

# Everything you want to know about 50/50

Energy saving in schools and other public buildings



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# Foreword

## **Spreading an innovative concept that makes public buildings use energy smartly and reduces bills for municipalities**

Many public building users, like in schools, are not motivated to use energy more efficiently as possible savings do not benefit themselves but the municipalities which pay the bills.

The EURONET 50/50 MAX European project is an example of how this challenge can be successfully addressed thanks to an innovative concept that helps change the behaviour of public building users and enables sharing of the savings achieved on the energy bills between the municipalities and the building users. Thus, employees, and in the case of schools, the pupils and the staff have a direct incentive to save energy.

The project has helped to raise awareness and assist the collective organization of users in public buildings. In schools, teachers and pupils have come together in teams to promote energy savings in each school, working with the main aim of reducing consumption and CO<sub>2</sub> emissions. And their share of the savings is used to improve educational activities.

Co-funded by the EU under the Intelligent Energy – Europe (IEE) programme, the concept has seen a real snowball effect: it was transferred from one country, Germany, to thirteen EU countries. It was initially launched only for school buildings and is now rolled out in other types of public buildings, such as sports facilities, libraries or public offices. It started as an educational programme for pupils and is now integrated as a sustained measure in many local, regional and even national sustainable energy plans and strategies.

Thanks to EURONET 50/50 MAX, measurable energy savings and reductions in CO<sub>2</sub> emissions were achieved, with focused actions of behavioural change, in more than 500 schools and 45 public buildings.

This is a shining example of what EU support can trigger: the market uptake of an innovative concept by local, regional and national public authorities and its dissemination across borders.

The 50/50 methodology is now a mature, institutionalised measure that can help public authorities meet their energy and climate policy objectives. It is already used as part of the Covenant of Mayors initiative as an integral part of municipalities' sustainable energy action plans. Let's now see how the snowball can further roll and be transferred to other communities.

**Vincent Berrutto**

Head of Unit

Horizon 2020 Energy – EASME

# Introduction

Studies show that people need to reduce their energy consumption to achieve the national and European climate and energy targets. Buildings and electrical appliances become more and more efficient, but the rebound effect very often leads to increasing demand of energy.

At the municipal level, schools and public buildings are among the largest consumers of energy, up to 60 % of the town council's total energy consumption. To have an impact on this consumption you can focus on energy efficiency. This always entails some investment; either to improve already existing equipment or to acquire equipment that is more efficient.

Another option is to act directly on demand through behavioural changes of the user of the building. The purpose of this guide is to provide a simple way – the 50/50 methodology – to achieve energy savings without making large investments, basically through behavioural changes in the use of the facilities. 50/50 introduces a financial incentive for good energy management and makes people the key to success in energy savings.



Photo: Climate Alliance Austria

In this guide, you will find details on how to organise a 50/50 project, the 9 steps to apply 50/50 methodology, tips and best practices from experienced schools or other public buildings and much more. We hope this guide inspires and helps you to develop a process of energy saving and greenhouse gases emissions reduction in your building. Our experience with more than 500 schools and nearly 50 other public buildings in the EURONET 50/50 MAX project shows, that 50/50 is perfect to join those efforts already undertaken by schools and town councils in a common goal to tackle climate change.

This guide has been prepared in the framework of the European EURONET 50/50 MAX project.

The project partners would like to thank you to all the schools, other public buildings and municipalities that participated in the Euronet 50/50 Max project and enthusiastically worked together to save as much energy as possible.

# What is 50/50 all about?

## The idea of 50/50

The 50/50 concept gives schools and other public buildings a methodology that helps them to learn about energy and to save it, mainly through a behavioural change of the users of the building. The idea is to involve schools and other public buildings in energy-saving activities by creating economic incentive both for schools/buildings and for managers of schools or buildings (usually local authorities):

- 50% of financial savings achieved thanks to the energy efficiency measures taken by pupils and teachers is returned to school through a financial payment.
- 50% of financial savings is a net saving for the local authority that pays the energy bills.
- As a result, everybody wins! The school teaches pupils how to save energy by changing behaviours and gets additional financial resources, the local authorities have less energy costs and the local community gets cleaner local environment.

## EURONET 50/50 MAX

The aim of the project EURONET 50/50 MAX was to mobilize energy savings in public buildings by using the 50/50 methodology in 500 schools and nearly 50 other public buildings from 13 EU countries. The 9-step methodology increases energy awareness of the building users and actively involves them in energy saving actions. Achieved financial benefits are equally shared according to the 50/50 principles.

EURONET 50/50 MAX was a continuation of a very successful EURONET 50/50 project which tested implementation of the 50/50 methodology in over 50 European schools and which won the European Sustainable Energy Award 2013! Thanks to EURONET 50/50 MAX, the idea has spread across Europe. 50/50 has been disseminated widely on the European and national level to encourage more public authorities to implement the 50/50 methodology in their buildings.

The European Commission supported the project through the Intelligent Energy Europe (IEE) programme.

### Citation:

**'It is important to us to raise awareness of children on environment and its protection as soon as possible, because they will have to do with the subject their whole lives!'**

Theresa Wippel  
Teacher at the 50/50 primary school Weiz.



Photos: J. Plazak, School Complex no 7 in Dąbrowa Górnicza

# What we wanted to achieve within EURONET 50/50 MAX

The main objective of the project are reducing energy consumption in schools and public buildings and the wide dissemination of the 50/50 concept on local, regional, national and European level.

This project lasted three years (2013 – 2016). During this period, we had set ourselves ambitious targets:

- Achieve an energy consumption reduction through behavioural changes of the users combined with small measures in maintenance. The goal was to achieve minimum energy-savings of 8% in each building involved.
- Wide dissemination of the 50/50 concept by influencing at least 100 local strategies, 16 regional strategies and 16 national strategies.
- 500 schools and nearly 50 other public buildings should join the 50/50 net-work and apply energy-saving measures.
- New methodological and educational materials and tools were developed to support implementation of 50/50 methodology in schools and other public buildings.
- Give the public building's managers and users an important role in proposing ideas and measures to save energy.
- Raise energy awareness among the users and employees of the schools and public buildings and to go beyond the EURONET 50/50 MAX project: changing their own energy-behaviours thereby influencing families and friends to do the same!
- Save money that would have been spent on energy and use it to finance other projects, activities or improvements in the facilities.

**Are you curious to see if we have achieved our goals?  
You can find the results on page 34.**



Photo: Jaskula (PNEC)

# Good planning is the key to success

Before beginning the implementation of 50/50 in schools or other public buildings, some things must be checked to ensure the success of the project both in reducing energy consumption as getting various groups involved:

## Before starting a 50/50 project as a municipality, you should know that you have to ...

- identify school(s)/public building(s) seriously interested in the project
- check, if there have been renovations of the building in the past three years (which makes it impossible to compare the historical and current data)
- determine the duration of the project (at least one calendar year) in agreement with the school
- provide data about the school/public buildings consumption on heating energy and electricity (consumption of the last three years and current data)
- clarify the period for which the energy invoices are issued (the easiest is to choose the same period for the 50/50 project)
- clearly define the persons which will be involved in the project and their functions
- appoint a representative for the energy team who will follow up on the development of the project at the school
- take part in the energy tour
- return 50% of achieved savings to the school/public building
- sign a collaboration agreement with the school/public building
- you could disseminate the methodology to other schools/buildings of the municipality

### TOP TIP:

If you want to start a 50/50 project in one of your buildings, the caretaker will be a very important person to help the children or the employees with their energy saving measures. Before starting the project, it might be a good idea to have a special training for the caretaker.



Photo: Barcelona Provincial Council



### **Before starting a 50/50 project as a school, you should know that you have to ...**

- determine the duration of the project (at least one calendar year) in agreement with the municipality
- find motivated teachers to help the pupils in realising the project
- set up the energy team
- motivate the caretaker to be a part of or support the energy team
- follow the 50/50 methodology to save energy
- promote behaviour changes among the pupils and other users of the building (sports clubs, etc.)
- sign an agreement with the town council or with the person in charge of paying the school's energy bills
- provide measurement devices, like thermometer, luxmeter and instant electricity meter, for the energy team to carry out an energy survey at school (devices can be rented from the project partner in your country, you can find the contact on the back page of this guide)

#### **TOP TIP:**

A good way to involve the parents of the pupils is to write a letter to them explaining the 50/50 project and the work of their children.

### **Before starting a 50/50 project as a public building, you should know that you have to ...**

- determine the duration of the project (at least one calendar year) in agreement with the municipality
- find motivated colleagues to realise the project and set up the energy team
- motivate the caretaker to be a part of or to support the energy team
- follow the 50/50 methodology to save energy
- promote behaviour changes among the users of the building (employees, user, citizens, etc.)
- sign an agreement with the town council or with the person in charge of paying the energy bills of the building

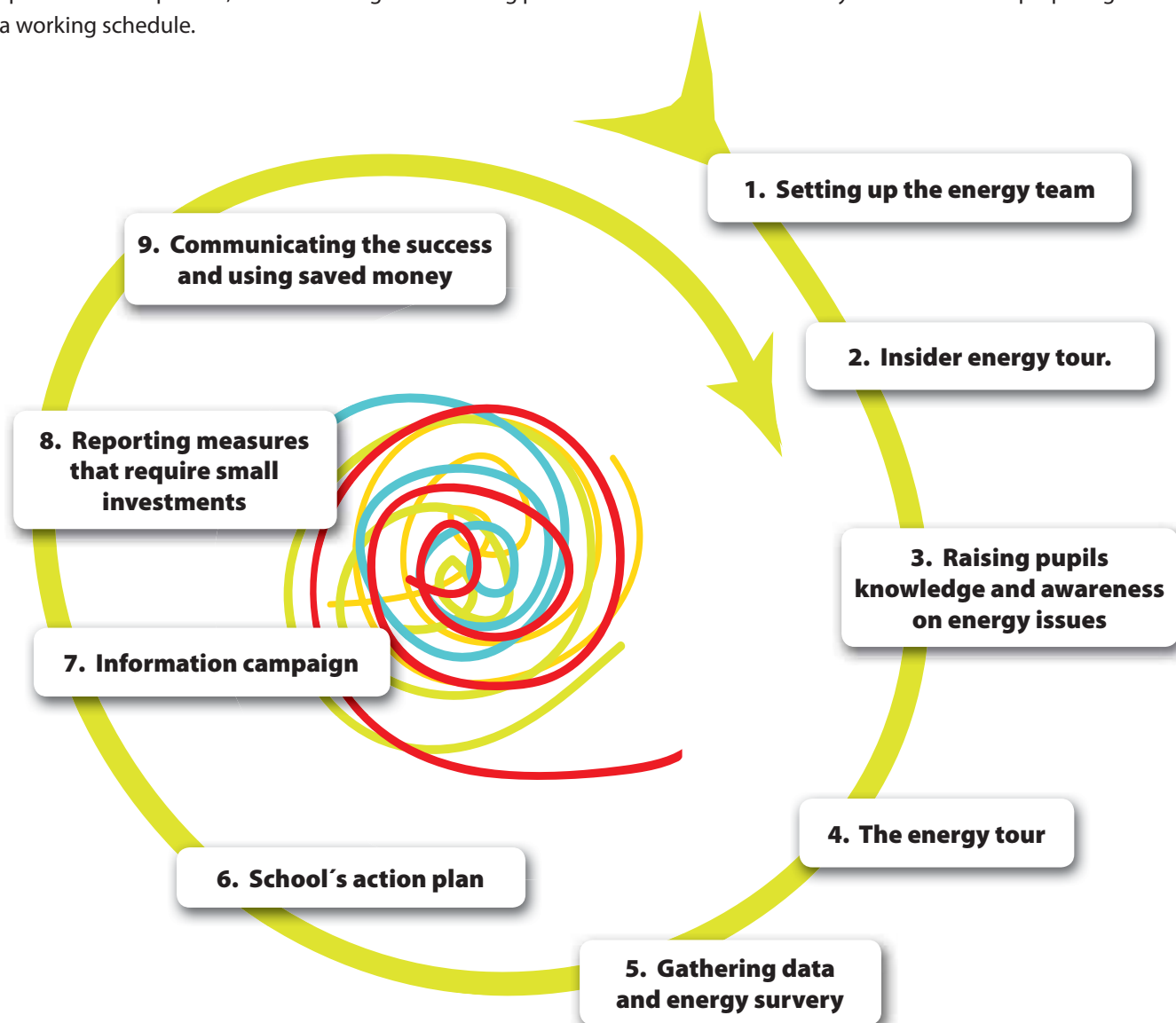
## 7 good reasons to start a 50/50 project at the school in your municipality:

- The 50/50 method can be implemented in many different types of public buildings and facilities: schools, sports facilities, municipal offices, social-cultural spaces (libraries, civic centres, museums, etc.) and others.
- If the energy use of the school or public building is reduced, it decreases the money the municipality pays for the energy as well.
- You can achieve energy savings without making large investments, through behavioural changes in the use of the facilities, reduce energy bills and get extra money for new investments in the building.
- A successful 50/50 project in your school can be a lighthouse project for other schools and public buildings in the region. It inspires your citizens and local stakeholders to follow your example and become more energy efficient.
- Some energy saving measures, like the readjustment of the heating system, will reduce the energy bills for the duration of the project and beyond.
- A 50/50 project in your schools and buildings can help you to reduce CO<sub>2</sub> emissions and to achieve your local/regional climate and energy targets. It proves your commitment towards a more sustainable future and energy smarter society.
- You can increase of the reliable energy supply in your municipality by using the 50/50 method. The less energy is used, the less energy has to be provided.

# 50/50 - Nine steps to success in schools

The 50/50 methodology is a 9-step methodology aiming at the achievement of energy and financial savings in a building. It actively involves building users in the process of energy management and teaches them environmentally friendly behaviours through practical actions.

The 9 steps can generally be extended over a whole year. However, each energy team will decide the appropriate speed to develop them, and will arrange the working plan in accordance with its reality. We recommend preparing a working schedule.



The steps of the methodology can be made consecutive, but there are also some, which can be taken out of order if the energy team decides to do so, depending on the type and operation of the facility.

**Remember, the project should be fun for the pupils and other building users!**

## Citation:

**'For us to be involved in the project has meant to discover the energy ... and how to save it!'**

Jan and Marcel from the Primary School Anton Busquets i Punset (Calders, Barcelona).

# WWW – Who? What? When?

## STEP 1 – SET UP THE ENERGY TEAM



### Who?

The energy team should consist of a group of pupils (one class or representatives of different classes), one or two interested teachers and the school caretaker. It is always a good idea to have members of the town council (from environment, education, services and maintenance) in the energy team.

### What?

Its task is to explore current energy situation of the school/building and to propose and implement energy saving measures. The team will also organize an information & education campaign addressed to the rest of the school society or other building users, plan tasks, propose actions, coordinate and disseminate the project.

### When?

As the energy team will be the project's driving force, it should be set up right at the beginning of the 50/50 project.

Photo: Christia Alexandrou (CEA)

### TOP TIP:

Involve the cleaning staff and let them be a part of the energy team. They observe the building every day during their work and might have some good ideas to save energy! Moreover, they are the last persons in all rooms and can turn off lights, equipment and radiators.

## STEP 2 – INSIDER ENERGY TOUR



### Who?

The management team; teachers involved in the project; maintenance personnel, the headmaster of the school.

### What?

The so-called 'Insider energy tour' will prepare the headmaster together with involved teachers and school caretaker for future tasks. Before starting work with the pupils, the school caretaker will lead the tour around the school showing heating and electricity systems. The aim of the tour is to:

- learn about the energy situation in the school/building and make an initial assessment of the energy characteristic of the school building (including assessment of the heating system, technical state of the building, etc.);
- identify aspects for potential savings and the elements, to which pupils' attention should be drawn to.

**When?** At the beginning of the project.

Photo: Climate Alliance Austria

### STEP 3 – RAISING PUPILS KNOWLEDGE AND AWARENESS ON ENERGY ISSUES

**Who?** The energy team.

**What?**

First step for the energy team is to raise the pupil's knowledge and awareness of issues related to climate and energy. They get acquainted with such issues as:

- forms of energy, using energy in everyday life and its impact on the environment,
- greenhouse effect, climate change and climate protection,
- energy saving, energy efficiency, use of renewable energy sources.

This could be during regular classes and/or during additional meetings with pupils (i.e. meetings of school environmental clubs, meetings of energy team). The projects didactic guide 'Energy Saving at Schools' for primary and secondary schools might help you with this task! You can download it on the EURO-NET 50/50 MAX website:

[www.euronet50-50max.eu/en/50-50-library/methodological-guidelines-how-to-implement-the-50-50-methodology](http://www.euronet50-50max.eu/en/50-50-library/methodological-guidelines-how-to-implement-the-50-50-methodology)

**When?** Right after setting up the energy team it can start with this step can be started with.



Photo: P. Zieliński

### STEP 4 – ENERGY TOUR

**Who?** The energy team.

**What?**

This is an energy tour carried out by the energy team. The school caretaker will lead a tour around the school showing the heating and electricity systems. Supervised by the teachers, the pupils inspect the whole school building and evaluate different aspects influencing energy consumption in school, including:

- technical state of the building
- heating system
- lighting
- use of electronic equipment
- use of water



Photo: Climate Alliance Austria

All school rooms should be checked (classrooms, corridors, staircases, gyms, toilets, teacher's room, storage rooms, etc.), to learn how energy gets to the school, how it is used and how it is sometimes lost. The energy team can use the working sheets of the didactic guide 'Energy Saving at Schools' (Download: <http://www.euronet50-50max.eu/en/50-50-library/methodological-guidelines-how-to-implement-the-50-50-methodology>) to collect all the data.

**When?** After the energy team learned more about energy saving and climate change it can do the energy tour. This step should be finished during the first two months of implementation.



## STEP 5 – GATHERING DATA AND ENERGY SURVEY

### Who?

The energy team; Pupils that take part in the project

### What?

At this stage of project implementation, the energy team has to make an energy survey at school including an instant temperature profile and a survey of the use of electricity during class time. The team observes how other pupils, teachers and other building users' behaviours influence energy consumption in school and pays attention especially to such behaviours as airing rooms, regulating the heating, use of electrical and electronic equipment, etc. This step includes surveys among other pupils regarding their opinion about the temperatures and air quality in school, use of electrical equipment and other energy-related issues.

If the energy team wants to make a long time temperature profile of the school, they can measure temperatures in all schoolrooms for 2 weeks and check, if they correspond to the established standards. It might be interesting to do the measures at a later stage or in the following year to check the results of the project.

For this step, the energy team needs some measurement devices like a thermometer, luxmeter and an instant electricity meter.

### When?

After the start of the heating season. Do the measuring during class time, so that the entire school community learns about the energy project.

### TOP TIP:

Provide the Energy Team with monthly consumption data, because the feedback helps and motivates them!



## STEP 6 – SCHOOL'S ACTION PLAN

### Who?

The energy team, the teachers, the headmaster and the caretaker.

### What?

Now the energy team is ready to discuss its findings and to develop solutions to reduce energy consumption at school (change of behaviours and small investments). The team also identifies 'target groups' of the proposals, as well as ways to approach them with the energy-saving message. At this stage, the team might need the help of the adults to put some of the proposals into action.

### When?

As soon as possible to go on with step 7.

### Citation:

'The children love to work on the project; they can learn and play at the same time.'

Marie Kružíková, teacher.

## STEP 7 – INFORMATION CAMPAIGN

**Who?** The energy team.

**What?**

At this stage, the energy team shares what they have learned during project implementation as well as what all energy users in school can do to save energy with the rest of the school. The team may use different communication channels, like posters, wallpapers, bulletin board displays, presentations during classes and school events, workshops, organization of an Energy Saving Day, articles on the website of the school, leaflets for all users, etc. Everyone at school should know how they can take part!

**When?**

As soon as the action plan is ready, the energy team can start with the information campaign.



Photo: Independent Institute for Environmental Issues (UfU)

**TOP TIP**

Create your own energy saving game to test the knowledge of your school-mates. On the picture, you can see the game **Activatt**, created by Barcelona Provincial Council.



Photo: Barcelona Provincial Council

## STEP 8 – REPORTING MEASURES THAT REQUIRE SMALL INVESTMENTS

**Who?** The energy team, the headmaster, parent’s associations and the municipality.

**What?**

Sometimes even small amounts of money can make a big difference! Although the main aim of the 50/50 methodology are non-investment energy savings through a change of the behaviour, the energy team can also propose things that require small investments. These proposals can be communicated to the municipality, the school authority and/or other potential sponsors, asking them for support.

**When?**

As soon as the action plan is ready, the energy team can start creating a list with all measures that require small investments.



Photo: Primary School Menéndez yPelayo

## STEP 9 – COMMUNICATING THE SUCCESS AND USING SAVED MONEY



### Citation:

'A 50/50 project makes pupils aware that there are opportunities to do something about the climate change and that their individual actions do matter! In Hartberg, the children are so proud of what they have achieved.'

Anton Schuller, Representative of the City of Hartberg.

### Who?

The energy team, the teachers and the headmaster.

### What?

After each year of 50/50 implementation, it is necessary to calculate, how much energy, CO<sub>2</sub> and money has been saved. It is important to involve the energy team in the discussion of what can be done with the money returned to the school with the energy savings. This way the pupils will really feel that their actions have positive and measurable results.

A funny part of this step is to disseminate the results among the school public, parents and other citizens with posters, articles in newspapers, etc.

### When?

The duration of the project should be at least one calendar year. Normally the energy team will get the first results after about one or two months later.

Photo: Montsenyor Gibert Primary School

## 7 good reasons to start a 50/50 project at the school at your school:

- 50/50 empowers pupils to learn about energy and get energy smart.
- The pupils are leaders, energy researchers and authors of energy-saving measures introduced in their schools. This is real 'Learning by doing'!
- A 50/50 project helps you to discover the energy situation of your school, to improve energy performance (on heating, lighting, etc.) and the environmental quality of the building.
- A correct management of temperature at school allows you to improve the school environment and make it healthier.
- If you reduce the energy use, you also decrease energy costs for that building and therefore the school has extra money to invest in other priorities.
- Energy production is usually linked to generation of CO<sub>2</sub> emissions. If you save energy, you can reduce this greenhouse gas and its the impact on the climate.
- The pupils change their energy-behaviours influencing their families and friends to do the same. They become multipliers!



## 50/50 in other public buildings

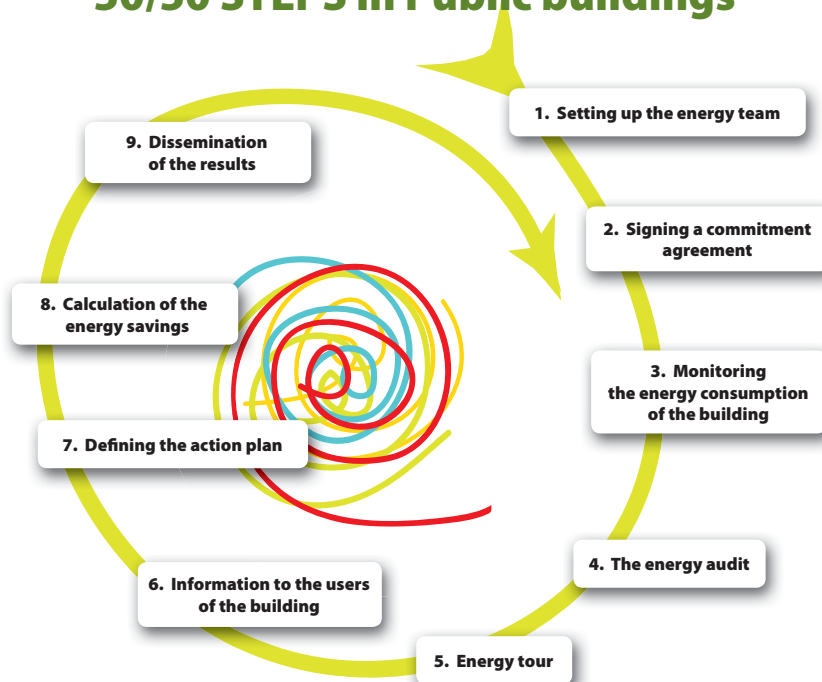
If you want to carry out the 50/50 methodology in a non-school building, there are 9 steps to apply 50/50 methodology as well. These steps can be implemented throughout a whole year. Some of them are similar to the steps at schools, some are different.

- Step 1. Setting up the energy team:** In other public buildings, the energy team is the management team or persons that want to promote the project. Involving members of the town council (from environment, education, services and maintenance) is a good idea.
- Step 2. Signing a commitment agreement:** We recommend signing an agreement, specifying responsibilities, the method to calculate the savings and how to refund the savings achieved. These should be equally shared between the building and the city council according to the 50/50 scheme.
- Step 3. Monitoring the energy consumption of the building:** It is good to know how much energy the building uses and when it is used. You can follow-up of the monthly bills, read the meter regularly or install measuring devices. When monitoring the energy consumption you see the impact of the actions taken. Best is to appoint someone in the building to be responsible for this task.
- Step 4. The energy audit:** Now we know how much energy is used and when it is used, this step tells us HOW we consume. Carrying out this initial energy audit in the facility should require special attention to the management and behavioural elements of the building.
- Step 5. Energy tour:** The energy tour is an accompanied visit to discover how energy is managed in the building. This visit must allow the members of the energy team to get an idea of the principal strong and weak points of the building in order to start proposing actions for improvement. The tour can also be used for the energy audit, steps 4 and 5 being dealt with simultaneously.
- Step 6. Information to the users of the building:** From conclusions arisen from the energy tour, the energy team may start planning communication actions to inform the rest of the users. Parallel to that, the energy team can collect ideas, comments, opinions, etc. from the rest of users, to be used when preparing the proposals for the action plan (step 7).
- Step 7. Defining the action plan:** Develop solutions to reduce energy consumption in the building (like the energy teams in schools).

### TOP TIP:

Do you need inspiration? On page 36 of this guide, you will find a list with some low-cost or free energy saving measures!

### 50/50 STEPS in Public buildings



**Step 8. Calculation of the energy savings**

**Step 9. Dissemination of the results**

# Calculation of the savings

## The calculation tool

After each year of the 50/50 implementation, everyone wants to know the amount of energy and money saved, including:

- electricity savings
- heat savings
- GHG savings
- financial savings

It is important to use a clear, simple and easy to understand method. Through the calculation, we should obtain the value of the energy savings in kWh, tonnes of CO<sub>2</sub> and national currency (whenever relevant, recalculated to Euro). 50% of the financial savings is given back to the school or other public building by the town council that pays the energy bills.

On the EURONET 50/50 MAX website, you can find a calculation tool to help you with the calculations:

► [www.euronet50-50max.eu/en/energy-savings-calculation-tool](http://www.euronet50-50max.eu/en/energy-savings-calculation-tool)

This tool helps to facilitate and homogenise the calculation of energy and financial savings done by the members of the 50/50 Network. We used it a lot during the EURONET 50/50 MAX project.



## The tool is available in three versions:

- The first version is designed **for project partners and/or municipalities** that are responsible for calculating and reporting official energy and financial savings achieved within the framework of the EURONET 50/50 MAX project. You need an individual login and password to enter.
- The second version is **for all schools and other public buildings being part of the 50/50 Network**. They can use it for educational purposes during their work with the Energy Team and other pupils involved in energy monitoring and saving activities. It is also available after logging in.
- The third version is open **for the general public**. Anyone can use it to calculate energy and financial savings achieved in his building without logging in. In this version, however, the results cannot be saved in the system.

## The tool is easy to use and consists of the following steps:

1. Enter the name of the building, name of the person doing the calculation and choose energy sources used in the building.
2. Enter the input data (electricity consumption, heating consumption, degree-days, energy prices, etc.).
3. Submit data and calculate the savings.
4. Check the results. Create a PDF-report.

You'll see - it's very easy!

## Methodology of calculation

Energy savings are calculated by comparing the electricity and heat consumption in the current year with the reference values. These savings are then converted into monetary values by applying the current energy prices. That is, the number of consumption units saved (kWh, GJ, m3, etc.) is calculated for each supply (electricity and heating) and is then multiplied by the average price for the current year, taken from the various invoices. Therefore, to successfully complete the calculation, all invoices for electricity and heating for each year of implementation and the reference years need to be collected.

### What are the reference years?

In case of electricity, reference year is simply the year preceding implementation of the 50/50 methodology. In case of heat and heating fuels it is a bit more complicated, as we need to take into account weather fluctuations. Therefore, to calculate reference value (see below), we need to take into account average consumption in the previous three years (recalculated with heating degree-days). The details can be taken from the invoices so remember to collect them in advance.

If there are changes in the use of the building or in the installations, which could have an impact on energy consumption, you have to take this into account when making the calculation.

**The primary school SAMPLE in Sample City has a water damage in the gym. For two months, the gym has to be dried with the help of electrical dehumidifiers. As a result the consumption of electricity is much higher as in the year of reference. The electricity consumption of the equipment has to be calculated and subtracted from the total consumption.**

### Calculation of the savings in electricity

The saving achieved is the difference between the consumption in the year of reference and the consumption in the respective year of 50/50 implementation.

**Savings in electricity (in kWh) = kWh in reference year - kWh in implementation year**

The kWh saved is multiplied by the current price of electricity.

**Primary school SAMPLE used 14 000 kWh of electricity in the reference year, the current amount is 12 600 kWh, the price for 1 kWh is 0.16 €.**

**14000 kWh – 12600 kWh = 1400 kWh  
1400 kWh x 0.16 €/kWh = 224 €**

**In this case the school saved 1 400 kWh, which amounts to 224 € (10%).**

Photo: M. Knapik-Lizak,  
Primary School n04  
in Krzesławice



## Calculation of heat (heating fuels) savings

The calculation of the savings on heating is a bit more difficult. It has to take into account the calculation of a weather-normalized energy consumption by using the heating degree days (HDD). A heating degree day is a unit which indicates the level of cold of the given year. Outside temperature cannot be controlled by the building users and has a direct effect on fuel consumption. Including the HDD in the calculation process corrects this problem.

You can use the webpage [www.degreedays.net](http://www.degreedays.net) to obtain the heating degree days for your area. In the section 'degree day type' you have to select 'heating' and the base temperature should be 15°C. It is important to select the meteorological station closest to your building.

In some countries, you might also get the heating degree days from the national Institute of Meteorology.

To calculate the heating reference value the consumption figures have to be weighted by the heating degree days.

You need to do this calculation for each year:

$$\frac{\text{Energy consumption in reference year 1 (kWh*)}}{\text{Heating degree days in reference year 1 (°Cday)}} = \text{Consumption weighted by HDD (kWh*/°Cday)}$$

With the results for the three years of reference, we calculate the average in order to obtain the standardised consumption in the reference period:

$$\frac{\text{Consumption (kWh*)/°Cday in year 1} + \text{Consumption (kWh*)/°Cday in year 2} + \text{Consumption (kWh*)/°Cday in year 3}}{3} = \text{standard factor}$$

Now - to finalize calculation of the reference value (reference consumption) for heat – we need to multiply the standard factor (average standardised consumption over the last three years) by the number of heating degree days in the 50/50 implementation year:

$$\text{Degree days in the year of implementation} \times \text{standard factor} = \text{Estimated consumption for the implementation year (reference consumption)}$$

Now it gets easy again! To calculate the savings we have to subtract real consumption in the 50/50 implementation year from the reference consumption.

$$\text{Energy savings (kWh*)} = \text{reference consumption} - \text{real consumption in the implementation year}$$

Then the kWh\* obtained are multiplied by the average price in the year for which the calculations are made.

\* Or other relevant currency unit, e.g. m<sup>3</sup>, GJ

**Heating consumption of the primary school SAMPLE in the three reference years is 346 000 kWh, 316 000 kWh and 308 000 kWh. The Heating Degree Days (HDD) for the same years are 3154, 3115 and 3102 °Cday.**

$$\begin{aligned} \text{Consumption per } ^\circ\text{C day: } & \quad 346000 / 3154 = 109.00 \text{ kWh/ } ^\circ\text{C day} \\ & \quad 316000 / 3115 = 101.00 \text{ kWh/ } ^\circ\text{C day} \\ & \quad 308000 / 3102 = 99.50 \text{ kWh/ } ^\circ\text{C day} \end{aligned}$$

$$\text{Standard factor: } \quad \frac{109 + 101 + 99.5}{3} = 103.17 \text{ kWh/}^\circ\text{C day}$$

**The HDD of the 50/50 implementation year are 2 835 °C day. The reference value (estimated consumption for the implementation year) is therefore:**

$$2835 \times 103.17 = 292486.95 \text{ kWh}$$

**The real consumption in the implementation year was 277862.6 kWh. Therefore, the school managed to achieve following heat savings:**

$$292486.95 \text{ kWh} - 277862.6 \text{ kWh} = 14624.35 \text{ kWh.}$$

**The school saved 14 624.35 kWh (5 %) of the heating energy.**

**The price for the district heating is 0.12 €/kWh. Therefore, the financial savings are:**

$$14624.35 \text{ kWh} \times 0.12 \text{ €/kWh} = 1754.92 \text{ €}$$

## Total savings achieved

The total savings are the sum of the savings in electricity and the savings in heating.

**The Primary School Sample saved 16 024.35 kWh in total.**

**This is 5.4 % savings of the total consumption (291862.6 kWh) and corresponds to 1978.92 €.**

50% of the savings achieved stays with the municipality (or whoever pays the energy bills for the building) and the other 50% is paid to the school as a reward for their efforts. If the school does not achieve any kind of savings, no money is given to them. Nevertheless, they can still try next year.

### TOP TIP:

Engage the energy team in the decision how to use the money saved. This way they get a better understanding of the relation between energy and money (economic education) and feel more responsible.

'How much did we receive?' and 'What can we buy with the money?' are fascinating questions for the pupils.

Photo: Primary School Weiz



Photo: PS Rodrigo de Xerez

# Best practices

In the project EURONET 50/50 MAX, more than 500 schools and 45 other public buildings tested the 50/50 method in their facilities. Some developed ideas and measures showed great results. The following best practice examples can be used as a pool of ideas for the implementation of 50/50 in a public building.

If you want to know more about a best practice, please use the following link:

► <http://www.euronet50-50max.eu/en/50-50-library/good-practice-examples>



## Austria

**Primary school Barwitzius (Wiener Neustadt)** expanded the 50/50 project to waste and water:

The Primary school Barwitzius saved 846.41 € (waste) and 669.5m<sup>3</sup> of water (1119.40 €) by improving the waste separation concept, evaluation of the watering system, no provision of hot water on Saturday and Sunday in the gym and installing economy buttons in the toilets.



Photos: Municipality of Hartberg • Primary School Barwitzius (Wiener Neustadt)

### Competition of all 50/50 schools in Styria

The Styrian government together with Climate Alliance Austria organizes a competition of all 50/50 schools in the province. This awakens the ambition and is an additional incentive to maximize energy savings, because the most active and successful schools can win additional prizes.



### The city hall of Judenburg invested in thermometers for each room

The temperature sensitivity is very different among the employees of a public building, and very often has nothing to do with the actual temperature. With a thermometer in each room of the building the employees permanently could check the real temperature. At the end of the year, the savings on heating energy amounted to 9%.

Photo: Municipality of Judenburg

# Croatia

## Big children for small children

**The Primary school Ivana Filipovića** has recognized the value of the project and has organized classes where the children from higher grades came to work with the children from first grades in order to teach them about energy. These lessons were both fun and educational.



## Energy team in action

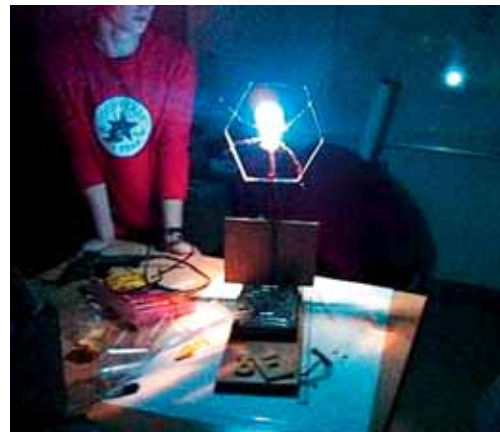
Several schools have opted for a funny and creative way of presenting the project to the school public. The energy teams from the Catering and Tourism College and the Vladimir Prelog Science School have made stickers and put them above the light switches to warn the students and teachers to switch off the lights.



## Recycling for our future

Several schools have recognized the value of recycling and re-using waste material: the energy team from the primary school Ivan Filipović has made a mascot Phillippa out of recycled material, while the energy team from the Vladimir Prelog Science School has created the school logo from waste ...

And yes, it shines!



Photos: City of Zagreb

# Cyprus

## Energy awareness to the local community



The energy team of the **15th Primary School of Kato Polemidia** decided that they should do something to raise energy awareness among the local community. Therefore, they prepared a three-page brochure with simple energy saving tips and advice and they distributed it to all community members, from parents and citizens, other schools of the area, bookshops, organizations and the municipality. They distributed a total number of 70 brochures and spread the message of 'energy saving'!



### Secret Energy Agents!

The Energy Team of the Primary School of Episkopi decided to take the 'law' in their hands: During school breaks, they are patrolling the classes and depending on their energy-saving or waste behaviour, they give them a green or red card. At the end of the week, the class, which gathered the most green cards, receives a prize! Similarly, in the Second Primary School of Kaimakli, a group of students founded a secret action team, that leaves messages to students or teachers whenever they forget to switch off the lights or turn off the photocopier!

### Lamp recycling

Even though the project is about to officially come to an end, the Energy Team of the Primary School of Lythrodontas does not give up: They decided to start recycling lamps. Therefore, they placed a bin outside of each class, for the students to deposit waste lamps. At the end of the month, they transfer them to a recycling location.

Photos: Natasa Soteriadou • Aristos Markakis (2) • Christoforos Christoforou • Andri Georgiou



## Czech Republic (EAV)

### Primary and Secondary school Čáslavice - Pass the baton

Teachers and pupils from primary and secondary school Čáslavice (Vysočina region) decided to ensure project dissemination and continuation in their school for the future pupils. This is based on forwarding energy knowledge and experience between pupils themselves. Older pupils, who graduate at the end of the school year forward their experience and knowledge to younger pupils about 10 years old.



Photo: Marie Kružíková  
Primary and Secondary School Čáslavice



Photo: Ondřej Němec (EAV)

### Workshop – thermostatic heads and ventilation

EAV organized a workshop about proper use of thermostatic heads and proper ways of ventilation in Care centre Stonařov. After the workshop, we installed a heat meter in the boiler room so we could check a change of tenants' behaviour in long term. We are glad to say, that this practice was successful. There were substantial savings of heat in the building of Care Centre Stonařov.

### Leandr Čech's primary and secondary school Nové Město na Moravě – Be a caretaker for one day

The members of energy team were invited to the boiler room and operational premises of the school. The caretaker explained all energy-related issues in the building and the energy team member, in cooperation with the caretaker, tried to do his job.

## Czech Republic (TOP ENVI)

### Energy saving activity cup

In this competition, the activities of the energy teams are evaluated according to (in advanced given) criteria allowed for a provable output: e.g. web, Facebook, press and other media.

It is very important to define these criteria in advance, to evaluate the participation of the school energy team's afterwards and to announce in advance given prizes for 1st, 2nd and 3rd place. This gives the same chances to all teams even though they have very different start conditions of buildings operation and it can significantly activate them in their participation on energy saving searching.

### Spreading of energy saving awareness

#### by energy teams to municipality leaders and cities connected to the project.

The spreading of information is very important for the project success. Important role in support and awareness spreading can be played by sufficient continuous information from leaders of municipalities and cities (mayor, council and deputies) in concerned schools areas. That is why it is needed to have their deputies as members of the

energy teams and to get information about the results progress regularly (once in a half year at least). They share this information on official meetings and make the project visible.

Informing municipality school leader commissions about project and its progress is in place.

Project presentation on web sites and other information channels of municipalities can also play big role.

### Management of low-cost arrangements for hygiene water savings for school and other buildings operations

Besides 'traditional' energies (as electricity, gas, heat energy, etc.) whose consumption and potential savings are being long term tracked, the consumption and savings of water used for personal hygiene in operated buildings in EURONET 50/50 max project is needed to be filed.

This applies also to correct and concrete management of hygiene water consumption by basin usage, shower and closet usage.

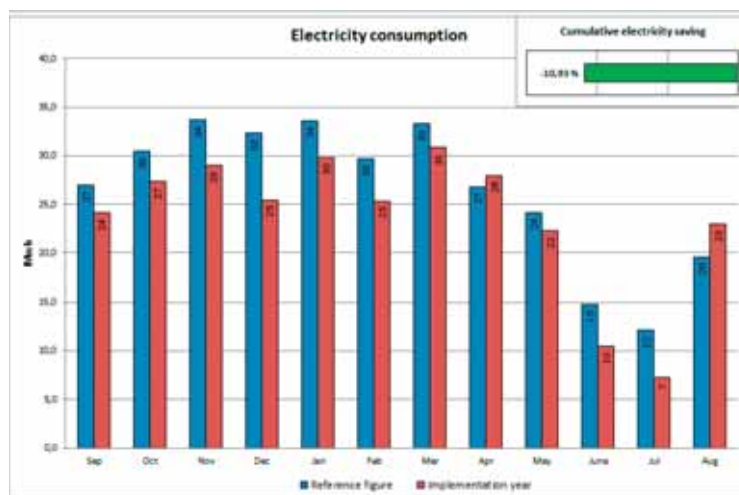
To reach these savings it is necessary to implement correct concrete management of the low-cost arrangements for hygiene water savings in the schools. Hygiene water saving management measures:

- Corresponding professional experience of consulting company that processes low-cost arrangements suggestion and calculates the savings
- Suitable components with relevant parameters delivery
- Following reporting and references documentation

## Finland

### Monthly energy consumption figures

When the building users receive monthly feedback on their consumption figures, it helps and motivates them to implement the project. The figures need to be in a format that is very easy to understand (even for pupils), such as bar charts comparing the monthly energy use to the reference months.



### Municipality representatives visiting the schools

After each implementation year, the municipality representatives could visit the schools personally in order to give the Energy teams a possibility to explain what they have done and to tell them the results they have achieved. Personal visits show the pupils (and teachers!) that their work is important.

### Purchasing a water flow meter

A basic model of a water flow meter is a very small investment (approximately 25 euros) but it can save a lot of water. Even the pupils can measure the water flows of the taps of the school and if the water pressure is unnecessarily high, then water is wasted. This has been tested in some Finnish schools. The pupils were eager to participate in the measurements and as a result, the water pressure was lowered in order to save water.

# Germany

## Peer Teaching and Learning

### – School Students instruct the whole school

The science course of the 13th grade realized the energy saving project at their school together with their teacher. As the pupils will leave school in summer 2016, they need a new energy team to continue the project. Therefore, they prepared a final presentation for the whole school. They presented their energy saving activities as one means to cut the emission of CO<sub>2</sub>.

The students prepared a 'world game' asking about climate facts in relation to the continents. The classes had 30 seconds to discuss, answer a question and lift a poster with the name of one continent. Representatives of the district administration took part. The winner group of the world game was invited to sandwiches and pizza.



## Workshop Understanding CO<sub>2</sub> and Greenhouse Effect in Class 3

For very young pupils CO<sub>2</sub> is merely a word – in this workshop we found a way of helping them to understand what it actually means. The 9-year old kids did experiments that showed how the greenhouse effect works when light is turned into warmth and this warmth cannot escape. Motoric play provided a change from deskwork and showed that more CO<sub>2</sub> keeps more warmth in the atmosphere. Generally, we used the life knowledge of the kids, their curiosity, a limited amount of science content and science methods (how to make a proper experiment) to create a deeper understanding of the sources and the effects of CO<sub>2</sub>.



## Send a Message to the Climate Conference in Paris in December 15

The aim of this activity was to bring Euronet 50/50 max into the context of the Climate Conference in December 2015 and to make students understand the 'COP' is not something behind closed door. It would bring issues like global climate equity into Euronet 50/50 max. Therefore, we proposed project schools to conduct a Climate Conference, e.g. as a role-play with different stakeholders discussing their respective interests and trying to find a solution. The results/proposals should be used to produce a message (paper, letter) and send it to us. We had made contact with young sustainability ambassador to the climate Conference, who had agreed to hand the messages to a 'real' negotiator in the conference. One school responded. The eco-group of the school worked on the message to the COP in Paris and handed it to us in front of the Federal German parliament. We send the beautiful poster to the youth ambassadors – who really managed to hand it over to the German Minister for the Environment at the conference site during the conference. The pupils were very happy their action had worked out.



# Greece

## Primary School of Boroι

### Poster use and official letters to Principals

The Primary School of Boroι did an amazing job in promoting the building energy saving issue outside the school premises. To specify, the participating pupils created a best practices energy saving poster as well as relevant flyers and several thematic blog entries in the school's blog. They also sent official letters to both the school Principle and the Mayor of Municipality of Faistos, suggesting ways to achieve energy saving and consequently minimizing energy related costs.

Blog: <http://blogs.sch.gr/dimvoron/category/εξοικονόμηση-ενέργειας>



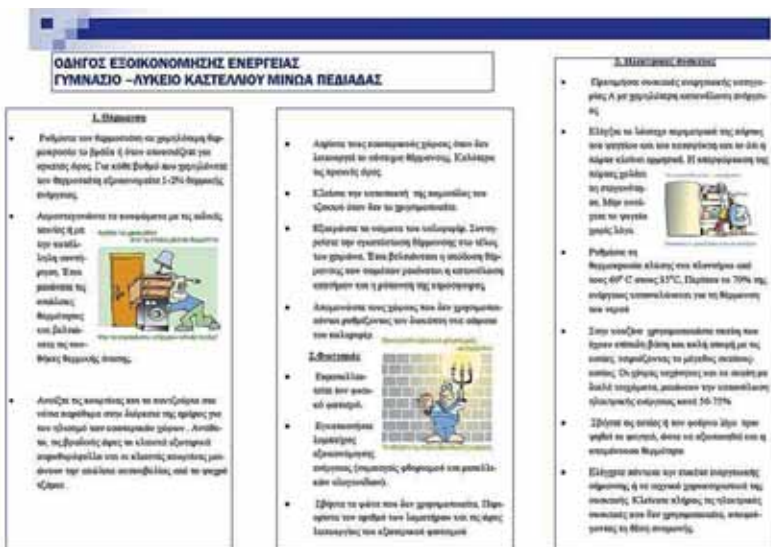
Image: Eleni Geronimaki, Serafim Dimaras and pupils of Primary School of Boroι



## 3rd Primary School of Rethymno: Use of internet

The pupil's activities ranged from in-school tasks like drawing thematic images and creating promotional energy-saving posters to extra-curricular activities like educational visits to waste treatment facilities and participation to thematic energy saving events. This school performed exceptionally well in raising school and social awareness on the importance and methodology of energy saving by intelligently utilizing popular social on-line tools like Blogging, YouTube, Pinterest to communicate the message of efficient energy saving to a wider audience.

Image: Ilias Farmakis and pupils of 5th Primary School of Rethymno



## Secondary School of Kastelli:

### Questionnaire/leaflet use

The participating pupils raised awareness on the energy saving issue and actively tried to reach out to their local community, starting from their family and friends and branching out. This was mainly achieved by preparing and distributing a specialized questionnaire aiming to make local people realize how they waste energy in their daily lives. A carefully prepared illustrated information leaflet made from recycled paper accompanied the questionnaire.

Blog: [http://gymkast.blogspot.gr/2014/10/blog-post\\_12.html](http://gymkast.blogspot.gr/2014/10/blog-post_12.html)

Image: IOlga Riga and students of Secondary School of Kastelli

## Latvia

### Excursions on energy efficiency

Latvenergo Energy Efficiency Centre, with whom we have signed an agreement on cooperation in the project Euronet50/50max, had prepared a program of excursions for pupils. The program includes (duration 2 hours 30 minutes) demonstration with detailed comments as virtually all instruments used in Latvia, which are consumers of heat, electricity, water and gas. Under this program, a seminar was organized for four schools from Jurmala. The Seminar is included in the plan of the Centre and will be regularly conducted.



### Monthly monitoring

The city of Liepaja municipality from schools, that have joined the Euronet50/50max project, receives monthly reports on the current consumption of heat throughout the building. If the ratio of energy consumption and the degree of days each month approximately constant, it can be assumed that the building is operated properly. Result: The behavior of users of premises can be adjusted on a monthly basis.

### Best practices in public building

Kindergarten 'Liesmina' has applied the principle of flexible use of their premises. Depending on the weather (the affects the sun, wind, humidity), estates of the building had a different temperature. Collective lessons for children and general staff meetings were held in those premises, which require less energy for heating.

Photo: Riga Managers School

## Lithuania

### 50/50 from schools to families

During the implementation of the project in several schools, pupils were taking energy-measuring devices at home for weekends in order to do measurements and try to reach for energy savings.

In this way, they have found out the most energy consuming devices at home and tried to use it more rationally. Some of pupils even made agreements with their parent similar to 50/50 methodology. This is good practices on educating and motivating young generation.

### Installation of bipolar light switches

Kaunas Juozo Gruso art gymnasium has installed bipolar light switches, which allow to turn on/off the light in long corridors from both ends of it. The person who enters the corridor is able to turn on the light and then go along the corridor. At the end of the corridor person is able to turn it off and go to his destination without leaving the light on. This was one of the measures that empowered gymnasium to save 5.6 % of electricity.



### Workshop – Energy saving and energy labeling

The workshop was organized at the beginning of the project. Topics of workshop were heat and electricity consumption in buildings, energy saving measures, behaviour measures, energy labelling, energy efficient devices, lighting, green procurement and other. The aims of this workshops were to refresh and increase caretakers knowledge on various energy issues, to present the newest technologies in lighting and heating, to encourage caretakers to buy energy efficient equipment and to recognized it (energy labelling), to inform how energy savings calculation will be done. The workshop was attended by all schools representatives: school principals, caretakers, teachers, others.



Photo: Kaunas Regional Energy Agency

## Poland

### Travels of energy-saving bulb

Pupils from the Primary School no 9 in Dzierżoniów decided to share knowledge gained within EURONET 50/50 MAX with their younger colleagues. They contacted the city council with the proposition to organise energy-saving classes in municipal kindergartens. Together with the teacher and the municipal coordinator of the project, they developed an educational programme addressed to small children and started visits in the neighbouring kindergartens.



### Learning about energy production and saving

Energy team from Primary School no 2 in Jasło inspired other pupils to implement their own research project concerning different ways of energy production, use and saving. The pupils not only visited whole school building, learning about different energy-related aspects of its operation, but also had a meeting with the municipal energy manager to learn more about his work and different ways of energy production and distribution within the city. They also had an opportunity to compare efficiency of different light sources and equipment. Moreover, they visited power station in Niegłowice. Now they will use their knowledge to find out best ways of energy saving.

Photos: P. Nosal • M. Najdek



### Citation:

'The pupils were very eager to make measurements of the temperature and light brightness in the rooms, as well as to check energy consumption of different devices. By doing this, they felt important and responsible for the energy situation of our school!'

Anna Rogalska, Primary School in Siedlce.

### PV panels on school building promote renewable energy

Solar PV panels were installed on the roof of the Primary School in Raszówka (Lubin municipality) thanks to the efforts of Lubin's Mayor and Greenpeace Poland.

Micropower plant is composed of 24 monocrystalline PV modules with the capacity of 260 W each. The installation will not only produce electricity for the school's needs but will be also used to further educate pupils on renewable energy sources. To add splendour to the official inauguration of the plant, the pupils prepared special environmental performance. There were also prepared special information boards about renewable energy sources.

## Slovenia

### Solar system used for teaching purposes

Energy team's actions helped with the school board decision to put a small solar system on the roof of Primary School Šmartno ob Dreti in partnership with a private investor. Pupils are now allowed to collect data and use the solar system for teaching and demonstrational purposes.



### Eco-guard

Every day one pupil in each class in Primary School Mihe Pintarja Toleda was named »eco-guard«. Eco-guard tasks include airing the classroom every morning and during recesses, regularly checking thermostatic valves and turning off lights, when they are not needed. In 2015 the school saved 52.805 kWh of energy!

### A day without shopping

Each year pupils of Primary School Mihe Pintarja Toleda decide on a day, when they and their families will not be visiting stores, thus saving on money and energy, contributing to lowering CO<sub>2</sub> emissions and producing less waste.



Image: primary school weiz

### Citation:

'This is the second best day of my whole school life!'

A boy from the energy team of the Primary school Weiz right after the energy tour.

## Spain (DIBA)

### A day without energy in the schools of Mollet del Vallès

The 5 schools of the Municipality of Mollet del Vallès wanted to organize some activity to raise the awareness of their families and neighbours about the necessity to decrease the wasted energy consumption, so, during the European Energy week they decided to celebrate the day without energy in their build-ings to exemplify their compromise to save energy.



### Energy training for the cleaning staff

The City Council of Cardedeu and Barcelona Provincial City Council organized a briefing session to the cleaning staff of the municipality's schools to help them to agree the best way to save energy.

The cleaning staff was introduced to what Euronet 50/50 max is about. The 12 workers participants were able to learn the basics of energy consumption in schools and reflect on their role in making a more responsible use of energy while doing their work in schools of Cardedeu.

### Re-thinking the spaces use of the Civic centre of Terrassa

At the civic centre of Terrassa, there is a group of women that practice Yoga.

Months ago, the yoga classes usually took place in the auditorium of the civic centre because it was the most private room. When the women knew about the existence of the Euronet 50/50max, they decided to go to another room which needed less expenses of light and heat.

The new room had big windows, so they could take advantage of the sunlight to get a good illumination and temperature. They decided to put up graduate curtains in the new Yoga classroom to keep their privacy.

Now, they enjoy their yoga classes without losing privacy and saving energy!





## Spain (DIHU)

### How to control the temperature of classes at all moments!

Making a small investment the project team gave 2 liquid crystal thermometers (those used in home aquariums) at 12 participating schools, personalized with the image of the project. These placed on the walls of classes allow you to control the temperature at all times for each class. These thermometers can also be customized by the students as an educational activity.



Photo: María Antonia Barceló Martínez  
(Primary School Menéndez y Pelayo)

### Cooking with Renewable tastes so good!

The project team provided a solar oven within the E-pack to each participating school. During the project implementation, several cooking workshops were organized in schools and in the two final 50/50 events of the project on how to prepare food with solar energy. In these theoretical and practical workshops, different technologies for solar cooking (concentrators, ovens and dehydrators) were shown and how to make these devices by ourselves.



### Teaching 'future 50/50' in energy savings!

In order to teach and instil the concept 50/50 in future teachers of schools and universities a series of actions between students of different levels of training were conducted:

1. Training session within two masters (one on training of Secondary Teachers and other inter-provincial master for Environmental Educators)
2. Training session for students Grade Teacher (primary school teachers) and
3. Participation and presentation of a stand in two years at Weeks Open University of Huelva where future students of universities decide their final professional studies.



### TOP TIP:

**Include 50/50 into your SEAP or other energy strategies.**  
**At the municipal level, public buildings are among the largest consumers of energy, up to 60% of the total energy consumption. 50/50 is a great measure with very low costs to unlock the energy saving potential of your buildings.**

# The results of EURONET 50/50 MAX

EURONET 50/50 MAX has brought together many people that have taken action to save energy. It is a lot of work to calculate the savings more than 500 schools and nearly 50 other public buildings. Here are the preliminary results of 340 schools and 27 other public buildings.

## TOP TIP:

One of the results of the project is the fact that it is a lot of work to calculate the savings. Normally everyone starts to think about the results at the end of the project, but it is much better to start earlier.

## To meet our goals

- More than 500 primary and secondary schools from 13 European countries implemented the 50/50 methodology
- 45 other public buildings implemented 50/50
- Nearly 90 000 pupils and more than 6 000 teachers and employees of other public buildings undertook efforts to save at least 8% of energy consumed in their buildings
- More than 100 European municipalities used the 50/50 tools and
- 84 of them participated in our training sessions
- 56 municipalities extended the 50/50 action to other public buildings
- 121 local strategies and 8 educational strategies include the 50/50 concept
- 8 national relevant action plans integrated 50/50 as well
- Around 20 EU-level initiatives support the 50/50 Network
- 18 project observers regularly follow the project and its activities
- More than 200 local, regional and national authorities were contacted to include the 50/50 concept in their strategies
- Over 1 000 persons participated in the 50/50 promotional and dissemination events
- 1050 people liked our international Facebook page and/or one of the 12 national versions.

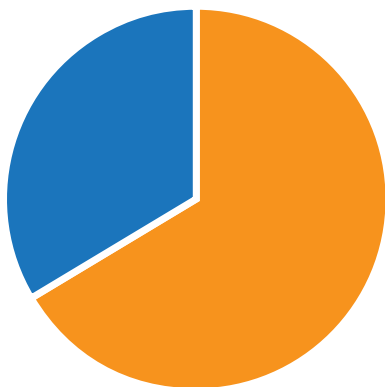


Photo: Climate Alliance Austria

Photo: Manuela Isla Rodríguez  
(Primary School Zenobia Camprubí)

## The Savings in schools

**66.65 %** of the 340 schools obtained savings (67.71% in 2014, the first year, and 65.58% in 2015, the second year of the project).



- Schools with savings
- Schools without savings

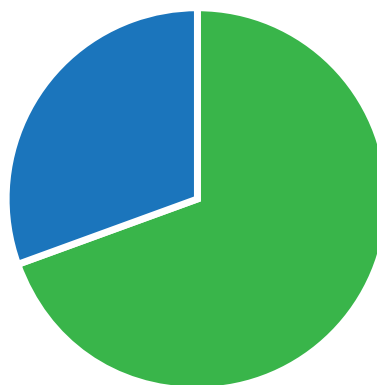
### Each of these schools saved

- 11.61 %
  - 40 538 kWh
  - 2 760 EUR
  - 12.71 t CO<sub>2</sub>
- on average.

The energy consumption of the group of schools with savings has been reduced by **11.6 %** on average in comparison to the reference years. In total these are **17 799 288 kWh** and **1 289 292 Euro** and **5 636 t CO<sub>2</sub>**, that have been saved.

## Savings in other public buildings

**77 %** of the 27 non-school buildings obtained savings (76.19% in 2014, the first year, and 77.87% in 2015, the second year of the project).



- Buildings with savings
- Buildings without savings

### Each of these buildings saved

- 10.85 %
  - 28 436 kWh
  - 2 800 EUR
  - 8.51 t CO<sub>2</sub>
- on average.

The energy consumption of the non-school buildings with savings has been reduced by **10.85 %** on average in comparison to the reference years. In total these are more than **1 080 426 kWh** and **105 110 Euro** that have been saved. **330 t CO<sub>2</sub>** less have been emitted to the atmosphere.

Please keep in mind that in this results you can see the savings of 68 % of the buildings we have in the project. You can visit our website [www.euronet50-50max](http://www.euronet50-50max) to check the final results of the project.

### TOP TIP:

Do you need more information about 50/50? Please visit our project website [www.euronet50-50max.eu](http://www.euronet50-50max.eu). Here you will find many interesting facts about 50/50 and useful documents: communication and dissemination documents, methodological guidelines, educational material and tools, a model agreement with schools and non-school public buildings and much more.

# The more the merrier – Tips for saving energy

## Electricity

- 1. Turn off the light when leaving the classroom!**
- 2. Switch on the lights only when needed!**
- 3. Use the different switches for the light, if you have it! Label the switches**  
Turn on the light at the wall first, because this is the darkest part of the class. Label the switches with 'window', 'wall', 'blackboard', etc., if you have more than one switch in the class.
- 4. Bye-bye Stand-by!**  
Turn off the stand-by-function of electrical equipment in the classroom. Use multiple outlet strips with a switch for connecting electrical devices. Stand-by consumes up to 11% of electricity consumption of the device – depending on the device and usage behaviour!
- 5. Turn things off!**  
Turn things off when you are not in the room such as lights, TVs, entertainment systems, and your computer and monitor.
- 6. Lighting of beverage machines**  
Most of the beverage machines in schools are brightly illuminated. Usually this is not necessary. During the next maintenance of the machine, ask the responsible person to take out the bulbs and/or fluorescent lights. Check whether you need the cooling machine at all – cooling takes as much energy as heating!
- 7. Pay attention and clean dust on light bulbs!**  
A heavy dust coat on light bulb can block 50% of light output.
- 8. A day without electricity!**  
One day without electricity might be a funny experience, especially during wintertime!

## Heating

Normally around 85% of the energy used in schools is heating. This is a field for big success!

- 1. Close the door of the classroom!**  
Close the door of the classroom to keep the colder air of the corridor outside. The sensor for the room temperature is often mounted next to the door and gets the information 'it is cold in this room', even if it's warm in the centre of the room.
- 2. Check the setting of the thermostat valves!**  
Check the setting of the thermostat valves in the classroom (not more than 3, otherwise it gets too warm ...). The temperature in the class should be 20°C.
- 3. Tell the caretaker that the class makes a trip or excursion!**  
He can turn back the temperature on that day.
- 4. Warm sweaters and socks!**  
If it is cold, warm sweaters and socks can help. Each degree less can save a lot of heating energy (up to 6 %). Some schools arrange regular 'warm sweater days'!
- 5. For airing, open the window properly!**  
Open the window completely in the cold season for airing and switch off the heating before you open the window. It is better to open the window WIDE and for a SHORT TIME, than having it HALF OPEN for a long time.
- 6. Keep vents and radiators unobstructed and clean – it is the source of heat and ventilation!**

### TOP TIP:

In the middle European countries, it is essential to work on the settings of the heating system, if you want to save a lot of energy. Reducing the temperature by one degree reduces the energy consumption by 6 %.

## Use of materials

### 1. Save Paper!

Use recycled paper, think before you print and use both sides of the sheet of paper.

### 2. Use rechargeable batteries!

Rechargeable batteries can be used up to 1000 times.

### 3. Too good to be thrown away

Are your clothes too tight or you don't like it anymore? Maybe you can organize a flea market in the class or in the school. This saves a lot of resources and energy. And maybe someone will be very happy about it!



Photo: City of Zagreb

### TOP TIP:

Create your own robot! This is Robotti Ruttunen that was developed in Ojankylä School, Finland. This robot is delivering energy saving advices. Each box has a tip for saving energy and children can read these when they are in the lunchroom, standing in the queue for food.

Photo: Maria-Riitta Paaso (Ojankylä school, Ii, Finland)



## Snacks for school

### 1. Your snack should be organic, regional, seasonal and fair.

Organic food is healthy and saves a lot of energy. Regional food has short transport distances and seasonal products use the energy of the sun perfectly. Fair Trade products help people in poorer countries.

## Waste

### 1. Avoid waste!

Use a lunchbox and your own bottle.

### 2. Separate the waste!

Waste you cannot avoid should be separated correctly. Maybe you can create a checklist for the school, how to separate the waste properly.

## Water

### 1. Go and tell the caretaker if you see dripping water taps in school and make sure to turn off all water taps fully!

A dripping tap can waste more than 5000 litres of water per year!

### 2. Reduce the temperature in your water heater to 60°C.

Did you know that recommended hot water temperature in a shower is around 60 °C? You can save a lot of energy.

### TOP TIP:

To change the habits is hard. To make it easier for everyone you can define 12 different goals on energy saving for the 12 month of the year.

Photo: Christia Alexandrou (CEA)



# Contacts

The EURONET 50/50 MAX project is implemented by a consortium of 16 motivated partners from 13 European countries, with great experience in the fields of energy saving and energy education. On the back side you may find our contact details. Should you have any questions regarding this project or the 50/50 methodology – feel free to contact us!

More information about EURONET 50/50 Max you can find on our website: [www.euronet50-50max.eu](http://www.euronet50-50max.eu)

Our 50/50 Networking Platform is based on Facebook. You will find a EURONET 50/50 MAX profile and 12 national Facebook pages there with posts about our most interesting activities as well as activities and achievements of other schools, public buildings and municipalities. Get inspired and share your experience and opinions!



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Riga Managers School (LV)  
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REGION OF CRETE (EL)  
[www.crete.gov.gr](http://www.crete.gov.gr)



Climate Alliance Austria (AT)  
[www.klimabuendnis.at](http://www.klimabuendnis.at)



UfU  
Independent Institute for Environmental Issues (DE)  
[www.ufu.de](http://www.ufu.de)



DIPUTACIÓN DE HUELVA (ES)  
[www.diphuelva.es](http://www.diphuelva.es)



KSSENA  
Energy Agency of Savinjska, Šaleška and Koroška Region (SI)  
[www.kssena.si](http://www.kssena.si)



Cyprus Energy Agency (CY)  
[www.cea.org.cy](http://www.cea.org.cy)



KREA  
Kaunas Regional Energy Agency (LT)  
[www.krea.lt](http://www.krea.lt)



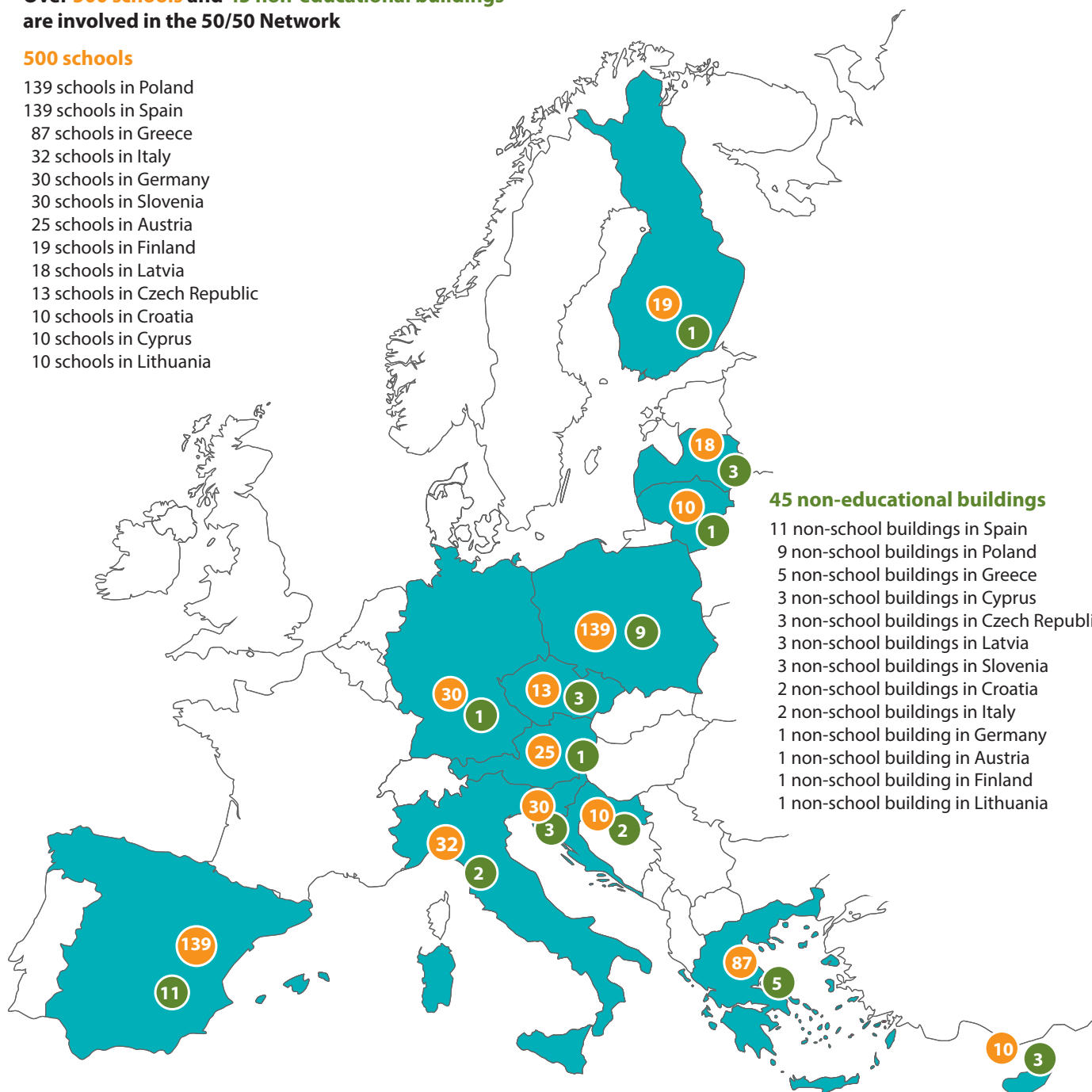
Energy Agency of Vysočina (CZ)  
[www.eav.cz](http://www.eav.cz)



**Over 500 schools and 45 non-educational buildings are involved in the 50/50 Network**

**500 schools**

- 139 schools in Poland
- 139 schools in Spain
- 87 schools in Greece
- 32 schools in Italy
- 30 schools in Germany
- 30 schools in Slovenia
- 25 schools in Austria
- 19 schools in Finland
- 18 schools in Latvia
- 13 schools in Czech Republic
- 10 schools in Croatia
- 10 schools in Cyprus
- 10 schools in Lithuania



**45 non-educational buildings**

- 11 non-school buildings in Spain
- 9 non-school buildings in Poland
- 5 non-school buildings in Greece
- 3 non-school buildings in Cyprus
- 3 non-school buildings in Czech Republic
- 3 non-school buildings in Latvia
- 3 non-school buildings in Slovenia
- 2 non-school buildings in Croatia
- 2 non-school buildings in Italy
- 1 non-school building in Germany
- 1 non-school building in Austria
- 1 non-school building in Finland
- 1 non-school building in Lithuania



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