

# TRANSNATIONAL EVALUATION BY FELLOW SPECIALISTS OF RESEARCH

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D.T2.3.1a 2 interviews of Cuneo and Bracak

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Title Transnational evaluation by fellow specialists of research

Deliverable D.T.2.3.1a

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## 1. Introduction

Qualitative interviews are conducted in the framework of interconnected Working and Steering Group Meetings of Store4HUC and from derived regional surveys in detail. The report is based on inquiries designed beforehand including particular background information for the interviewees. This allows also open discussions beyond the frame of the given inquiries in terms of unexpected barriers and specific regional contexts. Two of four pilot teams have been selected for the organisational aspects of using synergies of respective meetings in Torino and Zagreb. Related two surveys for the pilots in Cuneo and Bracak are connected to the WPT2 - Systematic procedures for implementation of energy storages in HUC to better understand favourable conditions for the implementation of the demonstration measures. The results are summarised by PP5 and provided to the interviewees for receiving reviewing feedback and amending the results towards collaboratively agreed interview reports.

### 1.1. Particularities in Cuneo

Already mentioned favourable conditions for the implementation of the pilot are highly depending on the feasibility in D.T1.2.1, the investment plan in D.T2.1.2, related design and on connecting of relevant regional frame factors.

### 1.2. Particularities in Bracak

Also in Bracak the implementation of the pilot is highly depending on the feasibility in D.T1.2.2, the investment plan in D.T2.1.3, related design and on connecting of relevant regional frame factors.

## 2. Objectives

In line with the WPT2 description that is dedicated to pilot action implementation and mutual learning activities the objectives of the interviews and related surveys are:



- To provide an overview about the particular Store4HUC policy strategies;
- To deliver insights about the motivations of the municipality and potential investor (replicating in future) towards renewable energy sources combined with energy storage;
- To check and increase public awareness via concrete communication measures;
- To determine the main particularities with impact on Store4HUC as a model for further replication; and
- To provide lessons learnt based on investigations to the two remaining pilots in Lendava and Weiz.

Responses are incorporated into the overall framework of sustainability policy of Store4HUC by considering socio-economic implications. Comparative investigations are carried out on the socio-economic, administrative and regulation levels.

### 3. Preliminary lessons learnt

**Cuneo:** This Store4HUC pilot is carried out to use renewable energy and a battery storage for the operation of the elevator system, limiting the energy consumption to a minimum. A close collaboration between the lift owner, the city of Cuneo and Envipark among others has been established. A financial foundation could support the city to replicate it with adapted dimensions at other sites. The pilot action is part of the wider municipal mobility plan to improve the urban transport whilst reducing CO2 emissions. Due to the small size and its environmental impact the pilot is only reported to the regional government by the responsible civil servants. Regulatory issues are related to restrictive national safety rules in particular in regards to the combination of the elevator with a PV supplied storage. Mutual dissemination activities (incl. exhibition) have been or will be done to advertise project results to the citizens, elevator users, but also potential future investors.

For **Bracak Manor:** This Store4HUC pilot has been conceptualised in a close collaboration between the estate owner, Krapina-Zagorje County, and North-west Croatia Regional Energy Agency - REGEA and is accompanied by the University of Zagreb Faculty of Electrical Engineering and Computing - UNIZGFER among others. Intention is to develop a lighthouse Energy Centre as a regional hub of excellence and knowledge in energy efficiency and renewable energy sources. All interventions made and foreseen follow the international and national key ethical and technical guidance and recommendations on heritage. Based on experiences in participating in other historical building projects REGEA and UNIZGFER are closely cooperating with each other to determine the optimal sizing parameters for the planned PV and battery storage combination. Starting point has been to collate data of the existing site consumption patterns and to simulate the optimum dimension with the off-line energy management tool of the university. In addition the actual Energy Management System will be upgraded. Lessons learnt of the refurbishment of this pilot shall be used to be replicated with adapted dimensions at other sites as the share of historical buildings is roughly 3% of the building stock in Croatia. Currently there are no financial incentives for similar measures for buildings under cultural heritage protection.



## A. Annex

The questionnaire submitted to the local teams of the pilots during the particular site visits included the inquiries given with the questions and answers in the following filled in beforehand templates. In the accompanying

### A.1 Regional survey - the template

Visitor: **Michael Heidenreich** / Name

Organisation: **CES** / xxx

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#### 1. CITY:

Place of mission:

Date(s) of the project visit: from *dd-mm* to *dd-mm-yy*

Participants:

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#### 2. SITE VISIT AND PARTICIPATORY MEETINGS:

*Describe the main outcomes of the discussions and interviews. The general questions below may support you and might be used as discussion guideline.*

**What are the motivations for existing or potential actors to invest in new energy technologies, energy storages and related management systems (comfort, price, CO2 legislation, etc.)?**

- Related to the Store4HUC project what are the main different interests of the main local actors, respective end-users? Do you have studies about these interests?
- How are sustainability and related measures positioned in the historical part of your city in the frame of monumental protection?
- How to raise motivation / self-responsibility for individual contributions?
- How to emphasise interests / motivation towards the objectives of STORE4HUC?
- What is the level of know-how and of awareness of the citizens? Do you have studies about it?
- How do you intend to address targeted customer groups and active interested parties?
- What are the expected main technical / non – technical barriers at local level? How to overcome them? Do you have studies about it?

- How do existing financial incentives for renewable and storage complement mentioned strategies?
- Where do the citizens/ end-users get their information from (Homepage etc.)?

## A.2 Regional survey in detail: Italy

Visitor: Michael Heidenreich / Stefano Dotta, Luca Galeasso

Organisation: CES / Envipark

### 1. CITY:

Place of mission: **TORINO**

Date(s) of the project visit: 03-10-19

Participants: **Stefano Dotta, Luca Galeasso, Mario Vasak, Fabio Pelligrino, Silvia Agnello, Michael Heidenreich**

### 2. SITE VISIT AND PARTICIPATORY MEETINGS:

*Describe the main outcomes of the discussions and interviews. The general questions below may support you and might be used as discussion guideline.*

Energy refurbishment of the urban existing sloping elevator is foreseen through the realization of a new energy storage system linked to a PV plant for becoming self-sufficient. The original situation of the elevator is shown in the figure below. Close to a nearby parking place the slope lift allows a straight ahead connection to the city centre on a platform above the river and roads that link Cuneo to the surrounding.





Cuneo has developed a Sustainable Energy Action Plan, in which the pilot action is considered and is involved in several cross border projects.

In regards to Deliverable D.T2.3.1 the interviewees of the city of Cuneo have provided the following responses:

**What are the motivations for existing or potential actors to invest in new energy technologies, energy storages and related management systems (comfort, price, CO2 legislation, etc.)?**

The municipality intends to establish an example for the integration of a Photovoltaic supplied storage system serving as visible show case for sustainability actions of the municipality underlined by the town council and administered by the civil servants of the city. The pilot action is part of the wider municipal mobility plan to improve the urban transport in terms of its environmental influence towards sustainability and significant CO2 reductions. With the today elevator related buses have been replaced that were used in the past. The next step is to use the solar and stored electricity to make the supply side environmental benign.

- Related to the Store4HUC project what are the main different interests of the main local actors, respective end-users? Do you have studies about these interests?

Addressed stakeholders are a financial foundation supporting multiplying the Store4HUC pilot action of Cuneo also in other municipalities and the local/regional bus transport companies. The pilot action is one puzzle piece of the e-mobility strategy for the municipality.

- How are sustainability and related measures positioned in the historical part of your city in the frame of monumental protection?

There are few restrictions for the Store4HUC pilot action as monumental protection is part of the municipality administration in regards to the pilot. The permission of a new elevator has to comply with the constraints of the regional administration. Due to the small size of the Store4HUC pilot action the project and its environmental impact is only reported to the regional government by the civil servants of the landscape department. The original plan of the application had considered a PV roof on a swimming pool beside the parking place. However, the connection cable under the street in between to the elevator is not allowed due to national regulation rules.

- How to raise motivation / self-responsibility for individual contributions?

High visibility of sustainability of the Store4HUC pilot action may allow replication measures also by private investors. Related advertisement are performed via the municipal webpage, press releases and newspapers in order to inform the end-users as well as interested investors. The installed deployment desk is utilised to exchange knowledge and to raise awareness about the importance of the Store4HUC pilot action.

- How to emphasise interests / motivation towards the objectives of Store4HUC?

It is foreseen to perform a replication project of the Store4HUC pilot action by implementing an additional elevator on the other side of the city. The corresponding concept is today in a preparatory phase.

- What is the level of know-how and of awareness of the citizens? Do you have studies about it?

Advertisement activities are mentioned above, specific studies don't exist at local level. The educational centre nearby the elevator provides information to the citizens and in particular to school classes presenting good practice examples triggered by the municipality.

- How do you intend to address targeted customer groups and active interested parties?



The municipality plans an exhibition of the Store4HUC pilot action in the city in May/June 2020.

- What are the expected main technical / non – technical barriers at local level? How to overcome them? Do you have studies about it?

The main regulatory barriers are related to restrictive national safety rules. In particular as the application is a combination of a cable car and elevator. Therefore diverse permissions are necessary also in regards to used communication and management tools for the Store4HUC pilot action.

- How do existing financial incentives for renewable and storage complement mentioned strategies?

Financial incentives are under discussion for the time being.

- Where do the citizens/ end-users get their information from (Homepage etc.)?

Advertisement activities are mentioned above.

### A.3 Regional survey in detail: Croatia

Visitor: **Michael Heidenreich**

Organisation: **CES**

#### 1. CITY: BRACAK

Place of mission: **VIA ONLINE MEETING AS THE COME TOGETHER HAS BEEN CANCELLED DUE THE CORONA VIRUS**

Date(s) of the project visit: from 12-03 to 12-03-20

Participants: Matija Hrupački, Marko Miletić (PP8), Mario Vasak (PP9), Michael Heidenreich (PP5)

#### 2. SITE VISIT AND PARTICIPATORY MEETINGS:

*Describe the main outcomes of the discussions and interviews. The general questions below may support you and might be used as discussion guideline.*

Bracak Manor, the selected building for Store4HUC was constructed in 1889. In 2017, the building has been reconstructed and restored on the principles of energy efficiency and in accordance with best practices in renewing heritage. The building is utilised as crystal place for organizations, companies and institutions interested in renewable energy. It also serves as business incubator for young companies with a favorable lease of business office space.





In regards to Deliverable D.T2.3.1 the interviewees have provided the following responses:

- What are the motivations for existing or potential actors to invest in new energy technologies, energy storages and related management systems (comfort, price, CO2 legislation, etc.)?

The reconstruction and revitalization of Bracak Manor is a unique example of energy rehabilitation of a historic building under cultural heritage protection by focusing on two aspects: i) application of advanced technical solutions and ii) retrofitting of a public building.

A collaboration between the estate owner, Krapina-Zagorje County, and North-west Croatia Regional Energy Agency - REGEA led to the conceptualization of the Bracak Energy Centre, a regional hub of excellence and knowledge in energy efficiency and renewable energy sources. Building has been renovated combining the state-of-the-art technical solutions whilst taking into account the cultural heritage preservation. The complete reconstruction of the building has resulted in an upgrade of the Energy Performance Certificate (EPC) calculated in the category E towards B (after refurbishment) with a share of 88% of renewable energy sources. The energy renewal has reduced the energy demand for heating of up to 70%, or in figures from the initial 213,0 kWh/m<sup>2</sup> to 64,0 kWh/m<sup>2</sup>

Cutting-edge technical solutions have been applied during the retrofitting process while respecting original form and visual identity of the building. In these terms, innovation has been both i) an answer to a challenge and ii) the means of raising the degree for energy efficiency.

- Related to the Store4HUC project what are the main different interests of the main local actors, respective end-users? Do you have studies about these interests?

The project is expected to improve the quality of lives of local citizens by creating new services, such as the educational centre, business incubator and local restaurant, and contribute to employment and regional development. Goals and actions to be achieved by this project are in accordance and in respect with key ethical and technical guidance and recommendations on heritage interventions brought by most relevant European and international institutions that deal with heritage protection and conservation such as UNESCO, European Commission, Architects' Council of Europe and above all ICOMOS - International Council on Monuments and Sites, only global non-government organisation dedicated to promoting the theory, methodology, and scientific techniques to the conservation of heritage.

The reconstruction and revitalization of Bracak Manor is in accordance with strategic and policy guidelines analysed in the Feasibility study for implementing energy storages in Bracak, developed within the deliverable D.T1.2.2 of STORE4HUC project:

- EU and national legislation (European Directive (2002/91/EC), Croatian Energy Efficiency Act (OG 127/2014, 116/18), Croatian Construction Act (OG 153/13, 20/17, 39/19), Croatian Law on the Protection and Preservation of Cultural Property (OG 69/99, 151/03, 157/03, 100/04, 87/09, 88/10, 61/11, 25/12, 136/12, 157/13, 152/14, 98/15, 44/17, 90/18),
- National and local strategic sustainability documents (Croatian Energy Development Strategy, Proposal of the Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock of the Republic of Croatia), National Public Sector Building Renovation Program 2016-2020, Fourth National Energy Efficiency Action Plan for The Period From 2017 to 2019, Proposal of the Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock of the Republic of



Croatia, Krapina-Zagorje County Development Strategy, Krapina-Zagorje County Energy Efficiency Action Plan, Krapina-Zagorje County Annual Energy Efficiency Plan);

- European and international guidelines and recommendations on conservation and rehabilitation of historic monuments and sites (*The Venice Charter (1964)* up to more recent *The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas (2011)*, *The Paris Declaration On heritage as a driver of development (2011)* and most recent documents delivered in the framework of the European Year of Cultural Heritage 2018; *Leeuwarden declaration on adaptive re-use of the built heritage: preserving and enhancing the values of our built heritage for future generations* and *European Quality Principles for Cultural Heritage*;

- How are sustainability and related measures positioned in the historical part of your city in the frame of monumental protection?

REGEA participated or is still participating in the reconstruction and renovation of several historic building under cultural heritage protection located in the area of North-west Croatia (Bracak Manor, Spiritual-Educational Center Mary's Court, County Palace in Krapina, local kindergartens, schools and high-schools located in historic building). In all those projects sustainability was and is one of the focus aspects which are being considered.

Energy Centre Bracak and other renovated historic buildings are the best example that energy renovation of historic building under cultural heritage protection is possible. Renovated buildings are good practice examples and guidances on how to implement such projects.

- How to raise motivation / self-responsibility for individual contributions?

Within Operational programme Slovenia-Croatia 2007.-2013. REGEA participated in the project with the acronym EE Culture where educational activities such as workshops, site visits and conferences has been held. Experiences from stakeholders have been collected and spread to a wider range of interested actors, making conditions for continuation of development of energy efficiency projects in historic buildings under cultural heritage. Based on the gathered experience, within the EE Culture project a Handbook for historic building renovation has been developed.

REGEA also participated in preparation of *Revitalization and Energy Renovation of Donji grad*. Donji grad is part of the city of Zagreb with 37.024 permanent residents in the 23.634 apartments. Most of the buildings are old and have either none or poor thermal insulation with a significant share of older buildings. Studies showed not only energy saving potential but also great positive socio-economic impact on the well-being of situated citizens.

REGEA participated in development of *The Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock of the Republic of Croatia* where historic buildings under cultural heritage have also been analysed and in development of *Program for the renovation of buildings that have the status of cultural heritage*, both for Ministry of Construction and Physical Planning.

Development of strategic documents, studies, handbooks and similar is a good way to involve and raise motivation of general public and individuals.



- How to emphasise interests / motivation towards the objectives of Store4HUC?

Energy renovation and reconstruction of buildings is becoming more and more commonly accepted and it is expected to become carrier among the construction industry and in regards to the overall urban development. It is becoming clear that renovation and reconstruction of the buildings are necessary due to the level of deterioration. It includes the preservation of the architectural heritage needs, the improvement of infrastructure and living conditions.

Historic buildings are represented with around 3% in overall building portfolio (source: *The Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock of the Republic of Croatia*). Besides good practice examples, cultural heritage buildings are threatened from numerous factors: abandonment and non-maintenance, unresolved ownership, aging of the population, poverty, which all cause the decay and disappearance of the heritage. On the other side, urban sprawl and new construction leads to degradation of value and extermination.

Historic buildings represent the part of cultural heritage which is a mirror of the region and community to which it belongs. It reflects the values, beliefs, craftsmanship, traditions and insights that older members of the region and communities have passed on to younger people. Cultural heritage is a non-renewable and limited resource that requires conservation, care, evaluation and use according to the principle of sustainability and as such should be sufficient motive to invest in preservation of such heritage.

As renovation of historic building due to its specific often have low financial potential but very high economical potential, high investment costs and bad financial indices of such projects require additional financial instruments to overcome funding gaps.

- What is the level of know-how and of awareness of the citizens? Do you have studies about it?

Specific studies at local level doesn't exist. Experiences in Croatia with renovation of historic buildings under cultural heritage protection are very modest. During the renovation process different permissions are needed so the collaboration of multiple participants is obligatory. All stakeholders (from investors, architects, engineers, consultants) have limited knowledge of energy renovation process and methods because of which the whole process of renovation is time-consuming and *Prior Approval* document obtaining is a long and complicated procedure.

- How do you intend to address targeted customer groups and active interested parties?

Bracak Mansion has been transformed into an Energy centre Bracak with multi-purpose education and demonstration centre for different local actors. Different educational programmes held in Bracak Mansion will target the entire region of South-East Europe and overall, the project will raise public awareness on the efficient use of natural resources and the importance of sustainable development on a continuous basis. Besides education and demonstration centre Bracak is home for business incubator for promising start-up companies in the field of energy, offices of the regional development agency ZARA and the regional energy agency REGEA, so people are fluctuating through Bracak on everyday basis.



- What are the expected main technical / non – technical barriers at local level? How to overcome them? Do you have studies about it?

Due the fact that Bracak Mansion and the environment (park) around mansion is protected cultural heritage it was a challenge to agree and coordinate the physical position of photovoltaic (PV) power plant and to find an adequate space for battery storage between engineers, conservator department and equipment restrictions. Building a new structure (building) for the battery storage within the existing park was declined by the conservatory department so the only possibility left was to integrate the PV upon the carport and to place battery storage inside the mansion where fire protection rules were the main limiting factor.

Cause of innovative character of the project it is very hard to get specific information regarding battery systems due to fact that there are no representatives for such equipment in Croatia.

There is also a risk of overspending due to specific conservatory rules for the carport design which makes it more expensive compared with regular carport.

- How do existing financial incentives for renewable and storage complement mentioned strategies?

Currently there are no financial incentives specifically meant for historic buildings under cultural heritage protection. Due to higher investment costs for historic buildings compared with standard buildings, available funds from ESIF funds are often not enough to close financial gap of the project.

- Where do the citizens/ end-users get their information from (Homepage etc.)?

As stated above, different educational programmes and many different events are held in Bracak Mansion, where interested attendants can make a tour through Mansion and get familiar with historical and technical aspects of Mansion.

# TRANSNATIONAL EVALUATION BY FELLOW SPECIALISTS OF RESEARCH

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D.T2.3.1b 2 interviews of Lendava and Weiz  
with recommendations for the final synthesis  
report

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## 1. Introduction

Qualitative interviews are conducted in the framework of interconnected Working and Steering Group Meetings of Store4HUC and from derived regional surveys in detail. The report is based on inquiries designed beforehand including particular background information for the interviewees. This allows also open discussions beyond the frame of the given inquiries in terms of unexpected barriers and specific regional contexts. Due to COVID-19 virtual meetings and decisions making are included in the actual project planning as option to organise alternatives to physical meetings. Related two surveys for the pilots in Weiz and Lendava are connected to the WPT2 - Systematic procedures for implementation of energy storages in HUC to better understand favourable conditions for the implementation of the demonstration measures. The results are summarised by PP5 and provided to the interviewees for receiving reviewing feedback and amending the results towards collaboratively agreed interview reports.

### 1.1. Particularities in Weiz

Favourable conditions for the implementation of the pilot are highly depending on the feasibility in D.T1.2.3, the investment plan in D.T2.1.4, related design and on connecting of relevant regional frame factors.

### 1.2. Particularities in Lendava

Favourable conditions for the implementation of the pilot are highly depending on the feasibility in D.T1.2.4, the investment plan in D.T2.1.5, related design and on connecting of relevant regional frame factors.



## 2. Objectives

In line with the WPT2 description that is dedicated to pilot action implementation and mutual learning activities the objectives of the interviews and related surveys are:

- To provide an overview about the particular Store4HUC policy strategies;
- To deliver insights about the motivations of the municipality and potential investor (replicating in future) towards renewable energy sources combined with energy storage;
- To check and increase public awareness via concrete communication measures;
- To determine the main particularities with impact on Store4HUC as a model for further replication; and
- To provide lessons learnt based on investigations to the two remaining pilots in Lendava and Weiz.

Responses are incorporated into the overall framework of sustainability policy of Store4HUC by considering socio-economic implications. Comparative investigations are carried out on the socio-economic, administrative and regulation levels.

## 3. Preliminary lessons learnt

**Weiz:** The local heating network and heating plant of the cooperative "Biomasse Heizwerk Weizberg reg. Genossenschaft mbH" was built in 1999. The heat supply of the local heating network with 12 consumers is ensured by two biomass boilers fired with regional wood chips. The integration of a thermal energy storage system into the existing Weizberg biomass heating system is to increase flexibility and energy efficiency is thus fully and seamlessly integrated into the regional climate and energy targets. Based on the decision for a more energy efficient heating system of Bishop Dr. Wilhelm Krautwaschl on 1 October 2018 procurement and eligibility criteria have been elaborated and published related to the particular services, system components and competences requested. Structural changes in protected areas like the parish Weizberg require a building permit including a positive assessment of the protected area. The construction phase of the storage started in February 2020 and was completed with the installation of the water buffer storage at the end of June 2020. Deployment Desk meetings have been established in Weiz. Deployment desks are intended to bring together a core group of stakeholders needed for the successful development, validation and implementation of the local pilot intervention. Replication of lessons learnt from the Weizberg case are promoted by the involved stakeholders, widespread in the municipality and may trigger other investments in projects with similar constraints.

**Lendava:** The Lendava Library (public building) will be connected to the existing geothermal district heating network to increase the share of renewables in public sector. Paraffin cells are modern and innovative buffer storages that have been developed to efficiently store heat and cold energy needing less space in comparison to conventional water storages. It is declared that for the time being higher initial investments of the pilot is only possible via public co-financing for novel and energy efficient technologies/storages/systems. Scaling up of these innovative technologies may lead to a better competition in regards to initial investment of competitive techniques. HUCs are in Slovenia subject to the building and spatial planning laws of the local community and the Slovenian Preservation of Cultural Heritage Act with all related needed permissions. The storage, which will be installed in the cultural and historic protected public library of Lendava, will represent a decentralized system of thermal energy advancement in the system with paraffin - latent storages. Based on the experiences in several past projects the common expectation and ambition of all stakeholder groups in Pomurje (including the citizens) are to prepare documents/strategies at regional level that take care to promote and facilitate continuous improvements of energy efficiency and the accelerated deployment of renewable energy sources in the region by seeking to maximize the local energy self-supply of the region.



Lendava and Local Energy Agency, both are planning to have several events to increase knowledge and awareness of the citizens in the region in the field of RES and RUE and in parallel to reduce social resistance related to the integration of RES technologies.

## 4. Annex

The questionnaire submitted to the local teams of the pilots during the particular site visits included the inquiries given with the questions and answers in the following filled in beforehand provided templates.

### 4.1 Regional survey in detail: Austria

#### Mission report of the online meeting

**Organisation:** CES / PP5

#### 1. CITY:

Place of mission: **WEIZ**

Date(s) of the project visit: *at 18-08-20*

Participants: **ANDREA DORNHOFER, RAFAEL BRAMREITER, THERESE LORENZ, MICHAEL HEIDENREICH**

#### 2. SITE VISIT AND PARTICIPATORY MEETINGS:

*Describe the main outcomes of the discussions and interviews. The general questions below may support you and might be used as discussion guideline.*

#### **What are the motivations for existing or potential actors to invest in new energy technologies, energy storages and related management systems (comfort, price, CO2 legislation, etc.)?**

The spirit of the investment in an additional energy storage situated in a historic urban centre is to improve the overall efficiency of the islanding district heating system for 12 customers via two biomass boilers fired with wood chips. The largest customers are a hotel and the parish of Weizberg. Due to the lack of a central storage tank, the heating network has been used as a thermal buffer to absorb the heat supplied by mentioned boilers, particularly during the summer period, in order to be able to supply effectively the decentralised hot water storage tanks at the customers' premises. The integration of a thermal energy storage system into the existing Weizberg biomass heating system is to increase flexibility and energy efficiency is thus fully and seamlessly integrated into the regional climate and energy targets. This shall contribute to the CO2 emission reduction target of 40% announced by the municipality of Weiz.

- Related to the STORE4HUC project what are the main different interests of the main local actors, respective end-users? Do you have studies about these interests?

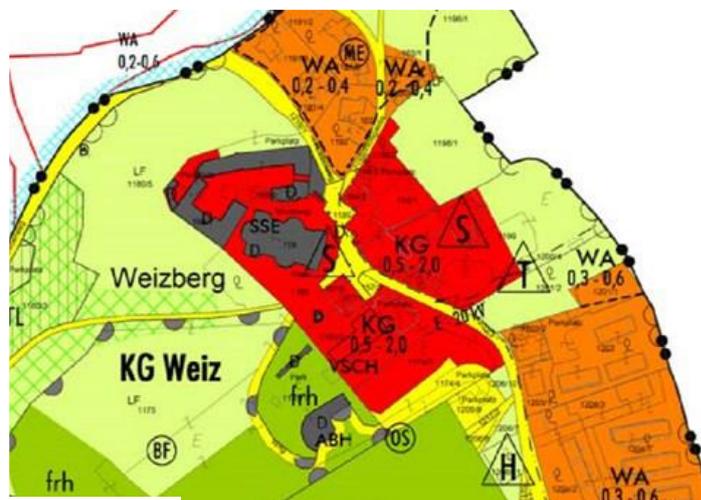
The main customers of the biomass heating plant Weizberg is the parish Weizberg with its basilica Weizberg. The integration of a thermal energy storage into the existing district heating stand-alone system allows an efficient delivery and use of the input material, the wood chips. One of the main customers of the biomass heating plant Weizberg is the parish Weizberg with the basilica Weizberg. The climate and energy strategy of the Catholic Church of Styria was taken into force by Bishop Dr. Wilhelm Krautwaschl on 1 October 2018. Procurement and eligibility criteria are related to the particular services, system components and competences requested. Expected skills are chosen via the performed analysis of



provided references. All relevant selected and acting companies are invited to join the local Deployment Desk meetings.

- How are sustainability and related measures positioned in the historical part of your city in the frame of monumental protection?

In Austria, the protection of historic sites and monuments in historic urban centres or other districts is subject to the Building and Regional Planning Act of the Counties and the Austrian Monumental Protection Act. In this context, the preservation of the local image and of historical monuments in the respective local image protection zones is preserved by a local image expert in the context of building permits (see fig. 1). Structural changes in protected areas therefore require a building permit including a positive assessment of the protected area.



Related German legend in

**A. Bauland (§ 30)**  
 (1) Vollwertiges Bauland

WA	Allgemeine Wohngebiete
WR	Reine Wohngebiete
DO	Dorfgebiete
GG	Gewerbegebiete
I1	Industriegebiet 1
I2	Industriegebiet 2
KG	Kerngebiete
E1	Einkaufszentren1
(EA)	Einkaufszentren - Ausschlussbereiche
1000/1000	Herabsetzung der Verkaufsfläche

**Fig. 1: Weizberg as part of the zoning plan in DE (Source: zoning plan No. 1.0 - Stadtgemeinde Weiz)**

- How to raise motivation / self-responsibility for individual contributions?

That is part of discussions in the frame of the Deployment Desk meetings held in Weiz with invited stakeholders. There is a common understanding about necessity and particularity among the stakeholders involved. The embedment in the landscape and the resulting additional costs that are necessary due to the additional planning are relevant parameters to be considered. Replication of



lessons learnt from the Weizberg case are promoted by the stakeholders and widespread in the municipality.

**- How to emphasise interests / motivation towards the objectives of STORE4HUC?**

Deployment Desk meetings have been established in Weiz. Deployment desks are intended to bring together a core group of stakeholders needed for the successful development, validation and implementation of the local pilot intervention. The objective is to establish contact between active stakeholders at the municipality level and the STORE4HUC project, in order to facilitate the integration of future investors and foster team building at project level. To achieve this objective, it is essential to understand and acknowledge all corresponding information, and this will be performed through the organisation of regular Deployment desk meetings and related activities.

**- What is the level of know-how and of awareness of the citizens? Do you have studies about it?**

The level of public awareness of new technologies - such as availability, technology development, advantages, potential and incentives - proved to be a crucial point in increasing success of the projects STORE4HUC in Weiz is going to put a large portion of its activities into empirical analysis and to embrace spatially, socio-economically and technically the widest possible range of sustainable energy solutions. Within the framework of this project, an extension to the existing boiler house is to be carried out to accommodate a heat storage tank, a machine room, a switch room, a retaining wall and the associated terrain changes. In addition, a water buffer tank with a storage volume of approx. 38 m<sup>3</sup> is to be installed. By showcasing suitable project results and recommendations as a means of raising the awareness of the works among the decision makers is part of STORE4HUC in Weiz.

**- How do you intend to address targeted customer groups and active interested parties?**

The approach and dissemination activities may show that large thermal energy storage systems are a technically and economically viable option for the supply of heat and cooling in buildings or districts that are protected by the historical monument office, especially with regard to the integration of renewable energy sources in listed buildings. Dissemination activities are foreseen after the completion of the work in order to make citizens and visitors of the parish aware about done intervention and related benefits.

**- What are the expected main technical / non – technical barriers at local level? How to overcome them? Do you have studies about it?**

The perception of end-users towards as well as the selection of the appropriate measures of new energy technologies and demand side measures are analysed against potentials and barriers, externalisation of costs as well as assessment and promotion of the involved technologies, energy management practises and socio-economic effects. For extending the scope towards a more interdisciplinary approach, STORE4HUC aims at connecting civil society protagonists and political decision makers on a guided way towards a sustainable energy path via participatory workshops with regional stakeholders. Enhancing the values of our built heritage for future generations and European Quality Principles for Cultural Heritage Interventions may overcome the mentioned obstacles.

**- How do existing financial incentives for renewable and storage complement mentioned strategies?**

Successful implementation of sustainable energy solutions depends in general on very specific local natural, institutional, economic, cultural and social conditions and contextual factors. This is also evident for Weiz. Among these the level of public awareness of new technologies - such as availability, technology development, advantages, potential and incentives - have to be proved to be a crucial



point in increasing success of the projects. It is needed to embrace spatially, socio-economically and technically the widest possible range of sustainable energy solutions.

- Where do the citizens/ end-users get their information from (Homepage etc.)?

The clear identification and definition of each of the target groups to whom project results and recommendations will be disseminated is of crucial importance. For each target group, specific and relevant dissemination strategies will be implemented via web, online and physical meetings depending on the COVID-19 status quo. Overall, it is essential to remain mindful of the underlying obligation to inform, promote and communicate the activities of the STORE4HUC project in a language that is both understandable and understood.

## 4.2 Regional survey in detail: Slovenia

### Mission report of the online meeting

**Organisation: CES / PP5**

#### 1. CITY:

Place of mission: **MARTJANCI**

Date(s) of the project visit: *at 18-09-20*

Participants: **ŠTEFAN ŽOHAR (LP), KATJA KARBA (LP), ROK PETJE (MUNICIPALITY OF LENDAVALA)**

#### 2. SITE VISIT AND PARTICIPATORY MEETINGS:

*Describe the main outcomes of the discussions and interviews. The general questions below may support you and might be used as discussion guideline.*

#### **What are the motivations for existing or potential actors to invest in new energy technologies, energy storages and related management systems (comfort, price, CO2 legislation, etc.)?**

The first and most effective motivation is related to possible subsidies for novel and energy efficient technologies/storages/systems, which can lead to a lower final price of the initial investment for the investors. The second effective motivation is the national legislation related to the national energy efficiency goals/reduction of CO<sub>2</sub> emissions<sup>1</sup>, and the existing local strategies/action plans (Local Energy Concept of the Municipality and Sustainable Energy Action Plan of the Municipality - SEAP).

- Related to the STORE4HUC project what are the main different interests of the main local actors, respective end-users? Do you have studies about these interests?

In the frame of INTENSS-PA<sup>2</sup> (Horizon2020) project a materiality assessment has been used as a strategic business tool, with implications beyond energy planning so as to help regions (also in Pomurje region) to identify the most appropriate sustainable development plan. In short, a materiality assessment is an

<sup>1</sup>

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiC\\_r2Lgp3sAhVstIsKHQWsA8sQFjAJegQIARAC&url=http%3A%2F%2Fwww.energetika-portal.si%2Ffileadmin%2Fdokumenti%2Fpublikacije%2Fan\\_ure%2Fneep\\_slo\\_2014-2020\\_eng.pdf&usq=AOvVaw3R8yCmEmnG\\_SpWf\\_90tvJu](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiC_r2Lgp3sAhVstIsKHQWsA8sQFjAJegQIARAC&url=http%3A%2F%2Fwww.energetika-portal.si%2Ffileadmin%2Fdokumenti%2Fpublikacije%2Fan_ure%2Fneep_slo_2014-2020_eng.pdf&usq=AOvVaw3R8yCmEmnG_SpWf_90tvJu)

<sup>2</sup> <http://www.intensspa.eu/>



exercise in stakeholder engagement designed to gather insights on the relative importance of specific environmental, social and governance (ESG) issues. The insights are valuable to strategic planning, operational management and capital investment decisions. All organizations can get most benefit from their materiality process by using it as an opportunity to apply a sustainability lens to risk, opportunity, trend-spotting and risk management processes. The materiality assessment has follow the process:

- a) Define purpose and scope: what materiality means for each organization and be clear about its objectives and audience
- b) Identify potential topics: long list of potential material topics
- c) Categorize potential material topics by clustering them into categories
- d) Gather information about the impact and importance of topics
- e) Seek stakeholder feedback
- f) Engage management (test the results of the materiality assessment with key internal audiences to validate the outcome)
- g) Prioritize material topics based on the strategic importance to the business, importance to stakeholders and the social, economic and environmental impact of each topic in the value chain.

Through the materiality assessments and concretely capitalizing on its results, the local authorities have been able to shape their Regional Sustainable Energy Plans<sup>3</sup> and gain the trust of all stakeholders and thus to increase their acceptability. The main results of this activities were the ranking list of following interests in Pomurje region:

Table 1: Ranking list of different interests of the main local actors in Pomurje region  
 (Source: <http://www.intensspa.eu/>)

#	Sector	Issues	TOTAL SCORE (INHERENT RISK)	→	TOTAL SCORE (RESIDUAL RISK)
1	technical actions and spatial planing	Energy efficiency in public sector - Energy Management	0,81	→	0,15
2	technical actions and spatial planing	Hydro potential of the river Mura - spatial planning compliance with environment and sustainable development	0,64	→	0,21
3	regional condition	Increasing the regional energy independency (RES)	0,64	→	0,21
4	technical actions and spatial planing	Wood biomass – a sustainable and decentralized energy source in the region	0,48	→	0,11
5	technical actions and spatial planing	Integration of the Smart system in buildings	0,47	→	0,16
6	local governance	Interdisciplinary and sustainable construction sector in Pomurje	0,37	→	0,12
7	communication	Local energy days at the municipal level - awareness raising	0,35	→	0,12
8	funding	Integration and added value of the entrepreneurship by the energy projects	0,36	→	0,24
9	funding	Energy cooperative - establishment - a combination of public and private capital	0,28	→	0,12
10	technical actions and spatial planing	Bio gas and biogas plant – negative impact and problems – best use with small biogas plant	0,27	→	0,12

- How are sustainability and related measures positioned in the historical part of your city in the frame of monumental protection?

HUCs are in Slovenia subject to the building and spatial planning laws of the local community and the Slovenian Preservation of Cultural Heritage Act.

<sup>3</sup> <http://www.intensspa.eu/library/intensss-pa-reports/>

Today the Institute for the Protection of Cultural Heritage of Slovenia<sup>4</sup> brings together art historians, archaeologists, architects, ethnologists, historians, landscape architects, sculptors, painters and many other experts, who work in the Institute's Cultural Heritage Service with the seven regional offices located across Slovenia and in its Conservation Centre with its Restoration and the Preventive Archaeology Centres. In 1999 the new Law on Cultural Heritage Protection clearly defined the administrative and professional functions of protection, especially in binding the rights and obligations of heritage owners to a legal document. In 2008 the Preservation of Cultural Heritage Act was adopted, which includes movable as well as non-movable and intangible cultural heritage, defining the tasks to be performed by public services concerning the preservation of cultural heritage and its executants.

In 2016, The Ministry of Culture in cooperation with the Ministry of Infrastructure published a Guidelines for energy renovation of cultural heritage buildings.

The municipality of Lendava follows the rules of the Institute for the Protection of Cultural Heritage of Slovenia in general and has checked the »Guidelines for energy renovation of cultural heritage buildings« in case of Lendava pilot on Lendava Library.



Fig. 2: The Public Library in Lendava in the Register of Slovene Cultural Heritage

Based on the Register of Slovene Cultural Heritage<sup>5</sup>, which is under the jurisdiction of Ministry of Culture, the Lendava Library is classified as Profane Building. In 2018, based on the Local Self-Government Act<sup>6</sup> (Official Gazette of the Republic of Slovenia, no. 94/07, 76/08, 79/09, 51/10 and 84/17) and the Cultural Heritage Protection Act - ZVKD-1 (Official Gazette of the Republic of Slovenia, no. 16/08), the Municipality of Lendava has adopted an Ordinance on the proclamation of cultural monuments of local importance in the area of the Municipality of Lendava<sup>7</sup>.

- How to raise motivation / self-responsibility for individual contributions?

Subsidies are declared to be the most important motivators.

- How to emphasise interests / motivation towards the objectives of STORE4HUC?

<sup>4</sup> <https://www.zvkds.si/en>, Zavod za varstvo kulturne dediščine Republike Slovenije

<sup>5</sup> <https://gisportal.gov.si/portal/apps/webappviewer/index.html?id=df5b0c8a300145fda417eda6b0c2b52b>

<sup>6</sup> <https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/82670>

<sup>7</sup> [https://gis.gov.si/MK\\_eVRDpredpis/p1904\\_1.pdf](https://gis.gov.si/MK_eVRDpredpis/p1904_1.pdf)



The investment in a pilot energy storage system in Lendava will be the first in the region and at national level. The storage, which will be installed in the cultural and historic protected building of Public library of Lendava, will represent a decentralized system of thermal energy advancement in the system with paraffin - latent storages. The municipality of Lendava is one of two Slovenian municipalities that has geothermal district heating, in parallel, the municipality also works on energy efficiency, where there are restrictions on cultural and historical protected structures. Pilot paraffin-based latent storages in connection with geothermal district heating system in Lendava is an innovative investment at the national level, such installation has not yet been built anywhere in Slovenia. Investment can serve as an example of good practice in the project area; example of innovative solution of storing renewable energy in an effective way.

- What is the level of know-how and of awareness of the citizens? Do you have studies about it?

Based on the experiences in several past projects the common expectation and ambition of all stakeholder groups in Pomurje (including the citizens) are to prepare documents/strategies at regional level that take care to promote and facilitate continued improvements of energy efficiency and the accelerated deployment of renewable energy sources in the region by seeking to maximize the local energy self-supply of the region. The main goal is to become an energy self-sufficient region in the future. So the awareness level of the citizens is quite high, but the know-how level is in parallel quite low. The idea is to higher the active involvement of citizens in the implementation and planning process of RES/RUE projects in the future to increase the level of know-how.

- How do you intend to address targeted customer groups and active interested parties?

When the government is among the first to take action (like with the pilot in Lendava), and then widely publicate its experience and resultant energy savings, this can be a powerful motivator for other customer groups - private enterprises and individual citizens - to follow the lead.

- What are the expected main technical / non – technical barriers at local level? How to overcome them? Do you have studies about it?

Main barriers are:

- Time-consuming planning and realisation process due to implementation in a HUC and additional time needed in case of using an innovative storage solution;
- Higher initial investment costs due to implementation an innovative storage solution in case of using an innovative storage solution;
- Additional permits due to monument and local image protection laws related to Cultural Heritage Protection (Institute for the Protection of Cultural Heritage of Slovenia);
- Finding a suitable product on the market in case of using an innovative storage solution.

*Possible solution:*

Independently to the Store4HUC pilot in Lendava and together with the Local Energy Agency, both are planning to have several events to increase knowledge and awareness of the citizens in the region in the field of RES and RUE and in parallel to reduce social resistance related to the integration of RES technologies.

- How do existing financial incentives for renewable and storage complement mentioned strategies?

Financial incentives for renewables are the most important tools for implementing of action plans defined in different local/regional and national strategies related to RES and RUE. For the moment the financial incentives for energy storages are missed and limited to few EU projects, which lead to minimum investments in this area.



- Where do the citizens/ end-users get their information from (Homepage etc.)?

The citizens/end-users get the informations related to investments in new energy technologies, energy storages and related management systems (also for subsidies, best good practice cases, etc.) in general through the different advertising activities by the Local Energy Agency. Informations related to the Lendava pilot in frame of Store4HUC are disseminated by the Municipality Administration and through the project homepage.

# TRANSNATIONAL EVALUATION BY FELLOW SPECIALISTS OF RESEARCH

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D.T2.3.1c The final synthesis report

Version 1  
01-02-21

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## 1. Introduction

Qualitative interviews have been conducted in the framework of interconnected Working and Steering Group Meetings of Store4HUC and from derived regional surveys in detail in D.T2.3.1a and D.T2.3.1b elaborated beforehand. The reports are based on inquiries designed in close cooperation with responsible partners of the four pilots including particular background information for the interviewees. Via intensive Email communications and online interviews due to COVID-19 barriers and specific regional contexts have been investigated and are summarised in both mentioned deliverables. The results have been summarised by PP5 and provided to the interviewees for receiving reviewing feedback and amending the results towards collaboratively agreed interview reports. Some results of the surveys are synthesised in the given evaluation report highlighting mainly two issues: “Main results” and “Identified challenges” per pilot. Other referred deliverables are related to the feasibility studies and implementations as listed in D.T2.3.1a and D.T2.3.1b.

## 2. Objectives

In line with the WPT2 description that is dedicated to pilot action implementation and mutual learning activities the objectives of this synthesis report are:

- To deliver insights about a comparative analysis of the pilots in Bracak, Cuneo, Lendava and Weiz towards renewable energy sources combined with energy storage;
- To check and increase public awareness via summarising their identified interview main results and realisation challenges;
- To provide lessons learnt and recommendation for further replications based on investigations of the four pilots.

Comparisons are drawn among the four surveys. It has been aimed at assessing the progress made in the fourth period of Store4HUC with a view to identifying any lessons that could be applied in the third part of the project.

### 3. Synthesised Feed-back from the pilots

Details of the responses from the corresponding stakeholders and local authorities are listed in form of regional surveys in detail in D.T2.3.1a and D.T2.3.1b. For all pilot actions COVID 19 continues to weaken local, regional and international cooperation. The identified main findings are summarised in table 1:

**Table 1: Synthesised Feed-back tables of the interviewees of the pilots**

<b>Bracak</b>	
<b>Main results</b>	<ul style="list-style-type: none"> <li>■ The selected building Bracak Manor is utilised as central place for municipalities, companies and institutions interested in renewable energy in connection with electricity storage.</li> <li>■ The reconstruction and revitalization of Bracak Manor is in accordance with strategic and policy guidelines of Croatia.</li> <li>■ REGEA participating in the reconstruction and renovation of several historic buildings under cultural heritage protection located in the area of North-west Croatia.</li> <li>■ The main actors are quite committed to the Store4HUC project and well connected to Deployment Desks.</li> <li>■ Lessons learnt of the refurbishment of this pilot shall be used to be replicated with adapted dimensions at other sites as the share of historical buildings is roughly 3% of the building stock in Croatia.</li> <li>■ Bracak Manor has been transformed into an Energy centre Bracak with multi-purpose education and demonstration centre for different local actors.</li> </ul>
<b>Identified challenges</b>	<ul style="list-style-type: none"> <li>■ Energy rehabilitation of a historic building under cultural heritage protection by applying for advanced technical solutions and by retrofitting of a public building.</li> <li>■ Cultural heritage buildings are threatened from numerous factors: abandonment and non-maintenance, unresolved ownership, aging of the population, and poverty.</li> <li>■ Cultural heritage is a non-renewable and limited resource that requires conservation, care, evaluation and use according to the principle of sustainability. Integration of photovoltaic (PV) power plant and to find an adequate space for battery storage was therefore a challenge.</li> <li>■ Experiences in Croatia with renovation of historic buildings under cultural heritage protection are very modest.</li> <li>■ Currently there are no financial incentives for similar measures for buildings under cultural heritage protection.</li> </ul>



<b>Cuneo</b>	
<b>Main results</b>	<ul style="list-style-type: none"> <li>■ Integrating stakeholders via the formed Deployment Desk engaged throughout the municipality to ensure that the targets of the local Sustainable Energy Action Plan will be achieved.</li> <li>■ The visibility of pilots for sustainability actions of the wider municipal mobility plan is underlined by town council decisions and administered by the civil servants of the city.</li> <li>■ Addressed stakeholders are a financial foundation supporting multiplying the Store4HUC pilot action of Cuneo also in other municipalities and the local/regional bus transport companies.</li> <li>■ The environmental impact is reported to the regional government due to the chosen size of the pilot.</li> <li>■ The educational centre nearby the elevator provides information to the citizens and in particular to school classes presenting good practice examples triggered by the municipality.</li> <li>■ High visibility of sustainability of the Store4HUC pilot action may allow replication measures even by private investors.</li> </ul>
<b>Identified challenges</b>	<ul style="list-style-type: none"> <li>■ There are some restrictions for the Store4HUC pilot action as monumental protection is part of the municipality administration in regards to the pilot.</li> <li>■ The permission of a new elevator has to comply with the constraints of the regional administration.</li> <li>■ The PV roof on a swimming pool beside the parking place was originally foreseen, but the connection cable under the street in between to the elevator is not allowed due to national regulation rules.</li> <li>■ The main regulatory barriers are related to restrictive national safety rules.</li> </ul>



<b>Lendava</b>	
<b>Main results</b>	<ul style="list-style-type: none"> <li>▪ Integrating stakeholders via the formed Deployment Desk and so-called materiality assessment (see D.T2.3.1b) engaged in the municipality is to ensure that the targets of the local Sustainable Energy Action Plan will be achieved.</li> <li>▪ The municipality and pilot of Lendava follow the guidelines for energy renovation of cultural heritage buildings of 2016.</li> <li>▪ Pilot paraffin-based latent storages in connection with geothermal district heating system like the Public library in Lendava is an innovative investment to be replicated in the neighbourhood and municipalities with nearly similar conditions.</li> <li>▪ To prepare documents/strategies/events at regional level that take care to promote and facilitate Store4HUC pilot action replication</li> </ul>
<b>Identified challenges</b>	<ul style="list-style-type: none"> <li>▪ Time-consuming planning and realisation process due to implementation in a HUC and additional time needed in case of using an innovative storage solution.</li> <li>▪ Higher initial investment costs due to implementation an innovative storage solution in case of using an innovative storage solution.</li> <li>▪ Additional permits due to monument and local image protection laws related to Cultural Heritage Protection.</li> <li>▪ Finding a suitable product on the market in case of using an innovative storage solution.</li> </ul>



<b>Weiz</b>	
<b>Main results</b>	<ul style="list-style-type: none"> <li>■ Integrating stakeholders via the formed Deployment Desk engaged in the municipality is fully and seamlessly embraced into the achievement of regional climate and energy targets.</li> <li>■ The integration of a thermal energy storage into the existing district heating stand-alone system allows an efficient delivery and use of the input material, the wood chips.</li> <li>■ Replication of lessons learnt from the Weizberg case are promoted by the stakeholders and widespread in the municipality in order to facilitate the integration of future investors and foster team building at project level.</li> <li>■ Putting a large portion of its project activities into empirical analysis and embracing spatially, socio-economically and technically the widest possible range of sustainable energy solutions.</li> </ul>
<b>Identified challenges</b>	<ul style="list-style-type: none"> <li>■ Structural changes in protected areas therefore require a building permit including a positive assessment of the protected area.</li> <li>■ The embedment in the landscape and the resulting additional costs that are necessary due to the additional planning are relevant parameters to be considered.</li> <li>■ Connecting civil society protagonists and political decision makers on a guided way towards a sustainable energy path.</li> <li>■ Enhancing the values of our built heritage for future generations and European Quality Principles for Cultural Heritage Interventions.</li> </ul>

## 4. Lessons learnt and related replication recommendations

In this document, the analysis is focussed on “empirical” understanding aiming at comparing results collated via conducted regional surveys presented in D.T2.3.1a and D.T2.3.1b as well as referred to particular feasibility and investment plan reports of the pilot actions.

### 4.1. General information

Awareness raising of the Store4HUC project has been increased in Bracak, Cuneo, Lendava and Weiz. The level of awareness can be directly related to the dissemination activities of the project performed in close cooperation with the WPC team.

### 4.2. Comparative analysis among the four pilot actions

When the Store4HUC project has been commenced in April 2019, it outlined a number of specific targets for each of the four pilot actions and related municipalities. The performed surveys given in D.T2.3.1a and D.T2.3.1b have reflected the initiatives behind and the municipal and regional conditions the underlining communal concepts achieving the project targets. Even if Store4HUC has meanwhile generated more enthusiasm in comparison to the initial situation, it should be recognised that the COVID 19 crisis has completely changed the landscape and the time schedule of the interventions. Decisions are facing re-analyses in 2020 just in time with the mid-term reporting. It is worth noting that Bracak, Cuneo, Lendava and Weiz have shown considerable flexibility to find solutions when problems have arisen so that the particular targets will be met, even with delays. There is also evident to mention that the general commitment from our investing partners is still there thanks to additional efforts performed local teams. All interventions made and foreseen follow the international and national key ethical and technical guidance and recommendations on heritage. The approaches of the pilot actions are mutually spread:

- Bracak – Intention is to develop a lighthouse Energy Centre as a regional hub of excellence and knowledge in energy efficiency and renewable energy sources.
- Cuneo – This Store4HUC pilot is carried out to use renewable energy and a battery storage for the operation of the elevator system, limiting the energy consumption to a minimum.
- Lendava – The Lendava Library (public building) will be connected to the existing geothermal district heating network to increase the share of renewables in public sector.
- Weiz - The integration of a thermal energy storage system into the existing Weizberg biomass heating system is to increase flexibility and energy efficiency is thus fully and seamlessly integrated into the regional climate and energy targets.

All pilot actions follow the logical chain underlining the bandwidth of integrated innovative energy storages connected with each other via clearly defined attributes (such as end-users addressed via participative measures) and related more detailed key performance indicators (see D.T2.1.1).

### 4.3. Barriers for succeeding

Legal, administrative and acceptance complications, largely because the integrated innovative approaches are not commonly applied in traditional renovation projects. How to deal with these barriers on the project level are summarised in the following:

- To put in place structures to deal with delays as they are likely to occur.



- To set a realistic time frame for obtaining permits.
- To consider long lead times that might occur during tender procedures.
- Project developers or town councils might be reluctant to follow a proposed process or implement a recommended technology.
- Fragmented decision-making process: bureaucracy at the municipality level also creates significant delays, e.g. the need to involve separate departments in the authorisation process, together with short term budget planning.
- Challenge may arise from difficulties finding appropriate developers in the private sector willing to meet the performance and time schedule targets.

#### 4.4. Lessons learnt and general recommendations

It is difficult to allow direct comparisons between all four municipalities in relation to the Store4HUC project. The problems are referring the delays of some pilot actions among others due to COVID 19. As a consequence of public awareness, it is noticed that related local advertisements are of high relevance. The perception of the public are significant socio-economic and social indicators to be considered from the planning to the implementation phases. What are the lessons learnt in general given by the interviewees in D.T2.3.1a and D.T2.3.1b:

- Financial considerations for investors are a strong motivator, but they shouldn't be more and more overloaded with bureaucratic elements as undertaken during requesting for particular permits.
- The municipalities have responded positively to the setbacks they have encountered and solutions of the Store4HUC project team have kept the active and positive approach.
- The reporting requirements and long-lasting feedbacks at local level are frustrating for external partners, but this is no excuse for not fulfilling contractual obligations.
- Adequate local policies encouragement relying on project results.