Political buy-in to energy efficiency

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TOGETHER

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TOwards a Goal of Efficiency THrough Energy Reduction

D.T4.2.1

Transnational Strategy Framework Strategy on how to increase energy efficiency in public buildings through integrated approaches
JOINT VERSION

PP9 - Paks

Contents

1. Background

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

The three main objectives of the 36 months' project TOGETHER are to:

1. Increase public buildings' energy efficiency and secure investments, through improved multidisciplinary in-house staff capacity building of Public Administration and the establishment of a system of alliances with the more engaged and motivated building users;
2. Produce and pilot test the most appropriate combinations of technical, financial and Demand Side Management tools for the improvement of the energy performance of public infrastructures, currently across 8 regional pilot actions involving a total of 85 buildings;
3. Codify 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.

The current document creates grounds for output O.T4.1 "Strategy on how to increase energy efficiency in public buildings through integrated approaches". It observes how local and regional institutions are able to increase energy efficiency in public buildings through integrated tools that represent a cost-effective way to reduce energy consumption and leverage investments. The content of the documents is based on the remarks of the stakeholders, and translated in to a Policy Package at local level. It observes the energy strategies of the partner countries, identifies the relevant policies, presents the results of the advocacy events and defines the set of policy recommendations on challenges that need to be dealt on EU/national/regional levels in order to enhance the use of behaviour-based energy efficiency measures, integrated with financial schemes, EnMS [1]and EPIC[2].

The overall goal of the strategy is to include policy recommendations for local/regional/national/EU policy/decision makers, to create the appropriate conditions to enhance the uptake of investment for the energy efficiency in public buildings.

[1] Energy Management System
[2] Energy Performance Integrated Contract

2. Energy policies of the participating countries

In order to identify the policies of Central European area, which should be affected and improved by the recommendations of TOGETHER, the different approaches and legislations of the involved countries have to be examined. TOGETHER involves partners from seven countries: Italy, Czech Republic, Poland, Slovakia, Hungary, Slovenia and Croatia.

1. Figure: Partner countries of TOGETHER project

The first step is the analysis of the **national energy efficiency policies related to the energy performance of public buildings** and strategies to understand the energy efficiency targets, motivations and planned tools of these countries.

2.1.1. Energy Efficiency Policy in Italy

Italian National Energy Policy of 2017 on public buildings specifies the adoption of measures to support the renovation of public buildings and the adoption of new minimum performance standards. The energy strategy sets ambitious and complex goals for which, in order to achieve them, efficient public policies are needed, but the success of the strategy also depends on everyday actions: making citizens aware of their consumption choices and shift them towards a conscious use of energy sources is essential.

A number of legislative decrees were passed, all with the focus of promoting the development of energy services and the increment of measures for energy efficiency in public buildings, especially schools and hospitals.

One of these was the Inter- ministerial Decree of 16 September 2016 which consists of interventions for the improvement of energy performance of PA buildings, indicating a wide number of intervention proposals, modalities, and services necessary for the functioning of the program.

The opportunities for the Italian Public Administration to achieve the goal of energy efficiency in its buildings are many and include: the Covenant of Mayors, the Sustainable Energy Action Plan, and the energy renovation program for public real estate assets.

Moreover, a number of incentives were devised, such as the Energy Efficiency Certificates, which are negotiable securities that certify energy savings achieved in the final consumption of energy, implementing measures and carrying out interventions to increase energy efficiency. PA can benefit from these by requalifying high energy consumption public services, such as lighting and public transport.

Another instrument for the incentivising of energy efficiency in public buildings is the so called “Conto Termico” which is a program that finances up to 65% of the costs incurred for maintenance on building casings and systems that increase its energy efficiency. These include interventions such as improvement of the thermal insulation of the building casing, replacement of lightning systems with more efficient ones, and generation of thermal energy from renewable resources.

The public administration has a strategic and exemplary role in the field of energy efficiency, at central level it exercises institutional functions for energy efficiency policies and at the territorial level it implements specific energy policies for the implementation of interventions and in the management and use of resources. At the same time, the Public Administration is itself one of the sectors with the highest energy consumption, obliged to adopt virtuous behaviour.

In Italy there are more than 13,000 buildings of the Public Administration and they consume about 4.3 TWh of energy each year for a total expenditure of 644 million euros. Of these, about 20% is the most energy-consuming with a consumption of 1.2 TWh and a cost of 177 million euro. The main consumption items of the PA concern: lighting, office machinery, systems, refrigeration, ventilation / air conditioning, electric motors, heating. Overall, the consumption of P.A. could be reduced up to 40%.

These are heavy consumption that require actions and interventions. It is estimated that the interventions on the building envelope and on the plants, together with the contribution that can be provided by the sustainable behaviour of the over 3 million civil servants, would allow a reduction in consumption by the Public Administration of about 40% with a saving of approx. 73 million euros.
The European directives and the Legislative Decree 102/2014 oblige Italy to promote a building that uses less energy and that produces less carbon dioxide. With regard to the public sector, the standard provides that the 3% of the surfaces of public buildings must be made energy efficient every year until 2020. And again, from 2019 all new public buildings will have to comply with the European parameters by adapting to the nZEB standard, - almost Energy Zero Building, "Almost Zero Energy Buildings" with very high levels of performance. For private buildings, on the other hand, the reference date is 1 January 2020.

These interventions presuppose both the activation of a wide range of regulation and promotion measures and a reorganization of the technological offer and innovative solutions. Furthermore, the involvement of the management with the planning of the actions to be undertaken and of the employees in training and information activities on the technologies and virtuous behaviour to be adopted is necessary.)

2.1.2. Energy Efficiency Policy in Czech Republic

Targets of the national policy related to EE of public buildings for 2020: The main target is common for EU - to achieve the savings target by 2020 20% of primary energy consumption, it corresponds in Czech Republic to 1 474 Mtoe in 2020.
Regarding buildings in public sector, there is aim to Energy retrofit 3% public sector buildings each year.
The Czech Republic has committed itself to fulfilling the objective in the so-called alternative way - the obligatory body responsible for achieving savings is a state. And the goal is achieved on the basis of policy measures based on grant programs i.e.

- Operational Program Enterprise and Innovation for Competitiveness
- Integrated Regional Operational Program
- Operational Program Environment, etc.

Other tools for improvement of the energy performance of public buildings:

- National action plan for energy efficiency
- State energy concept and other territorial energy concepts which is based on SEC

Act on Energy Management 406/2000 Coll., as amended etc.

2.1.3. Energy Efficiency Policy in Slovenia

Targets of the national policy related to EE of public buildings for 2020: Improving energy efficiency by 20% by 2020 (the use of primary energy in Slovenia in 2020 will not exceed 7,125 Mtoe (82,86 TWh)); reducing greenhouse gas (GHG) emissions; achieving the 25% target share of renewable energy sources (RES) in the balance of gross final energy consumption by 2020; rebuilding 3% of the total floor area of public sector buildings each year.

Relevant strategies, action plans, regulations:

- Action Plan for Energy efficiency for the period 2017 - 2020,
- A long-term strategy for the promotion of investments in energy renovation of buildings,
- Action plan for almost zero-energy buildings for the period by 2020,
- Action plan for renewable energy sources for the period 2010–2020,
- Operational program for reducing GHG emissions by 2020,
- Operational Program for the Implementation of the European Cohesion Policy for the period 2014-2020,
- Public Administration Development Strategy 2015-2020,
- Energy concept of Slovenia,
- Action plan for RES for the period 2017–2020,
- Energy Act.

How do they regulate the improvement of the energy performance of public buildings?

With upgrading green public procurements: they will be based on examples of environmental requirements and criteria that can be included in the procurement process, including energy savings and the use of RES or CO_2 emissions reduction; with Financial incentives for comprehensive energy renovation and sustainable construction of buildings in the public sector: within the Cohesion Fund and Eco Fund, private resources and energy contracting (EPC); with Establishment of an energy management system and an computerized collection of energy accounting; with Preparation of a program for financing partial energy renovation measures for public sector buildings (for buildings where complete renovation is not justified); with the establishment of a project office for the energy renovation of buildings, which carries out the project "Energy renovation of buildings owned by the state and municipalities"; with Creating sustainable criteria for buildings; with Design and establishment of a comprehensive quality assurance system for energy renovation of buildings.

2.1.4. Energy Efficiency Policy in Croatia

The core legislative framework for energy efficiency is included in the Energy Law, the Energy Efficiency Law, the Environmental Protection and Energy Efficiency Fund Law, the Construction Law, the Law on Protection from Light Pollution, the Air Protection Law, the Environmental Protection Law and the legal acts for the implementation of these laws.

The Energy Efficiency Law regulates the domain of efficient energy use, adoption and implementation of local, regional and national energy efficiency improvement plans, energy efficiency measures and energy sector stakeholders' duties in implementing energy efficiency measures, identification of energy savings and customer rights in energy efficiency measures application.

The definition of energy efficiency policy is under the responsibility of two ministries: the Ministry of Environmental Protection and Energy (MZOE) and the Ministry of Construction and Physical Planning (MGIPU). MZOE is in charge of a comprehensive and integrated energy-climate policy, while MGIPU is in charge of energy efficiency in the buildings sector. The implementation of energy efficiency policy is defined by the National Energy Efficiency Action Plan (NEEAP) which is prepared for the period of three years. Report on implementation with results is carried out each year.
Croatia has integrated measures for achieving the EU Energy Efficiency Policy goals in 2020 substantially into its national legislation, including:

- Achieving 1.5 % annual reduction in the amount of energy sold by establishing a system of energy efficiency obligations for suppliers and/or energy distributors and/or using alternative energy efficiency measures with the same quantitative effect;
- Energy renewal of at least 3% of the building surfaces of the central state administration buildings
- per year;
- Obligatory definition of minimum energy standards (based on a cost-optimal analysis) for new buildings and buildings to be renewed and mandatory energy certification for public buildings and all other buildings to be sold or leased;
- Regular control of heating and air conditioning systems;
- Obligation for all new public buildings starting from December 31, 2018 and all other new
- buildings starting from December 31, 2020 to be built as nearly zero energy buildings;
- Limiting products to be placed on the market by minimum energy efficiency and eco-design standards requirements and labelling the energy efficiency of energy-related products;
- Preparation of national energy efficiency action plans every three years with annual reporting;
- Application of smart meters for electricity and natural gas consumption;
- Monitoring and verification of energy savings;
- Education in the area of energy efficiency;
- Green Public Procurement (GPP)

- Consumers' rights protection with regard to access to simple and understandable information on actual and historical energy consumption.

2.1.5. Energy Efficiency Policy in Poland

Polish energy efficiency policy reflects EU regulations. The foundations of the policy are set out in the EU directives:

- Directive (EU) 2018/844 of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency
- Energy Efficiency Directive (2012/27/EU)
- Energy Performance of Buildings Directive (2010/31/EU) amended by the directive Directive (EU) 2018/844
- Energy Labelling Directive
- Ecodesign Directive.

These regulations shape Polish policy which has been set out in national law using policies, action plans and legal acts. The most important are:

- Poland's Energy Policy until 2030;
- National Energy Efficiency Action Plans (the plans no. 1, 2, 3, 4, were drawn up in 2007, 2012, 2014, 2017 respectively) - required by the Directive 2006/32/WE and 2012/27/UE.
- Act on Energy Efficiency from 20 May 2016 (replacing previous one from 2011) - aimed at further improvements to the energy efficiency of the Polish economy and ensuring the achievement of national energy efficiency target

The key implications of these regulations for the energy efficiency improvements of buildings are:

- Introduction of mandatory energy certification of buildings (new and rented/refurbished),
- Introduction of white certificates schemes – influencing the profitability of energy improvements in buildings,
- The requirement for new and retrofitted buildings to reach a 'nearly zero' energy consumption (NZEBs) starting from 2019 (public authorities) and 2020 (all buildings);
- Mandatory energy audits for large companies/buildings.

New EPBD regulations from 2018 haven't been transposed yet into Polish legislation – Poland will have to prepare a national renovation strategy as well as other requirements.

The main policy instrument regarding the improvement of energy efficiency at regional level are Regional Operational Programmes which provide EU funding in a targeted way to achieve specific results including energy efficiency improvement. Also the Air Protection Programmes at regional level cover some energy efficiency of mainly private buildings.

At local level energy efficiency of building should be covered by the mandatory Assumptions for Energy Supply for the municipalities. All municipalities in Poland are required under Energy Law Act to prepare such assumptions and include energy efficiency actions within these documents. There are also non mandatory policies like SEAPs/SECAPs and Low Emission Development Plans, which extensively cover energy efficiency issues.

2.1.6. Energy Efficiency Policy in Hungary

Starting with the holistic approach, we have to mention the **National Energy Strategy 2030 (NES)** as the most comprehensive strategy, which was published in 2012. It lays down five crucial efforts: increasing energy savings and energy efficiency, increasing the share of renewable energies, integrating the Central European grid network and constructing the required cross-border capacities, maintaining the existing nuclear capacities and utilising the domestic coal and lignite resources in an eco-friendly manner for power generation. In regard to energy efficiency of buildings it states that 40% of all energy consumed in Hungary is consumed in our buildings, two-thirds of which goes to heating and cooling. 70% of the public buildings fail to meet modern functional technical and thermal engineering requirements. It also declares that 'the renovation of existing buildings, with particular regard to public buildings, is therefore a priority'. Public buildings can also demonstrate commitment by the public sector, therefore they are able to start a multiplier effect. The average annual specific thermal energy consumption of these buildings is 340 kWh/m^2, which is a high value, therefore the retrofitting of buildings and the modernisation of heating and cooling systems hold the greatest energy efficiency potential. The strategy aims at reducing the heating energy requirements of buildings by 30% through energy-efficiency programs until 2030 in the building sector. It also express indirectly the need of smart metering when it says that although there has been an improving trend in energy efficiency thanks to the communal energy efficiency programs implemented in recent years, no precise data are available due to the lack of a functioning system for the monitoring of the impact of the implemented projects. Next to heating modernisation, building energy programs should include the integration of renewable energy sources, the modernisation of lighting systems, connecting more public buildings to district heating networks and the development and implementation of IT-based services which demonstrably contribute to CO_2 reduction and the improving of energy efficiency. The projects requiring the smallest investment, where the investment is returned out of the reduction of consumption should be given preference, as it is at such projects that the cooperation of building owners and the participation of private investors can be expected. Regarding new buildings it is well-known that according to Directive 2010/31/EU all new public buildings should fulfil the criteria of nearly zero-energy buildings from 1 Jan 2019. In the case of such new buildings, the purpose of the strategy is to encourage construction of an energy efficiency level higher than the regulations of a target value of 25 kWh/m^2/year.

Considering the use of renewable energy sources in Hungary, the targets and recommended technologies are introduced in the **National Renewable Energy Action Plan** (NREAP), published in 2011. Hungary has set the following renewable energy targets for 2020:

- 14,65% share of renewable energy in gross final energy consumption by 2020;
- 18.9% of heating and cooling consumption covered from renewable sources;
- 10,9% of the electricity demand covered from renewable energy sources;
- 10% energy demand of the transport sector covered from renewable energy sources;

In order to achieve above enlisted targets Hungary implements and runs number of programmes supporting deployment of renewable energies financially, fiscally and also by creating appropriate legislation and administrative framework such as feed-in tariff, various fiscal incentives, promotion of pilot projects and trainings for installers. Among the measures serving the delivery of these targets it mentions the energy programmes for public buildings starting from 2011, that will expectedly result in increased incorporation of renewable energy sources during the modernisation of public buildings, in accordance with Article 13(6) of the Renewable Energy Directive (2009/28/EC).

The actions supporting energy efficiency are better highlighted in Hungary's **National Energy Efficiency Action Plan** 2020, which has been issued in 2015 as an obligation set by the energy Efficiency Directive (2012/27/EU). This document mentions that 80% of public buildings fail to meet modern functional technical and thermal engineering requirements (NES indicated 70%). It states that during the period since the drawing up of the National Energy Strategy, economic growth has been significantly lower than originally expected, which resulted in lower energy use. Accordingly, the expected value of gross final energy consumption (the difference between primary energy consumption, conversion, grid losses and non-energy uses) in 2020 is 603 PJ/year. The action plan lists several operational programmes and incentives that support the achievement of this goal. Among the measures supporting energy efficiency in public buildings it also introduces the 'Building Energy National Strategy'. In latter documents this strategy is referred as National Building Energy Performance Strategy, which has also been issued in 2015, adopted by Government Resolution No 1073/2015 of 25 February 2015.

The **National Building Energy Performance Strategy** completes the above-mentioned statistics by the statement that more than 50 % of the energy used by buildings comes from natural gas, thus the savings achieved by improving the energy performance of buildings would significantly affect natural gas imports. That means that increasing public buildings' energy performance is an important tool for raising the level of energy security. Familiarity with the baseline, i.e. the energy consumption of the existing building stock and main energy consumption patterns is a prerequisite to improving the energy efficiency of buildings. Therefore, a large-scale in-depth survey has been conducted, involving the analysis of data in statistical databases on buildings and existing project and certification databases as well as the on-site inspection of a great number of buildings. In the survey, data were recorded in Budapest, and in major

cities, smaller towns and villages in the countryside. This building energy performance survey was unprecedented in sample size: a total of 2029 residential buildings were involved in equal numbers across the different regions of Hungary, covering family houses, traditional multi-apartment buildings and multi-apartment buildings constructed of prefabricated panels alike. Residential and public building stock was analysed in the following steps: taking an inventory of the building stock, identifying specific building types based on the energy performance characteristics of the buildings, classifying the buildings according to the building types identified, calculating the expected effect of renovations, calculating the costs of the different renovation scenarios. In analysing the public building stock, the purpose and the year of construction of buildings were the main classification criteria, while building types were identified based on energy consumption and prevalence. Based on the available data, buildings were categorised according to their purpose as follows: health and social care facilities, office buildings, commercial buildings, cultural facilities, educational buildings. In the pilot buildings of Paks and Hegyvidék all these public building categories are represented except the commercial buildings in Paks. Furthermore, these categories were divided into subcategories according to their year of construction. Based on the available data, model buildings (sub-types) were defined based on purpose, the structural features characteristic of the period of construction and the number of storeys. These were then used as a standard for energy performance analyses. 10 public building sub-types were identified within the category of health and social care facilities, 10 within office buildings, 4 within commercial buildings, 8 within cultural facilities and 10 within educational buildings. In order to examine the energy performance of these model buildings, the structure as well as heating, hot water supply, cooling, ventilation and lighting systems were identified for each building type. For structure, the materials typically used in the period of construction were taken into account, assuming that no modernisation has taken place since construction. The overall energy performance of buildings (kWh/m^2a) was calculated as the sum of the primary energy consumed for heating, cooling, hot water supply, ventilation and lighting. In addition, an energy performance rating from A+ to I was assigned to each building.

The classification may support the ranking of needs for refurbishment of different public buildings, as it lists the typical energy performance values of public buildings with different functions, year of building and number of storeys.

In the strategy, two renovation scenarios were examined for the model's public buildings: The first involves renovation to ensure compliance with the energy performance requirements applicable from 1 January 2015 in accordance with the amendment of the Energy Performance Characteristics Decree. The second meets the nearly zero-energy requirements defined in the same Decree. For technical building systems, the effects of the following characteristics were considered:

- in the case of heating by gas boiler, the heating unit is a condensing boiler;
- a double duct heating system is installed;
- the designed temperature difference of the heating system is 65/50 °C;

- heat emitters are provided with a thermostatic valve;
- a pump with controlled speed (r.p.m) is installed in the heating system;
- in systems where hot water is produced by a boiler, the original boiler will be replaced by a condensing gas boiler during modernisation;
- possibility of installing solar collector systems.

Implementing the first renovation scenario would result in primary energy savings of 55% on average in the inspected model buildings. The second scenario incorporates the requirement under the Energy Performance Characteristics Decree for a 25 % share of renewable energy. As the use of renewable energy was already part of the renovation package outlined above, in the case of certain model buildings, there is no need to install additional components. For the rest of the buildings, in addition to increasing the share of solar energy, the possibility to apply air-to-water heat pumps was also considered. For example, heat pumps are a viable solution in public buildings not having sufficient surface area on the roof to ensure a 25 % share of renewable energy. Technical building systems of this type also allow for recovering heat from used air in buildings having an air treatment system. When designing the energy supply system, it was a priority to produce the largest possible part of the energy needed for operating the heat pump with the solar panels also to be installed. Implementing this renovation scenario would result in primary energy savings of 63 % on average in the inspected model buildings.

After analysing the related cost, the strategy mentions that as the maintenance costs of public buildings account for a significant part of the spending of the central and local governments, the renovation of public buildings for improved energy efficiency would reduce the expenses of the Government and municipalities in the long term, which in turn would strengthen Hungary's budgetary position.

Staying on national level, concerning the legislation on energy performance, the most important regulation is the **7/2006 (V.24.) TNM[3] decree** that was issued in line with the requirements of 2002/91/EC EPBD (Energy Performance of Buildings Directive) which came into force in 2006. It has elaborated a national methodology for calculating the integrated energy efficiency of buildings; established minimum requirements for the energy efficiency of new buildings with a surface area of over 1000 m^2; established minimum requirements for large existing buildings (with a surface area of more than 1000 m^2) regarding their energy performance in case they are subject to major renovation. Requirements cover both specific U-values for different building elements, whole building heating load requirements, and gross energy requirements for heating, cooling, ventilation, domestic hot water and - except for residential buildings - artificial lighting. The rationality of using cogeneration must also be verified. The same requirements apply to new buildings and buildings undergoing major renovation, which is defined based on the building value.

[3] TNM stands for: Minister Without Portfolio

This decree contains 3 levels of threshold values for the heating season and 1 for the summer period. Requirements for the heating season:

1. Threshold values for building envelope;
2. Limitation of the specific heat loss coefficient of the building expressed in W/m^3K for the heated volume of the building. It includes all building shell related transmissionlosses and solar gains but nothing that is not the property of the building. The threshold value is set as the function of the A/V (Area/Volume) ratio.
3. Limitation of the total integrated comfort energy consumption (excluding the energy consumption of the technology) in primary energy expressed in kWh/m^2a for the heated floor area of the building. The threshold value is set as the function of the A/V ratio.

The threshold values depend on the function of the building. Different values are specified for residential houses, apartment blocks, accommodations, offices, educational buildings. For buildings out of the above functions a procedure is specified for calculating the threshold.

Requirement for the summer season: The daily average room air temperature over the daily average ambient temperature must not excide 3K in case of heavy buildings and 2K in case of lightweight buildings.

Building energy certification procedures and energy classes are specified by **176/2008. (VI. 30.) Government decree**. It applies the calculation methods described by 7/2006 decree.

40/2012. (VIII. 13.) BM decree meant to make the first step to fulfill the requirements set by EPBD recast 2010/31/EU. However does not include tightening on major requirements only set requirements on comfort and renewables.

The **105/2012**. (V. 30.) Gov. decree specifies the modifications regarding the application of the measures. Decree No **20/2014** of 7 March 2014 of the Minister for the Interior amending 7/2006 Decree provides that, from 1 January 2015, the values corresponding to cost-optimal energy efficiency levels are applicable in the case of support granted under domestic or EU tenders or from the central budget for the improvement of the energy performance of buildings falling within the scope of the Energy Performance Characteristics Decree. Requirements of EED 2012/27/EU regarding cost effectiveness are introduced by 20/2014. (III. 7.) BM decree by specifying the cost-optimal threshold values.

The application measures are specified in the 387/2014. (XII. 31.) Gov. decree.

The nZEB requirements specified in the 39/2015. (IX. 14.) MvM decree and the related application measures in the 261/2015. (IX. 14.) Gov. decree.

In order to be able to distinguish the energy classification categories before and after 01.01.2016 the new categories that are specified according to nZEB requirements are marked with double characters (AA, BB, CC etc.). The categories are specified by the relative consumption compared to the nZEB requirement. There are some additional measures above to the Ep requirement in order to achieve nZEB category and BB classification: The specific heat loss factor must comply to nZEB requirement and it is required to use

2% renewable energy compared to the used non-renewable energy. Additional requirements in order to achieve AA or better classification (weather dependent heating control, heating control by rooms, individual metering by apartments and units to be sold or let individually).

Rules related to energy audits are driven by the Energy Efficiency Directive (2012/27/EC). It has been implemented by the Law LVII. on Energy Efficiency in 2015 and by the governmental decree 122/2015 (v.26.). The most important elements of these regulatory documents are as follows:

- Annually 1.5% energy savings should be achieved on national level. Tools and frameworks are specified (CO2 taxes, incentives).
- Annually 3% of the central governmental buildings should be retrofitted according to minimum energy requirements.
- Establishment of a national network of energy advisors.
- Rules and procedures of energy audits and auditors.
- Energy efficiency tasks related to public buildings

It is to be highlighted that one of the tasks of the energy advisors is influencing behaviour of occupants in public buildings for a more energy efficient operation. However, responsibilities and methods are not specified by the regulation.

Finally, as the pilot project of TOGETHER is heavily reliant on the results of the smart metering – maily of measuring the electricity consumption - we have to mention the Act that regulates the electric energy distribution in Hungary. The Act LXXXVI of 2007 on Electric Energy which has come into force in 2008 has targeted to set up an efficient internal electricity market, to promote energy efficiency and energy conservation within the framework of sustainable development, to provide consumers with a secure and reliable supply of electricity of a specified quality at transparent prices. Among diverse other factors, the act regulates the installation of meters, measurement process, data management, consumer rights, integration of renewable energies, etc.
If gas consumption is also measured by smart meters, the Act XL of 2008 on Natural Gas Supply also has to be taken into consideration.

On local level, Municipality of Paks is highly devoted to improve the energy efficiency of its buildings operation of the infrastructure and it also stives for involving as many renewable energy sources to the energy mix as possible.
The development strategies of the settlement were elaborated in accordance with the policies and strategies of the higher territorial levels. Its development plans are in line with the National Development and Regional Development Concept, the objectives of the National Environmental Program IV, the

objectives of the National Energy Strategy 2030, the principles set out in the National Environmental Education Strategy, and the implementation of the Regional Development Concept of Tolna County and the Integrated Territorial Program of Tolna County. Its sustainability based proposals contribute to the implementation of the EU 2020 Strategy and the Danube Region Strategy at macro-regional level. Policies in the economy, infrastructure development, environment, agriculture, culture and social affairs, as well as other sectors, have been coordinated at local level with the following strategic documents:

- Integrated Urban Development Strategy for Paks
- Sustainable Energy Action Plan (2014)
- Local Equal Opportunities Program
- Environmental Sustainability Program (2017)
- Local Agenda 21 (updated in 2018)
- Settlement Wastewater Treatment Program 2017-2022 (2017)

From the above documents, the SEAP of Paks has to be highlighted, as it contains exact interventions on the fields of energy efficiency and renewables. Municipality of Paks signed the Accession Statement of the Covenant of Mayors on 14 February 2013 and committed itself to:

- Fulfil and even exceed the 2020 objectives of the European Union and to reduce its CO_2 emission on its area by at least 20%: Paks has undertook to achieve 22% reduction by 2020;
- Elaborate an action plan that contains an emission inventory and describes how to reach the goals within one year from the above date: The action plan was officially approved by the General Assembly on 12 March 2014, and submitted to the CoM after some clarifications on 11 November 2015.
- Make reports on the implementation of the action plan at least every 2 year in order to facilitate its assessment, follow-up and control. The follow up of the SEAP will be delivered in April 2019;
- co-organize „energy days" with the European Commission and others concerned in order to give citizens an opportunity to get to know the advantages of a more reasonable energy use, and to inform the local media about the development of the action plan;
- join the Mayors Conference organized by the European Union and to actively participate in its work

2.1.7. Energy Efficiency Policy in Slovakia

Main national policy setting the energy efficiency and energy saving goals in Slovakia an Action plan of energy efficiency. At the moment, the action plan for years 2017-2019 with view to 2020 is in effect. It is fourth action plan. This action plan is the fourth implementing measure of the Energy Efficiency Concept and is consistent with the previous three Action Plans. The Action Plans aim to evaluate energy efficiency

measures over the previous 3-year period, evaluate the achievement of energy savings targets and plan measures to meet the targets set for energy efficiency for the next period. Long term goal (to year 2020) is to save 11% of energy compared to energy consumption of years 2001-2005. Expressed in numbers, the goal is to save 34 342 Tera Joules in 2020.

Long term goals of energy efficiency, is achieved through national laws about energy efficiency. Main laws concerning energy efficiency in buildings are following. Act no. 321/2014 on energy efficiency and in particular defines data provision, real consumption billing, energy consumption monitoring and energy audits. Act no. 657/2004 on thermal energy (in particular budgeting of heat consumption costs, monitoring of heat consumption, energy efficiency of heat sources) but mainly national plan aimed at increasing the number of buildings with nearly zero energy needs, which is amended by Act no. 555/2005 on the Energy Efficiency of Buildings and on Amendments to Certain Acts. This act (no. 555) defines very strict rules on building envelope properties as well as energy sources and distribution efficiency in buildings, however the omits the importance of energy management. Topic of energy management is in general not addressed in energy efficiency laws or policies.

3. Targeted policies

3.1. List of targeted policies

After identifying the above-mentioned policies, their relevance to the project's purposes – namely to improve the energy performance of buildings by demand side management and other low-cost actions – had to be examined. Based on their level of linkage to DSM, the partners have selected the following policies to be influenced and supported:

Country	Policies	Territorial level (NUTS)
Italy	1. Legislative Decree 102/2014 obliges Italy to promote a building that uses less energy and that produces less carbon dioxide	NUTS0
	2. Conto Termico "Thermal Account incentives" interventions to increase energy efficiency and the production of thermal energy from renewable sources for small plants. The beneficiaries are mainly the Public Administrations, but also businesses and individuals, who will have access to funds for € 900 million a year, of which 200 will be allocated to public administrations. Thanks to the Thermal Account it is possible to redevelop their buildings to improve their energy performance, thus reducing consumption costs and quickly recovering part of the costs incurred. The Thermal Account was introduced in 2012 and updated with the Ministry Decree 16/02/2016	NUTS0
	3. Objective 2 of the Regional Energy Plan - concerning "Regional Energy Plan - Renewable Sources - Energy Saving - Energy Efficiency approved with the Regional Council Decree n. 17/2017 (PERFER).	NUTS2
Czech Republic	4. Territorial energy concept of Vysočina region	NUTS2
	5. Energy management of Vysočina region	NUTS2
Slovenia	6. Prioritising efficient use of energy over energy supply	NUTS 3
	7. Reducing dependence on import and use of fossil fuels	NUTS 3
	8. Ensuring sustainable energy management	NUTS 3
Croatia	9. Roll-out of smart meters for all fuel types and water: End-users will have near real time information on their	NUTS1

	energy consumption to help them manage their energy usage, save money and reduce emissions. Smart meters will also provide consumers with more accurate information and bring an end to estimated billing.	
	10. Continuous monitoring of energy consumption in the whole public sector and utilisation of energy efficiencypotential: EIS expansion and integration into national energy management information system.	NUTS3
	11. Accelerator Programmes, focusing on energy management using ISO 50001, implementing energy awareness campaigns and developing the use of specific technologies.	NUTS3
	12. Innovative and responsible public procurement in cities: Green Public Procurement (GPP) is an important tool to achieve environmental policy goals relating to climate change, resource use and sustainable consumption and production. GPP may also provide financial savings for public authorities – especially if the full life-cycle costs (LCC assessment) of a contract and not just the purchase price is taken into consideration.	NUTS2, NUTS3
Poland	13. - Regional Operational Programmes – at regional level	NUTS2
	14. SEAPs/SECAPs/LEDPs – at local level	NUTS3, LAU2
Hungary (Paks, Hegyvidék)	15. National Energy Strategy	NUTS0
	16. National Building Energy Strategy	NUTS0
	17. National Awareness Raising Strategy on Energy Efficiency	NUTS0
	18. Law LVII. on Energy Efficiency (2015)	
	19. Governmental decree 122/2015 (v.26.) on the implementation of the energy efficiency law	NUTS0 NUTS0
	20. Act LXXXVI of 2007 on Electric Energy	NUTS0
	21. Act XL of 2008 on Natural Gas Supply	NUTS0
	22. Territorial and Settlement Development Operational Programme 2014-2020	NUTS0 NUTS0
	23. Environmental and Energy Efficiency Operational Programme 2014-2020	NUTS0
	24. Sustainable Energy (and Climate) Action Plan	NUTS5 (LAU2)

	25. Integrated Urban Development Strategy for Paks	NUTS5 (LAU2
	26. Sustainable Energy Action Plan (2014)	NUTS5 (LAU2)
	27. Local Equal Opportunities Program	NUTS5 (LAU2)
	28. Environmental Sustainability Program (2017)	NUTS5 (LAU2)
	29. Local Agenda 21 (updated in 2018)	NUTS5 (LAU2)
	30. Settlement Wastewater Treatment Program 2017-2022 (2017)	NUTS5 (LAU2)
	31. Sustainable Energy and Climate Action Plan (SECAP) 2018-2030.	NUTS5 (LAU2)
	32. Environmental Program and Action Plan of Hegyvidék (2017-2022)	NUTS5 (LAU2)
	33. Integrated Urban Development Strategy of Hegyvidék 14/2005. (VIII. 10.) regulation of Hegyvidék Municipality about city-planning and building	NUTS5 (LAU2)
Slovakia	34. The National plan for increasing the number of nearly zero energy buildings	NUTS0
	35. Act no. 555/2005 on the Energy Efficiency of Buildings	NUTS0
	36. Concepts of cities and municipalities in thermal energy	NUTS2

3.2. Conclusions of advocacy events

TOGETHER has strived to recognise and integrate the opinion and recommendations of the political decision makers into the findings of the project, as without their support it is not possible to influence the selected policies. The politicians and their experts on energy policies are those stakeholders, who are aware of the structures and purposes of these energy policies. They are also aware of the steps of shaping them, and have the competences and official linkages to make this influencing process successful.

To collect their needs and feedbacks, each partner has organised so-called advocacy events (D.T4.5.2). Embedding the suggestions of the decision-makers who have attended at these events is the prerequisite of achieving a political pledge for the set of policy recommendations (D.T4.2.2) defined by the TOGETHER partnership.

The following findings were made at the advocacy events in the different countries:

- Italy

  According to the exchange of information activated through the advocacy events and with the support of an on line questionnaire administrated during the late summer 2018, it would be of support the establishment of “one- stop- shop” able to inform and advice the small and medium sized municipalities about the latest energy sector news and regulation

  Small and medium sized cities are called to contribute to the energy transition such as the biggest one but probably with less tools and resources, monetary and human, considering that small and medium municipalities have to deliver several services with a decreased number of staff. There is not a person devoted to implement energy policies without the burden to follow other issues often not strictly linked to the building sector and energy policies. The organisational contraints and limits hamper the capacity to put into connections the different level of knowledge and disciplines that the energy transition call for. Energy efficiency calls for a cultural change and for ragaining a control over the consumptions

  Behavioural measures remain the often forgotten issue of the energy transition even though a lot of scientific research exists on that topic, most works are rather to be found in humanities through sociology of behavioural change. It is difficult to channel the results and suggestions deriving from these studies without an interpreter leading the cultural change.

  A massive implementation of smart meter is crucial to get important information about the consumption practices of the buildings but there is the need to have the support of one person daily devoted to assess the data, to process them, verify the excessive consumption and propose counter measures to gain an effective control over energy consumption

- Czech Republic

  EAV organised advocacy event with representatives of pilot buildings' owner – associated partner – Vysočina Region. During the meeting WPT4 documents such as action plans its benchmark, reinvestment action plan etc. were introduced. The main conclusion of the meeting was to start with implementation of energy management according to ČSN EN ISO 50 001 to gain certification of energy management on regional level, where TOGETHER project will be introduced as a pilot project for energy management. Follow up activities and action plan of TOGETHER project is in line with preparatory activities for energy management certification.

- Slovenia

  We organised Advocacy event with representatives of Municipality of Velenje (associated partner of the project) and Local Energy Agency KSSENA (energy manager for Municipalities Velenje, Celje and Slovenj Gradec). The energy agency was established in 2006 with the aim of reducing energy consumption in public buildings and improving the overall energy status of municipalities. As a result of years of experience and professionalism of the team, they don`t seem to have any problems with identifying the relevant policies of Slovenia. They often send proposals to the ministry, based on the identified policies, but only few are taken into consideration. This could be due to the fact that there are 7 local energy agencies in Slovenia which probably send a lot of proposals regarding their regions/municipalities and consequently the ministry has a lot to deal with . However, even if suggestions are approved, the implementation of measures often takes too long. And the biggest problem are financial barriers and the lack of resources to support the implementation of measures. In their opinion, people need to be educated, so they get sense of responsibility and become more aware of energy saving possibilities. It is important to show people that energy efficiency concerns all of us, and not just certain people - such as energy experts. Their suggestions are: educate people on energy efficiency; simplify the procedures for implementing approved measures and efficiently acquire EU funds for (improving) energy efficiency.

- Croatia

  28.11.2018. – I. advocacy meeting

  As the advantages of embedding technology in the objects themselves, the possibility of influencing and changing the behaviour of users in an energy-efficient way was highlighted. Users pointed out that by incorporating remote reading technology, the process of monitoring consumption and possibly locating the source of problems in the distribution of energy or water within facilities as well as remediation, has been greatly facilitated for them. Also, the

owner of the object expressed a positive attitude - excessive consumption and the total cost have been reduced. The obstacles in the installation and the installation process were mostly expressed by the equipment manufacturer and distributor of gas due to specific situations (internal regulations, the Agency's regulations etc.). In particular, in the case of buildings owned by the City of Zagreb, it was discussed how to solve the problem of access to data, both now and in the future, because the development of technology also changes the conditions of incorporation of such technologies on the facilities itself, and of course taking into account the legal regulations (connecting and disconnecting the measuring devices when replacing the meters).

29.11.2018. - II. advocacy meeting

The main issue that arose was the possible ways of influencing the adult target group, as this group is set in its ways and reluctantly accepts new ideas and changes. This is a mind-set that needs to be changed in order to change the behaviour and to achieve greater energy savings.

The conclusions drawn are as follows:

- Work on the culture of good building use
- Implement a new workplace – a representative of the object owner who would be tasked with making sure energy savings are being implemented
- Including the City or national administration
- Working on the activities' sustainability

30.11.2018. - III. advocacy meeting

The main issue identified was the problem in moving the project from the educational buildings (such as schools and kindergartens) to the community. Namely, while the children can influence their parents, there still remains a society group that cannot be influenced in that way and are not keen to participate in activities they are not interested in. The possible solution is to try to reach them through using media or brochures, however this approach turned out to be ineffective. The other suggested solution is to organize community events or Energy days on busy locations within the community. The key point is to determine a local champion, i.e. a person who is open to new ideas and energetic enough to encourage the implementation of new ideas within the greater community.

- Poland

  From local advocacy events the following suggestions and opinions emerge:

  - Demand side management is not visible in the Regional Operational Programmes – they focus mainly on deep thermal retrofitting; DSM is only regarded as a supportive measure in thermal retrofitting process;
  - Behavioural changes are often regarded as a marginal factor in energy efficiency of buildings – it should be stressed that it's one of main drivers of successful energy efficiency plan for the building
  - Local energy efficiency policies are focused on the 'hard investments' which cost much and have unfavourable payback time – they should focus more on the smaller investments in the DSM and behavioural changes which cost much less and have very favourable payback time.
  - Building staff are often sceptical of the DSM and behavioural change as it is demanding and entails a cultural change and a new way of working. Technical staff working in the public administration some time lack of the m

- Hungary

  HEGYVIDÉK:

  - In Hegyvidék Municipality the political management proved to be very open and committed to make actions towards the adaptation of recommendations on regulatory level. Actions on local regulatory level have been initiated by the mayor with regards to reorganisation of energy management roles and responsibilities within the municipality. By carrying on the project the Mayor would like to develop an energetic management system for the whole district in order to get a more precise and holistic picture. He supported the installation of further smart meters and the dissemination of the already finished communicational documents.

  PAKS:

  - The smart metering and demand side management solutions have to be promoted in the national level policies and also in the local policies such as SECAPs. Establishing energy management systems have to be supported to provide a reliable database and software background for measuring the baseline energy consumption and the effects of different energy investments. These tools have to be mentioned and motivated by the national and local strategic documents.

- As currently there's a lack of energy managers at public authorities and also at companies, who could efficiently monitor the consumption by smart meters and EMS, their employment has to be supported.
- Smart metering of water, gas, heat and electricity should be treated as a singe service. Usually only electricity is measured any smart meters, although the wastage in the water supply is much more significant. The initiation of this complex metering should be incited by the national strategies.
- The SECAPs have to directly mention smart metering investments and also DSM actions as awareness raising campaigns. Estimated budget has to be planned.
- As in Hungary the Territorial and Settlement Development Operational Programme provides funding for municipal energy investments under its actions 3.2.1 and 3.2.2, the calls of these actions have to support smart metering and DSM, and the evaluation method has to consider them by providing extra scores for investments including smart metering, EMS and DSM elements.

- Slovakia
  - Long term goals of energy efficiency, are achieved mainly through national laws. Main laws concerning energy efficiency (Act no. 321/2014 on energy efficiency, 657/2004 on thermal energy and national plan aimed at increasing the number of buildings with nearly zero energy needs, which is amended by Act no. 555/2005 on the Energy Efficiency of Buildings) define very strict rules mainly because of ambitious goals in energy saving set by European Union. Taking.
  - According to our experience from the project TOGETHER, it would be feasible to incorporate topic of energy management and other low investment saving methods directly in energy efficiency laws. This topic is omitted in regulations which results in decision makers trying to reach ambitious energy efficiency goals by setting too strict demands on fx. Building envelope. The situation is unfortunate in a way, that this laws can be amended only in parliament. SIEA will continue to reach representatives from Ministry of Economy. SIEA is a state contributory organization of Ministry of Economy. Change in a law can be achieved only by increasing awareness of public and politicians (which is already in happening) and intensively commenting law and amendment drafts – ideally supported by facts and experiences from pilot projects.

3.3. Recommendations for the selected policies

Once the building's energy consumption baseline is set by tracking and measuring its energy use, the reduction of the consumption can be commenced by revealing leakages, lavish consumption, inefficient operation of different devices. Obviously, the financial possibilities of the maintainer have to be considered when deciding on the necessary actions. As low-cost or no-cost action demand side management can be initiated, which is briefly the improvement of the end-users' energy efficiency. It is a facility management approach that actively involves building users into the process. As first step the buildings owners and managers have to be targeted, as they have the possibility to intervene and to motivate other building users as opinion leaders or by regulations.

During the implementation of TOGETHER, partners have met several obstacles and challenges that they had to overcome in order to introduce a novel automatic energy monitoring system combined with

a. Demand Side Management measures
b. Contractual/financial tools such as Energy Performance Contracts
c. Technical and retrofitting measures indicated in the energy audits reports for improving and updating their respective energy management system

Strong commitment of the building owners and operators have to be achieved to ensure the initiation and sound implementation of Demand Side Management actions and improve the energy performance of the involved buildings. Their possible scepticism has to be beaten and Demand Side Management initiatives have to be channelled into the everyday energy efficiency activities of municipalities, public authorities. These results can be achieved only if they are supported and incited by official policies and strategies of the given countries on different territorial levels. Based on their experiences and the conclusions of the advocacy events, the partners of TOGETHER have identified the recommendations below:

ITALY

1. To promote and sustain the inter municipality cooperation in energy management.
2. Energy transition cannot be left solely to the spirit of innovation of the owners/operators, but it must be accompanied by suitable and consistent normative, administrative and economic tools.
3. To support the upgrading of skills platforms for the staff of the municipalities, the province and the users involved in energy efficiency, proposing and organising opportunities for discussion, debate and learning opportunities.
4. the role of the Environmental/Energy Manager of all public buildings should be regulated and made mandatory by the legislature, with the aim of carrying out, in a full and recognised way, a trait d'union towards the various stakeholders of the building: owners, managers and end users

5. to establish an Energy Manager in public buildings regardless of the size of the building. The energy manager can work for more buildings and support the buildings managers (e.g. school managers) to identify a possible action plan for improving the energy usage and time usage of the spaces of the buildings
6. To establish an Energy Team- as a standard and compulsory organisational measure- responsible for behavioral change in each public building. The energy team should bring together the representatives of the different user groups and should be responsible for analysing and improving the energy situation of the building
7. To plan actions and events that are cyclically repeated to engage new users
8. Ad hoc financing for the installation of tools similar to those installed thanks to the TOGETHER project

CZECH REPUBLIC

9. Implementation of DSM practices in public buildings in general (responsible EE behaviour)
10. Proper monitoring of energy consumptions in buildings and its evaluation
11. Introduction of Energy management systems to all representatives of buildings
12. Raising EE awareness across organizations and buildings

SLOVENIA

13. An efficient use of energy should be mainstreamed into all policies
14. Energy efficiency criteria should be included in all spheres
15. Energy efficiency should be taught in schools, so that children can grow to be responsible citizens
16. Creating more competitive energy market
17. Supporting the implementation of EnMS in public buildings
18. Supporting establishment of ESCO companies for concluding EPIC
19. Strategies on energy efficiency should promote DSM tools in public buildings, thus creating a good example
20. Supporting the reinvestment of the money, saved by the behavioural measures, on national level by changing/adjusting the legislation
21. Public procurements should support energy efficient outcomes
22. Test the innovative approaches in practice, and integrate them into local policies and procedures

CROATIA

23. Roll-out of smart meters and integration with existing Energy Management Information System.

24. Continuous monitoring of energy consumption in buildings using existing Energy Information System and its upgrade in the way to allow different visual data representation. The EIS should be equipped with alarms notification upon excess consumption, with the possibility of setting goals and relevant KPIs, and to be able to get relevant comparisons taking into consideration the impact of external temperature variation.
25. Introduction of Engaging People Accelerator workshop programmes aimed at preparing and implementing an effective energy awareness campaign in the community.
26. Implementation of 50/50 methodology3 for reducing the use of energy and reducing CO2 emissions at schools
27. Presentation of living lab methodologies4 as a tool for involving stakeholders in design and implementation of sustainable energy solutions.
28. Procurement of equipment that takes in consideration the full Life Cycle Costs assessment (LCC) of a contract and not just the purchase price.

POLAND

29. Provide small grants for the implementation of the DSM supported by relevant training.
30. Provide informative campaigns on the importance of the DSM – as low cost alternative to the thermal refurbishment of buildings.
31. Require all energy efficiency investments in building co-financed from the operational programme to include DSM component –prerequisite for the selection process.
32. DSM actions should be mandatory in SECAPs.

HUNGARY

HEGYVIDÉK

33. The National Energy Strategy and the National Building Energy Strategy should support DSM initiatives
34. Law LVII. on Energy Efficiency (2015) and Governmental decree 122/2015 (v.26.) on the implementation of the energy efficiency law should specify support DSM activities. It should also specify the tasks and methods of the energy advisors' network and auditors on how they should implement behavioural change in public buildings.
35. The permission procedure for the installation of smart meters should be simplified. Energy service providers should become a cooperative partner in the procedure which is not the case at the moment.

PAKS

36. The Territorial and Settlement Development Operational Programme should support DSM initiatives by recognising it as an eligible activity of the Operational Programme's calls, and providing extra scores at evaluation. It can be channelled into awareness raising activities.
37. Environmental and Energy Efficiency Operational Programme should support DSM initiatives by recognising it as an eligible activity of the Operational Programme's calls, and providing extra scores at evaluation. It can be channelled into awareness raising activities.
38. The Territorial and Settlement Development Operational Programme should support smart metering and energy management system development activities by recognising it as an eligible activity of the Operational Programme's calls, and providing extra scores at evaluation.
39. Environmental and Energy Efficiency Operational Programme should support smart metering and energy management system development activities by recognising it as an eligible activity of the Operational Programme's calls, and providing extra scores at evaluation.
40. The National Energy Strategy and the National Building Energy Strategy should support DSM, smart metering and energy management system development initiatives
41. The National Awareness Raising Strategy on Energy Efficiency has to motivate DSM at public buildings and contain some examples for their implementation.
42. Territorial and Settlement Development Operational Programme and Environmental and Energy Efficiency Operational Programme should support the employment of energy managers at municipalities and other public institutions
43. A detailed strategy for smart meter rollout should be elaborated on national level.
44. Act LXXXVI of 2007 on Electric Energy and Act XL of 2008 on Natural Gas Supply should ease the data management of smart meters' consumption data

SLOVAKIA

45. Topics of energy management and low cost energy saving measures should be addressed in energy efficiency laws and policies.
46. Government should have interest in increasing awareness of public and politicians in topics of energy management (DSM) and other low cost energy saving measures
47. Energy assessment and certification of buildings should consider the level of energy management and quality of BMS (Building management system)

The Set of policy recommendations (D.T4.2.2) link these recommendations to the selected policies and ensures that the findings of the project will reach the necessary decision making bodies.

3.4. The TOGETHER Manifesto: Measurement, behavioural change and energy reduction for the Integrated Energy Efficiency Strategy (IEES)

The set of recommendation have been integrated and merged in a single document that is submitted to the approval of the project beneficiaries, their associated partners and promoted towards external entities.

In its last annual report, the International Energy Authority (IEA) stated that 32% of the energy use worldwide is governed by efficiency rules or standards. And yet investments are growing - by 9% in 2016 until reaching 231 billion dollars - technologies evolve rapidly, facilitating efficiency measures and making them more convenient; attention to the problem by both the public and private sectors cannot be described as insignificant, the standards are being aligned between European and non-European countries and the availability of funding has remained considerable throughout the crisis.

So what is missing to achieve a true and final qualitative leap?

Promoting is not enough, capitalisation, i.e. change in people's behaviour have to be ensured. It has been known for many decades how important (not to say crucial) the behavioural dimension is in these as in other transformation processes, which involve people in the dual role of **beneficiaries and agents of change.** The use of seatbelts in cars, for example, as well as the abolition of smoking in public places; no state law would ever have been able to achieve such extensive results in such a short period of time if the conviction of the usefulness of these measures had not taken root at the cultural level in the majority of the population.

For years the Province of Treviso has taken a leading role in promoting - through various project initiatives, funded in part with their own resources and in part with European and national funds - more widespread awareness in the territory of the importance of behavioural change to achieve even very ambitious energy efficiency goals.

An isolated approach to energy improvement, focused for example only on purely technological issues, can give results, but conventional research on the topic highlights the fact that **the link between measures and behaviour is fundamental, demonstrating that merely suggesting technical interventions has a less impact and is more expensive to implement if carried out in isolation**, without introducing measures aimed at encouraging behavioural change.

The technical glossary pertinent to the issue of energy talks about the so-called "Demand Side Management"; it's about tools and procedures for creating new incentives - not necessarily financial - and new regulations - not solely governmental - that steer the changes in behaviour towards individual and collective energy consumption models.

Over time the PPS's methods of intervention for managing their public assets have acquired a more and more innovative and inevitably complex approach, determining the transition from an isolated energy Management System to an integrated one.

Demand Side Management and in particular social investment have found wide appreciation and expression in the integrated system.

Indeed, the European Energy Efficiency Directive indirectly recognizes behavioural measures as possible tools to adopt.

Specifically Article 5 "Exemplary role of public bodies' buildings" establishes that member states may adopt alternative measures to reach the obligation that, as of 1st January 2014, 3% of the total useful covered area of heated and/or cooled buildings, owned by their central government and occupied by the same, be renovated every year to meet the minimum energy performance requirements established in application of Article 4 of Directive 2010/31/EU.

Among the various alternative measures, communicated by many states to reach an equivalent improvement of the energy performance of the central government's building stock, there are also behavioural and educational measures.

These measures need to be supported so they can find adequate structuring and continuity also through regulatory support aimed at providing suitable tools to those who voluntarily conceive, invent and test intervention methods steeped in work and active energy.

Just as the matter of safety finds its expression in the figure of the Occupational Health and Safety Manager, similarly, the figure of *Environmental/Energy Manager* of all public buildings should be regulated and made mandatory by the legislature, with the aim of carrying out, in a full and recognised way, a *trait d'union* towards the various stakeholders of the building: OWNERS, MANAGERS AND END USERS.

This *Manager* should deal across the board with both environmental/energy issues, approaching them with technical expertise, and communication themes for the correct involvement of the players who inhabit the buildings to varying degrees.

In view of the above

The (*name of the interested body*) intends to:

- ✓ SUPPORT the concept of **"energy efficiency as the first element"** to use as a rule on public spending and emissions of CO2 into the atmosphere and not as an exception in the programming and management of consumption reduction interventions;

- ✓ REPRESENT **a national and international reference pole** for attention to the efficiency of the *Res Publica*, including the buildings that accommodate people, objects and materials daily in their different intended uses;

- ✓ CONTINUE **to support** internally and externally the affirmation of an **ever stronger concept of integrated energy efficiency**, promoting actions focused on behaviour, as an incentive to be set in motion in all energy efficiency interventions, concerning both old and energy consuming buildings and new or renovated buildings.

- ✓ DEVELOP the **upgrading of skills platform** for the staff of the municipalities, province and bodies involved in energy efficiency, proposing and organising opportunities for discussion, debate and learning;

- ✓ INCENTIVISE the territorial capacity to orient themselves more quickly in the selection of tools and opportunities for energy efficiency - technological, contractual, managerial, financial and behavioural - working towards **cognitive convergence** and anticipating the conditions to achieve concrete and lasting goals of energy consumption reduction in public buildings;

- ✓ PROMOTE development over the provincial, regional, national and international territory, giving **appropriate emphasis** to behavioural measures in the planning of energy efficiency interventions;

- ✓ UPHOLD at the legislature the belief that the innovation of **Energy Management Systems** cannot be left solely to the spirit of innovation of the owners, but it must be accompanied by suitable and consistent normative, administrative and economic tools;

- ✓ PROMOTE the set-up of “One- stop- shops” (OSS) able to inform and advice the small and medium sized municipalities about the latest energy sector news and regulations and to support them in selecting the most adequate technical, financial and Demand Side Management Solution.