TRANSNATIONAL ENERGY BEST PRACTICES CATALOGUE

Deliverable.T1.1.4/Output.T1.1

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WHAT IS IN THIS DOCUMENT

This document is the first output of the Interreg CE 496 CitiEnGov project and contains an elaboration of best practices in regional energy management in the Central Europe Region, collected during the implementation of the project. It also provides an elaboration of best practices, synergies, strengths and weakness collected from Energy Units who participated in the project.

The Catalogue addresses people and entities dealing with energy management in the Central Europe area. Its target groups are experts in energy planning and technicians who work at energy agencies, energy units and other institutions dealing with energy on local or regional level in Central European area.

This document can be used for the identification of possible actions regarding energy management and provides the evaluation of a broad scope of practices that have already been implemented as well as contact data to entities that have implemented them, enabling the direct know-how transfer between Central European regions.

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1. INTRODUCTION

The **Interreg CE 496 CitiEnGov** is a three-year project funded by the European Regional Development Fund, with 10 participating public and private institutions from 7 countries from the Central Europe area: Italy, Poland, Austria, Croatia, Hungary, Slovenia and Germany. The project aims at improving the capacity of Central Europe public administration bodies to implement new energy planning strategies through the setting up of new Energy Units or the enhancement of those already existing. Furthermore, CitiEnGov promotes an integrated approach to the implementation of intersectoral energy plans, new SECAP elaboration, SEAP monitoring and implementation, energy-related data management and new energy data integration, incentives and pilot actions to improve the adoption of energy efficiency solutions at local and regional level.

As the following document is based upon the experiences on actual energy units it provides a selection of practices and initiatives based on real-life experience. This document's main aim is to enable further dissemination of those experiences and solutions. Thus the readers are encouraged to contact the specific project partners of the CitiEnGov project for first-hand experience. The following list includes all project partners and also specific contact data:

Partner Name	Abbreviation	Type of institution	Country	Contact person
SIPRO Development Agency - Ferrara	SIPRO	Public/private agency	ITALY (IT)	Chiara Franceschini, Project Manager: chiara.franceschini@siproferrara.com
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Energy and Innovation Center of Weiz Ltd.	Weiz	Innovation Center	AUSTRIA (AT)	Bernadette Karner (Pichler): bernadette.karner@w-e-i-z.com Dijana Loder: dijana.loder@w-e-i-z.com
City of Split	Split	City	Croatia (HR)	Hrvoje Matas: hrvoje.matas@split.hr
Municipality of Grodzisk Mazowiecki	Grodzisk Mazowiecki	Municipality	POLAND (PL)	Marian Czyżewski, Energy Manager: marian.czyzewski@grodzisk.pl
Goriska Local Energy Agency	GOLEA	Local Energy Agency	SLOVENIA (SL)	Vanja Cencič, Energy Techn. Expert – Project Manager: vanja.cencic@golea.si
Hajdu-Bihar County Government	HBMO	County Government	HUNGARY (HU)	Zsuzsa Mihalik: zsuzsa.mihalik@hbmo.hu
Local Energy Agency of Gorenjska	LEAG	Local Energy Agency	SLOVENIA (SL)	Staš Kos: stas.kos@leag.si
Dedagroup	Dedagroup	Private Company	ITALY (IT)	Piergiorgio Cipriano: Piergiorgio.Cipriano@dedagroup.it
City of Ludwigsburg	Ludwigsburg	City	GERMANY (DE)	Isabel Staiger: I.Staiger@ludwigsburg.de

2. OVERVIEW OF ENERGY ISSUES IN CITIENGOV REGIONS

2.1. Introduction

During the implementation of the CitiEnGov project the project partners were asked to carry out Strength-Weakness-Opportunity-Threat (SWOT) analysis of their energy management units in relation to energy planning. Through these analyses we were able to get an overview on activities of project partners in terms of energy issues.

The SWOT analyses were done on a regional or local level and present the current state of energy management in the analysed regions/cities. They serve as a means of comparison between regions or local areas where project partners are located and can be useful to identify further opportunities or identify how to convert weaknesses into opportunities. As the analysis was done by all the project partners, it is also useful for exchanging experience, especially when addressing weaknesses. For example, one partner may have already tried to convert similar weakness to opportunities and could therefore exchange experience and potential outcome.

The results of this activity should be used by other public institutions from the Central Europe region for finding solutions for their energy-related issues.

2.2. Methodology

Each of the partners was provided with a standardized template. After collecting inputs from all partners, the results were analysed and evaluated, and the most relevant results were chosen. For the findings, see the following conclusions.

2.3. Conclusions on energy activities

For purposes of organizing information and a better comparison between SWOT analyses made by partners, strengths, weaknesses, opportunities and threats were divided into 4 categories: energy policy, public awareness, infrastructure, management and energy data. Conclusions are also divided in this manner. The topics included in each category are summarized in the brackets.

2.3.1. Energy Policy

(strategies, planning, incentives, interventions, funding)

- Diversity between partners can be seen in the field of **SECAP** elaboration. On **regional level** Hajdu-Bihar County (HU) reports weakness that only one municipality has prepared SEAP, GOLEA and LEAG (SL) report that some municipalities have elaborated a SEAP document, where at the same time LEAG stresses the strength of the elaboration of a SEAP document for a whole region. SIPRO (IT) reports that 22 municipalities have outlined the SEAP (8 of them working on the transition to SECAP) and also 300 municipalities have joined Covenant of Mayors (CoM). They also have an action plan on green public procurement and a regional energy plan. It can be pointed out that regarding the Covenant of Mayors network, Italy has more than 1/3 of all signatories.
- **On local level**, Bydgoszcz (PL) has accepted (2012) and updated (2016) a SEAP, Grodzisk Mazowiecki (PL) adopted a Low-Emission Economy Programme, while Ludwigsburg (DE) started

implementing the Urban Development Strategy document via numerous projects. Weiz (AT) also reports strength in versatile pilot and demonstration projects for energy efficiency in the city.

- All the partners pointed out the problem regarding the **changes in legislation** or threats that rise from this issue – insufficient political interest in energy issues (Grodzisk Mazowiecki, PL), City of Weiz (AT) even stated that strategic plans and models are politically not "sexy". LEAG (SL) reports that the lack of political commitment is due to changes of members in councils and municipalities, while Weiz (AT) reports a strength in this field, as the Chairman of Energy region changes every two years. In Bydgoszcz (PL), the city authority and the new Mayor are seen as a strength and opportunity as the Mayor and the administration are oriented to sustainable development.
- Partners report that there is no uniform planning and common objectives as well as no **cooperation between public institutions and businesses** in the cities (Weiz, AT, Split, HR). This can result in non-compliance with adopted strategies and incomplete and insufficient implementation of activities (Grodzisk Mazowiecki, PL, GOLEA, LEAG, SL)
- Most partners indicated **low financial resources** as a weakness. Granting in energy field is being reduced (GOLEA, SL) while, at the same time, the development of renewables is very expensive and has long period of return of investment (Bydgoszcz, PL HBMO, HU). In some regions funding is changing on national level for private households and public initiatives (Ludwigsburg, DE), in other it is disproportionate to the needs (Bydgoszcz, PL) and it is already insufficient in some cities like Split (HR).

  City of Weiz (AT) reports that they have also exhausted their own financial support on the environmental projects.
- Partners also report **high investment cost of RES** as a weakness, which in some cases makes them less interesting for private companies. Split (HR) reports that despite high popularity of photovoltaic panels among people (strength) and very high potential for production of energy (opportunity) there is a lack of government/local incentives. This holds also true for Weiz (AT), where industrial and service companies push forward the cost-effective energy sources, or in Poland where the present government promotes coal as a source of energy.

2.3.2. PUBLIC AWARENESS

(training, public issues, communications and promotion of EE and RES)

- Bygodoszcz (PL) reported problems with public awareness of EE and air pollution. Air pollution is also a threat in Grodzisk Mazowiecki (PL), and in contrast to Bydgoszcz (PL), media in Grodzisk has promoted air pollution (smog) as one of the most urgent public issues. Meanwhile, Weiz (AT) and Ludwigsburg (DE) put a lot of strength in public awareness and providing information to citizens.
- The region of SIPRO (IT), the City of Weiz (AT) and Ludwigsburg (DE) have more strengths than other regions in work on public awareness of people on issues of energy Part of this is the active participation in energy and environmental organizations. Municipalities in the region of SIPRO (IT) developed a function (responsible person) that is in charge of involvement of businesses, organizations and households.

  Huge work can be seen in Ludwigsburg: interdepartmental unit for urban development, information centers, the city participates in the European Energy Award initiative and is a member of the climate alliance and Covenant of Mayors.

- Weiz (AT) and Ludwigsburg (DE) are ahead of other regions when it comes to public awareness. They achieve this through active participation of their energy and environmental organizations in all kinds of projects, even awards. They have trainings and demonstrations projects for citizens, they intensively cooperate with local leading companies and in Weiz (AT) even the political position of the Chairman of the Energy Region (so the threat of lack of political interest on energy issues is eliminated).
- Weiz (AT) sees a threat in persistent bad solutions for renewable energy systems and energy efficiency (either technical, organizational, financial) that lead to environmental and energy alternatives becoming less attractive, despite the high awareness in the region. The market recognizes a bad solution (even if there are only a few) and reverts back to energy-intensive, but well-functioning solutions.

2.3.3. INFRASTRUCTURE

(mobility, buildings, energy supply and energy production)

- In the regions of GOLEA, LEAG in Slovenia and HBMO in Hungary, there is still high number of (old) buildings that are **not sufficiently insulated** and some of them may also depend on heating by fossil fuels. Whereas Weiz (AT) has 100% of public buildings with energy certificates and in Ludwigsburg (DE) the energy management of public buildings is a priority (a concept was developed to define a priority list on refurbishment fields). These two cities are ahead of the partners as they point out that they have already done their part in renovating public buildings and they are trying to increase the rate of renovation in private and business sector. However, by now the response is low.
- All partners report at least one strength or opportunity when it comes to mobility or traffic issues. At the same times region of SIPRO (IT) reports inefficient local public transport in terms of energy consumption, and the City of Weiz (AT) reports problems regarding mobility, because the “smart mobility” is not promoted and attractive, rail transport has inappropriate travel times and e-mobility (bikes, cars) are still expensive.
- Regions in Poland, Slovenia, HBMO (HU) and the region of SIPRO (IT), have high dependency on **fossil fuels** (weakness), while at the same time Emilia-Romagna has high availability of **biomass** (opportunity). Some regions (GOLEA, LEAG, SL) report good supply of natural gas and presence of alternative energy sources, especially in Slovenia where there is high potential in biomass. The City of Weiz (AT) already has more than 60% of all buildings connected to the local biomass district heating system.

2.3.4. MANAGEMENT and ENERGY DATA

(partnerships, procurements, international projects, energy data and management systems, monitoring and audits, technological solutions)

- Apart from establishing units for energy there is an opportunity in **partnerships between regions**. Grodzisk Mazowiecki (PL) sees this in the partner Municipality of Weiz (AT) as they have easy access to state-of-the-art knowledge. Weiz is also consulting other cities and regions and they report a threat that low cooperation will lead to loss of influence on federal level.

- Weiz (AT), Ludwigsburg (DE), Split (HR) and SIPRO (IT) all see a weakness in the lack of **interventions by industries, businesses and private owners** of buildings in energy efficiency and energy policy coordination. Although Grodzisk Mazowiecki (PL) and Ludwigsburg (DE) have reported to have some private companies interested in support on energy efficiency, the majority of actions are done by public institutions. One of the threats that Ludwigsburg (DE) reports is that renovation of buildings is missing the profitability in energy measures. The same holds true for renewables: high costs, combined with bad solutions leads to RES being non-attractive (Weiz, AT).

  There is a similar threat, which is the existence of **industries in the area** with high energy consumption (Golea, Leag –SL, Weiz, AT). As the industry is interested in **cost-effective energy sources**, there is the threat that low energy prices decrease the willingness to invest in RES, EE of buildings.

- Gathering **energy data** is a big issue in almost all partner territories. SIPRO (IT) reports a small availability of data and there has been some examples of gathering energy data in other regions (public lightning in Grodzisk Mazowiecki, PL, remote systems in Bydgoszcz, PL, HBMO, HU, GOLEA, SL, Split, HR - energy data from public institutions from ISGE and SMIV national systems), whilst in other remaining regions there was no energy data (LEAG, SL, reports no database for energy data in region). Weiz (AT) however, reported this as a strength as an energy monitoring system (cadaster) and GIS evaluations of heat systems have already been implemented there. Regarding the gathering of energy data SIPRO (IT) reports that there are weaknesses in lack of indicators for energy data on municipal level, but there are indicators on regional level. On this issue Dedagroup (IT) reports that making a relevant data available needs national support

2.3.5. OVERALL

(common points from all SWOT analyses)

- All partners see the establishment of Energy Unit or an existence of local/regional energy agency (Grodzisk, LEAG, HBMO, Ludwigsburg, Bydgoszcz, GOLEA) as a strength and opportunity. Besides the establishment or enhancement of Energy Unit, partners report a strength in existence of academic centers, such as Universities, in vicinity.
- There is an overall strength in elaborating planning documents such as SEAP and implementing pilot projects such as subsidizing sustainable mobility projects.
- Common weaknesses are definitely changes in legislation and lack of political commitment as well as availability of energy data and standardization.
- GOLEA, LEAG, SIPRO, Weiz and partly also Bygodoszcz and HBMO report a lot of opportunities in the field of integration of energy local actors, implementation of energy management in public buildings and buildings of large private companies. Beside these opportunities Weiz and Ludwigsburg also focus opportunities to expansion of public awareness, while Grodzisk and partly Bygodoszcz report opportunities regarding infrastructure and international projects/connections.

3. REGIONAL ENERGY BEST PRACTICES IN CENTRAL EUROPE

3.1. Introduction

This section includes best practices in energy planning and management in Central European regions and is based upon the Deliverable DT1.1.1 "Comprehensive template for definition of the region's state of art in relation to energy planning and management". Best practices were collected from project partners, who identified them basing upon the experience they had from their region. All the collected best practices were then analysed and further selection was carried out by the Energy Agency Golea (SL), basing on the methodology described below.

3.2. Methodology

The best practices were identified by means of a template table. Each of the partners was asked to indicate at least 8 practices from their region, including at least 1 bad practice.

In the next step, the Energy Agency Golea (SL), with the help from Dedagroup (IT) evaluated the results and made a selection of 3 best practices per partner. The selection of best practices was based on the criterium to have as much diversity as possible between practices chosen by each project partner. The selection also aimed at extracting the most representative best practices and having a balance between sectors and different areas of intervention. Therefore all the sectors (buildings, transport and public lighting) are represented and the practices have a wide variety: from the ones that have educational nature to IT solutions and financial incentives on national level. It also has to be noted that these best practices present a chance to share knowledge and experience among partners and different regions, so they could be also easily presented to other Central European regions or European networks (e.g. Covenant of Mayors, Polish Network Energie Cites PNEC, National Association of Italian Municipalities ANCI).

3.3. Statistics

The majority of the practices, more than two thirds, were implemented on municipal level, followed by regional and national level. Some of them were also transnational, like the European Cycling Challenge, which started in Bologna and has now become international. Among all selected best practices there is also one example of private company being responsible for implementation of the practice. That is an example from Hajdu Bihar County (HU) where private company, in strong cooperation with University of Debrecen, runs Renewable Energy Park that serves as a scientific, education and demonstration park to promote the widespread use of renewable energy sources.

Two of the most represented sectors of best practices reported, are the building sector and transport sector. The public lighting sector is considerably less represented. A small amount of practices involve at least two sectors, as for example the national financial incentives programme Eco Fund in Slovenia, which gives soft loans in all three sectors. As mentioned, the selection aimed at having a balance between sectors and the reason that in the public lighting sector less practices were identified is that project partners reported the least practices in this sector.

Funding of the selected practices was mostly through EU programs and in combination of EU/national or EU/regional funding (18 altogether). All 3 selected best practices in Weiz (AT) and also one in Ludwigsburg (DE) were financed by all three funding mechanisms: EU funding, national (AT in case of Weiz and DE in

case of Ludwigsburg) and regional level. There were also two practices, which were self-financed by the city: the installation of two solar-benches at the Marjan hill area in the city of Split and intelligent street lighting in Ludwigsburg).

The selected best practices can be found in the attachment (attachment – selected best practices D.T1.1.1)

3.4. Conclusions on regional energy best practices

The best practices in the Catalogue serve as a show-case of good examples and possibilities that can be applied in other regions. They could open solutions (from technological to organizational) to experts in the field of energy efficiency, who should then work as facilitators and communicators between expertize, political and public figures (mayors etc.), regional decision-makers and the general public in their local area or region. These practices constitute a wide range of possibilities that can be taken in other regions of Central Europe.

From the collected best practices and the selection process itself the following conclusions can be derived:

- The **building sector** is the most represented in best practices from project partner regions, while transport and public lighting are lacking behind. This can be attributed to the fact that municipalities and public bodies are more prone to the refurbishment of public buildings because of the "immediate effect" that such measures bring about - citizens are more likely to acknowledge the refurbishment of public building as it is a tangible measure. This sector is also ahead because of many regulative and financial initiatives being on a side of public buildings (example: EU policy "Energy Efficiency Directive, EED, requires an annual renovation rate of 3% of buildings owned and occupied by national central governments). There is also pressure from building users on refurbishment, whereas transport and public lighting in most cases can only be managed by municipalities.
- The sector of **public lighting** had the least reported best practices out of the all collected ones. This seems to indicate that the public lighting sector needs to be better exploited or appointed for testing new innovative solutions.
- There is a lack of good practices concerning the **involvement of stakeholders**, which is a common issue among Central European cities.[1]
- Industry and private businesses are hardly motivated/forced to become more energy efficient due to the lack of tax policies on national level. Therefore the investments in energy efficiency in the private sector are not on an appropriate level.

[1] This issue is addressed by the CitiEnGov project through the outline of methodology, solutions and suggestions as several project deliverables are dedicated to this topic, such as: "Report on involvement of public and private energy actors" (D.T1.2.4), which will, by Agreements, involve exchange of smart and trusted data between public and private actors, "Transnational concept to involve stakeholders and/or public administrators" (D.T2.1.2) which is focused on involvement of public administrations in order to accomplish action plans, "Identification of technicians in charge of the implementation of the energy programmes/plans and working plan with public and private stakeholders" (D.T2.3.1), which identifies additional technical profiles to be involved in cooperation with stakeholders.

4. LOCAL ENERGY BEST PRACTICES IN CENTRAL EUROPE

4.1. Introduction

This section provides information on the best practices in energy management that are actually implemented by the CitiEnGov Project Partners. Thus a first-hand experience on them can be acquired by directly contacting the Partners.

4.2. Methodology

The best practices were collected during study visits organized during the implementation of the CitiEnGov project. The practices were shown to the participants on the spot and also documented with a standardized form.

Information about the study visits:

Period: from 6th July 2016 to 19th October 2017

Number of visits: 5

Places:

- Ferrara, Italy (Emilia-Romagna Region, 133 500 inhabitants)
- Weiz, Austria (Styria Region, 11 500 inhabitants)
- Bydgoszcz, Poland (Kuyavian-Pomeranian Region, 358 500 inhabitants)
- Ludwigsburg, Germany (Baden-Würtemberg Region, 93 000 inhabitants)
- Nova Gorica, Slovenia (Goriška Region, 36 500 inhabitants)

For the full descriptions of the study trips, please find the attached descriptions in the standardized format.

4.3. Conclusions on local best practices

The study visits took place in variety of cities in the Central European Region, from Germany in the West, to Nova Gorica in the East, from Ferrara in the South, to Bydgoszcz in the North. The cities are also ranging in size, from Weiz with only 11 500 inhabitants to Bydgoszcz with almost 360 000. However, the size did not necessarily mirror the cities' experience, with Weiz (the smallest) and Ludwigsburg (middle-sized) showing a high level of long-standing expertise with energy management. Given the wide spectrum of geographical locations, size and experience of the cities, the general trends and repeating patterns that could be determined during the visits to the cities might be considered a good general picture of energy-related issues and problems that can be found in the Central Europe region. Thus the conclusions should prove as useful to other cities from the region.

The main conclusions drawn from the study trips include:

ENERGY POLICY

- Even though considered a pan-European initiative, the SEAPs resp. SECAPs seem to show a kind of "regional popularity". In the Emilia-Romagna region of Italy they proved to be an efficient tool towards creating energy policies, and altogether in Italy these plans are highly popular compared to other regions. However, in other regions they seem rather to be considered as a tool for promoting the picture of cities as energy-interested rather actually creating energy policies. This shows that there is a gap between acceptance of strategic energy plans and their actual implementation.

PUBLIC AWARENESS

- RAISING-AWARENESS: The examples of Weiz, Ludwigsburg and Bydgoszcz clearly show that successful energy management in cities needs to be strongly supported by conscience-building and educational actions and initiatives that would be directed towards citizens, including also children. This might take the form of initiatives directed towards citizens (e.g. a competition for citizens, where they compete by lowering their carbon print, Nachhaltigkeit (Ba)rockt!, Ludwigsburg), but also include the establishment of an educational scheme at crucial energy-related places (guides for schools at the waste thermal treatment plant in Bydgoszcz).
- DEMONSTRATION: As energy is a notion that is not tangible and thus seems quite abstract to many, demonstrative measures should be undertaken to make energy issues visible. This might be conducted by tangible examples that would become symbols of energy policy of the city – such as the Gemini House or e-bikes in Weiz (AT), the RES Center Building in Bydgoszcz (PL), or the Energy Knowledge Center located in a public library in Ludgwigsburg (DE).

INFRASTRUCTURE

- There have been examples of infrastructural and technical surpluses like the Intelligent Transportation System in City of Bydgoszcz (PL), which is able to steer the traffic with vision-based monitoring giving information on stops, parking spaces and navigating vehicles to alternative roads if necessary. Another one is Intercompany Training Center in Nova Gorica (SI), which is a zero energy building with innovative system of construction, heating and cooling. The building has so called active protection with tubes, which keeps the building envelope warmer in the winter and cools it down in the summer. What was found as an innovative approach, was that the building has the tubes not only on ground floors and horizontal structure elements, but also on walls. The study visit in Weiz (AT) provided a visit to W.E.I.Z Office Building which is the first passive house office building in Central Europe. This was a successful demonstration pilot project in public buildings, which already in 1999, showed an innovative focus on energy systems in the building (full description of the example can be found in the attachment of selected best practices).

MANAGEMENT AND ENERGY DATA

- DATA HARMONIZATION: The harmonization of energy-related data constitutes a major challenge in all the regions, regardless of the regions' experience with energy management. An interesting example of a solution was provided by Weiz, where the decision was taken to employ an own data-collector on a door-to-door basis, as it was realized that data was missing and could not be

acquired elsewhere. For the quality of data, it is also recommended to create a long-term data update scheme.

Region Emilia Romagna (IT), where partners SIPRO and Dedagroup are starting to collect energy data of public buildings, passed a regional law in 2015 that declared an institution of the energy observatory. The observatory is directed by ARPAE (Regional Environmental and Energy Agency of Emilia Romagna) and performs activities with purpose to gather energy information, evaluate public utilities, study a legislative and regulatory framework and also publication of data and networking opportunities. The last part in particular is interesting for municipalities, where there was a discussion during the Energy Café in Ferrara (IT) about the possibility to define a web service for interoperability of energy-related data.

- ENERGY UNITS: The instances of Ferrara, Bydgoszcz, Weiz and Ludwigsburg show that as energy is an issue concerning almost all sectors of public authorities' tasks, it is advisable to shape the energy units as intersectoral institutions that remain in steady cooperation with other departments of different types (e.g. building, mobility etc.).
- ROLE OF REGIONAL AGENCIES: The experiences from Italy and Slovenia show that it can be a useful approach to create regional agencies responsible for the transition in energy policies that would encompass several cities/municipalities with its actions. E.g. in the Emilia-Romagna region such an approach brought about a significant transition in energy policies in a number of Municipalities.

5. POTENTIAL SYNERGIES WITH EUROPEAN ENERGY INITIATIVES

5.1. Introduction

During the project an extensive study was performed to identify existing EU projects, platforms and initiatives with a focus on renewable energy sources (RES) and energy efficiency (EE) that could built up synergies specifically with the CitiEnGov project and also generally with energy planning activities of the Central European regions in future.

5.2. Methodology

Several actions were performed to identify the possible initiatives for RES and EE:

1. On-line survey and identification of initiatives: An online survey was sent out to the project partners, asking them to collect information. 95 responses could be collected that were then analysed.
2. Desk study and identification of initiatives: A desk study of Horizon 2020 projects was conducted, resulting in both the identification of relevant projects as well as additional information concerning the leading coordinators of projects by country, the value of the projects, number of one-participant-projects etc., giving a general overview of energy-related H2020 projects.
3. Establishment of connections and synergies with selected initiatives: A number of initiatives identified during the steps 1 and 2 was selected to be contacted by respective CitiEnGov project partners in order to define and create possible synergies.

The comprehensive description of the methodology and results of steps 1 and 2 can also be found in the attachment “D.T1.1.2 Methodology for valorizing existing knowledge”.

The results identified by step 3 can be found in the following section.

5.3. Results

The results are provided in the manner of reported accomplishments from project partners. The list of initiatives and project that were connected are shown below:

Project partner: SIPRO Development Agency-Ferrara, Dedagroup and Municipality of Ferrara (associated partner) (IT)

Project/Initiative: ELISE Action – Joint Research Centre (JRC) of the European Commission, Ispra (Italy)

Website: http://inspire-sandbox.jrc.ec.europa.eu/energy-pilot/use-case-1/webapp/ (Prototype Web App)

About the project:

The ELISE Action is a package of legal/policy, organisational, semantic and technical interoperability solutions to facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations and between them and citizens and businesses, in the domain of location

information and services, supporting Digital Single Market (DMS), Better Regulation (BR) and Public Sector Modernisation (PSM) goals.

Results:

ELISE Action confirmed support to the activities of CitiEnGov, especially related to focus of CitiEnGov on energy data at level of buildings. This is linked to the Energy pilot undertaken by the JRC in the framework of the ELISE action. In this context the Municipality of Ferrara (associated partner, IT) together with the project lead partner SIPRO (IT) and supported by Dedagroup (IT) will collect spatial and energy related data that are of interest for the ELISE Energy pilot, in particular for the Use Case 2 (*Implementation of different buildings' Energy Performance Labelling schemes,* aiming at developing different geo-processing services to automatically calculate the "energy labels" of buildings based on spatial information and basic attributes such as volumes and surfaces. The results of activities will be executed by JRC and shared with CitiEnGov consortium.

Project partner: City of Bydgoszcz (PL)

Project/Initiative: ENERGY@SCHOOL project

Website: http://www.interreg-central.eu/Content.Node/ENERGYATSCHOOL.html

About the project:

The project aims to increase the capacity of the public sector for implementing energy smart schools. The project will achieve this by applying an integrated approach that educates and trains schools staff and pupils to become Senior and Junior Energy Guardians (EGs). The project will provide customized strategies for smart schools, smart phones apps, tested pilot solutions of energy efficiency and application of renewables.

Results: The collaboration between the projects is foreseen in the usage of energy database that will be developed as one of the project outputs of CitiEnGov. The database will provide schools with data on energy consumption of schools, such as electricity, central heating, gas and water. Therefore students will have the opportunity to use these data to monitor the results of the implementation of energy-smart-school management plans (Energy@School) and evaluate the impacts. Also, if there were to be renewable energy systems installed on schools, energy database will gather information about energy production and thus students will be able to compare schools' energy consumption in addiction to energy production.

Project partner: City of Bydgoszcz (PL)

Project/Initiative: Smart Transition of EU cities towards a new concept of smart Life and Economy (mySMARTLife)

Website: http://www.mysmartlife.eu/mysmartlife/

About the project:

Project mySMARTLife is a project funded under the European Union's Horizon 2020 research and innovation programme. Activities will take place in the three lighthouse/advanced cities, where they will implement integrated, smart solutions in 3 areas: energy in buildings, transportation and CT. These cities

are: Nantes, Hamburg and Helsinki. The four follower cities Bydgoszcz, Varna, Rijeka and Palencia will learn from these experiences and develop Replication plan that will enable implementation of selected solutions used by lighthouses, suitable for our local social, economic, political conditions.

Results:

Realization of CitiEnGov project is complementary to the activities that City of Bydgoszcz is performing in mySMARTLife project. One of the results of CitiEnGov project, that is being developed for energy data harmonization is energy database. This database will provide data on energy consumption (electricity, central heating, gas and water) of municipal public buildings (e.g. schools, municipality offices). This might be used for Replication of Advanced Integrated Urban Planning methodology, for example:

- where energy model (demand and supply) will be identified to create a 3D modelling,
- for simulations of energy demand for next 10 – 20 years.

Project partner: City of Split (HR)

Project/Initiative: Dynamic Light Project

Website: http://www.interreg-central.eu/Content.Node/Dynamic-Light.html

About the project:

The Dynamic Light project (Dynamic, Intelligent & Energy Efficient Urban Lighting) was approved at the 1st call of the Interreg Central Europe transnational programme in co-operation with 15 partners from 7 Central European countries. The project develops dynamic light solutions with the aim to combine an improved quality of light with energy savings in public space. Apart from modernizing light bulbs, the Dynamic Light project encourages a strategic approach to reconstruction and promotes a process that enables a city to implement energy-efficient lighting, starting from ideas and analysis, GIS depth data analysis, strategy development to financial model levels, public procurement rules, and implementation and evaluation.

Results:

Project coordinator from City of Split, Hrvoje Matas, presented CitiEnGov at the workshop in the framework of Dynamic Light project. A Pilot Action in City of Split - modernization of Public lighting (Green public lighting system) is very similar to Dynamic light project and during the workshop there were also professional lectures from engineers in area of designing lighting. The entire workshop was well attended by experts as well as by the wider public, and it was concluded from the debate that the reconstruction and renewal of the Public lighting system is one of the burning issues in many units of local administration. It has also been agreed on further continuation of the exchange in order to create additional synergies between the projects.

Project partner: Municipality of Grodzisk Mazowiecki (PL)

Project/Initiative: The Association of Municipalities Polish Network „Energie Cités" (PNEC), City of Bydgoszcz (PL)

Website: http://www.bydgoszcz.pl/

About the project:

The Municipality of Grodzisk Mazowiecki, through the participation in the CitiEnGov project, established close bonds to the Energy Unit of the City of Bydgoszcz (which also is a Project Partner of CitiEnGov, but also a signatory of the Covenant of Mayors). Through this, the links were also established with the Polish Network "Energie Cites" (PNEC).

Results:

The close cooperation with the City of Bydgoszcz resulted in the signature of an agreement on co-operation regarding energy data management, including a joint public procedure for purchasing one energy data management system for the two cities as well as further cooperation in energy issues. This purchase will probably be finalized by the end of 2017 or start of 2018.

Project partner: Goriska local energy agency - GOLEA (SI)

Project/Initiative: SISMA (Supporting Innovative Schemes in the MED Area), ENERJ (Joint Actions for Energy Efficiency)

Website: http://sisma.interreg-med.eu/, http://enerj.interreg-med.eu/

About the project:

SISMA and ENERJ projects are both Interreg Mediterranean projects related to energy.

SISMA aims at reducing the payback period for the deep renovation of public buildins in the Mediterranean area, with a focus on gyms, schools, municipal buildings and retirement homes.

ENERJ aims at enhancing and improving the coordination of SEAP's and other relevant energy Efficiency Plans, in order to reach Energy Saving and the national targets on public buildings' energy efficiency. The project will develop and test a technologically oriented methodology that focuses on increasing cooperation among public authorities through Joint Actions.

Results:

GOLEA is actively promoting CitiEnGov project activities within these two projects which are by content related to CitiEnGov. They are involved in these projects on the subjects of energy efficiency of public buildings and new innovative financial mechanisms.

Project partner: Goriska local energy agency - GOLEA (SI), Local Energy Agency of Gorenjska - LEAG (SI)

Project/Initiative: NEW FINANCE, BUILD2LC, PEACE Alps

Website: http://new-finance.interreg-med.eu/, http://www.interregeurope.eu/build2lc/, http://www.alpine-space.eu/projects/peace_alps/en/home

About the project:

Project NEW FINANCE aims to increase the trust between owners of public buildings and private investors. Goal is to improve their collaboration through innovative financial models in financing energy efficiency measures in renovation.

Project BUILD2LC is part of the Interreg Europe programme and forms alliance between European regions to boost new markets and take advantage of regional opportunities for specialisation in sustainable construction. General goal of the BUILD 2 lC project is to encourage energy renovtion of buildings, decrease the energy consumption and improve related policies on the market.

PEACE Alps is an Interreg Alpine Space project that tackles the problems related to the implementation of Sustainable Energy Action Plans (SEAPs) or any other Energy concepts already endorsed by Local Authorities in Alpine Space Area. The project support Local Authorities in developing concrete actions with an inter-municipal approach.

Results:

Connection with afformentioned projects was made in the conference Energy Municipality & Energy management that took place in October 2017 in Ljubljana. This conference was the main event concerning energy management in regions and cities and was therefore also the most visited by public officials and decision-makers. GOLEA (SI) presented the project CitiEnGov at the conference and connected with three projects that are similar in content to CitiEnGov: NEW FINANCE, BUILD2LC, PEACE Alps.

Partner in the project BUILD2LC is also LEAG (SI). LEAG has made connections with BUILD 2LC mainly in terms of promotional activities of CitiEnGov.

Project partner: Local Energy Agency of Gorenjska - LEAG (SI)

Project/Initiative: MODER (Mobilization of innovative design tools for refurbishing of buildings at district level)

Website: http://www.vtt.fi/sites/moder

About the project:

The project will develop, demonstrate and mobilize design tools, processes and business models for efficient refurbishment on building and district level. The main objective of MODER is to increase business of engineering companies, energy managers and consultants in supporting municipalities and building owners in European and global markets for the refurbishment of buildings at district level.

Results:

With connection to the CitiEnGov project, LEAG has been involved in MODER projects on the level of collecting data and carrying out different types of analysis. These analyses serve for purposes of creating Local Energy Plans and SEAP documents, which are a part of CitiEnGov project.

Project partner: Dedagroup (IT), City of Ludwigsburg (DE)

Project/Initiative: CityGML Energy ADE (working group)

Website: http://en.wiki.energy.sig3d.org/index.php/Main_Page

About the project:

CityGML is an open standardised data model and exchange format to store digital 3D models of cities and landscapes. It is implemented as an application schema for GML3, and it is an official international

standard of the OGC. The CityGML Energy ADE aims at extending the CityGML 2.0 standard with energy-related entities and attributes necessary to perform energy analyses at urban scale, such as energy demand diagnostics, solar potential study, simulation of low-carbon energy strategies etc. Its structure is conceived to be modular, so as to be potentially used and extended also for other applications (e.g. module Occupancy for socio-economics, module Construction and Materials for acoustics or statics, etc).

Results:

During the CitiEnGov meeting in Ludwigsburg, the CitiEnGov partners met with Mr. Volker Coors from University of Stuttgart, who is directly involved in the Energy ADE development. He was also able to join the working group on WP T1 to share his insights and enrich pilots' discussion on WP1 activities. CitiEnGov is liaised with working group on Energy ADE (Application Domain Extension) for CityGML data exchange model via partner Dedagroup who is part of the working group.

This liaison is useful for CitiEnGov's activities related to data infrastructures for energy data as the structure and approach of the data structure defined in the Energy ADE is a useful best practice for pilots. Thanks to the liaison, Prof. Volker Coors of the University of Stuttgart was able to join CitiEnGov meeting in Ludwigsburg in June 2017.

Associate partner: The Association of Municipalities Polish Network „Energie Cités" (PNEC)

Project/Initiative: Covenant of Mayors (CoM), European network "Energy Cities"

Website: http://www.covenantofmayors.eu/index_en.html, http://www.energy-cities.eu/

About the project:

Covenant of Mayors for Climate & Energy brings together thousands of local and regional authorities voluntarily committed to implementing EU climate and energy objectives on their territory. It was heralded as the "world's biggest urban climate and energy initiative" by Commissioner Miguel Arias Cañete. Energy Cities is the European Association of local authorities in energy transition.

Results:

The Association of Municipalities Polish Network „Energie Cités" (PNEC) is a non-governmental organisation that supports energy planning and implementation at local level. PNEC is also a corporate member of the European network "Energy Cities" and since April 2009 as Covenant of Mayors Supporter is actively engaged in boosting the CoM implementation in Poland. It promotes the initiative among Polish municipalities, supports Polish Covenant signatories in fulfilling their commitments and acts as an intermediary between Polish municipalities and the Covenant of Mayors Office. PNEC is also an associate partner in CitiEnGov project and through their active involvement in the working groups of CitiEnGov and membership in CoM they are a valuable source of information and contacts.

5.4. Conclusions on synergies with European energy initiatives

It has been approximately one year since the recommendation were made in the Deliverable D.T1.1.2 about liaising CitiEnGov with other European projects/initiatives and disseminating its activities at national/EU conferences, platforms and other channels. Dissemination of the project and connections are mainly made at the conferences or similar events and synergies are mostly formed on national level or among partners in other European projects that CitiEnGov project partners are already involved in.

- Involvement in other European projects gives a strong cooperation between parties involved and can in some cases lead to concrete interwoven activities, such as collection and exchange of data between project partners Dedagroup (IT), SIPRO (IT), associated partner Municipality of Ferrara (IT) and ELISE initiative undertaken by Joint Research Center (JRC) of the European Commission. Similar cooperation is done by the City of Bydgoszcz, as they might use one of the CitiEnGov project results (energy database on energy consumption) in two of their other projects, one of which is also an Interreg project ENERGY@SCHOOL, that aims to increase the capacity of the public sector for implementing energy smart schools.
- Exploit the potential of contacts and connections that are already in existence by project partners or use the potential of partners in your own country. In our case this is seen in Poland where Grodzisk Mazowiecki made close bonds with Energy Unit of the city of Bydgoszcz.
- Use the contacts and willingness of associated partners, such as Polish Network "Energie Cites" (PNEC) which is helping Polish municipalities to sign Covenant of Mayors and is now an active part of CitiEnGov working groups. Associate partners are also proven to be a good instrument for dissemination of the project.
- Connections should strive for long-term collaborations and development of both parts. Especially in the view of next programme period regarding energy issues in Europe, where this kind of liaisons can be valuable.

6. RECOMMENDATIONS

- Constant **changes in legislation** and lack of political commitment to energy related topics is one of the most burning issues in all areas. It is recommended to work on involvement of municipal politics and politicians and try to persuade them into considering energy-related measures, for example by exploiting the chances of joining the Covenant of Mayors. The role of Municipalities must be made clear in this process. Thus CitiEnGov proposes the **establishment of** "in-house" **energy units** in municipalities or the enhancement of energy units already existing in the area, such as local or regional energy agencies/centres. Such units are useful for smaller countries that have small municipalities and are not able to afford their own departments. Therefore energy units can connect and link more municipalities, such as is the case in Slovenia, where the agencies GOLEA and LEAG work for more municipalities in the region as their energy managers. From the mentioned links between energy units and municipalities, there is the possibility of partnerships between municipalities on regional or national level, which can further work on the involvement of politics. The influence that these ventures can have, is higher if cities/regions cooperate with each other and act together.
- Energy policy on national level is crucial for the promotion of energy efficiency and renewables, which is why regional/local energy agencies (energy units in case of CitiEnGov) should especially work on engaging decision-makers into energy issues, especially those on national policy level. Concerning this involvement, it is important and suggested to cooperate with other cities/regions as it increases influence on state level.

TIP: Cooperate with (neighbouring) cities or regions to gain influence on state level!

- The common issue found among cities in Central Europe is the insufficient **involvement of stakeholders**. It is possible to appeal to stakeholders, especially decision-makers, by inviting them to events related to energy (such as e.g. the conference on energy management and energy municipalities in Ljubljana, SL, or Energy Day organized in Bydgoszcz and Grodzisk Mazowiecki, PL). Similarly stakeholders could be persuaded by trying to show them good practices by means of study visits (a good practice physically seen on site, can have a bigger "effect" when it comes to the acknowledgment of energy measures). It is also important to constantly update stakeholders on future events or possible benefits of energy measures.

TIP: Involve stakeholder, decision-makers through events and study visits of good practices!

- Apart from politicians an important stakeholder group are also **private businesses**, industries in the region (1) and the general public (2). Industry and private households have higher consumption of energy than municipalities which makes them more important regarding energy consumption. Therefore the municipalities should serve as a mechanism (show-case of good practices) in order to reveal the real benefits that come from measures in energy efficiency (to show the private sector that it really "works"). It is recommended to try to engage the private sector, e.g. by financial incentives, and try to intensify the cooperation between municipalities/regions and local leading companies for energy supply, efficiency, data, public awareness etc.

(1) Examples of cooperation can be seen in Grodzisk Mazowiecki (PL), where a private company from the energy sector actively supports the improvement of energy efficiency, in Ludwigsburg (DE), where local utility company supports the development of sustainable energy supply and contracting solutions on renewables, in Weiz(AT) where the municipality works with the district company to raise awareness of citizens to connect to the network of biomass heating, in Ferrara (IT), where the Municipality of Ferrara, with the support of SIPRO and Dedagroup, collects spatial and energy related data, also in cooperation with Elise Action project.

(2) General public should be addressed by raising awareness on energy measures and the promotion of energy issues. CitiEnGov partners showed work on public awareness: FunERGY Park for Kids in Weiz (AT), general strong identification with energy in Weiz by the slogan: "The city full of energy, Energy finds City", Ludwigsburg's (DE) taking part in the European Energy Awards since 2006, Information/PR centre about energy and climate change in Ludwigsburg. Furthermore, LEAG (SL) involved young students by carrying their yearly practice in the form of energy advices on "fighting energy poverty".

TIP: Public awareness starts with young people!

- The share of RES is increasing in sectors each year, but it would even be higher if the **technology** was more **affordable**. The initial investment of RES is higher than the ones that run of fossil fuels, however the return of investment is usually a couple of years. The awareness and culture of RES is gradually evolving and this has a positive impact on increase of RES installations. However, the implementation of RES in private households and companies is still insufficiently economical. Thus, funding incentives on local, regional, national and EU level are still necessary to bring about a significant change in energy.

TIP: Exploit the gradually evolving awareness of RES with funding incentives!

- **Study visits**, where implemented good practices are demonstrated, should serve as a first step to the acknowledgment of new solutions and sharing them with other regions (1). In this context, the Catalogue also serves as a platform for contacts connected to of these practices.[2] Some regions of Central Europe are already quite advanced in technical solutions and infrastructure that do not exist elsewhere, like the ITS system in Bydgoszcz (PL) or the Intercompany Training Centre (zero energy building) in Nova Gorica (region of operation of GOLEA, SL), while some regions show progress in areas of energy data and public awareness, like collection and harmonization of energy data at local level in the Municipality of Ferrara (IT) or the high number of outlined SEAP documents in province of Ferrara and in Weiz (AT), where energy data is used for developing energy strategies and the focus on public awareness includes even kindergarten children.

  (1) Good example derived from study visits: Weiz (AT) presented a good example of the Municipality's role in presenting potential opportunities to wider public by cooperating with a district company to raise awareness of citizens to encourage them to connect to a network of biomass district heating. This was identified as a good practice of cooperation between public and private sector and was then taken

[2] The contacts to the CitiEnGov project partners can be found in the Introduction.

by the Local Energy Agency of Gorenjska (SL) as an example that was demonstrated to local stakeholders. The example from Weiz was very well perceived in Slovenia.

- There has been a satisfactory amount of on-going **SEAP or SECAP** elaborations, but further there will be a need of implementation and especially monitoring these plans. In this regard, it is recommended to share the experience between partners who have already started with these activities, or to exploit associated partners that have know-how and experience in this matter, such as PNEC in Poland (The Association of Municipalities Polish Network „Energie Cités", which is a non-governmental organisation that supports sustainable energy planning and implementation at local level), ANCI Emilia Romagna in Italy (Association of Regional Municipalities in Emilia Romagna) or other similar associations of municipalities in other countries. (could name some more if you know them). It can be also derived from the collected practices that SEAPs and SECAPs sometimes are "competing" against documents of local type (Low-Emission Economy Plans in Poland, Urban Development Strategy in Ludwigsburg, DE). It is recommended to link the elaboration of such plans with SEAP & SECAP adoption. This might be a solution to the problem of lacking funds for the implementation of the plans that was reported by the partners.

> **TIP:** Link the elaboration of planning documents with SEAP & SECAP adoption if possible!

LIST OF ATTACHMENTS

Selected best practices from CitiEnGov project partners (D.T1.1.1)

Methodology for valorizing existing knowledge (D.T1.1.2)

Study visits (D.T1.1.3)

SWOT analysis from all project partners (D.T1.1.4)