Deliverable nº 6.1.b

2nd Part

Knowledge sharing activities in Bolzano and Innsbruck

Update on knowledge sharing activities in SINFONIA

SINFONIA

"Smart INitiative of cities Fully cOmmitted to iNvest In Advanced large-scaled energy"

CONTRACT NUMBER	**609019**	**INSTRUMENT**	**COLLABORATIVE PROJECT**
START DATE	**2014-06-01**	**DURATION**	**60 MONTHS**

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List of abbreviations

ACC	Agenzia Casa Clima
BOZ	City of Bolzano
CEN	European Committee for Standardization
DH/C	District heating/cooling
DoW	Description of Work
EURAC	European Academy of Bozen/Bolzano
G!E	Greenovate!Europe
IEP	Innsbrucker Energieentwicklungsplan
IIG	Innsbrucker Immobilien Gesellschaft
IKB	Innsbrucker Kommunalbetriebe
IPES	Istituto per l'Edilizia Sociale
KPC	Kommunalkredit Public Consulting
MAG IBK	Magistrat Innsbruck
NHT	Neue Heimat Tirol
PHI	Passive House Institute
PMB	Project Management Board
SAT	Standortagentur Tirol
SEL	Società elettrica altoatesina SpA
SME	Small and medium enterprises
TC	Technical Committee
TIGAS	TIGAS Erdgas Tirol GmbH
TIWAG	Tiroler Wasserkraft AG
UIBK	Universität Innsbruck
WP	Work package

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1. EXECUTIVE SUMMARY

After five years of SINFONIA runtime we can look back to a large number of involvement activities organised and carried out by different project partners with the aim of actively including stakeholders in diverse aspects of the project. The deliverable at hand holds a selection of the eleven most successful involvement activities covering interventions in the two demo cities Bolzano and Innsbruck (chapter 4 and 5) as well as interventions reaching beyond the demo city level (chapter 6).

This selection of highlights of stakeholder involvement is presented in the format of two-sided factsheets (compare Annex 2). Page one contains a general description of the interventions. Their underlying vision, the addressed stakeholder groups and outreach are graphically highlighted in text boxes which shall increase the attractiveness and clarity of the factsheets. Page two presents the challenges and recommendations derived from the experiences made by planning and implementing the interventions. The rather dense information is loosened by picture material and by comments of involved persons. Logos of the contributing partner institutions are on top of page two. The factsheets are mainly addressed to different representatives of Early Adopter and Replication Cluster cities and shall facilitate the replication process. The factsheets will be made available via SINFONIA`s online toolkit for stakeholder involvement (http://alpsthu.bplaced.net/wordpress/).

Upon a closer look on the challenges experienced throughout the planning and implementation of stakeholder involvement measures in the framework of SINFONIA a common pattern becomes apparent. As reported previously the main challenges are not related to technical components but to stakeholder dialogue and communication. Firstly, players of different institutional background and with different functions have to be brought together and good cooperation routines based on common and well-defined goals have to be establishment. Secondly, rather sophisticated topics have to be communicated to different target groups. The preparation or “translation” of complex contents to stakeholders like tenants or pupils is challenging. Thirdly, although the intentions are good not all activities are welcomed with open arms. To inspire tenants or students for the topics of energy efficiency or smart city in general is elaborate. Different backgrounds of the addressed target groups, like age, financial or educational background, have to be considered. Furthermore, anticipating time and effort for the implementation of involvement measures is difficult. Most experiences in SINFONIA show that the interventions are more time-consuming and more expensive than originally expected.

What we learned from these experiences is that the establishment of a good contact to all participating actors is an important prerequisite for the transfer of knowledge. The creation of a positive and constructive working climate based on mutual trust and transparency is fundamental. Furthermore, anticipatory planning and the early promotion of involvement measures are recommendations that were derived from most best practice examples described below.

More details on challenges and recommendations are presented in the following.

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2. INTRODUCTION

The deliverable at hand is an update on the report of knowledge sharing activities in the framework of SINFONIA as published in Deliverable 6.1b in February 2016. The first part of the deliverable provided an overview on activities related to the involvement of stakeholders on a local level between internal and external stakeholders, between all European partners within the different work packages, between the demo cities of Innsbruck and Bolzano and, beyond that, with Early Adopter Cities and other smart cities organized in the Replication Cluster.

The first part of the deliverable was a (more or less) complete listing of knowledge sharing activities at the reporting time and furthermore aimed at the introduction of established instruments for stakeholder involvement (e.g. district team, local stakeholder team, communication team). After more than five years of project runtime at the time of the release of D6.1b – Part 2 we are able to look back on an extensive series of knowledge sharing activities which allows us to draw conclusions on the success of different applied involvement measures. Hence, in the following chapters we will focus on the **highlights of stakeholder involvements** in the two demo cities and beyond the local level.

The highlights were selected based on a short survey on applied measures for stakeholder involvement. The survey form was circulated among the main internal key stakeholders of SINFONIA prior to the release of D6.1a – Part 2 (compare annex 2 of D6.1a – Part 2). The selection of eleven highlights is presented in the format of two-sided factsheets. The factsheets contain a general description of the involvement measure, the underlying vision, the addressed stakeholder group(s) and the achieved outreach. On the second page of the factsheet we draw a résumé including the presentation of challenges experienced in the preparation and implementation phase of the intervention. Based on the described experiences and challenges we derive recommendations with the intention to facilitate the replication of the involvement measure in other smart cities.

The factsheets will be published on the online toolkit for stakeholder involvement under http://alpsthu.bplaced.net/wordpress/ and can be downloaded there by representatives of the Early Adopter and Replication Cluster Cities as well as by other interested people.

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3. GOALS OF KNOWLEDGE SHARING ACTIVITIES

All knowledge sharing activities carried out in SINFONIA were aligned with the following goals that have been published in the first part of Deliverable 6.1b:

1. Knowledge sharing at all levels

In the framework of SINFONIA a broad spectrum of knowledge sharing activities was organised and executed by different partners. Among the selection of activities we chose eleven methods that are to be considered as highlights and will be examined more closely in the following. The selection encompasses measures from the two SINFONIA demo cities (see chapters 4 and 5) as well as measures that reach beyond the local level (see chapter 6).

The following listing provides an overview on selected involvement measures for the deliverable at hand:

In Bolzano:

- Appointment of a tenants representative in refurbishment buildings
- Demo apartment tour “Better living”
- Design of a user manual for tenants
- Real-time feedback on energy consumption in households

In Innsbruck:

- District meetings as a tool for successful project management
- Energy consultancies for households
- Ideas competition “Smart city of the future” for students
- School workshop program „Smart City of the Future“
- Smart City Lab - IKB-Smart-District

Beyond the local level:

- Questionnaire survey for tenants
- Experience Passive House – International Passive House Open Days

2. Encouraging of stronger interdisciplinary collaboration between stakeholder groups

The concept “smart city” *per se* is the embodiment of interdisciplinary teamwork. Transforming a city into a *smart* city requires the constructive collaboration of a large number of stakeholders (compare Del. 6.1a for the SINFONIA stakeholder maps). Stakeholder involvement activities in the framework of SINFONIA are aiming at encouraging a stronger interdisciplinary collaboration at different levels. Since the project consortium is diverse and partner institutions cover important stakeholder groups (e.g. housing agencies or energy suppliers) the project management tools provided in the DoW are the basis

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for the involvement of those INTERNAL stakeholders (compare chapter 5.1 – District meetings as a tool for successful project management) and provided the basis for collaboration of representatives of different disciplines among the partners.

When it came to the involvement of external stakeholders, especially the "end users" at the centre of the stakeholder maps, the high quality of some involvement activities was based on the good cooperation of the partners. In Innsbruck, for instance, partners jointly developed a workshop program on the concept of smart cities with a focus on activities performed in SINFONIA that covered different thematic fields represented by different partner institutions (compare chapter 5.4).

3. Coordination of planning and implementation activities

Instruments for the management of planning and implementation of stakeholder involvement activities are partly already intended in SINFONIA`s description of work (e.g. district meetings, local stakeholder meetings). Other panels like e.g. the local Communication Teams have been established as a reaction on local requirements.

Upon closer consideration of the challenges experienced in single involvement activities (compare page 2 of the factsheets on best practice in stakeholder involvement) it becomes apparent that the good coordination of different players with different functions is one of the biggest success factors. Recommendations often target the proactive planning of activities and the permanent presence of coordination units during the implementation of activities.

4. Facilitation of replication processes in Early Adopter and Replication Cluster Cities and Share of good practices as well as broader engagement

All project deliverables derived from WP6 (D6.1a-I, D6.1a-II, D6.2, D6.3, D6.4) aim at sharing good practices of stakeholder involvement. Beyond that, contents of the deliverables were constantly integrated in the WP6 toolkit for stakeholder involvement (http://alpsthu.bplaced.net/wordpress/).

Figure 1 shows the structure of the toolkit with its five main domains. The items in the figure represent the different entry-levels to the toolkit. All elements of the graph serve as clickable entry links to detailed information about the single subjects. Subsections are interlinked to enable a multi-dimensional access to contents resulting of WP6 outcomes. The language is easily understandable and free of SINFONIA-specific notions. Contents are loosened with picture material. This way, it shall be ensured that different target groups can easily orientate in the toolkit and screen relevant information.

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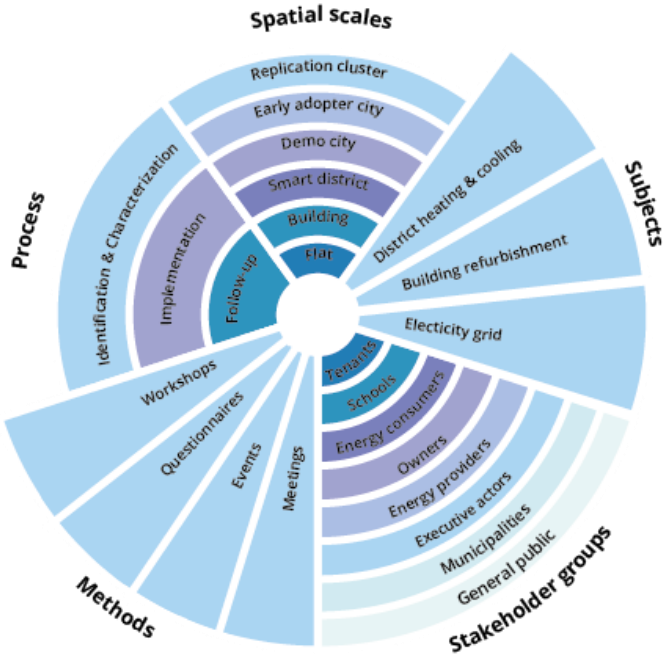

FIGURE 1 TOOLKIT FOR STAKEHOLDER INVOLVEMENT – ENTRY GRAPH REPRESENTING THE TOOLKIT`S STRUCTURE

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4. KNOWLEDGE SHARING ACTIVITIES IN BOLZANO

The following three involvement measures are considered as highlights in Bolzano and hence are described in detail below. Identified highlights are presented in the format of two-sided factsheets. The corresponding pdf files are attached to the document in Annex 2.

4.1 APPOINTMENT OF A TENANTS REPRESENTATIVE IN REFURBISHMENT BUILDINGS

In the framework of SINFONIA a series of residential buildings was refurbished, including refurbishment measures inside inhabited flats. In order to guarantee a transparent flow of information and to establish an environment of trust, housing agencies in Bolzano appointed the figure of a tenants` representative.

The role of the tenants` representative was taken over by the so-called “trustees”, that are democratically elected by the tenants on a yearly basis in order to represent the side of the tenants in periodic meetings with the landlords. The trustees are responsible for mediation in case of conflicts and the proposal of improvements related to the building to the housing associations. He or she lives in the communal building and in most cases is known personally by the other tenants. The work of the trustees and hence the tenants` representatives are acknowledged with a small budget.

By appointing the “trustees” as tenants` representatives it was guaranteed that the choice corresponds to the tenants` expectations. In addition to their tasks as trustees the tenants` representatives, under the guide of municipality’s offices, were responsible for the distribution of information material concerning the refurbishment and monitoring activities in the framework of SINFONIA and the active involvement of tenants in different activities related to the refurbishments (e.g. questionnaire surveys, monitoring of energy performance).

Features & Résumé	
Vision	Refurbishment of lived-in apartments requires a sensitive handling of tenants. By appointing a representative figure from the ranks of the tenants initial resistance should be overcome.
Addressed stakeholder groups	▸ tenants ▸ housing associations
Outreach	Housing agencies in Bolzano refurbished six building complexes with nearly 400 apartments.

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Challenges	▸ The SINFONIA refurbishment plan was very complex and initial mistrust from political side and from the side of the tenants had to be overcome. ▸ In one "critical" building site the tenant representative had to be replaced by an employee of the Municipality of Bolzano since the appointed person became one of the biggest opponents of the refurbishment works which had a negative influence on the other tenants. Although the cooperation worked perfectly during the preparation of all construction activities and during the refurbishment on the façade and rooftop, the trustee objected the refurbishment activities that were carried out inside the lived-in apartments. Strong mediation skills were required to ease resulting conflicts among tenants, housing and construction companies.
Recommendations	▸ To guarantee a transparent flow of information it is recommendable to adopt a winning communication strategy for the involvement of tenants that also consider tenants` needs and desires. Tenants need to be constantly informed about the refurbishment activities. ▸ Pay attention to correctly inform tenants about the refurbishment activities including technical details of the devices that will be installed in their apartments, the resulting benefits and possible uneasiness to be faced during the execution of the works. The acceptance for invasive refurbishment activities is significantly higher, when tenants can anticipate them in advance. ▸ It is essential that the tenant representative obtains strong mediation skills. In critical cases the role of the representative should be taken over by an external neutral person that does not come from the ranks of the tenants. ▸ Organise regular exchange meeting with the trustees and the tenants on a monthly basis during the phase of the construction works.
Comments of tenants to their representative, **Passeggiata dei Castani**	*"The refurbishment works are too invasive and come along with an unacceptable production of dust and excessive noise."* *"I was never told that construction companies and all the subcontractors will enter my apartment that often."* *"Construction companies have not always used sufficient precautions to limit the production of dust and noise"*

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	"Now the building is more beautiful, more comfortable and more silent.

4.2 DEMO APARTMENT TOUR "*BETTER LIVING*"

In Bolzano five building sites have been refurbished in the framework of SINFONIA while tenants lived in the apartments. This caused a series of interferences of tenants' daily lives since the renovation works included interventions inside the apartments. In order to communicate the advantages of the new technical installations and promote acceptance by the tenants, the project partners in Bolzano launched a touring exhibition called „*Qui vivo meglio / Besser wohnen*" (i.e. „*Better living*").

Tenants were personally invited to a series of events where experts of the SINFONIA consortium guided visitors through an exhibition that included technical details about the new installed equipment. The demonstration tour was set up in an empty apartment, one at each refurbished building site, giving tenants a tangible idea about the results of the intervention activities in their own apartments.

The items of the exhibition were distributed in four main rooms, each one referring to a single refurbishment intervention. Tenants were able to see what will change in their homes, how those changes will influence their daily life and how they can improve their well-being. Short texts combined with graphical content helped to easily understand the main aspects of the interventions.

The exhibition aimed at raising tenants` awareness on energy efficiency and on benefits associated to energy refurbishment. Based on the assumption that a higher acceptance for the interventions fosters a behaviour change to a decreased energy consumption, the exhibition also aimed at reaching the full energy-saving potential of the refurbishments.

Features & Résumé	
Vision	Tenants are often sceptical about refurbishment activities in their apartments. Prejudices can be reduced by giving tenants the opportunity to check out technical equipment in a demo apartment.
Addressed stakeholder groups	▸ tenants
Outreach	The exhibition was held five times and adapted to each SINFONIA building. 146 tenants (about 22 %) visited the demo apartment.
Challenges	**…regarding the preparation of the event**

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	▸ Many actors from different organisations with different functions are involved and need to be coordinated. ▸ The apartment is not an usual location for an exhibition. It implies many obstacles both from a practical (transporting materials, getting the space clean and prepared) and legal point of view (responsibilities for any damage to persons and property) . ▸ Activities running on the construction site can interfere with the exhibition (e.g. workers coming inside the apartment where the exhibition is installed). **…regarding the interaction with tenants** ▸ Negative attitude of some tenants, mainly caused by bad experiences during the refurbishment works, can influence all the tenants that are visiting the exhibition at the same time. ▸ Tenants take the opportunity to ask different kinds of questions that are not always in line with the content of the exhibition. ▸ Even if the content of the exhibition is about the improvements in all the apartments, some tenants tend to persist in comparing the interior fittings of their own flats to the new ones.
Recommendations	▸ Plan all the steps in advance and include all involved actors from the very beginning. ▸ Guarantee the presence of housing owners during the visits. Often they are the only ones who can answer specific questions. ▸ Partially refurbished apartments are more suitable for a exhibition venue than brand new ones. This way tenants will focus more on the topics presented instead on the aesthetics of the interior fittings. ▸ Get more information *here*!
Comment Tenant, Passeggiata dei Castani building, Bolzano	*„Finally we know how to use this new ventilation system. We've never seen it before and we had no idea about how to use and maintain it.* *This tour and the explanation you gave us were really interesting and useful for us."*

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4.3 DESIGN OF A USER MANUAL FOR TENANTS

In order to guarantee that tenants properly use the new technologies in their refurbished apartments SINFONIA partners elaborated a user manual. It contains a guideline that can help tenants to better manage their apartments and the main technical devices installed in the framework of SINFONIA.

The manual transports information on appropriate user-behaviour in refurbished buildings which is considered a key factor for achieving the expected energy savings. Specifically, the guidebook addresses the right use of the mechanical ventilation systems and the sun blinds plus the temperature management inside the apartments. It has common basic contents and additionally holds specific information for each building site. Hence, it can be easily adapted for the use by the facility management of other dwellings.

A series of coordination meetings with housing owners, designers and illustrators proceeded the preparation of the guidebook to ensure that the messages are transferred in a suitable way. Language and design of the manual are corresponding to age and cultural background of the tenants. The imparted content is liven up by the use of comics.

The final version of the user manual is divided into four chapters with different colours. The red chapter is a detailed guideline for the management of facilities in the apartments and holds explanations on illumination, shadowing, ventilation and heating as well as water and energy consumption. The green chapter provides a two-sided overview on necessary daily maintenance activities. The yellow chapter gives tenants background information on comfort and health and on the influence of user behavior on the building`s energy performance. Finally, the blue chapter contains templates intended for the record of annual maintenance activities.

Features & Résumé	
Vision	The proper application of technical devices can be challenging for tenants. A user manual shall provide assistance for proper user behavior in order to achieve envisaged energy savings.
Addressed stakeholder groups	▸ tenants ▸ housing associations

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Outreach	The user manual is distributed as a printed version to all the involved tenants in Bolzano.
Challenges	▸ The main challenges of the design of the User Manual were to have a document which is user-friendly, short, and accessible to all tenants. The figures are relevant for promoting a wider use of the document. ▸ The User Manual aims at answering to challenges related to the daily choices in terms of energy consumptions and use of the retrofitted flat. Day by day, tenants ventilate, change temperatures and heat their houses. The User Manual support the tenants to make their choices the most effective and low consuming.
Recommendations	▸ The manual is an important instrument that support tenants in daily choices for decreasing their energy consumption. ▸ Get more information *here*!

4.4 REAL-TIME FEEDBACK ON ENERGY CONSUMPTION IN HOUSEHOLDS

Tenants of 140 apartments in refurbished buildings in Bolzano receive real-time feedback about their energy consumption via a touchscreen monitor. A dedicated Graphical User Interface (GUI, see Figure 2) has been designed and developed for this purpose. Based on the assumption that energy saving tips increase individuals` likelihood to change behaviour, the GUI will also send saving tips when a particular energy consumption threshold is achieved.

Via the GUI of the monitors installed inside the apartments, tenants will furthermore receive information about the historical household consumption on a daily, weekly and monthly basis.

Moreover, some of the tenants are randomly assigned to a treatment group. These tenants receive a normative message, including descriptive and injunctive norms in addition to the abovementioned feedback. This approach is based on the evidence that social comparison feedback activates individuals' intrinsic motivation to change behaviour. The descriptive message informs about the mean household energy consumption from the most efficient similar residents during the past days, weeks and months.

The monitor is a tool to promote an effective use of the retrofitted apartments. The proper application of the monitors by the tenants is assisted by dedicated workshops and a user manual. Focus of the workshops also is the importance of individual and family behaviour for energy efficiency and they shall empower participants to achieve effective energy saving results, both for them and for the project.

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FIGURE 2 GUI OF MONITORS FOR FEEDBACK ON ENERGY CONSUMPTION

Features & Résumé	
Vision	Real-time feedbacks can increase tenants' awareness about their energy consumption habits. Social comparison feedbacks can increase energy savings.
Addressed stakeholder groups	▸ tenants
Outreach	The touchscreen monitors were installed in 140 apartments.
Challenges	**…regarding the design of the GUI** ▸ A big number of tenants are elderly. Often they are not familiar with ICT technologies. ▸ People from many disciplines are working together in the project, with different expertise and speaking in specific technical languages. **…regarding the development** ▸ Every monitoring system has different protocols and ways to manage data. Gathering, harmonisation and integration of data in the GUI is considerable difficult. **…regarding the installation** ▸ Technical aspects: A smooth installation of the displays requires the coordination of the involved construction companies (preparation of all the necessary connections and proper lockable display case wall mount).

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	▸ Legal aspects: Personal data protection has to be in compliance with the EU General Data Protection Regulation GDPR. **…regarding the contact with the tenants** ▸ Some tenants are skeptical with the monitoring activities. They feel controlled and cannot see the advantages that they could obtain from this tool.
Recommendations	▸ Foresee a testing phase of the interface before launching, using a sample from final users to assess it. ▸ Prepare detailed monitoring specifications with all the technical requirements in an early stage of the project. ▸ Consider Data protection from the beginning, collecting signed documentation in an early stage of the project. ▸ Check out the GUI demo *here*!
Comment of tenant, Via Brescia-Cagliari building, Bolzano	*„We are looking forward to have this monitor installed to improve our wellness at home, cannot wait any longer!“*

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5. KNOWLEDGE SHARING ACTIVITIES IN INNSBRUCK

In the demo city of Innsbruck, the following five knowledge sharing activities are considered as highlights and are described in detail below. Identified highlights are presented in the format of two-sided factsheets. The corresponding pdf files are attached to the document in Annex 2.

5.1 DISTRICT MEETINGS AS A TOOL FOR SUCCESSFUL PROJECT MANAGEMENT

The core instrument for the management of local activities concerning the European project SINFONIA is the district team and its periodic meetings. The district meetings are organised by the district lead for the local representatives of the project consortium of the demo city of Innsbruck in order to monitor the project progress, provide exchange of information and update about administrative issues.

The district lead of Innsbruck is responsible for the regular meetings (every one to three months) of the consortium partners of the demo city. These meetings follow the purpose to ensure the successful implementation of the project in line with the description of work and the coordination between the tasks of the different work packages. The district lead informs about administrative issues regarding the project implementation (e.g. about the status of the amendment) and coordinates dissemination events like site visits or any other events which involve the partners of the demo city.

SINFONIA is a complex project with a wide range of interdependencies between the partners and, hence, holds a considerable potential for conflicts. Besides the timely realisation of implementation measures the district lead is responsible for the establishment of a positive working atmosphere and has to manage arising conflicts so that the overall targets come back in the focus of the partners.

Features & Résumé	
Vision	The district lead is an additional management and coordination layer on the local level to guarantee the fair and neutral encounter of local partners.
Addressed stakeholder groups	▸ Municipality of Innsbruck ▸ local energy suppliers ▸ local building owners ▸ local scientific & technical consultants
Outreach	30 district meetings over a period of 63 months were held in Innsbruck.
Challenges	▸ The district lead is responsible for the set-up of management structures that are suitable for all partners. Partners have to follow a common well-defined goal to make them pull together for the overall targets.

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	▸ Most local project partners had no experience with international EU-funded projects. Hence, some partners lacked the understanding for project management procedures like e.g. reporting to the Commission. ▸ Team formation and the establishment of good cooperation routines required a significantly high amount of time and mediatory skills in the beginning of the project. However, the opportunity to meet in regular periods led to the increase of trust between the local partners. Trust is a fundamental relational component of European projects that permits to reach shared goals and a coordinated implementation of envisaged activities.
Recommendations	▸ The district lead has to be a neutral figure that is not directly involved in any implementation activity. He or she has to function as a mediator between the project partners if necessary. ▸ Create a good contact with all the partners on a project as well as on an institutional level. ▸ Do not neglect the municipal political players since their backing supports the smooth process of local demonstration measures. Consider that the composition of the council may change during the project term. ▸ Make sure to hold a well-balanced discussion between all the participating actors. Do not overstrain your partners - a meeting of three hours was experienced to be the maximum reasonable duration. ▸ Get more information *here*!
Comment by Hanna Krimm, University of Innsbruck	*„The district meeting is a persuading tool to exchange information and to get updates about on-going SINFONIA activities, status and progress reports as well as informal exchange between the local partners."*

5.2 ENERGY CONSULTANCIES FOR HOUSEHOLDS

In Innsbruck, eleven apartment houses have been refurbished in the framework of SINFONIA. Among them, tenants of 40 apartments participated in a detailed monitoring of their personal energy consumption. The measurements aimed at providing tenants with well-founded advice for the improvement of their household`s energy efficiency.

The partner Passive House Institute collected basis data of the tenants (e.g. number of persons that live in the household, living space, applied heating system, water heating, energy consumption of the

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last few year) at their first appointment. In addition, all electricity appliances were checked and noted by the tenants' self-assessment (age, duration of use).

The consultants were equipped with a measuring case containing eight measuring plugs (see Figure 3) installed to measure the consumption of the main devices in the household like the refrigerator or the electric stove. These were measured over a period of one to three months.

After this period, the results were evaluated including the calculation of possible savings and, as a first step, sent to the tenants by mail. The results of the monitoring pointed out a clear savings potential.

Additionally, the tenants was offered an on-site consultation for the personal presentation of the measuring results. It aimed at pointing out the potential for energy savings and optimized costs and hence, the optimization of the tenants` energy consumption.

FIGURE 3 MEASURING CASE WITH EIGHT MEASURING PLUGS

Features & Résumé	
Vision	Through measurement-based consulting and the demonstration of improved economics the refurbished flats shall reach their full energy saving potential.
Addressed stakeholder groups	▸ tenants
Outreach	40 households were consulted.
Challenges	▸ The installation of monitoring systems, maintenance and handling of data are laborious.

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	▸ In most cases, tenants do not have the competence to interpret the measuring results regardless of the graphic preparation. Hence, the presentation of results is the most important part of the consultancies and requires extended individual discussions, well-illustrated graphic results and a consulting focus on the elaboration of suggestions for improvement. ▸ Most participants turned out to be elderly people with a conservative approach to investing in new appliances. This poses an additional limiting factor even for improvements that are clearly financially beneficial with regard to the lifecycle of the product in question.
Recommendations	▸ Depending on the age and educational background of the tenantship of a housing company the effort spent on explaining results and further actions must be adjusted. In any case, significant resources must be allocated for this purpose or the whole campaign is ineffective. ▸ Energy consultancy needs to be a continual effort. ▸ In some instances, TV and related auxiliary equipment contributed more significantly to the total consumption than expected. This should be considered in following campaigns.
Comment by Wolfgang Hasper, Passive House Institute	*„With efficient appliances and limited stand-by losses a very low electricity consumption is within reach for everyone.* *Regulations should mandate very low stand-by power consumption. Less than 1W should be mandatory for any energy related product while class A and higher ratings should only be granted for considerably less."*

5.3 IDEAS COMPETITION "SMART CITY OF THE FUTURE" FOR STUDENTS

The successful implementation of energy saving strategies such as pursued in SINFONIA stands and falls with the acceptance of corresponding measures. Therefore, it is important to transparently communicate the smart city concepts to the broad public. To reach students, the local partners organised an ideas competition on the topic "SMART CITY – City of the Future" with a focus on sustainable energy supply.

At the ideas competition pupils could write or design their concepts on the city of the future and win prizes. On this occasion, more than 300 students came in touch with the contents of SINFONIA. The competition took place within the scope of the "Young University – day of action" organised by the University of Innsbruck. At this event, different institutes of the university and external institutes with a scientific and technical background could present the topics of their daily work to school children

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and teenagers. The eight winners were invited to receive their prises in person, handed over by the vice-mayor of Innsbruck.

Since teachers and parents of the students participated in the award ceremony, the event had a multiplier effect on the social environment of the students.

In April 2017 there was a successful repetition of the event. IIG – as owner of the three school buildings in Innsbruck – presented a multi-media-show about reasons and implementation of refurbishment work in schools to the pupils in addition.

Features & Résumé	
Vision	Creating awareness of the topic „Smart city“ among students outside the SINFONIA-framework to reach the general public using their multiplier effect.
Addressed stakeholder groups	▸ pupils ▸ general public ▸ local politicians
Outreach	More than 500 students participated in the competition. Via the students as multipliers member of their families also came in contact with SINFONIA.
Challenges	▸ It is not easy to inspire students for the topic energy efficiency or smart city. The ideas competition was only a part of the stand at the “Young University – day of action” but it turned out to be a successful part. Younger pupils as well as older pupils were happy to participate. ▸ After two successful SINFONIA days for students an ideas competition with lager scope was planned for pupils in Innsbruck to celebrate the end of SINFONIA. Despite promotion by the state school board and local organisations, several events and word-of-mouth recommendation, not a single contribution was received. It turned out, that it is much easier to reach students when they are on site and submit their contributions on site.
Recommendations	▸ Select appropriate methods to reach student target groups fairly. A competition stands out especially because in the case of an associated award ceremony, additional attention can be paid to the project itself (press, invited local politicians or teachers and parents).

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	▸ Use existing frameworks or events (i. e. "Young University – day of action"), so that the students can participate on site. ▸ Get more information *here*!
Comment by Ursula Schwarzl, City councillor, Municipality of Innsbruck	*„Energy efficiency and the fight against the worldwide climate crisis must be seen as connected effort. Energy production hardly ever happens without harmful emissions. So reducing our carbon and nitrogen footprints is a goal that must be followed and taught to the young generations. That's why SINFONIA is an important project not only for the participants but for everyone who benefits from better air quality and a better living environment."*

5.4 SCHOOL WORKSHOP PROGRAM „SMART CITY OF THE FUTURE"

In Innsbruck, three elementary schools (Siegmair, Angergasse and Neu-Arzl) were refurbished in the framework of SINFONIA. Over a period of two years (2015 – 2017), schools were being renovated to improve their energy efficiency. To involve the actual users of the school buildings we developed and implemented the School Workshop Program: Smart Cities into the school`s curriculum.

The workshop program consisted of a kick-off event, one obligatory basic module and three elective modules on the topics of energy, mobility and aspects of the refurbishment of the school building. Module 1 was organised by local members of the SINFONIA consortium. It aimed at the presentation of SINFONIA to all pupils and teachers taking part in the workshop program and to raise awareness for the use of renewable energy and the refurbishment activities. The additional three modules were held by "external" partners like Energy Tyrol and Climate Alliance Tyrol, that have experience in the exchange of knowledge of relevant topics to the target group.

Applied methods and contents of the workshop were adapted to the age of the children.

A coordination unit consisting of local project partners guaranteed the consistency of the program sequences.

Features & Résumé	
Vision	Students of refurbished schools in Innsbruck should feel part of SINFONIA and the renovation activities of their school building.
Addressed stakeholder groups	▸ schools ▸ general public
Outreach	More than 100 students participated in the workshops.

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	Via the students as multipliers members of their families also came in contact with SINFONIA.
Challenges	▸ Prerequisite for the transfer of knowledge to the pupils is the establishment of a good contact with the teachers and the headmasters of the schools. Since the curricula of the schools are relatively tight and offers of extracurricular activities by different institutions are manifold, some efforts have to be done to persuade the schools of participating in the workshop modules. ▸ It is challenging to prepare complex topics in the context of smart cities in an age-based way. The age of pupils in the SINFONIA schools range between six and ten years. Accordingly, topics are processed in a playful and easy intuitive way. ▸ The financial situation of pupils has to be considered. All involvement activities with schools described above were offered for free. Costs were covered by the consortium partners or by the external institutions involved. It is unlikely that costs for non-financed events can be covered by schools or pupils.
Recommendations	▸ Establish a good contact with the teachers and the headmasters of the schools! ▸ Promote the program as early as possible! To convince schools to participate, the workshop program has to follow a clear structure and a reasonable embedding in the school curricula. ▸ Involve external educational partners! It is beneficial for the involvement of schools to base the workshop program on an existing range of offers to guarantee that available resources are used. ▸ Get more information *here*!
Comment by Kathrin Schwab, University of Innsbruck	*"The school workshop program is a convincing instrument for the involvement of students and teachers in a smart city project that includes the refurbishments of school buildings. The pupils gain a playful access to the different contents of the city, respectively the school, of the future. Subsequently, a multiplier effect is expected when there is knowledge exchange between teachers, pupils and their families, friends or colleagues."*

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5.5 SMART CITY LAB - IKB-SMART-DISTRICT

Innsbruck`s energy provider IKB implemented a series of projects for the increase of energy efficiency and renewable energies in the framework of SINFONIA. This includes the installation of technologies such as Combined Heat and Power (CHP), heat pumps, waste heat recovery, battery storage, thermal storage photovoltaic, power to heat and grid automation. In order to communicate this rather complex topics to a broader audience partner IKB developed a showroom - the Smart City Lab.

The IKB Smart City Lab is a hub for innovative energy and infrastructure solutions with a showroom for the general public.

The major aim in the IKB-Smart-District was to use synergy effects to enable a higher share of renewable energies and increases system stability, to the hybrid grid. Therefore there was the set-up of the energy management system (EMS). The EMS gives directions to the central building control system. The EMS defines the operation schedule based on the parameters:

- Temperature
- Solar radiation
- Electricity spot market price

The IKB Smart City Lab illustrates how electricity and heating grids can be networked locally. The graphic below shows all technologies built in the IKB-Smart-District with EMS.

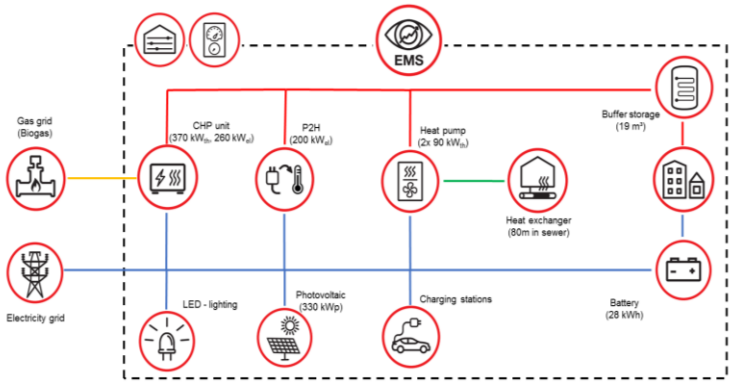

FIGURE 4 INTEGRATED TECHNOLOGIES IN THE IKB-SMART-DISTRICT

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Features & Résumé	
Vision	The aim of the Smart City Lab is to bring complex technical energy installations to a broader audience and to provide a space for innovative thinking especially for younger generations.
Addressed stakeholder groups	▸ general public ▸ energy consumers ▸ experts ▸ municipality
Outreach	80 guided tours with about 1.000 visitors take place in the Smart City Lab per year.
Challenges	▸ The IKB Smart City Lab was originally planned to be more extended. But major investment costs for heat pipes and legal requirements to cross a public street resulted in delay and difficulties, so that the hybrid grid was adapted. It is planned to be extended it in the future. ▸ Subcontractors for the realisation of the IKB Smart City Lab had to be selected by means of a tender procedure. In order to make a satisfying nomination, the criteria for awarding the contract had to be defined very carefully.
Recommendations	▸ Consider possible delays and difficulties early in advance. ▸ Demonstrate the legal options and pick out the problems. ▸ Adapt planned measures according to the budget or discuss national or other funding sources with relevant partners. ▸ Design tenders for subcontractors with the utmost care. ▸ Get more information *here*!
Comment by Sophia Neuner, IKB	*„The IKB-Smart-City Lab is a solution approach to a holistic view on the energy system. Through the use of synergy effects the share of renewable energies shall rise and a higher stability to the energy electricty grid is given.“*

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6. KNOWLEDGE SHARING BEYOND THE LOCAL LEVEL

Beyond the local level we considered the following two knowledge sharing activities as highlights. Identified highlights are presented in the format of two-sided factsheets. The corresponding pdf files are attached to the document in Annex 2.

6.1 QUESTIONNAIRE SURVEY FOR TENANTS

In the framework of SINFONIA seventeen apartment houses with more than 1.000 apartments have been refurbished in Innsbruck and Bolzano. In order to access the socio-economic impacts of the refurbishments on attitudes and behaviour of the involved tenants and to identify successful measures for the stimulation of positive changes a tenant survey has been conducted in the two demo cities.

Tenants were consulted via an ex-ante questioning carried out prior to the refurbishments that formed the baseline against which changes were measured by an ex-post questioning after the completion of the refurbishments.

In order to avoid multiple questioning by different institutions of the SINFONIA consortium and to minimise time of effort for the tenants, all SINFONIA partners with specific information needs were included in the compilation of the questionnaire items.

Beside of the assessment of socio-economic impacts the survey allowed the housing associations to gather information from their tenants who are considerable experts on their respective apartment. It also gave tenants the possibility to express requests and opinions on the actual state of their building. This input, when feasible and affordable, was considered in the refurbishment plans.

Data collection was often assisted by personal consultation through the housing associations – resulting in high return rates (up to 90 %). The gathered data was used to perform multiple analyses by different partners e.g. an analysis from a communication perspective.

Further analyses focused on the public's attitude towards renewable energy and energy efficiency measures and what changes, if any, in their energy behaviour have been stimulated by living and working in the SINFONIA smart districts.

Features & Résumé	
Vision	Tenants are the real experts of their building. By considering their everyday experiences the refurbishment concept shall be optimised and time and money saved.
Addressed stakeholder groups	▸ tenants ▸ housing associations ▸ research partners

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Outreach	The questionnaires were distributed in more than 1.000 households.
Challenges	▸ The applied version of the questionnaires had to be approved by the responsible housing association of the building site and single items of the questionnaires had to be adapted to local peculiarities. Hence, different versions of the questionnaires were circulated which led to a restriction of data comparison and impeded the exploitation of the full research potential. ▸ To convince tenants to participate in the survey was very time consuming. In order to reach high participation rates tenants were rewarded with incentives that had to be organised and distributed. Partially, tenants were offered personal support to fill out the questionnaire.
Recommendations	▸ Keep it simple and short! Adapt content and wording to the target group. ▸ A questionnaire is suitable to gather information concerning preferences of different communication channels (e.g. in Bolzano 85 % of the interview partners would like to get detailed information about SINFONIA) ▸ As answering the survey was rewarded with incentives the high participation of tenants in the survey could be maintained. ▸ Get more information *here*!

6.2 EXPERIENCE PASSIVE HOUSE – INTERNATIONAL PASSIVE HOUSE OPEN DAYS

Passive House buildings are often theme in any discussion relating to energy efficiency. The best way to understand what this building standard specifically entails is to experience it first-hand. Therefore the International Passive House Association – a network of Passive House Institute – organises the International Passive House Open Days where residents of Passive House buildings throughout the world open their doors to the public.

Is life in a Passive House different than in other buildings? Characteristic features of the Passive House Standard include an excellent level of thermal insulation, triple-glazed windows and a ventilation system with heat recovery, among other things. Due to these components, building owners can dispense of traditional heating systems and thus, save a lot of energy and costs. Thanks to the low energy demand, Passive House buildings can also be combined well with renewable energies.

Many people are curious about this innovative concept but they still have a variety of questions about the functioning and everyday life in a Passive House. What does the living comfort feel like? How low

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are the heating costs in a Passive House? The Passive House Open Days are a great opportunity for the public to gain valuable knowledge and to experience the high level of living comfort offered by these buildings for themselves.

Features & Résumé	
Vision	The open passive house days aim at spreading the knowledge and best practices related to Passive Houses. The event helps people to understand what a Passive House entails and provides first-hand-experiences.
Addressed stakeholder groups	those who want to build or renovate their own homes or buildings or who are simply interested in energy efficiency ▸ general public ▸ home owners ▸ architects ▸ municipalities
Outreach	5000 – 6000 persons visit the event every year. It takes place every second weekend in November.
Challenges	▸ Many people are curious about this innovative concept but they still have a variety of questions about the functioning and everyday life in a Passive House. What does the living comfort feel like? How low are the heating costs in a Passive House? The challenge is to reach this target group so that they can take the opportunity to discover Passive Houses, talk to the residents and benefit of their experiences. ▸ To bring together Passive House owners and interested people is challenging. Therefore, Passive House Institute has developed a database (www.passivehouse-database.org) where you can search for Passive House buildings in your region or city. Most privately owned houses are open to the public, including those in the categories Passive House Plus and Passive House Premium, which produce renewable energy on-site or near the building itself. Other buildings such as schools, offices and even a student hostel are also be open to the public.
Recommendations	▸ Make as much publicity as possible for this event! ▸ Motivate Passive House residents to open their homes by offering attractive incentives.

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	▸ Demonstrate that opening the windows is also possible in a Passive House building! ▸ Get more information *here*!
Comment by Laszlo Lepp, PHI	*„Sinfonia partners opened some of their buildings which were retrofitted during the project, among them a social housing and a school building in Innsbruck.* *One tour was organised in a living district. The 6 buildings were in different stages of renovation so that the visitors could see the different steps of retrofitting. Some facades only started, others were already finished. This is the best way to visualise the renovation steps."*

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7. ANNEX

ANNEX 1: DOCUMENT INFORMATION

SINFONIA DELIVERABLE FACT SHEET	
PROJECT START DATE	1st June 2014
PROJECT DURATION	60 months
PROJECT WEBSITE	http://www.sinfonia-smartcities.eu
DOCUMENT	
DELIVERABLE NUMBER:	D 6.1b – 2nd Part
DELIVERABLE TITLE:	Update on knowledge sharing activities in Bolzano and Innsbruck
DUE DATE OF DELIVERABLE:	
ACTUAL SUBMISSION DATE:	
EDITORS:	
AUTHORS:	
REVIEWERS:	
PARTICIPATING BENEFICIARIES:	
WORK PACKAGE NO.:	6
WORK PACKAGE TITLE:	Local Stakeholders involvement, evaluation & follow up in demo cities
WORK PACKAGE LEADER:	UIBK, alpS GmbH
WORK PACKAGE PARTICIPANTS:	SP, MAGIBK, IKB, UIBK, SAT, BOZ, EURAC, IPES, SEL, ACC, BORAS, LARO, SEV, PAFOS, G!E, PHI, ROSE, ALF, LIE
DISSEMINATION LEVEL:	
CO (CONFIDENTIAL, ONLY FOR MEMBERS OF THE CONSORTIUM INCLUDING THE COMMISSION SERVICES)	
PU (PUBLIC)	
PP (RESTRICTED TO OTHER PROGRAMME PARTICIPANTS, (INCLUDING THE COMMISSION SERVICES)	
RE (RESTRICTED TO A GROUP SPECIFIED BY THE CONSORTIUM INCLUDING THE COMMISSION SERVICES)	

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COLLABORATIVE PROJECT; GRANT AGREEMENT NO 609019

WORK PACKAGE: 6
VERSION: 0.1
DATE: 28.05.2015

DRAFT/FINAL:	
NO OF PAGES (INCLUDING COVER):	
KEYWORDS:	

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ANNEX 2: FACTSHEETS ON HIGHLIGHTS OF STAKEHOLDER INVOVLEMENT

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