

# CE51 TOGETHER

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Pilot Concept Design  
D.T2.1.6

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07 2017

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## INTERREG CENTRAL EUROPE 2014-2020

### TOGETHER

### TOwards a Goal of Efficiency THrough Energy Reduction

#### Pilot Concept Design

#### D.T2.1.6



LP - Province of Treviso



PP2 - EAV



PP4 - Zagreb

## Executive summary

The Pilot Concept Design represents the fundamental attachment of the Building Alliance: it represents the action plan of the 8 Pilot Actions in 85 different pilot buildings.

The partners will adapt and implement the Pilot Concept Design to their respective pilot scenarios. The pilot concept design has to be implemented in each pilot building, so eventually the partners will elaborate 85 pilot concept designs related to their 8 pilot buildings clusters, together with the whole chain of their buildings players: owners, managers, end users representatives.



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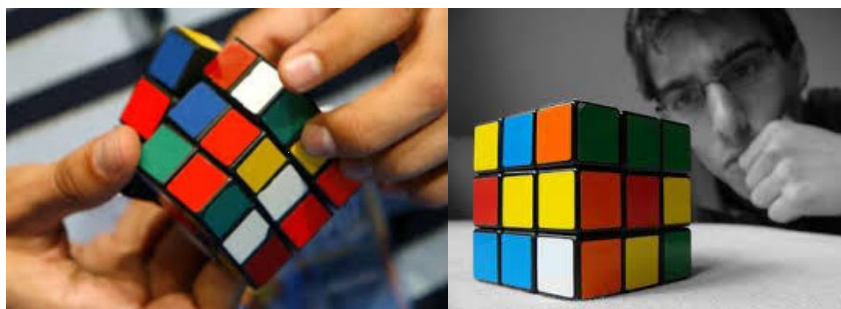
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# 1. Introduction

The Project TOGETHER offers a transnational capacity building platform, where partners with different levels of knowledge can strengthen their competences together, thus reducing their disparities and promoting actions on both the supply and demand side, in the context of planning EE in public buildings. The main goal of the project is improving energy efficiency and energy saving in public buildings by changing behaviour of building users and promoting energy efficiency measures.

This document provides common guidelines to the partners for drafting their respective pilot project implementation plans and developing the presentation of their Pilot Actions in their pilot buildings clusters with a common framework and visual identity.

This tool is contextualized within the framework of the second objective of the project TOGETHER: if the first project objective “To increase energy efficiency and secure investments thanks to improved multidisciplinary in-house staff skills and thanks to an Alliance system with more engaged and motivated buildings users” calls for the observation and learning of possible tools to be combined together for achieving energy efficiency in public buildings, the second one “To produce and test the most appropriate combinations of technical, financial and Demand Side Management tools for the improvement of the energy performance of public infrastructures” calls for the practical and concrete implementation of the possible identified measures.



## 1.1. Project TOGETHER

The three main objectives of the project TOGETHER consist in:

1. Increasing public buildings energy efficiency and securing investments, through the improved multidisciplinary in-house staff capacity building of Public Administrations and the establishment of a system of alliances with more engaged and motivated building users;
2. Producing and pilot testing the most appropriate combinations of technical, financial and Demand Side Management tools for the improvement of the energy performance of public infrastructures, currently in the 8 regional Pilot Actions involving a total of 85 buildings;
3. Codifying the project outcomes into a comprehensive policy package for a large-scale implementation, bringing local buildings governance practices to the centre of ambitious energy saving policies.

In its inception, TOGETHER plans the organisation of an interdisciplinary “Training of Trainers” course for building owners, managers and public decision makers that integrates the traditional technical inputs on energy management and buildings retrofitting with targeted contributions from behavioural science, economics and psychology, aiming to engage the end users in the building energy performance goals.

The “Training of Trainers” course is completed by the provision of an Integrated Smart Toolkit, including:

1. Guidelines for implementing the innovative EPIC (Energy Performance Integrated Contract) scheme, combining technological devices and behavioural-based components;
2. A set of exemplary models of Energy Management Systems in schools, institutional and other type of buildings;
3. An innovative Building Alliance concept among building owners/managers/users who cooperate within a Negotiating Panel to achieve energy savings to be reinvested through a Reinvestment Action Plan.

Additionally, and by the project's end, the Partners will jointly elaborate a Transnational Strategy and Mainstreaming Programme, including policy/strategic and operational recommendations for an appropriate follow-up and a sustainable take-up of the project outputs.

## 1.2. Purposes of the Pilot Concept Design template

This deliverable aims at providing a common guide to the project partners when planning their Pilot Actions in their respective pilot buildings clusters. The ambition of this deliverable/tool is to create a standardized platform that the project partners can use to plan their Pilot Actions, by using not only a common template, but a common basis of thinking and reasoning, together with their buildings stakeholders.

**The Pilot Concept Design represents the fundamental attachment of the Building Alliance (D.T2.3.2): it represents the action plan of the 8 Pilot Actions in 85 different pilot buildings.**

The partners will adapt and implement the Pilot Concept Design to their respective pilot scenarios.

The pilot concept design has to be implemented in each pilot building, so eventually the partners will elaborate 85 pilot concept designs related to their 8 pilot buildings clusters, together with the whole chain of their buildings players: owners, managers, end users representatives.

## 1.3. Use of the Pilot Concept Design template

The first test of the pilot concept design was tested in Jihlava on occasion of the Thematic Working Group meeting devoted to discussing the Pilot Actions.

On occasion of that meeting, the partners discussed about the Pilot Actions process and about the preliminary activities that lead to their delivery and decisions.

The partners have to bear in mind that according to the Application form, the Pilot Actions have to be planned on the basis of the pilot concept design, other integrated T2 tools (technical, financial and demand side management) and on the basis of the Building Alliance.

The Building Alliance identifies the common goals of energy reductions, the “profit sharing” approach, incentives etc. decided by the Negotiating Panel.

## 2. The 8 TOGETHER building clusters

### 2.1. Introduction

Project TOGETHER involves 8 pilot building clusters for a total of 85 buildings in 8 different partners regions.



Figure 1: localisation of the project partners

The partners' building clusters are composed in different ways, as explained in the deliverable D.T3.1.1 summarized by PP2 EAV.

Based on the D.T3.1.1 questionnaire elaborated in the first period, we gathered the following data:

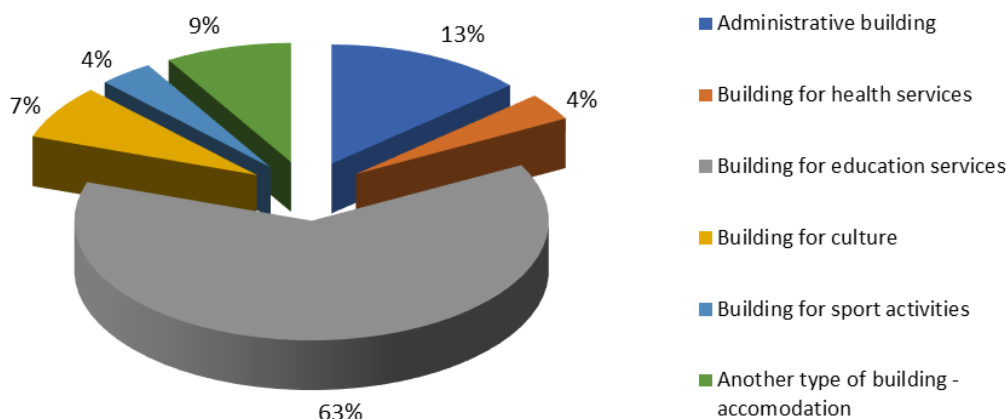


Figure 2: Demonstration of the pilot building purposes

Most of the pilot buildings are destined to educational services, where it is possible to work on the energy consumption habits of pupils and students. In the second place, there are administrative buildings, where it is possible to work on the customization of their indoor climate, also through the organisation of basic energy trainings for the buildings users, based on previous surveys of the building users' satisfaction with indoor climate. Other types of buildings included in the project are buildings for health services, buildings for culture, buildings for sport activities and buildings destined to students' accommodation: i.e. dormitories.

## 2.2. Pilot cluster variables

### a) The partners have different pilot building scenarios:

PP1/PA1 works on its owned pilot buildings and, in parallel, in buildings belonging to the associated partners. Some partners work on their own pilot buildings, but the pilot investment does not encompass all the involved pilot buildings, as in the case of Treviso and the University of Maribor/PP3. As a matter of fact, the LP involved 8 secondary school buildings but is going to implement the investment only in 4 of them. The University of Maribor is going to test activities in 7 buildings but to invest only in 4 of them. Other partners have not involved buildings they own but are going to work with buildings belonging to the Associated Partners, as in the case of PNEC, EAV and SIEA; while Hegyvidek/PP7, Zagreb/PP4 and Paks/PP9 involved only pilot buildings they own.

### b) The partners' building clusters have different compositions (as shown in the table above).

Some partners involved only educational school buildings, as in the case of Treviso, Zagreb and EAV.

Some others presented more heterogeneous pilot building clusters, involving the three main categories identified in our projects.

In some other cases, the end-users of the building clusters composed only by educational buildings have different ages.

### c) 38 pilot buildings belong to different Associated partners:

- Treviso involved 12 buildings belonging to 10 Associated Partners;
- EAV involved 10 buildings belonging to 1 Associated Partners;
- PNEC involved 9 buildings belonging to 3 Associated partners;





- SIEA involved 7 buildings belonging to 4 Associated partners.

The Associated Partners have different features: they are more or less big, more or less advanced in the use of advanced contracting models and tools. It is important to note that each Pilot Action is composed of different buildings (from at least 7 to 20) and in some cases the pilot buildings belong to different institutions that are not the project beneficiaries. The fact that some Pilot building Clusters belong to different Associated Partners (i.e. in Italy, Poland and Slovakia) calls for a multi level dialogue and an intensive relationship that in some case can be really demanding.

Each pilot action will be characterized by the prevalence of one of the three typologies written above and it will have its own planning path, decided by the Negotiation Panel either directly or indirectly.

Table 1: distribution of the pilot buildings in the 3 main buildings categories

	Total no. of pilot buildings	Educational buildings	Institutional buildings	Other types of buildings	No. of buildings involved owned	No. of pilot buildings belonging to the Associated Partners	No. of buildings interested by the investment
Treviso PA1	20	18	2	0	8	12	16
EAV PA2	10	10	0	0	0	10	5
UM PA3	7	2	0	5	7	0	4
Zagreb PA4	12	12	0	0	12	0	12
PNEC PA5	9	4	3	2	0	9	9
PAKS PA6	11	2	2	7	7	0	11
Hegyvidek PA7	9	4	3	2	9		9
SIEA PA8	7	4	1	2	0	7	7
Total	85	56	11	18	43	38	73



The partners administered a questionnaire at local level to get a sharper overview of the state of the art related to the energy management capacities and maturity of the partners that own the building stock involved in the project and of the Associated Partners that are involved in the project in terms of pilot buildings.

### 2.3. State of the art in the involved local communities

The Associated Partners and the project beneficiaries that are owners of building stocks (Province of Treviso, Maribor, Zagreb and Hegyvidek) have:

- A different level of experience in retrofitting and in the use of financial and contractual instruments.
- A different level of energy management organisation.
- Different experiences in the use of automatic energy monitoring systems.
- Different in house competencies.

Moreover, the pilot buildings end-users have a different type of interaction with the buildings premises and their energy consumption practices can variably affect the energy consumption level:

- Buildings occupied by regular users for learning activities (schools, universities, dormitories, kindergartens).
- Buildings occupied by permanent staff for other activities (office buildings, municipal buildings).
- Buildings occupied by users for different, occasional activities (cultural buildings, libraries, museums, concert halls).

## 3. Introducing the Pilot Actions at regional level

### 3.1. Introduction

The following 3 main typologies of actions are planned in the project TOGETHER:

1. The combination of the existing basic management system with the measures of Demand Side Management that have been developed.
2. Reinforcing the already tested users' engagement schemes with the Demand Side Management measures that have been developed.
3. Application of the Integrated Tools developed in WPT2, including EnMS, Financial and Contracting Tools.

Considered that each project partner preselected a cluster of buildings (owned by or belonging to the Associated Partners) for a total of 85 buildings, the single pilot action at building level could be different and targeted on the basis of the following variables/state of the art in each partner region:

- Energy performance/age of the building and consumption practices of its users; building space/usage practices.
- Level of maturity of each involved administration (i.e. less advanced municipalities, that are at an initial stage).
- State of the art in terms of supply contracts (i.e. in case a supply contract is close to its end, is it possible to launch a new contract including references to the Demand Side Management?).
- "In-house competencies" to be exploited with a view to combining and linking up different available tools integrated with Demand Side Management measures.

### 3.2. The possible approaches of the Pilot Actions

The Pilot Actions have to be activated from September 2017 through December 2018, but what are the Pilot Actions?

*The Pilot Actions have to test and demonstrate the effectiveness of integrated measures for energy management aimed at improving the energy efficiency of buildings as well as, and this is the innovative aspect, users' behaviour and awareness.*

The typology of Pilot Actions that can be carried out at the level of a single building are of three kinds:

1. Combination of the day-to-day energy management system with the DSM measures that have been developed: **BASIC APPROACH**.
2. Improvement of the already existing measures for the users' involvement with new DSM tools: **IMPROVEMENT APPROACH**.
3. Application of the integrated tools developed in WP T2, including an improved Energy Management System, financial, technical, contractual and DSM tools: **EVOLUTION APPROACH**.

*These three main categories have been described in the Application form. The selection of the adjectives "basic", "improvement" and "evolution approach" was decided at a later stage, during the draft of the Pilot Concept Design, in order to point out the "incremental value" and the increasing difficulty from one approach to the following one.*

As a matter of fact, we have to consider that, according to the stepwise approach of the project, its beneficiaries are and/or represent regional/local administrations that have a different level of maturity and experience in relation to energy efficiency and possible implementable measures to achieve it. There are public administrations used to considering public buildings with a limited vision, facing the problems in isolation, only when they occur, or managing energy supply contracts without an integrated perspective.

The lack of knowledge, the complexity of the rules, the increasing daily activities in the public administrations' technical offices (ranging from facility management, building permissions, authorisations, building maintenance, energy supply contracts to the assistance to private sectors etc.) prevent public administrations' technical experts from being engaged in the virtuous process leading to more advanced and integrated tools, through which it is possible to manage and create energy efficiency.

The involvement and engagement of buildings users is time-consuming and calls for the adoption of a new communication register by the experts of the public administrations that deal with buildings maintenance on a daily basis.

### 3.2.1. Role of the Pilot Actions

The Pilot Actions represent a fundamental activity of the project, as:

- they validate and integrate the training path done in T1 (training);
- they test the technical, financial and Demand Side Management tools developed in T2 (integrated tools);
- they provide indications for the elaboration of the political recommendations with the elaboration of an Integrated Strategy for energy efficiency in public buildings planned in T4 (political involvement and pledge).

If we wanted to represent the pilot actions through an icon, we could probably resort to the **Rubik Cube**, where an internal pivot mechanism enables each face to turn independently, thus mixing up the colours.

A similar approach is referable to the project pilot actions that want to test the ability of the public administrations to combine and link up different possible tools to reach energy efficiency goals in their pilot buildings applying, at a later stage, the acquired knowledge to other infrastructures they own and to other scenarios (the Thematic work-package n.4 plans for the approval of an Action Plan to introduce the tested measures in other contexts).

**The level and complexity of combinations is conditioned by the level of maturity of the Public Administrations, by the level of risk involved and by their will to put themselves at stake, thus paving the way to innovation instead of travelling familiar paths.**

## 3.3. Demand Side Management: Behavioural and Analytic

Whatever the choice, all the partners have to introduce in the context of their buildings at least the so-called Behavioural Demand Side Management measures.

What is the difference between Behavioural and Analytical?

Behavioural and analytical demand-side management (DSM) are relatively new methods for discovering and promoting energy savings that have the potential to reduce the costs for energy consumption beyond what traditional DSM programmes have achieved. Each method relies on software platforms and using data to get information on private and business energy use.

1. Behavioural DSM tends to focus on educating consumers and encouraging individual participation to achieve energy savings, whereas
2. Analytical DSM finds opportunities for savings through equipment monitoring and data analytics.

The new availability of energy usage data and the creation of software platforms with data analytics have provided the basis for behavioural and analytical DSM. This trend has been driven by both the growth of the smart grid and the deployment of smart meters. The resulting data have become a tool for promoting lower energy consumption and costs reduction, leading to greater customer satisfaction for utilities and furthering investments in DSM programmes. However, while the DSM programming is becoming increasingly important for utilities, there is a certain reluctance to adopt new technologies.

**Behavioural and analytical DSM are such new concepts that the use of these solutions and the results they can produce need to be evaluated to instil confidence and favour a widespread adoption. This is one of the aims of our pilot actions that can play an exemplary role in this sense.**

A strict control of energy expenditure and the optimization of energy efficiency in the activities carried out can improve the reliability of the data/feedback and can, above all, lead to savings.

### 3.4. Smart meters installation as a first upgrade of the day-to-day energy management system in use

All the project partners have the opportunity to invest project resources in the installation of automatic feedback systems, such as smart meters, to register and gather their energy consumption (thermal and electrical) data.

The Smart metering system defined as “direct feedback measure” (excerpt from “Achieving energy efficiency through behaviour change: what does it take?” from EEA), provides the building players with the concrete possibility to have a direct and immediate feedback of the incidence of their behaviour and consumption practices on energy consumption.

Feedback systems based on smart metering devices are therefore strategic in Energy Efficiency programmes based on Demand Side Management (DSM) measures and users’ involvement. Users need appropriate frames in order to determine where their energy consumption is excessive and a smart metering system can provide them with a direct feedback visualized on monitors. It is widely demonstrated that indirect feedback/manual measures are themselves a way to involve users and engage them in adopting proper behaviour.

On the other hand, smart metering devices can provide an immediate feedback, reliable, comparable data and require less working time than an energy monitoring system based on manual registration.

The installation of smart meters in pilot buildings is essential for pilot actions aiming at improving their energy efficiency, as:

- they will provide information serving as a basis for planning all future EE interventions (including technical, financial, DSM...);
- they will help to produce changes in the behaviour of users and to monitor the effectiveness of actions already undertaken;
- they will help to quickly react to any breakdown and to adapt behavioural/management procedures in a desirable way;

- they will help to reinforce the engagement of building users in energy saving actions (when people are able to observe energy consumption in real time, they will pay more attention to their actions and habits);
- they will help to provide visual information on the consumption changes, which can be useful for presenting results and for pointing out to the whole building players/users the changes that are still necessary.

The analysis carried out in the pilot buildings (energy audits) gives a static picture of the building, which helps us to define construction problems, malfunctions in mechanical systems, energy waste. The results of these examinations define the intervention points, which can contribute to the improvement of energy efficiency in the involved public buildings.

Whilst these technologies do not aim to induce changes in behaviour they appear to create a new context in which energy saving behaviour can take place. The negotiation with and acceptance of new technologies by employees has been little researched to date but is worthy of further investigation (excerpt from intervening to change behaviour and save energy in the workplace: a systemic review of available evidence”)

On the other hand, these buildings are used for different activities by people who have different habits.

Their consumption patterns are different and vary in time. These dynamical data have to be measured in real time in order to make it possible to analyse the building consumption curves on an hourly, daily, weekly and monthly basis.

The aggregation of the consumption curves define the consumption curve of the building and shows the places and time intervals in which the consumption should be reduced.

The static analysis carried out in the pilot actions examines the energy performance of the building, which provides a framework for the interventions.

Smart meters examine people's (and equipment) consumption, which allows to fine-tune the definition of the intervention points in place and time.

PP2/EAV decided to use a mixed approach, both direct and indirect, and will evaluate the automatic data collection vs. manual data collection in the context of energy management.

The double use of direct (via smart meters) and indirect feedback measures (with manual registration) will allow comparing the costs - efficiency of direct and indirect measuring systems, considering that the latter system is based on manual work (data registration and data entering).

The aim is that of demonstrating the value of investing (as written in the Reinvestment Action Plan) in such technologies and giving evidence of the added value in investing in smart metering systems integrated with DSM measures, in order to achieve concrete energy efficiency results.

The introduction of direct feedback systems and of the registration of energy consumption represent in themselves a first step towards the improvement of the partners/associated partners' day-to-day Energy Management System.

In terms of pilot actions, the concerned partners can even go further, by developing and implementing a new/improved Energy Management System (EnMs), getting inspiration from the project output O.T2.1 Toolkit, containing 3 Energy Management System models.

The introduction of smart meters is in itself an innovation.

Next step consists in the possible partners' formalization of their management system, also by introducing standard procedures for energy management (e.g. ISO 50001).

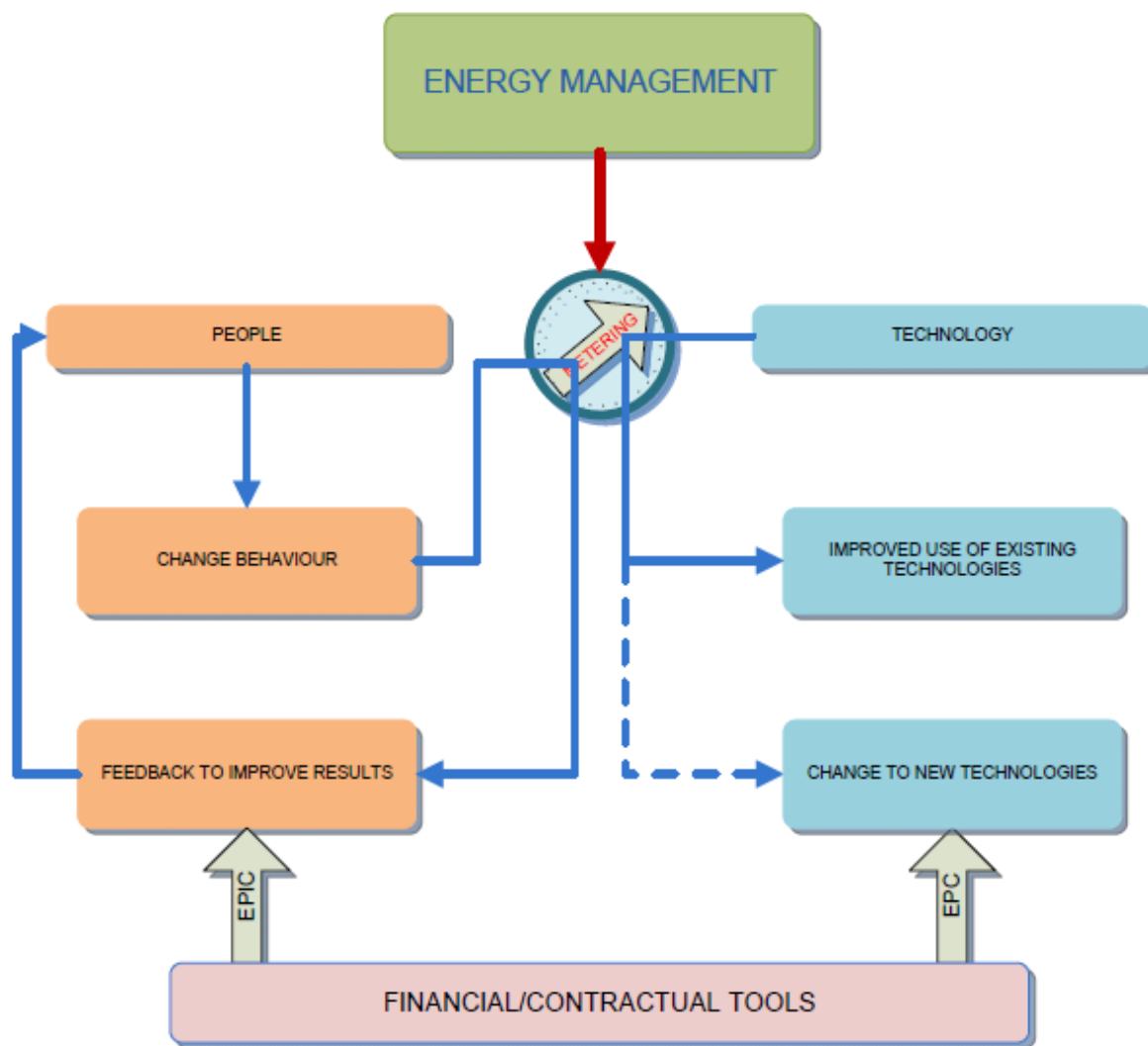


Figure 3: Energy Management System

The scheme represents an Energy Management System based on metering and, as a consequence, on Demand Side Management.

The left part represents Behavioural DSM: Users change behaviour, and check the effectiveness of the change through smart metering, that provides a feedback which enables a further behavioural improvement, opening a virtuous loop.

The right part represents analytical Demand Side Management: the use of existing technology is improved with the feedback continuously provided by an effective metering system.

The process can also lead to detect the need for technological improvements, or new technologies (dotted line).



The lower part represents the possibility of triggering both improvement mechanisms with the aid of financial/contractual tools. The right part represents the EPC (Energy performance contract), which can be integrated with behavioural DSM measures (EPIC - Energy Performance Integrated Contract).

### 3.5. The Macro Component of the Pilot Actions

The project for the implementation of the Pilot Actions is made up of the following components:

**1**

**Plan the development and implementation of a new/improved Energy Management System (EnMS)**  
(on the basis of the manuals developed in T2 for different types of buildings)

Energy efficiency behaviour helps organizations save money, as well as conserve resources and tackle climate change.

**2**

**Design the:**

- improvement plan with *technical interventions* (structural and system interventions for energy efficiency);
- improvement plan with *financial actions* (financial schemes, contracts etc.).

**3**

**Plan the implementation of the Demand Side Management with actions aimed at:**



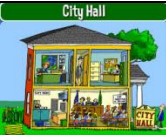





- *improving the organisation of time and space.* It concerns the category of users that have the power of agency on the use of space and time;
- *educating consumers and encouraging individual participation to achieve energy savings.*

The third component is the “common denominator” that has to be introduced in each pilot cluster! Investments in the social component have to be done in all pilot buildings.

### 3.6. Visual representation of the crucial importance of the Demand Side Management when planning Energy Efficiency

Table 2: visual representation of the crucial importance of the DSM when planning Energy Efficiency

COMPONENT/BUILDING			
<b>1</b> A new/updated Energy Management System including Analytic Demand Side Management tools			
<b>2</b> Designing technical improvements 			
<b>3</b> Designing contracts and financial improvements 			
 BEHAVIOURAL DEMAND SIDE MANAGEMENT TOOLS, IN TERMS OF INVESTMENT IN THE SOCIAL COMPONENT			



Most energy efficiency measures implemented (or yet to be implemented) in Europe involve technological interventions, but will equally have to rely on people adjusting their energy consumption behaviour and in parallel to improve the capacity of the public administrations to invest in energy management system such as those developed in some of the integrated tools developed under the project (references to D.T2.1.3 Step by step procedure handbook for EnMs in SCHOOLS, D.T2.1.4 Step by step procedure handbook for EnMs in INSTITUTIONAL BUILDINGS and D.T2.1.5 Step by step procedure handbook for EnMs in PUBLIC BUILDINGS).

This visual representation overlaps with the structure of the 3 Transnational Toolkit planned under the thematic work-package T2 “Integrated tools” is to give evidence on how possible solution for the energy efficiency should be integrated with the component of the so called low costs measures linked to the social investment that is users involvement for their engagement for energy efficiency goals.

The interaction between the possible energy efficiency solution and their integrations with the social component has been developed in other project deliverables and among them several tools can be highlighted:

- D.T2.1.3 Step by step procedure handbook for EnMs in SCHOOLS
- D.T2.1.4 Step by step procedure handbook for EnMs in INSTITUTIONAL BUILDINGS
- D.T2.1.5 Step by step procedure handbook for EnMs in PUBLIC BUILDINGS
- D.T2.2.1 Model of EPIC - Energy performance Integrated Contract
- D.T2.2.2 Transnational Good Governance Handbook
- D.T2.2.3 Set of subsidies and incentives integrated with Demand Side Management
- D.T2.2.4 Set of financial instruments integrated with Demand Side Management

## 4. Pilot Actions Flow

### 4.1. Introduction

The pilot actions and their workflow are different for the different countries and partners.

There are many variables that all the project partners have to take into account, nevertheless there is a general procedure that has to be fulfilled.

### 4.2. The Road-Map for the elaboration of the Action Plan of the Pilot Actions at building level



Figure 4: Pilot actions flow

The starting point for planning the Pilot Action is the installation of the smart metering systems (I1-I5, I7, I8) and the interpretation of the results of the energy audit (D.T3.1.3) performed in the pilot buildings, which represents the first step of the project.

The resulting information will be integrated with the profiling of the buildings and their users (D.T3.1.2) and with the mapping of the stakeholders to be involved in the Negotiating Panel.

The Action Plan will be drafted on the basis of the information that will be available and the activities will be defined when the tools (T2) are ready.



Each Negotiating Panel will define the features of its Pilot Action so that it suits one of the three available typologies:

- Combination of the day-to-day energy management system with the DSM measures developed: **BASIC APPROACH**;
- Improvement of the already existing measures for the users' involvement with new DSM tools: **IMPROVEMENT APPROACH**;
- Application of the integrated tools developed in WP T2, including an improved Energy Management System, finance, technical, contractual tools and DSM tools: **EVOLUTION APPROACH**.

### 4.3. Cross-cutting activities supporting the Pilot Action conceptualisation

In parallel with the development of the preliminary activities leading to the pilot action planning and implementation, other project activities are in progress and their outputs provide the contents to conceptualise the pilot action:

- Thematic Work-package n. 1: Formal training paths in each partner region, anticipated by the Master Train-the-Trainers that provides new knowledge and assures knowledge advancement in the field of energy efficiency.
- Thematic Work-package n. 2: Development of the other integrated tools related to the technical, financial and Demand Side Management measures that provide guidelines and instructions on how to introduce possible integrated energy efficiency solutions at pilot buildings level.

The results of the Pilot Actions lead to a necessary dialogue and exchange of views with the political level that receives the Transnational Strategy for energy efficiency in public buildings and a Policy Package including the Reinvestment Plan and the Action Plan for all the buildings (Thematic Work-package n. 4).

## 5. Demand Side Management tools

### 5.1. Examples of possible Behavioural DSM tools to be used at pilot buildings level

The table below provides an indicative list of possible Demand Side Management solutions available in the market, indicating the resources/website, the possible context of use and the languages in which the material is available. Examples available in English were primarily searched for, however there are some interesting country specific examples as well. These suggestions are not intended to be copied and ready for use, they are given as an inspiration to tailor-made tools for behavioural change that fit the best to the given situation in a building that is undergoing the process of introducing full-scale energy management system. All behavioural tools rests on the awareness raising campaign that needs to be carefully designed to provide benefit recognition to the target group. Trainings with different levels of details should be organised and accompanied by appropriate materials (leaflets, posters) and if possible awards (financial or not-financial). In order to provide continuous reminders related to energy behaviour posters and signage can be used, while feedback to the building users should also be provided through publication and public promotion of best practice examples. One of the possibilities to keep building users alerted in relation to energy efficiency is a dedicated newsletter. Finally, information related to the use of social media and gaming to promote energy efficiency are provided. Distinction between different types of public buildings was not made for each and every tool, as all of them, if designed properly, can be used in each type of a public building. However, for some examples indication on the type of building was made, dominantly in relation to educational buildings as they have pupils as one specific and very important target group to be addressed in all Energy Management Systems and Demand Side Management activities.

Furthers DSM measures are listed in the deliverables D.T2.2.3 “Set of subsidies and incentives integrated with Demand Side Management” and D.T2.3.3 “DSM tools for the engagement of the buildings users”

Table 3: Examples of possible Behavioural DSM tools to be used at pilot buildings level

<p>Training and awareness raising campaigns</p>	<p>Training and awareness raising are integral parts of any energy management systems. They should be tailor-made to fit the needs of a target group. Awareness raising campaigns and trainings need to be accompanied with appropriate promotional and training materials. For employees and building users (e.g. pupils in educational buildings) simple, informative and interactive trainings should be provided.</p> <p>Example of training materials for public sector employees is provided here (guidance for green office): <a href="http://www.enu.fzoeu.hr/assets/files/shared/list/zuRadnaKnjiga.pdf">http://www.enu.fzoeu.hr/assets/files/shared/list/zuRadnaKnjiga.pdf</a> (In Croatian)</p> <p>How to develop awareness campaign can be found here: <a href="https://www.carbontrust.com/resources/guides/energy-efficiency/creating-an-awareness-campaign-download/">https://www.carbontrust.com/resources/guides/energy-efficiency/creating-an-awareness-campaign-download/</a> (in English)</p> <p>Training may be more relevant in mod traditional offices with decentralised energy functions where, for example, employees can operate air conditioning interfaces, but often without any knowledge in how to best use them, such as closing windows whilst the air conditioning is active. Training may also become more relevant alongside the introduction of new smart energy technologies or system, which return some influence</p>
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	over local conditions to buildings occupants in order to improve satisfaction levels, which are often low under the centralisation strategy.
Financial and economic incentives	<p>Financial incentives can be good stimulus for change of behaviour and can be a part of awareness raising campaigns, as the result of the changed behaviour will be immediately awarded. The awards do not need to be necessary in money terms, they can also bring some other form of benefit, as tickets for theatre or football game, etc. However, even better examples that immediate awards are seen in the ability to make decision about distribution of saved money. This is especially good stimulus for long-lasting behaviour change, i.e. for adopting energy efficiency as a way of living in schools. Excellent example is 50/50 project:</p> <p><b><u><a href="http://www.euronet50-50max.eu/en/about-euronet-50-50-max/what-is-the-euronet-50-50-max-about">http://www.euronet50-50max.eu/en/about-euronet-50-50-max/what-is-the-euronet-50-50-max-about</a></u></b> (in English)</p>
Leaflets	<p>Leaflets are usually used to provide more information on specific topic. E.g. leaflets are used to disseminate information on available sources of financing, on specific energy efficiency activities that are going to be implemented or that have been implemented (in these cases, results of activities are presented) or to provide guidance on how to implement certain activities.</p> <p>Interesting example of leaflet aimed at using green criteria in public procurement is available here:</p> <p><b><u><a href="http://fzoeu.hr/docs/brosura_zelena_javna_nabava_v1.pdf">http://fzoeu.hr/docs/brosura_zelena_javna_nabava_v1.pdf</a></u></b> (in Croatian)</p> <p>Leaflets usually contain energy saving tips and links to implementing agencies that can provide more information, e.g.:</p> <p><b><u><a href="https://www.derbyshire.gov.uk/images/Energy%20Efficiency%20leaflet_tcm44-205647.pdf">https://www.derbyshire.gov.uk/images/Energy%20Efficiency%20leaflet_tcm44-205647.pdf</a></u></b> (in English)</p> <p>Example of project-based leaflet is provided here:</p> <p><b><u><a href="http://www.euronet50-50max.eu/images/documents/Leaflet_50_50_max_EN.pdf">http://www.euronet50-50max.eu/images/documents/Leaflet_50_50_max_EN.pdf</a></u></b></p>
Posters/signage	<p>There are numerous examples of posters/signage that raise awareness of employees within a public building. This awareness raising messages are universal and can be applied in any public building, reminding employees to turn off the lights or switch off their computers when not in use.</p> <p>Available resources (ideas that need to be adapted for specific country/city/institution): <b><u><a href="https://www.pinterest.com/pin/242350023676097837/">https://www.pinterest.com/pin/242350023676097837/</a></u></b> (in English)</p> <p><b><u><a href="https://www.carbontrust.com/resources/guides/energy-efficiency/posters-and-stickers-for-employee-awareness/">https://www.carbontrust.com/resources/guides/energy-efficiency/posters-and-stickers-for-employee-awareness/</a></u></b> (in English)</p> <p><b><u><a href="http://www.enu.fzoeu.hr/info-edu/informiranje-i-edukacija-gradana/informativno-edukativni-materijali">http://www.enu.fzoeu.hr/info-edu/informiranje-i-edukacija-gradana/informativno-edukativni-materijali</a></u></b> (in Croatian)</p>



	<p>Excerpt from “intervening to change behaviour and save energy in the workplace: a systematic review of available evidence”</p> <p>A meta- analysis of studies to promote pro-environmental behaviours in the workplace finds that those most impactful interventions are those that involve cognitive dissonance (where differences between actions and pre-existing values or attitudes are highlighted), goal setting, social modelling (providing role models), and prompts (other types of treatment reviewed included "making it easy" for employees, justifying the need for actions, providing instructions, giving feedback, offering rewards and seeking employee commitment" - excerpt from "intervening to change behaviour and save energy in the workplace: A systematic review of available evidence"</p> <p>Providing energy-saving prompts by email directly to employees or placing signs by light switches asking employees to turn them off, could be argued to be both educating users as to energy saving actions that be taken, and to be providing contextual cues to remind people of behaviours that they should already be undertaking.</p>
Direct feedback system	<p>Changing the physical context- such as the use of signs, stickers or posters, use of electronic devices and on line dash boards to provide real time energy use feedback (which may implicitly promote awareness and therefore considered use of energy)</p> <p><b>Emails prompts</b></p> <p><b>Checklist</b></p> <p><b>The use of feedback devices may offer more potential than the use of signs or visual imagery.</b></p>
Success stories/newsletter	<p>Success stories related to energy efficiency in public sector are numerous and are published by the cities, project consortiums within different projects, solution providers and other agencies implementing specific projects in the public sector at local level, primarily local or regional energy agencies. Newsletters are also usually formed as a part of some specific project/programme that lasts for a specific period of time or by specialised institution that implements activities, usually local or regional energy agencies. At their web sites, implementing agencies offer possibility to subscribe to a newsletter, so that you can be regularly informed about activities. The following examples can use as an inspiration to establish a database of best practices and to develop a newsletter at the level of a building as well as a part of overall energy management system.</p> <p><b>Available resources (examples of newsletters and published success stories):</b></p> <p>European association of local authorities in transition - Energy Cities is regularly publishing newsletter: <a href="http://www.energy-cities.eu/-Newsletter-">http://www.energy-cities.eu/-Newsletter-</a></p> <p>Example of a newsletter published by local/regional energy agency: <a href="http://regea.hr/newsletter-objave/?arc_year=2017&amp;arc_month=04">http://regea.hr/newsletter-objave/?arc_year=2017&amp;arc_month=04</a></p> <p>Example of a newsletter published by local/regional energy agency: <a href="http://www.energap.si/uploads/News%20review%20Dec08-en_def%202.pdf">http://www.energap.si/uploads/News%20review%20Dec08-en_def%202.pdf</a></p> <p>Example of success stories published by local energy agency:</p>





	<p><a href="http://regea.hr/newsletter-objave/kako-je-dvorac-bra%C4%8Dak-postao-energetski-u%C4%8Dinkovit.html">http://regea.hr/newsletter-objave/kako-je-dvorac-bra%C4%8Dak-postao-energetski-u%C4%8Dinkovit.html</a> (In Croatian)</p> <p>Example of case studies/success stories published by financing institutions:</p> <p><a href="http://www.webseff.com/images/CaseStudies/CS02%20-%20Brod%20plin%20-%20Croatia.pdf">http://www.webseff.com/images/CaseStudies/CS02%20-%20Brod%20plin%20-%20Croatia.pdf</a> (in English)</p> <p><a href="http://fzoeu.hr/docs/_v14.pdf">http://fzoeu.hr/docs/_v14.pdf</a> (in Croatian)</p> <p><a href="http://www.ieadsm.org/wp/files/eceee-Rotmann-1-181-151.pdf">http://www.ieadsm.org/wp/files/eceee-Rotmann-1-181-151.pdf</a></p>
Energy saving tips	<p>Energy saving tips are very widespread tool for raising awareness on energy efficiency in public buildings. They can be distributed and made visible in different forms (posters, stickers, leaflets, web sites, e-mail). Some inspirational examples are provided hereafter:</p> <p>Energy Saving Tips for Schools: <a href="http://www.energyineducation.ie/Energy_In_Education/Information_for_Schools/Resources_and_links/Top_ten_energy_tips_factsheet.pdf">http://www.energyineducation.ie/Energy_In_Education/Information_for_Schools/Resources_and_links/Top_ten_energy_tips_factsheet.pdf</a> (in English)</p> <p>General energy saving tips: <a href="http://www.enu.fzoeu.hr/assets/files/post/146/list/200savjeta-full.pdf">http://www.enu.fzoeu.hr/assets/files/post/146/list/200savjeta-full.pdf</a> (in Croatian)</p>
Social networking - sharing experiences	<p>Social media are becoming the most important way of sharing information. Social services are online tools used for people to engage, share, interact and participate with each other. It's really a big deal - More people now use social networking than use email! Inspirational material on how to use social media to promote energy efficiency can be found here:</p> <p><a href="https://www.energystar.gov/sites/default/files/asset/document/Using%20Social%20Media%20to%20Promote%20EE.pdf">https://www.energystar.gov/sites/default/files/asset/document/Using%20Social%20Media%20to%20Promote%20EE.pdf</a> (in English)</p>
Serious game	<p>A serious game is a game with purpose other than solely entertainment. It has all the elements of a real game, will look and feel like a real game, but has some defined purpose, outcome or message the creators wish to get across to you. Serious games can be used to promote reduced energy consumption and emissions reduction in public buildings, by increasing the building users understanding and engagement in energy efficiency. In the games, real data on energy use may or may not be used. One of the advantages of the use of real data is that players get real life feedback on consequences of their actions. These games are suitable e.g. in office buildings where sensor network is created to monitor energy use. Feedback on energy use that results from certain type of behaviour is provided through serious game and can be combined with the awards to the best performing once. An example of such a game is provided here:</p> <p><a href="http://energychickens.weebly.com/">http://energychickens.weebly.com/</a> (in English)</p> <p>There are many educational games that are used for raising awareness among pupils about energy and climate related issues. A useful list of such games can be found here:</p> <p><a href="http://www.euronet50-50max.eu/en/educational-games/games-developed-within-">http://www.euronet50-50max.eu/en/educational-games/games-developed-within-</a></p>



	<b><u>other-educational-projects</u></b> (in English)
Competition -  battle of the building	<p>Noun</p> <p>the act of competing; rivalry</p> <p>a contest in which a winner is selected from among two or more entrants</p> <p>a series of games, sports events, etc.</p> <p>Engage employees</p> <p>Employees in L'Oréal USA's New York City headquarters helped the company cut electricity use by 9% by adopting energy-saving behaviours during their "I've Got the Power" campaign.</p> <p>Competitions for the energy efficiency are present in the USA, as shown by the Energy Star  <a href="https://www.energystar.gov/buildings/about-us/how-can-we-help-you/communicate/energy-star-communications-toolkit/motivate-competition-0">https://www.energystar.gov/buildings/about-us/how-can-we-help-you/communicate/energy-star-communications-toolkit/motivate-competition-0</a></p> <p>For three months from September 1 - November 30, 2016, more than 200 organizations across the country entered 800+ buildings to compete in the 2016 National Building Competition: BOOTCAMP. Competitors worked to cut energy and water waste, one energy or water-saving action at a time, and tracked their building's monthly energy and water consumption using ENERGY STAR Portfolio Manager®, EPA's online measurement and tracking tool.</p> <p>Each competition lasts for one year, with applications usually accepted in late spring. Competitors get access to a one-stop shop of promotional materials, like web buttons and banners, <i>template blast emails</i>, event ideas, and more.</p> <p><a href="http://www.energizeschools.org/competition.html">http://www.energizeschools.org/competition.html</a></p> <p>A 8-week challenge for K-12 schools served by Pacific Gas and Electric to compete to save electricity! The Competition is from February 27th - April 21st,. Compete with your: •Environmental Clubs &amp; Green Teams</p> <p>Leadership Clubs</p> <p>Science &amp; Engineering Classes</p> <p>Any students and faculty interested in making a difference at their school!</p> <p>Want to participate in our Fall 2017 Energy Conservation Competition? Fill out the 2017 Competition Request Form below, and we will contact you with details about our Fall Competition</p> <p>How can Energize Schools help</p> <p>Guidance on identifying, planning, and implementing conservation strategies from an Energy Advisor assigned to your school</p> <p>Lesson planning or in-class instruction support</p>



	<p>Resources package with a sample lesson plan, participation guide, and conservation action plan</p> <p>Informational webinar: watch here</p> <p>Prizes will be awarded to the top two schools that achieve the highest percentage reduction in their electricity use:•First Place \$1,000Second Place \$500One additional prize of \$500 will be awarded to the school with the best conservation campaign materials. Teams who submit their conservation materials by the end of the competition on May 1st will be eligible. Check out successful campaign resources below.</p> <p><a href="http://ec.europa.eu/energy/intelligent/projects/en/projects/en2">http://ec.europa.eu/energy/intelligent/projects/en/projects/en2</a></p> <p>Bet to win!" - the climate competition between municipalities and their citizens</p> <p>Stimulating a sense of competition can be an excellent way to raise awareness, as one EU-funded project has demonstrated by bringing the Kyoto Protocol into people's homes. Inspired by a Belgian campaign, Energy Neighbourhood has gathered together cities and municipalities across the EU to challenge their citizens to save energy</p> <p>The rule was that people had to compete collectively - teams of friends, colleagues and neighbours gathered into Energy Neighbourhoods. The challenge then taken up by cities in 16 countries was to defy participants to save at least 9% energy over four winter months in 2010/2011 and in 2012/2013.</p> <p>Some 830 Energy Neighbourhoods representing 8 626 households and 22 420 household members took part. On average, they achieved energy savings of 8.94% in the first year and 12.94% in the second year.</p> <p>"It was all about small things, like switching off lights," says project coordinator Anke Merziger who works for B.&amp;S.U mbH in Berlin, a company that deals with environmental consulting and services. It may have been small things but the EU competitors saved 5.66 million kWh and 2 425 tons of CO<sub>2</sub>, while at the same time bridging the gap between theory and practice.</p> <p>Keeping up good habits</p> <p>Winners were chosen first at national level, with the top EU prize (a trip to Brussels for a small gala) going to a town near Athens that reduced its energy consumption by 64%. Participants claim they have kept up the good habits, even though the organisers say they haven't been able to get the figures to prove it. While the project was running, each participating country had its own website, and some have since extended the EU project to national level. France and Belgium have been particularly dynamic in urging households to save energy but Hungary, Slovenia, Sweden and Austria are doing good work too.</p>
Direct information provision and peer education	<p>Generic energy advice given through postcards sent directly to individual, with the impacts of combining energy advice alongside either emailed feedback on energy use at the building level, or peer education involving employees acting as points of contact and information for colleagues.</p> <p>A study finds that participants considered email a better means of communicating</p>



	<p>information than either posters or leaflets, with specific rather than general advice to be most meaningful. The study draws attention to the frequency and duration over which feedback information is provided., suggesting emails sent weekly would be effective in providing information but would not annoy employees.</p> <p>Peer education provided the opportunity for students to raise questions and concerns and for these to be addressed, thus removing barriers to energy saving behaviour: some students had expressed a belief that they were not allowed to turn off the lights when leaving the classroom as it was a public space,, a fear which was allayed through the peer education. It appears that targeted information and knowledge passed on by peers is likely to be more effective than general information provided through printed material such as stickers and posters.</p> <p>Excerpt from “intervening to change behaviour and save energy in the workplace: a systematic review of available evidence”</p>
Social reward	<p>Incentivisation is described as creating the expectation reward, for example through the use of prize draws to induce attempts to stop smoking in the health domain. Incentivisation could involve the provision of rewards in the form of cash , bonus, food and other prizes. However rewards may be of social nature, i.e. not based on financial or other gains, but rather a sense o achievement, for example the provision of positive descriptive comments in employee reviews. Social rewards tend to be given in relation to meeting pre-established targets or goals around performance of energy saving actions, although goal-setting (with no expectation of reward) is itself also a form of incentivisations. Reward may be given to employees on an individual basis or based on groups of employees working together.</p> <p>Publically given rewards outperformed ones given privately, and that social rewards outperformed monetary ones; in fact public social rewards generated energy savings of 6.4% whilst private monetary rewards led to an increase in energy use. Some studies encourage competition between employees, although with no tangible rewards beyond social recognition.</p> <p>“IChoose” engaged groups of employees in competition with each other. Although organised through their work, this intervention crossed the domestic/non domestic divide as employees were encourage to register savings activities in their own homes, and in doing so gained points for themselves and their team at work.</p>

## 6. Template for the development of the 8 Pilot Actions

### 6.1. Template

- Please fill in a separate template for each building involved in your pilot cluster
- Please try not to use more than 10 pages for each pilot building
- You must develop an ACTION PLAN for each pilot building!
- Please read carefully the Application Form before working
- Please bear in mind that, according to the Application Form, all the pilot actions have to start in September 2017 and be completed by the end of December 2018.

#### *Classification of the pilot project:*

- Please, mark the thematic areas your project shall deal with and indicate which type of buildings and users the project involves (if adequate you may tick several fields).
- Consider that in all the pilot buildings it is essential to plan DSM activities with the users! If you need inspiration, please go to the “Inspiration Island” chapter n.7 and to the behavioural DSM resources available in the market, chapter n.5
- The Action Plan must be included as an attachment of the Building Alliance

Before elaborating the pilot template, it is recommended to investigate the “level of maturity” of the pilots owners, collecting the following information. The aim of this questionnaire is to drive with specific questions the pilots owners to think about the possibility to introduce in their pilot buildings financial and technical measures for integrating the DSM measures that are requested by the project.

#### BUILDINGS OWNERS

- Pilot building name
- Partner/Associated Partner
- No. of inhabitants (where applicable)

#### OWNED PUBLIC BUILDINGS

- Total N. of public buildings owned
- Total square meters

#### ENERGY POLICY

- Members of the Covenant of Mayors
  - YES
  - NO
- Do you have an energy action plan?
  - YES
  - NO
- Please provide brief information related to the action plan (year of approval and main content)
- Other voluntary measures
- Please specify the voluntary measures.

#### ENERGY CONSUMPTION



- Year of the latest available baseline of the pilot buildings

#### ENERGY SUPPLY CONTRACT

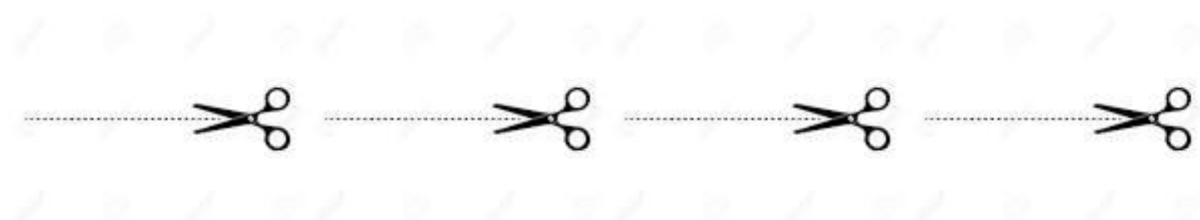
- Types of energy used in your pilot buildings
- Typology of the contract (e.g. separate contract for gas/electricity supply etc.
  - Integrated supply contract for gas and electricity
  - Integrated supply contract for gas, electricity and maintenance
  - Separated contracts
  - Other
- When does the contract end?

#### ENERGY PERFORMANCE CONTRACT

- Are you interested in this energy efficiency instrument such as EPC contract?
  - YES
  - NO
- Is your administration ready to rest to such contracts?
  - YES
  - NO
- Would you like to develop and formally adopt an EPC within the framework of the TOGETHER project (as a possible pilot action)?
  - YES
  - NO

#### REFURBISHMENT OF PILOT BUILDINGS INVOLVED IN THE TOGETHER PROJECT


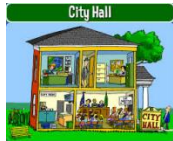
- On the basis of the energy audit results, are you willing to update/modify your investment plan, by the end of the project? (With an official approval)?
  - YES
  - NO
- If yes, please explain briefly
- On the basis of the energy audit results, are you willing to invest your own resources/external funds in the refurbishment of the pilot building (as a possible pilot action of the project), by the end of the project?
  - YES
  - NO
- If yes, please explain briefly
- Have you the opportunity to apply to regional/national calls for proposal for financing the refurbishment of the pilot building/facility (as a possible pilot action of the project), by the end of the project?
  - YES
  - NO
- If yes, please explain briefly






## PILOT CONCEPT DESIGN - ACTION PLAN

### PART A

I.D. of the building			Basic approach	Improvement approach	Evolution approach
Pictures (size compatible with the template)					
Name of the building		<input type="checkbox"/> Educational building 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Owner		<input type="checkbox"/> Institutional building 			



Location		<input type="checkbox"/> Other type of building 			
Engagement in previous projects related to the involvement of end-users for energy efficiency.	<input type="checkbox"/> yes <input type="checkbox"/> no	If you have ticked yes, describe briefly			
<b>Agreements and basic conditions of cooperation</b>  <i>The first step is to meet the local requirements for cooperation with owners and managers of the pilot buildings. This first step can vary according to the different types of partners (agencies, cities, etc..)</i>  <i>In case the partners are not the owners of the buildings where the smart meters are installed, it is compulsory to sign an agreement regulating the relationship between the project partners and the associated partners. In fact the project partners maintains the ownership of the installed equipment even after the end of the project (for at least five years after the final ERDF reimbursement).</i>			Provide a brief description of the terms of reference of the agreement signed (if applicable)  <i>e.g. number of the deliberation/number of registration of the agreement and brief summary of the contents with reference to the ownership and maintenance</i>		
<b>Establishment of a Negotiating panel</b>  <i>It is crucial to map who are the members of the panel and who is responsible for co-defining the energy reduction objectives, the activities to be implemented and the profit sharing approach.</i>			Provide a brief description of the members of the negotiating panel		





<p><b>Type of Smart Meters installed - Investment</b></p> <p><i>Public procurement for purchasing and installing the smart meters</i></p> <p><i>Different methods and different approaches are possible, considering the size of the investment and the EU/national rules on public procurement.</i></p> <p><i>Installation of smart meters, implementation of software for data collection and interpretation, training of the involved subjects...</i></p> <p><i>The PPs describe the list of devices that are installed in the building. Which kind of meter monitors which type of energy; further description and explanation of the installation.</i></p> <p><i>The main goal is that of controlling the use and the costs of energy for a specific activity.</i></p> <p><i>Shifting from a system that is not controlled to a controlled one, it is possible to achieve energy saving.</i></p>	<p><i>Provide a brief description of the main features of the automatic energy consumption system installed and one or more pictures of the installation work</i></p>
<p><b>Energy Management System in use and first upgrade of the system connected to the introduction of the smart meters</b></p> <p><i>Please, indicate your current system of energy management. The automatic collection of data is just the first step. How will the data be used? Who is responsible for checking the data collected?</i></p>	<p><i>Provide a brief description of the energy management system already in use and of the changes resulting from the smart meters installation</i></p>
<p><b>Data collection</b></p> <p><i>How are the data collected? Where are the data saved (owner of the server)? Which kind of (energy management) software is used for viewing and processing the data (diagrams, statistics, etc..)?</i></p> <p><i>Some screenshots of the software could be included as an example.</i></p>	<p><i>Provide a brief description of the data collection system that you have developed in conjunction with the installation of the smart meters. Please include pictures and schemes explaining the data workflow</i></p>



<p><i>Are you planning a (temporary) parallel data collection in order to verify the correctness of the data collected through the smart meters?</i></p>	
<p><b>Profiling of the buildings results</b></p> <p><i>All the pilots must be analysed from different points of view. The first analysis is the technical profile of the building, detailing the construction and technical equipment of the building. The technical profile is complemented by the users' profile. This information refers to deliverables D.T3.1.1 and D.T3.1.2. The profiles of the pilot buildings are useful as a "first view" of the pilot building....</i></p> <p><i>As part of the pilot concept, the partners should deliver the technical profiles and users' profiles of the pilot buildings.</i></p>	<p><i>Provide a brief description of the results of the profiling of the buildings, including the main features related to the users' profile and technical profile of the buildings</i></p>
<p><b>Energy audit results</b></p> <p><i>An energy audit must be provided for each pilot building of the project TOGETHER. There are different approaches for processing the audits. The energy audits are necessary to better understand "how the building works" and to define the potential opportunities in the field of energy efficiency for the pilot building, such as possibilities of investments, retrofitting, heating, cooling, ventilation or "simple" energy management of the building.</i></p> <p><i>As part of the pilot concept, the partners should deliver the Energy audit report.</i></p>	<p><i>Provide a brief description of the main results provided by the energy audits</i></p>
<p><b>Type of smart meters installed</b></p> <p><i>Public procurement for purchasing and installing the smart meters...</i></p> <p><i>Different methods and different approaches are possible, considering the size of the investment and the EU/national rules about public procurement.</i></p>	<p><i>Provide a brief s description of the main features of the automatic energy consumption system installed and one or more pictures of the installation work</i></p>



<p><i>Installation of smart meters, implementation of software for data collection and interpretation, training of the involved subjects...</i></p> <p><i>The PPs describe the list of devices that are installed in the building. Which kind of meter monitors which type of energy; further description and explanation of the installation.</i></p> <p><i>The main goal is that of controlling the use and the costs of energy for a specific activity.</i></p> <p><i>Shifting from a system that is not controlled to a controlled one, it is possible to achieve energy saving.</i></p>	
<p><b>Negotiation of a Building Alliance</b></p> <p><i>The Building Alliance is meant as a contract defining an improvement path that plans for technical interventions (structural and system interventions for energy efficiency), financial actions (financial schemes, contracts etc.) and actions aimed at improving the organization of time and space.</i></p> <p><i>The Building Alliance<sup>1</sup> should be developed, also through the definition of its goals of consumption reduction, by September 2017.</i></p> <p><i>The elaboration of the Building Alliance entails the selection of the tools affecting users' behaviour (basic and/or improvement approach)</i></p>	<p><i>Provide a brief description of the main contents of the building Alliance by using the template provided by the Lead Partner D.T2.3.2</i></p> <p><i>Make reference to the consumption data</i></p>

<sup>1</sup> The subjects involved in the Building Alliance define together the potential incentives and benefit sharing to be included in the REINVESTMENT ACTION PLAN (WP T4) in terms of a “win-win approach” and circular economy (D.T2.2.5 Transnational protocol for the definition of the system for calculating the savings generated by the Pilot Actions, functional to the Reinvestment Plan)



*and the selection of integrated tools (advanced approach).*



## DEFINITION OF THE ENERGY SAVING STRATEGIES- ACTION PLAN

### PART B

<b>Title of your Pilot Action</b>	<i>Please, fill in!</i>
<p><b>Plan for the development and implementation of the Energy Management System (EnMS), including the Analytic Demand Side Management, for a strict control of energy consumption</b></p> <p><i>In this case, the interested owners have to develop, adopt and test the system by December 2018</i></p>	<i>Please, fill in!</i>
<p><b>Improvement plan with technical measures</b> (Structural and system interventions for energy efficiency)</p> <p><i>In this case, the interested owners have to plan:</i></p> <p>1) the approval/modification of their investment plan by the December 2018;</p> <p>2) the use of their own resources, by the end of the project, to improve the technological performance of their pilot buildings</p> <p>3) the resort to external resources in order to pay the necessary investment. By the end of the project, the interested partner can elaborate and submit projects to get regional/national funds. However, it is important to link the request of funds with the results provided by the energy audits!</p>	<i>Please, fill in!</i>
<b>Improvement plan with financial measures</b>	<i>Please, fill in!</i>



*In this case, the interested owners have to adopt the financial measures within the framework of the TOGETHER project, with an official approval of the financial measures identified. For example, in case an administration is interested in developing an EPC contract, it is necessary that the contents are elaborated and approved by the end of December 2018. The effective launch of the EPC can be done at a later stage, but there is the clear need to get the technical/political pledge before the end of the project.*

#### **Plan for the implementation of the Demand Side Management**

*The plan entails the selection of tools affecting users' behaviour, i.e. tools for behavioural change, as well as low costs measures.*

*All the partners should match the list of (meanwhile identified and selected as key) DSM tools with the buildings where the Pilot Actions will be implemented.*

*Remember that the TOGETHER Application Form does not specify a minimum number of behavioural/analytic DSM tools to be provided/used within the pilot.*

*Inspiration can be taken from the D.T2.2.2, concerning low costs measures, and some communication tools developed under the Work-package Communication (e.g. tutorials, origami, videos etc.) can be used*

#### **Name of the selected tool**

#### **Select and describe**

*Training and awareness raising campaigns*

*Financial and economic incentives*

*Leaflets*

*Posters/signage*

*Direct feedback system*

*Success stories/newsletter*



	<i>Energy saving tips</i>	
	<i>Social networking - sharing experiences</i>	
	<i>Serious game</i>	
	<i>Competition - battle of the building</i>	
	<i>Social award</i>	
	<i>Direct information provision and peer education</i>	
	<i>Etc... make references to the other DSM tools mapped in the D.T2.2.3 and D.T2.3.3</i>	
<b>Brief description of the pilot project.</b> Please, clearly summarise the action planned for the interested pilot building in a few sentences (please note, one per each pilot building), providing results when the activities are implemented	<i>Please, fill in!</i>	
<b>Please, indicate the main objectives the pilot action aims to achieve in each building of your pilot cluster.</b>	<i>Please, fill in!</i>	
<b>Possible problems and risks.</b> Please, describe the difficulties that may occur during the implementation of the project action!	<i>Please, fill in!</i>	
<b>Please, describe the planned activities (1.1., 1.2, 1.3) and their timing</b>	<i>Please, fill in!</i>	



<p>e.g.</p> <p>1.1 informal training for caretakers: Sept- December 2017</p> <p>1.2. organisation of a workshop for the sport associations Sept- December 2017</p> <p>1.3. elaboration of the EnMs Sept- December 2017</p>	
<p><b>Please, explain which is the specific target group of your Pilot Actions and its size (e.g. students, caretakers, members of the sport associations...)</b></p>	<p><i>Please, fill in!</i></p>
<p><b>Please, indicate which best practices or strategies inspired the development of your pilot action.</b></p>	<p><i>Please, fill in!</i></p>
<p><b>Please, indicate the profit sharing approach used (50/50, incentives, prizes etc.).</b></p>	<p><i>Please, fill in!</i></p>
<p><b>Verification of whether the proposed measures actually work.</b></p> <p>Implementation, monitoring and support (until December 2018).</p> <p>Reporting of the savings achieved.</p>	<p><i>Please, fill in!</i></p>
<p><b>Setting up of a Supporting Structure.</b></p> <p>According to the application form, A.T3.4 plans for the setting up of a Supporting Structure, at partners' level, supporting the implementation of the pilot action.</p>	<p><i>Provide a brief description of the structure that has been set up and that supports the implementation of the pilot action. In case of external support, please include references to the external company providing support for the implementation of the pilot activities.</i></p>



## 7. Examples

### 7.1. Ideas for planning your pilot Action



Behavioural Demand Side Management	Financial Measures	Technical measures	New/updated Energy Management System including low cost measures, such as space and time organisation and analytic DSM measures
<b>Resources:</b> <ul style="list-style-type: none"> <li>project library</li> <li>training material developed by Zagreb</li> <li>T2 - toolkit containing the Demand Side Management tools</li> </ul>	<b>Resources:</b> <ul style="list-style-type: none"> <li>project library</li> <li>training materials developed by Treviso</li> <li>T2 - Toolkit containing Financial and contracting tools</li> </ul>	<b>Resources:</b> <ul style="list-style-type: none"> <li>project library</li> <li>training material developed by Maribor</li> </ul>	<b>Resources:</b> <ul style="list-style-type: none"> <li>project library</li> <li>training material</li> <li>T2 - tools containing the Energy Management System</li> </ul>
<b>Resources of the Communication Work-package</b> <ul style="list-style-type: none"> <li>Video of the project <ul style="list-style-type: none"> <li>Origami</li> <li>Posters</li> </ul> </li> <li>Animated tutorial on correct energy conscious behaviour <ul style="list-style-type: none"> <li>Animated tutorial on how to read smart meters</li> </ul> </li> </ul>			
<i>Informal training through class/school competitions - gamification</i>	<i>The building owner is used to managing separate supply and maintenance contracts. He sets the new goal of elaborating the terms of reference of a new type of contract i.e. ENERGY PERFORMANCE CONTRACT/EPC and/or EPIC with the valorisation of the investment in social components/activities</i>	<i>The local authority, owner of the pilot building, considers the opportunity to adopt the decision to invest money to improve the equipment in the pilot building, on the basis of the results emerged from the energy audit.</i>	<i>One partner wants to upgrade its energy management system adopting a specific standard/procedures acknowledged at international level. Then its pilot action includes the improvements of the energy management system according to a specific standard</i>



<i>Elaboration of a set of communication tools aimed at instilling proper energy conscious behaviour in different types of users (e.g. elaboration of edutainment material, storytelling, APPs...)</i>	<i>The Owner takes advantage of the training, tools and assistance provided by the Province of Treviso to elaborate the terms of reference for a new contract</i>	<i>The investment is included in the Building Alliance, thus, the savings registered are included in the Alliance and reinvested</i>	<i>The local authority and building managers want to revise the time-space organisation and commit themselves to changing the existing model of organisation with a new one. Managers and owners elaborate together an excel file/informative document with a view to collecting the needs of the buildings most used, and try to re-organise them in an energy efficient way, by using tools such as the analytic DSM tools</i>
<i>Informal training with students organised by teachers and/or peers: e.g. informal training organised by students for students</i>	<i>A building owner is already used to implementing EPC contracts and more advanced contractual schemes. He decides to dialogue with his contractor and verify whether the % of savings to be invested in technological activities can be partially invested to finance incentive schemes for those teachers that cooperate with managers and owners in reducing energy consumption.</i>	<i>One partner/associated partner is interested- for an example - to start to put the basis of an energy performance contract. It could work in the framework of the evolution approach: DSM measures + the elaboration of the terms of reference of an EPC contract that should be approved (not necessary launched) by the closure of the project.</i>	<i>Setting up of common energy action plan for the group of public buildings owned by the public authority, where common aim will be defined. The aim must be SMART (specific, measurable, achievable, relevant, time-based).</i>



<p><i>Organisation of events and internal debates related to energy conscious practices</i></p>	<p><i>Two-step procedure involving the DSM measures which are successfully implemented in the building. It leads to energy and money savings. From this savings can be financed an investment in building renovation leading to another energy savings.</i></p>	<p><i>A partner/associated partner is interested in introducing DSM measures ex novo (as never tested before) in connection with buildings managers; moreover, It is interested in investing with own funds or external funds for improving one or more elements put in evidence by the energy audit report that is a sort of “whishing list”.</i></p> <p><i>On the basis of that wishing list, the interest partner/associated elaborates and approve by the closure of the project an intervention plan or approve the modification of the current investment plan (if existing).</i></p> <p><i>The interest partner can even think to attract funds applying for special national funds based on the energy audits.</i></p> <p><i>So in case, the submission of the request of funds for technological intervention or the approval/update of the investment plan, have to be elaborated and approved before the project closure and possible by December 2018.</i></p>	
<p><i>Collection of materials concerning the proper energy management behaviour and relevant training material (e.g. training material targeting caretakers) to be left as a legacy to the new students/new users</i></p>	<p><i>To show the building owners possibilities of EU/national funding of the investments. It is good to contact local subsidy consultant.</i></p>		



<i>Elaboration, introduction, use of applications/IT tools to record the energy consumption routine and habits of the building users and estimation of the waste of energy . These activities are carried out by pupils/other type of users by using a “log file”</i>	<i>Definition and monitoring of concrete financial performance indicators, which can show impact of investment/non-investment energy efficient measures.</i>		
<i>Energy sentinel groups: setting up of an energy team responsible for monitoring the energy consumption and promoting energy conscious activities</i>			
<i>Engagement of the pupils in technical activities, such as micro-climate analysis (inspired by the Fanger studies, energy audit procedures etc.)</i>			
<i>Training for caretakers and cleaning companies on the proper behaviour to have when working and cleaning.</i>			
<i>Implementation of the Euro-net 50/50 MAX methodology in 9 steps (European Project introduced to the partners during the Master in Krakow)</i>			



## 8. Conclusion

The documents has been delivered to support the partners and their associated partners to define the pilot activities to implement in each of their pilot buildings. The benefits obtained with the provision of a standard template is for:

- Harmonising the descriptions of the ad hoc activities.
- Guiding the partners/associated partners to select the most appropriate tools and better describe their conceptualised interventions!
- Inspiring the partners and future administrations, managers and owners to introduce DSM tools into their pilot building scenarios.

The sum up of the separate templates will provide the description of the activities to be carried out in each single pilot buildings that can be different even if they belong to the same “pilot clusters”.



## References

1. Application Form Approved by the Central Europe Programme
2. Summary report D.T3.1.1 delivered by EAV/PP2 in the first period
3. <https://www.navigantresearch.com/research/behavioral-and-analytical-demand-side-management>
4. <https://www.energystar.gov/buildings/about-us/how-can-we-help-you/communicate/energy-star-communications-toolkit/motivate-competition>
5. <http://www.sciencedirect.com/science/article/pii/S2214629616300627>
6. <http://www.zdnet.com/article/storytelling-our-energy-future/>
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## Glossary

Demand Side Management (DSM) - The modification of consumer demand for energy through various methods such as financial incentives and education.

DSM tools - Communication techniques and contents targeting building users (including Apps, Storytelling, edutainment, gamification and social networking) according to their age and attitudes.

Edutainment - Content designed both to educate and to entertain.

Gamification - Application of game-design elements and game principles in non-game contexts.

Social networking - The creation and maintenance of personal and business relationships especially online.

Storytelling - The social and cultural activity of sharing stories, often with improvisation, theatrics, or embellishment.

EnMS/ Energy monitoring system - allows to view usage of different types of energy in the building

Energy management - activities and/or measures aimed at the effective operation of the building.

Protocol - rules for communication between two or more nodes (systems, controllers).

Manual data collection - regular manual data logging by person who is in charge of energy management of the building. All consumption data must be collected at least once a week.

Automatic data collection - is ensured by wire/wireless communication of measuring devices with appropriate software.

Capacities - Capacities are to be understood as the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals (UNISDR, 2009: Terminology). They comprise the enabling policy, legal and institutional environment including human resources development and the respective managerial systems. Capacities may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management.

Energy efficiency - Energy efficiency improvements refer to a reduction in the energy used for a given service (heating, lighting, etc.) or level of activity. The reduction in the energy consumption is usually associated with technological changes, but not always since it can also result from better organisation and management or improved economic conditions in the sector ("non-technical factors") (World Energy Council, 2008: Energy Efficiency Policies around the World: Review and Evaluation).

Stakeholder - person, group or organization that has interest or concern in an organization.

Stakeholders can affect or be affected by the organization's actions, objectives and policies. Some examples of key stakeholders are creditors, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources. Not all stakeholders are equal. A company's customers are entitled to fair trading practices but they are not entitled to the same consideration as the company's employees.



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