



**SMARTER  
TOGETHER**

Smart and Inclusive  
Solutions for a Better  
Life in Urban Districts

# Report on standardisation activities

Deliverable D8.5.1

Version 1.0



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## Glossary

API	Application Programming Interface
CCMC	CEN-CENELEC Management Centre
CDP	City Digital Profile
CEN	European Committee for Standardization
CEN/WS	CEN Workshop
CENELEC (CLC)	European Committee for Electrotechnical Standardization
CIM	Context Information Management
CWA	CEN Workshop Agreement
EED	Energy Efficiency Directive
EIP	European Innovation Partnership
EnEV	<i>Energieeinsparverordnung</i> (Energy Saving Ordinance)
EPBD	Energy Performance of Buildings Directive
ETSI	European Telecommunications Standards Institute
EU	European Union
IEE	Intelligent Energy Europe Programme of the European Union
KfW	<i>Kreditanstalt für Wiederaufbau</i> (Reconstruction Credit Institute)
LEAF	Low Energy Apartment Futures
nZEB	nearly Zero-Energy Buildings
RED	Renewable Energy Directive
SCC	Smart Cities and Communities
SF-SSCC	Sector Forum on Smart and Sustainable Cities and Communities
TC	Technical Committee
WP	Work Package

## SMARTER TOGETHER BENEFICIARIES

N°	Organisation name	Short name	Country
1	Lyon Confluence	SPL	France
2	Lyon Métropole	GLY	France
3	HESPUL Association	HES	France
4	Toshiba	TSF	France
5	Enedis	END	France
6	Enertech	ETC	France
7	City of Munich	MUC	Germany
8	Bettervest	BET	Germany
9	G5-Partners	G5	Germany
10	Siemens Germany	SIDE	Germany
11	Spectrum Mobil	STA	Germany
12	Securitas	SCU	Germany
13	City of Vienna	VIE	Austria
14	BWS Gemeinnützige	BWSG	Austria
15	Wiener Stadtwerke	WSTW	Austria
16	Kelag Wärme	KWG	Austria
17	Siemens Austria	SIAT	Austria
18	Sycube Informationstechnologie	SYC	Austria
19	Austrian Post	POST	Austria
20	Fraunhofer	FHG	Germany
21	Austrian Institute of Technology	AIT	Austria
22	Energy Cities	ENC	France
23	Gopa COM	GPC	Belgium
24	University of St Gallen	UNISG	Switzerland
25	Technical University of Munich	TUM	Germany
26	Deutsches Institut fuer Normung	DIN	Germany
27	Algoé	ALG	France
28	City of Santiago de Compostela	STC	Spain
29	City of Sofia	SOF	Bulgaria
30	City of Venice	VEN	Italy
31	SA Régionale d' HLM de Lyon	HLM	France
32	Wavestone	WAV	France
33	WEG Radolfzeller str. 40-46	RZL	Germany
34	WEG Wiesenthauerstr. 16	WHR	Germany

## EXECUTIVE SUMMARY

Deliverable 8.6 "*D8.5.1 Report on standardisation activities*" is part of Work Package 8 "*Replication of Smart City solutions*" and gives an overview about the either initiated or envisaged CEN Workshops based on SMARTER TOGETHER's results.

In Chapter 2 the process of the initiation and development of a CEN Workshop Agreement is described. It can be summarised, that a CEN Workshop is a working platform defining a set of requirements and recommendation forming the content of a CEN Workshop Agreement. The respective project plan forms the basis for each CEN Workshop.

Chapter 3 illustrates the strategy for standardisation activities within SMARTER TOGETHER. The strategy is based on the standardisation needs and potentials proposed by members of the consortium, identified due to their expertise and work conducted within SMARTER TOGETHER. As a result of the strategy a decision was made on which potential standardisation needs and potentials should be transferred in further standardisation activities.

Chapters 4, 5, and 6 are listing the three CEN Workshops either initiated (4, 5) or envisaged to be initiated (6) within SMARTER TOGETHER, including the involvement of external organisations. The CEN Workshops are titled:

- *Description and Assessment of **Good Practices** for Smart City Solutions;*
- *Sustainable **Energy Retrofit** Process Management for Multi-Occupancy Residential Buildings with Owner Communities;*
- ***Data Gatekeeper – Transparency Dashboard** (working title).*

The background of each of these standardisation activities has been listed accordingly, including the initiation of the CEN Workshop, the scope of the CEN Workshop as well as its Workshop participants and current status. The CEN Workshop on "Good Practices" started in March 2018, the CEN Workshop on "Energy Retrofit" has been established in June 2018, while the CEN Workshop on "Data Gatekeeper – Transparency Dashboard" depends on the amendment containing the extension of WP8. Currently, it is envisaged that the draft documents of the established CEN Workshops Agreements will be finalised by the end of Work Package 8 in January 2019.

As intermediate version of the Deliverable, this document provides an overview as January 2019. It will be updated with a final version at end of July 2019.

## 1. Introduction

Deliverable 8.5.1 *“Report on standardisation activities”* is part of Work Package 8 *“Replication of Smart City solutions”* and focuses on the description of the either initiated or envisaged CEN Workshops and the standardisation strategy behind it. This deliverable is based on the standardisation needs and potentials proposed by members of the consortium, identified due to their expertise and work conducted within SMARTER TOGETHER.

This deliverable aims to show the evolution from the standardisation needs and potentials identified to the initiation, development, and finalisation of the envisaged standardisation activities. Therefore, DIN conducted a standardisation workshop as part of the General Assembly on 8th March 2018 in Vienna. The objective of the standardisation workshop was the identification of standardisation needs and potentials. As follow-up, DIN organised and led a web conference. The objective of the web conference was the discussion of all standardisation proposals received and to agree on the topics for the initiation of further standardisation activities, the basis to formally establish CEN Workshops.

To show the standardisation activities conducted within SMARTER TOGETHER Deliverable 8.5.1 is structured as follows:

- Initiation and development process of a CEN Workshop Agreement (Chapter 2);
- Strategy for conducting the standardisation activities within the project (Chapter 3);
- Background information on the either initiated or envisaged CEN Workshops and their current status (Chapter 4, 5, and 6);
- Conclusion and outlook (Chapter 7).

## 2. Initiation and Development of a CEN Workshop Agreement

The **CEN/CENELEC Workshop (CEN/WS)** is a working platform open to the participation of any interested parties for elaboration of CEN/CENELEC Workshop Agreements.

The **CEN/CENELEC Workshop Agreement (CWA)** is a CEN/CENELEC agreement, developed by a Workshop, which reflects the agreement of identified individuals and organisations responsible for its contents. It is a document made available by CEN/CENELEC in at least one of the official languages. The creation of a CWA follows the rules of CEN-CENELEC Guide 29<sup>1</sup>.

The CEN-CENELEC Guides are reference documents published by CEN-CENELEC to give orientation, advice or recommendations on standardisation principles and policies and guidance to standards writers. CEN-CENELEC Guide 29 details the characteristics and the development process of CEN/CENELEC Workshop Agreements as shown in Table 1.

Project Plan	Kick-Off Meeting	CWA Drafting and Adoption	Publication of CWA
<b>Describing</b> <ul style="list-style-type: none"> <li>▪ Scope</li> <li>▪ Objectives</li> <li>▪ Schedule</li> <li>▪ Financing</li> </ul>	<b>Confirming</b> <ul style="list-style-type: none"> <li>▪ Project Plan</li> <li>▪ Rules of the Workshop</li> <li>▪ Chairperson</li> <li>▪ Secretariat</li> </ul>	<b>Consensus Process</b> <ul style="list-style-type: none"> <li>▪ Workshop Participants (envisaged)</li> <li>▪ Public consultation (as appropriate)</li> </ul>	<b>Validity of 3 years</b> <ul style="list-style-type: none"> <li>▪ Re-confirmation (possible only once)</li> </ul>

*Table 1 Initiation and Development Process of a CEN Workshop Agreement*

The **proposal** of a new CWA leads to the creation of a new Workshop. The proposer of a CWA prepares a draft project plan, a self-assessment, and an analysis of the degree of interest in the subject in different European countries and amongst different stakeholders. The proposal will be prepared with the assistance of a CEN/CENELEC (national) Member or the CEN-CENELEC Management Centre (CCMC). In SMARTER TOGETHER new CWAs were proposed by members of the consortium due to their expertise and work conducted within the project. The relevant documents were prepared with the assistance of DIN.



The **project plan** of a CWA specifies how the CWA will be created. It consists of the background to the Workshop, the Workshop proposers and Workshop participants, the Workshop scope and objectives, the Workshop programme including work plan and work already delivered, the Workshop structure, the resource requirements as well as the contact points. The draft project plan is posted by CCMC and publicly available on the CEN-CENELEC website<sup>2</sup> for a **commenting period of 30 days**. Any comments received during this period have to be considered with the Secretariat and the Workshop proposers.

After the commenting period the **kick-off meeting** takes place. The kick-off meeting approves the proposed project plan by common agreement and appoints the chairperson of the CEN/WS. All the elements of the adopted project plan have to be respected by all Workshop participants. Participation to the kick-off meeting does not automatically ensure registration to the CEN/WS. After the kick-off meeting the participants wishing to continue contributing to the development of the draft CWAs will be requested to officially register to the CEN/WS by mean of signing a specific registration form including the assignment of exploitation rights.

The Workshop participants **draft the CWA** according to the specifications laid down in the project plan. This requires input, time, and willingness of the experts. The draft CWA is made available for comments to the registered Workshop participants. If foreseen in the project plan, and in any case if the draft CWA covers safety aspects, an **open commenting phase of minimum 60 days** is launched.

The chairperson decides when agreement is reached amongst the registered Workshop participants on the **final text of the CWA**, on the basis of the comments received and any further consultation that has taken place, at which point the CWA is approved. The Workshop secretariat submits the approved CWA to CCMC. The CWA is valid for 3 years, after which the former Workshop secretariat consults the former Workshop participants and the relevant CEN/CENELEC technical bodies to determine whether the CWA shall be:

- Confirmed for another 3 years;
- Revised;
- Transformed into another deliverable; or
- Withdrawn.

### 3. Standardisation Strategy

#### Decision on standardisation activities

In SMARTER TOGETHER the initiation of the standardisation activities mainly depended on the outcome of the standardisation workshop where members of the consortium proposed standardisation needs and potentials, identified due to their expertise and work conducted within SMARTER TOGETHER. These standardisation needs and potentials were discussed amongst the proposers as well as all consortium members interested in the proposed standardisation needs and potentials.

The SMARTER TOGETHER results which have been considered as most promising for the initiation of standardisation activities were the WIKI<sup>3</sup> developed in WP1, the Energy Retrofit Process considering the Refurbishment Roadmaps developed in WP4 and WP7, and the Data Gatekeeper Concept or parts of it developed in WP4. After the identification of the most promising standardisation needs and potentials appropriate titles had to be defined. The following three standardisation activities have been initiated (Good Practices, Energy Retrofit) or are envisaged to be initiated (Data Gatekeeper – Transparency Dashboard):

- Description and Assessment of **Good Practices** for Smart City Solutions;
- Sustainable **Energy Retrofit** Process Management for Multi-Occupancy Residential Buildings with Owner Communities;
- **Data Gatekeeper – Transparency Dashboard** (working title).

The CEN/WS on Good Practices is based on the WIKI<sup>3</sup> developed in WP1, the CEN/WS on Energy Retrofit is based on the Refurbishment Roadmaps developed in WP4 and WP7, and the envisaged CEN/WS on the Data Gatekeeper – Transparency Dashboard is based on the work carried out in WP4.

As an additional need, the reduction of necessary lightning of 100 lux in building corridors, to reduce investment and maintenance costs, has been identified out of WP5. The value of 100 lux is defined in the European standard EN 12464-1 "*Light and lighting – Lighting of work places – Part 1: Indoor work places*". A request to a member of CEN/TC 169 "*Light and lightning*" resulted in the statement, that this need will be processed rather on a national than on a European level. In addition, the partner was encouraged to hand in the request on national level. As the focus of the project is a European one the realisation of the other three proposed standardisation needs and potentials were prioritised higher.

## Invitation for participation in standardisation activities

All SMARTER TOGETHER consortium members including the lighthouse, follower, and observer cities and their professional networks were actively invited to join the development process of SMARTER TOGETHER's standardisation activities. Additionally, the respective draft project plans have been published on the CEN-CENELEC website<sup>2</sup>. This led to the involvement of and the contribution from external experts representing organisations from cities/countries not involved in SMARTER TOGETHER.

## Support the development of the CWAs by assessment at city level

As the envisaged CWAs are targeted mainly towards city stakeholders, it was/is important to receive as much feedback as possible from them during the development phase of the CWAs. Thus, it was/is foreseen that during some of the CEN Workshops lighthouse, follower, and observer cities of SMARTER TOGETHER, but not limited to, will assess the content of the draft CWAs. This already happened at the 3<sup>rd</sup> co-creation Peer-to-Peer Workshop in July 2019 in Vienna, Austria and the Smart City World Expo in November 2019 in Barcelona, Spain. These activities will not only support the development of the CEN Workshops but also build the basis for fast future uptakes of the CWAs by the cities.

## Dissemination of the CEN Workshop Agreements

The finalised CWAs will be publicly available on the CEN-CENELEC website<sup>4</sup> and thus support the dissemination and exploitation of SMARTER TOGETHER significantly. The dissemination of the CWAs could also be supported by the cities involved in the development process. If they are willing to adopt these standards within their cities then other cities will receive knowledge of this and might be interested in taking part.

## 4. CEN Workshop on Good Practices

### 4.1 Initiation

The CEN/WS on "*Description and Assessment of Good Practices for Smart City Solutions*", short "**Good Practices**", has been initiated in March 2018 by the submission of the corresponding project plan. The proposer of this workshop was Fraunhofer IAO (FHG, Germany). FHG has been responsible for WP1 and thereby for the development of the WIKI<sup>3</sup>.

The draft project plan has been published on the CEN-CENELEC website<sup>2</sup> for one month. The kick-off meeting took place on 9<sup>th</sup> March 2018 as part of the General Assembly in Vienna, Austria. The approved project plan can be found on the related CEN website<sup>5</sup> and is attached in Appendix 1.

### 4.2 Scope

The Scope of the CEN/WS on "*Good Practices*" is the development of a CWA which defines a set of requirements and recommendations on how to describe and assess good practices for Smart City Solutions. The CWA is intended to support the decision-making process of smart cities in the interest of their citizens, and of those who advise them such as companies providing products and services, consultants, associations etc.

The objectives of the Workshop were:

- To find an adequate terminology;
- To identify good practice description criteria;
- To classify description criteria; and
- To create a template based on this set of criteria, which shall serve as the basis for the determination of solutions.

The CWA addresses not only cities, but companies providing them with solutions as well as many other stakeholders like research organisations, planning institutions, associations, etc.

### 4.3 Contributors

The organisations participating in the CEN/WS on "*Good Practices*" are listed in Table 2. In total eleven organisations from five different countries are participating in the development of the corresponding CWA.

No.	Organisation	Country	Gender
1	European Association for the Co-ordination of Consumer Representation in Standardisation	Belgium	1 male
2	Sofia Energy Agency SOFENA	Bulgaria	1 male
3	HESPUL	France	1 male
4	Lyon Confluence	France	1 male
5	Bable UG	Germany	2 females
6	City of Munich	Germany	1 female
7	Fraunhofer IAO	Germany	2 females 1 male
8	Fraunhofer IBP	Germany	1 male
9	Technical University of Munich	Germany	1 female
10	University of St. Gallen	Switzerland	1 female
11	BSI Group	United Kingdom	1 male

*Table 2 Members of the CEN Workshop on "Good Practices"*

## 4.4 Status

The kick-off meeting of the CEN Workshop took place in March 2018. The Workshop participants consist of a sound mixture of project internal and external experts. As chairwoman Susanne Schatzinger from Fraunhofer IAO has been elected. After the kick-off meeting, several web-conferences and physical meetings have been conducted to elaborate the content of the CWA. The two main parts of the CWA are the description and the Assessment of Good Practices. The finalisation of the **prCWA 17381** is due in January 2019.

## 5. CEN Workshop on Energy Retrofit

### 5.1 Initiation

The CEN/WS on "*Sustainable Energy Retrofit Process Management for Multi-Occupancy Residential Buildings with Owner Communities*", short "**Energy Retrofit**", has been initiated in June 2018 by the submission of the corresponding project plan. The proposer of this workshop was Fraunhofer IBP (FHG, Germany). FHG has been involved in the development of Refurbishment Roadmaps in WP4 and WP7.

The draft project plan has been published on the CEN-CENELEC website<sup>2</sup> for one month. The kick-off meeting took place on the 27<sup>th</sup> of June 2018 as part of the Joint Session: SMARTER TOGETHER and Integrated Planning, Policy and Regulations Action Cluster Meeting organised by the European Innovation Partnership on Smart Cities and Communities (EIP-SCC) in Sofia, Bulgaria. The approved project plan can be found on the related CEN website<sup>5</sup> and is attached in Appendix 2.

### 5.2 Scope

The Scope of the CEN/WS on "*Energy Retrofit*" is the development of a CWA which describes a workflow and an overall quality and process management methodology for the resource efficient retrofit of existing multi-occupancy and multi-ownership residential buildings including a set of requirements and recommendations for the implementation.

The target group of the CWA are all relevant process stakeholders including owner communities, property managers, owner community boards, planners, energy efficiency consultants, financial institutions, and policy makers.

### 5.3 Contributors

The organisations participating in the CEN/WS on "*Energy Retrofit*" are listed in Table 3. In total eight organisations from eight different countries are participating in the development of the corresponding CWA.

No.	Organisation	Country	Gender
1	City of Vienna	Austria	1 male
2	CEN-CENELEC Sector Forum Energy Management	Brussels	1 male
3	Ministry of Regional Development and Public Works	Bulgaria	1 female
4	EDF Group	France	1 male
5	Fraunhofer IBP	Germany	1 male
6	Comat S.p.A.	Italy	1 male
7	Norwegian University of Science and Technology (NTNU)	Norway	1 female
8	Future Climate	United Kingdom	1 male

*Table 3 Members of the CEN Workshop on "Energy Retrofit"*

## 5.4 Status

The kick-off meeting of the CEN Workshop took place in June 2018. The Workshop participants consist of a sound mixture of project internal and external experts. As chairman Georgi Georgiev from Fraunhofer IBP has been elected and as vice-chairwoman Judith Borsboom-van Beurden from the Norwegian University of Science and Technology (NTNU). After the kick-off meeting, several web-conferences and physical meetings have been conducted to elaborate the content of the CWA. The finalisation of the **prCWA 17382** is due in January 2019 unless an amendment containing the extension of WP8, especially Task 8.5, is granted.

## 6. CEN Workshop on Data Gatekeeper – Transparency Dashboard

### 6.1 Proposal

The City of Munich (MUC, Germany) is leading WP4 and initially proposed to standardise the **Data Gatekeeper** Concept as a certain environment or process for Data exchange. Follow-up discussions with Fraunhofer IAO and the City of Munich showed that the overall Data Gatekeeper Concept is too complex for one standardisation document. This led to the suggestion to focus on one part of the concept, the **Transparency Dashboard**<sup>6</sup>. The Idea for the Transparency Dashboard originated from a co-creation workshop between the City of Munich and its citizens.

In the context of SMARTER TOGETHER, the Transparency Dashboard shows any residents who are interested which data will be collected and how they will be processed. As the name suggests, the Transparency Dashboard is a window on the Munich smart data platform. It demonstrates which data sources are integrated, which data privacy protection measures are implemented and for what purposes data will be used. The Transparency Dashboard also shows:

- Which platform data are available as open data;
- How data can be reused;
- Whether and how data can be downloaded using a platform API.

In this regard, the adjusted proposal is to define a set of content wise requirements and recommendations on which data will be collected and how they will be processed.

### 6.2 Status

Based on the well-advanced preliminary work conducted in WP4 and the proposal, to define a set of content wise requirements and recommendations on which data will be collected and how they will be processed, the next step will be the initiation of the CEN/WS. The initiation takes place by the preparation and submission of the corresponding project plan based on the mentioned well-advanced preliminary work and the proposal, as soon as an extension of Task 8.5 is confirmed by an amendment.

There is a great interest in this topic by several project partners and the initiation of this CEN Workshop would be a great benefit not just for the consortium members of SMARTER TOGETHER but also for the European standardisation landscape and its profiteers.



## 7. Conclusion and Outlook

Task 8.5 "Standardisation of the developed smart solutions and services" successfully started with the analysis of the current Smart City standardisation landscape and applicable standards relevant for SMARTER TOGETHER. This is documented in the Report on Milestone 47 "*M8.5.1 Overview of existing standards and ongoing standardisation activities*". The milestone provides an overview of international, European, and national (German) Technical Committees, groups of experts representing a specific sector and responsible for standards development upon request. Furthermore, the document covers and briefly assesses published standards, standards under development, and further standardisation activities, based on the keywords identified by all project partners as well as on SMARTER TOGETHER's five clusters of co-created, smart, and integrated solutions.

Based on the standardisation needs and potentials identified by members of the consortium, due to their expertise and work conducted within SMARTER TOGETHER, two CEN Workshops on "*Description and Assessment of Good Practices for Smart City Solutions*" and on "*Sustainable Energy Retrofit Process Management for Multi-Occupancy Residential Buildings with Owner Communities*" have been established by the submission of the corresponding project plans. **Furthermore, the final CEN Workshop Agreements CWA 17381 and CWA 17382 will be published on the CEN-CENELEC website<sup>7</sup>.** From 2018 on CEN Workshop Agreements developed through European funded research projects are available as free downloads. A third CEN Workshop with the working title "*Data Gatekeeper – Transparency Dashboard*" is envisaged to be initiated, as soon as an extension of Task 8.5 is confirmed by an amendment. There is a great interest in this topic by several project partners and the initiation of this CEN Workshop would be a great benefit not just for the consortium members of SMARTER TOGETHER but also for the European standardisation landscape and its profiteers.

In addition to the involvement of the consortium members as well as including the lighthouse, follower, and observer cities of SMARTER TOGETHER within the CEN Workshops, there are a number of other external experts actively taking part which are representing organisations from cities/countries not involved in SMARTER TOGETHER. Thus, a broader variety of interested parties supports the transfer of the SMARTER TOGETHER results into standardisation. This enhances possible adoption of the CEN Workshop Agreements as well as the future uptakes of their content.

## Appendix 1 Project Plan for the CEN Workshop on "Good Practices"

### Background to the Workshop

#### General

Against the background of worldwide urbanisation trends coming along with environmental and societal challenges, many organisations, committees, networks and projects have been established and dedicate their work on tackling these challenges in cities and urban areas on a global level. In order to come up with solutions, so-called "good practices" have proved to be an effective means of orientation in initial project stages. Many "good practice" collections have been created in recent years, aiming at demonstrating how certain cities overcome specific challenges in different sectors and benchmarking how far ahead those cities are in comparison to others.

Within the Smart Cities and Communities (SSC) Initiative, the European Commission has carried out nine lighthouse projects so far, which deliver and replicate smart city solutions. One of these projects is SMARTER TOGETHER including the lighthouse cities Vienna, Munich and Lyon and the follower cities Santiago de Compostela, Venice and Sophia. One of the first steps in the project was the collection of good practises from other cities in the sectors of (e-)mobility, refurbishment, district heating, data and data standards, processes and methods, business models, as well as governance and participation. The results had been transferred into a project Wiki and are accessible to all project members. A release of the project WIKI to the public is currently being discussed.

#### Motivation for the CEN Workshop

The quality of good practice collections can vary widely and their structures are rarely consistent or comparable. Even within one single project such as SMARTER TOGETHER it was a challenge to come up with a general structure which fit all best practices within the various fields. Furthermore, there was no standardised quality check in order to explain which criteria make a good practice a good practice.

Criteria that help describing Best Practices could be the following:

- Category (technology, service, etc.);
- Addressed sectors (energy, mobility, security, etc.);
- Background (who has developed the solution and for which purposes?)

- Purpose (how does the solution contribute to the well-being of a community and its citizens?)
- Value (how does the solution contribute to a certain aim or certain change?);
- Negative side effects when indicated (including costs and stakeholders affected)
- Implementation context (where is the solution already implemented, local context);
- Possibility of replication (under which circumstances is the solution transferable to other (local, national, international, content) contexts?)
- Etc.

## Market environment

Nowadays, especially technological solutions are emerging within shorter and shorter periods of time and a growing number of companies offer a variety of smart city products and solutions. This makes it difficult for cities and those who advise them, such as companies providing products and services, consultants, associations, etc. to evaluate the benefits of new technologies, products or services, in the best interests of the city and its inhabitants. Nonetheless, the knowledge of how new technologies and other kinds of inventions influence the development of cities is essential for decision-making processes.

The main obstacle in finding the best possible solution for a municipality (in terms of being sustainable, adapted to the individual needs of a city, cost-effective, flexible etc.) is the fact that local authorities and those advising them usually do not have a comprehensive knowledge of what is available in the market to provide useful solutions that will effectively serve the city's interest.

## Legal environment

In the decision-making process cities have to take into consideration a wide range of general conditions and requirements within all sectors: EU directives, national guidelines, regional guidelines, their own specifications as well as the climate protection objectives, compliance with pollutant limits, share of renewable energies, etc.

As for procurement processes, municipalities have to follow clear requirements regarding national and European tenders and relevant technologies. Expensive, but innovative acquisitions can only be justified and acquired through appropriate argumentation and comprehensive market knowledge.

## Existing standards and standard related activities and documents

The most important existing standards, standard related activities and documents for the project plan are listed in the following table.

Number	Title
EN 14892	Transport service – City logistics – Guideline for the definition of limited access to city centres
ISO 37154	Smart community infrastructures – Best practice guidelines for transportation
ImpactPaperRec	
<ul style="list-style-type: none"> <li>▪ Project ID 690182,</li> <li>▪ 2016-02-01 2018-01-31,</li> <li>▪ <a href="http://impactpaperec.eu/en/home/">http://impactpaperec.eu/en/home/</a></li> </ul>	<a href="http://impactpaperec.eu/wp-content/uploads/2018/01/HANDBOOK_Final-version-JANUARY.pdf">http://impactpaperec.eu/wp-content/uploads/2018/01/HANDBOOK_Final-version-JANUARY.pdf</a>

The Workshop will draw on the current work of the CEN-CENELEC-ETSI Sector Forum on Smart and Sustainable Cities and Communities, which is producing a comprehensive mapping of relevant initiatives, and ensure that those providing good practice examples are appropriately referenced in the CWA.

## Workshop proposers and Workshop participants

The proposer of the Workshop is Fraunhofer IAO, Germany, which is a SMARTER TOGETHER project partner. DIN, the German Institute for Standardisation intends to hold the secretariat of the Workshop. Several other members of SMARTER TOGETHER will take part in the progression of the Workshop (SMARTER TOGETHER lighthouse cities Munich, Lyon, Vienna; follower cities Santiago de Compostela; Venice and one of the observer cities Kiev). Moreover, (research) institutions from other analogous projects will be invited to join the development of the CEN Workshop Agreement (CWA) (the Fraunhofer Morgenstadt-Initiative, the project FutureCitiesBW, other SCC projects).

Participation in the Workshop is open to anyone, and the opportunity to participate will be widely advertised prior to the Kick-off meeting by its proposers.

The registered participants of the CEN Workshop Kick-off meeting that have approved this Project Plan are listed in Annex A.

## Workshop scope and objectives

This Workshop will develop a CEN Workshop Agreement (CWA), which will define requirements to describe and assess good practices of Smart City Solutions. This document is intended to support the decision-making of smart cities in the interest of their citizens, and of those who advise them, such as companies providing products and services, consultants, associations etc.

The objectives of the Workshop are the following:

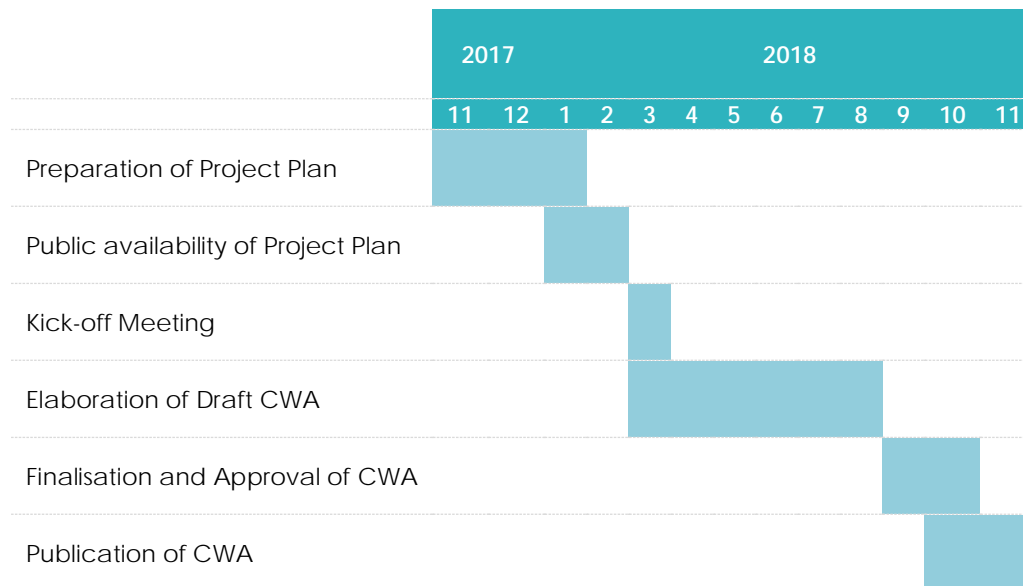
- Finding an adequate terminology: The current proposal would be using the term "Good Practices" instead of "Best Practices" and including such categories as "Practices" or "Bad Practices";
- Identifying good practice description criteria (see above);
- Classifying description criteria, e.g. compulsory vs optional;
- Creating a template based on this set of criteria, which shall serve as the basis for the determination of solutions. It addresses not only cities but companies providing them with solutions as well as many other stakeholders (research organisations, planning institutions, associations, etc.).

## Workshop programme

The CWA will be drafted and published in English. The estimated duration of the Workshop is 9 months, no later than December 2018. During the Workshop lifetime, several meetings, mainly web meetings are foreseen to draft the CEN Workshop Agreement.

### Work Plan

Anyone can comment on this Project Plan of the envisaged CWA. All comments received will be considered by the chairperson preliminary to the Kick-off meeting. At the Workshop, each comment received shall be presented, discussed and resolved. Any meeting except for the Kick-off and the final meeting can be organised as virtual meetings. The time schedule for the Workshop is influenced by the runtime of SMARTER TOGETHER.



## Work already delivered

As stated above a good practise WIKI had been created within the first work package of the SMARTER TOGETHER project that contains more than 50 Good Practices. Being inspiring input, they support the implementation stage of the project. However, Fraunhofer IAO has undertaken several other good practice collections within other smart cities projects.

## Workshop structure

This Workshop shall be led by a chairperson and in case of absence or unavailability, by a vice-chair. The Workshop secretariat shall be responsible for the management of the Workshop.

## CEN Workshop Chairperson

A proposal for the chairperson will be made by the Workshop proposers; he/she or any other candidate nominated during the period of publication of this Project Plan or at the Kick-off will be approved at the Kick-off meeting by the parties present. His / her responsibilities include:

- Chairing the CEN Workshop meetings,
- Being responsible for ensuring that the development of the CWA is in accordance with the agreed Project Plan,

- Representing the CEN Workshop in outside meetings in cooperation with CCMC and with the Workshop secretariat,
- Monitoring the progress of the CWA,
- Interface with CCMC regarding strategic directions, problems arising, external relationships, etc.

## CEN Workshop Vice-Chair

The Workshop vice-chair shall be appointed in the Kick-off meeting. The vice-chair shall support and assist in all responsibilities outlined for the chairperson. In the absence of the chairperson, the vice-chair will represent the CEN Workshop at outside meetings in cooperation with CCMC and will interface with CCMC regarding strategic directions, problems arising, external relationships etc.

## CEN Workshop Secretariat

The CEN Workshop Secretariat is providing the formal link to the CEN system. The following main activities will be carried out by the Workshop Secretariat:

- Organising CEN Workshop plenary meetings,
- Producing CEN Workshop minutes and action lists,
- Forming the administrative contact point for CWA project,
- Managing CEN Workshop attendance lists,
- Managing CEN Workshop document registers,
- Following-up action lists,
- Assisting Chairperson in monitoring and following-up of electronic discussions – in case the CEN Workshop is mainly working by electronic means,
- Administrating the liaison with relevant CEN/TCs, if applicable.

The CEN Workshop Secretariat provides a professional management support in the form of administrative and operational. DIN will provide the Workshop secretariat subject to formal approval of the Project plan at the Kick-off meeting.

## Resource requirements

### Costs of the CEN Workshop Secretariat

The administrative costs of CEN Workshop Secretariat will be covered by resources from SMARTER TOGETHER. The copyright of the CWA shall be with CEN.

## Participation and registration Fees

The registration and participation at this CEN Workshop is free of charge; each participant shall bear his/her own cost for travel and subsistence. Participation to this Workshop is open to all interested parties. All physical meetings will be located in Europe. Use of electronic meetings will be encouraged as much as possible.

## Related activities, liaisons, etc.

The topic of the CWA is related to the following European initiatives:

- CEN/CLC/ETSI/SF-SSCC the CEN-CENELEC-ETSI Sector Forum on Smart and Sustainable Cities and Communities
- ETSI ISG CDP City Digital Profile, CIM Context Information Management, TC SmartM2M
- EIP-SCC the European Innovation Partnership on Smart Cities and Communities

On national, German, level the following technical committee is the most relevant one:

- NA 172 DIN standards committee Principles of Environmental Protection (NA 172-00-12 AA on Sustainable development in communities)

On international level the following technical committees are the most relevant ones:

- ISO/TC 268 on Sustainable Cities and Communities
- ISO/IEC JTC 1 on Information Technology (WG 11 on Smart Cities will be implemented until end of 2019)

The Workshop shall ensure appropriate links are in place with these initiatives, in particular with the CEN-CLC-ETSI Sector Forum on Sustainable Smart Cities and Communities (SF-SSCC), through liaison or any other means.

## Contact points

Chairperson	Secretariat
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## Appendix 2 Project Plan for the CEN Workshop on "Energy Retrofit"

### Background to the Workshop

#### General

The European Commission adopted in 2008 the 2020 Climate and Energy Package, with a goal to improve 20% in EU's energy efficiency by 2020. The 2030 Climate and Energy Framework<sup>1</sup> set an additional target of at least 27% energy savings compared to baseline projections by 2030. The building sector is the largest consumer of energy in Europe, accounting for nearly 40% of the total consumption and 36% of the greenhouse gas emissions.<sup>2</sup> While new buildings can be constructed with high energy performance levels, the existing stock is predominantly of poor energy performance and consequently in need of renovation work. With their potential to deliver high energy and CO<sub>2</sub> savings, energy efficient buildings can play a pivotal role in a sustainable, low carbon future.

With the addition of new buildings to the existing building stock, renovation to improve the energy efficiency of the existing stock of buildings is vital to meet the EU's targets of a 20% improvement in energy efficiency by 2020 and a 27% improvement by 2030.<sup>8</sup> The EU policies and strategies acknowledge the importance of building renovation as a key element in reaching the long-term energy and climate goals, as well as having a positive economic impact. Therefore, the building sector is considered in all EU's energy, climate and resource efficiency related strategies by 2050. To reach the long-term decarbonisation goals, the EU Roadmap for moving to a competitive low carbon economy in 2050 identified the need of reducing carbon emissions in residential and services sectors by 88-91% by 2050 compared to 1990 levels.<sup>9</sup>

The Energy Performance of Buildings Directive (EPBD), together with the Energy Efficiency Directive (EED)<sup>10</sup>, the Renewable Energy Directive (RED), the Eco design Directive and Energy Labelling are the most important documents relating to improvements in the energy performance of Europe's building stock.<sup>11</sup>

These documents mainly focus on the economic and technical issues of funding and financing energy efficient refurbishments as the decision is interpreted as a rational choice of an investment. Their success is rather low as the refurbishment rate stagnates around 1% per year for more than a decade.<sup>12</sup>

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<sup>1</sup> COM (2014)15. A policy framework for climate and energy in the period from 2020 to 2030

<sup>2</sup> Eurostat, European Union (2017)

Renovation rates in the EU are low and renovating the existing building stock to make it more energy efficient remains a challenge, even more so when considering the ambitious levels set by the EPBD which includes aims for nearly zero-energy buildings (nZEBs). Increasing the rate at which existing buildings are renovated to at least 2-3% (the higher figure for the public sector) per year until 2030 is a key objective of the EU's Resource Efficiency agenda.<sup>13</sup>

A variety of political measures have been put in place for some decades aiming to encourage the homeowners to make technical improvements in the built environment. Several ways of accomplishing this goal are being implemented but renovation is not a common practice today despite the efforts of the recast of the EPBD and the successful implementation of energy certifications systems.<sup>14,15</sup>

Especially the analysis and knowledge of the complex legal framework, information flow management, as well as the financing model design for the owner communities in multi-occupancy residential buildings, but also the overall quality management before, during and long after the energy retrofit is finalised, are crucial for having a sustainable success rate and assessment.

During the activities in the Strategic Phase of SMARTER TOGETHER the Chair is intensive involved in the development of a refurbishment roadmap for initialising and implementing a process of sustainable energy retrofit of residential buildings with owner communities in Munich. The final document is a delivery in Smarter Together project (WP4, Task 4.3). The document will include 3 parts. The first part will draw a possible sketch of a well targeted municipal infrastructure and tools needed for enforcing the municipal and local activities in consultancy and support of private home owners' associations based on long term experiences of the City of Munich. The second part aims directly the group of owners, their property managers, planners but also tenants. It informs about strategic steps, (German) legal issues and offers tools, check lists and process timelines. This part will be presented in an appropriate and fast informing way as a printable booklet and a digital interactive version. Beside of the intensive collaboration of the Chair with the City of Munich on this second part, the Chair set up an additional proposal for Sofia. Once finalised, this one is planned to become the third part of the "Refurbishment Roadmap". Co-Chair as well as several of the workshop participants collaborated on the development of different parts of the Road Map or were involved in the project discussions and international workshops during the last 3 years.

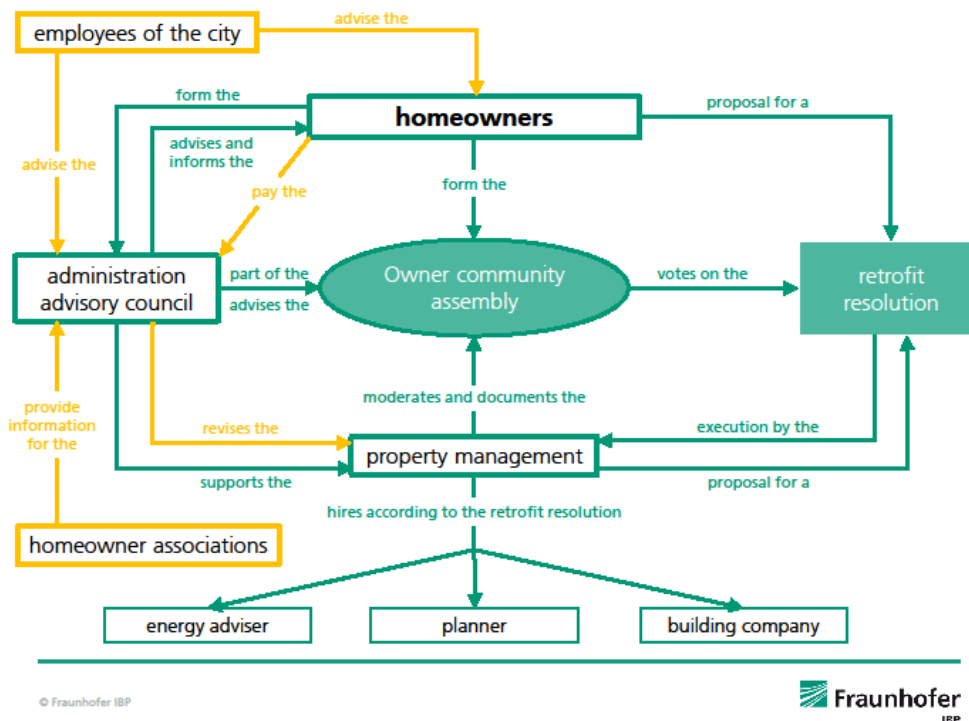
## Market environment

The challenges, which should be addressed and solved by applying a CEN Workshop Agreement (CWA), are mainly the lack of a standardised workflow and management procedures for the energy retrofit of multi-family residential buildings with owner communities. Due to the large number of relevant stakeholders among the process and several critical work- and information flow hubs over the timeline of the particular process, as well as the not always supportive energy efficiency and homeownership legal regulations of ownerships, the retrofit planning, execution and monitoring process, the quality, sustainability and speed of the works experiences often strong problems. By standardising particular information flow and process management procedures and quality management activities, a high amount of decision makers and all other relevant stakeholders among the EU will be supported and facilitated to be active on innovative markets in a form of new business models on retrofitting residential properties with a complex ownership structure.

## Legal environment

Legal and regulatory system is different in every country and it is linked to country's historical development and regulation depends on each country's laws. The decision of implementing measures for retrofitting the building depends on decisions of the owners. The legal framework establishes the privileges and obligations of apartment's owners and all related stakeholders in multi-family housing blocks that need to be followed. Additionally, legal framework is there to ensure right energy measures which can be applied to multi-family residential buildings.

A policy that requires a 2% equivalent comprehensive retrofit rate per year to meet its long-term goals, but which is currently achieving 0.2% of multi-occupancy houses and falling, needs to reflect on why people are resisting it. <sup>16</sup>



*Process optimization proposal. Under development. If applicable according to the commenting persons, needs to be enabled through the CWA. Fraunhofer IBP*

For improving the energy efficiency in buildings, the main EU key legislative act is the implementation of the Energy Performance of Buildings Directive (EPBD). EPBD was adopted in 2002, to support and to follow the Kyoto Protocol on climate change. The roadmaps can define different phases which go from voluntary to (depending on the country) prescribed technical measures, where it gives an option to choose how to apply the improvements, as long as standards are taken into account, also an opportunity to decide how far to go with the retrofit, to do the major renovation or only the replacement or retrofit of building elements. The holistic renovation approach must be encouraged in order to increase the cost-effectiveness and total resource efficiency of the measures. The measures should be continuously evaluated and improved.

EnEV and KfW, a Federal standard and a financing & funding mechanism for retrofit, both in Germany, offer a solid regulatory basis in the context of the German market for energy retrofit. They mostly cover the energy efficiency standard and retrofit measures, but also partially define the optimal workflow and involved stakeholders. This needs to cover: the initial information and motivation phase for and between the owner community members, management board and property managers; the activities of planners and energy efficiency consultants who advise, as well as local authorities and government on all its levels. Similar is the situation among all countries of the EU. National, regional and local energy efficiency standards are present, but these mostly give a technical framework, and don't give an overall process work- and information flow.

The most important existing Directives and relevant national legislation for the Project Plan are listed below:

- EFIG Underwriting Toolkit
- Energy Efficiency Directive (2012)
- Energy Performance of Buildings Directive EPBD
- Effort Sharing Decision (2009)
- Renewable Energy Directive (2014)
- Ecodesign Directive
- State of the Energy Union (2015)

## Existing standards and standard related activities and documents

Number	Title
CEN/CLC/TR 16567	Energy Efficiency Obligation Schemes in Europe - Overview and analysis of main features and possibilities for harmonisation
EN 15232-1	Energy Performance of Buildings – Energy performance of buildings – Part 1: Impact of Building Automation, Controls and Building Management – Modules M10-4, 5, 6, 7, 8, 9, 10
EN 15459-1	Energy performance of buildings – Economic evaluation procedure for energy systems in buildings – Part 1: Calculation procedures, Module M1-14
EN 15900	Energy efficiency services - Definitions and requirements
EN 16247-1	Energy audits – Part 1: General requirements
EN 16247-2	Energy audits – Part 2: Buildings
EN 16627	Sustainability of construction works – Assessment of economic performance of buildings – Calculation methods

ISO 13793	Thermal performance of buildings – Thermal design of foundations to avoid frost heave
ISO 14040	Environmental management – Life cycle assessment – Principles and framework
ISO 14001	Environmental Management Systems
ISO 16346	Energy performance of buildings - Assessment of overall energy performance
ISO 50001	Energy management
ISO 52000-1	Energy performance of buildings – Overarching EPB assessment – Part 1: General framework and procedures
ISO/TR 52000-2	Energy performance of buildings – Overarching EPB assessment – Part 2: Explanation and justification of ISO 52000-1
ISO 9869	Thermal insulation – Building elements
EnEV	Energieeinsparverordnung (Energy Saving Ordinance) in Germany

In most European countries, when it comes to multi-family residential buildings, the difficulties of owner-occupants in reaching collective decision on renovation and improving energy efficiency appears as a problem. In a case of more than one owner, most of the time the apartments are owned by legal entities which provide dwellings for the rent: not-for-profit companies, associations of cooperative housing, cooperative associations, and housing associations or they are owned by municipalities or insurance companies. In case when there are many owners, the dwellings are owned by individuals, they use homeowners' associations for the decision-making management for common parts and the plot of the land and it concerns all tenants. Levels of refurbishment in apartment blocks are often lower than in single-family houses, due to the technical difficulties, complexity of reaching agreement among the multiple owners and sharing the costs<sup>17</sup>.

Most people are unaware and do not know what the retrofit is and of what importance it can be for them. Especially during the process of preliminary decision, people should be guided with a clear structured process. It is therefore necessary to present them disadvantages, advantages and the necessary steps in a simple way, with easy-to-understand information and good examples.

## Motivation for the Creation of this Workshop

In most European countries, when it comes to multi-family residential buildings, the difficulties of owner-occupants in reaching collective decision on renovation and improving energy efficiency appears as a problem. In a case of more than one owner, most of the time the apartments are owned by legal entities that provide dwellings for the rent: not-for-profit companies, associations of cooperative housing, cooperative associations, and housing associations or they are owned by municipalities or insurance companies. In case when there are many owners, the dwellings are owned by individuals, they use homeowners' associations for the decision-making management for common parts and the plot of the land and it concerns all tenants. Levels of refurbishment in apartment blocks are often lower than in single-family houses, due to the technical difficulties, complexity of reaching agreement among the multiple owners and sharing the costs<sup>17</sup>.

Most people are unaware and do not know what the retrofit is and of what importance it can be for them. Especially during the process of preliminary decision, people should be guided with a clear structured process. It is therefore necessary to present them disadvantages, advantages and the necessary steps in a simple way, with easy-to-understand information and good examples.

## Workshop proposers and Workshop participants

The CEN Workshop is proposed by Georgi Georgiev – architect and urban planner - from the Fraunhofer-Institute for Building Physics IBP. He has worked on various international demonstration projects for sustainable retrofit actions in multi-occupancy residential buildings with owner communities. His special focus is innovative holistic measures and business model development for energy retrofit in residential buildings with complex ownership structures.

Currently he is involved in the development of a Refurbishment Roadmap for the Sustainable Energy Retrofit in multi-occupancy residential buildings with owner communities, based on case studies in Munich and Sofia, in the framework of the EU Smart City Project SMARTER TOGETHER.

During his activities on the thematic area, he has constantly realised the need of a common European CWA on the organisation, management and quality management of the energy retrofit process among the residential buildings, operated by owner communities. There are various European and national energy efficiency standards for existing residential buildings, but only few of the regulations and legal framework address the motivation and information process for the retrofit, Kind of information process, Management and quality management issues are considered in technical guidelines for Architects, Engineers and technicians (e.g. HOAI, Vergaberichtlinien).

Still the market situation and the legal regulation in private sector often miss the use of these technical and non-technical guidelines. This of course strongly influences the technical quality and sustainability of the retrofit and the latter operation of the retrofitted buildings.

The workshop will be supported by Judith Borsboom-van Beurden. She is a senior Researcher Smart Sustainable Cities at the NTNU in Trondheim, Norway and leads the Sustainable Cities and Regions in TSO Sustainability and doing research and business development of the area of Smart Cities.

The workshop is open to any interested party or entity that is willing to support the aims of the project plan. The Participation will be free of charge.

## Workshop scope and objectives

This Workshop will develop a CEN Workshop Agreement (CWA) which will describe a workflow and an overall quality and process management methodology for the resource efficient retrofit of existing multi-occupancy and multi-ownership residential buildings.

The target group of the CWA are all relevant process stakeholders including owner communities, property managers, owner community boards, planners, energy efficiency consultants, financial institutions, and policy makers.

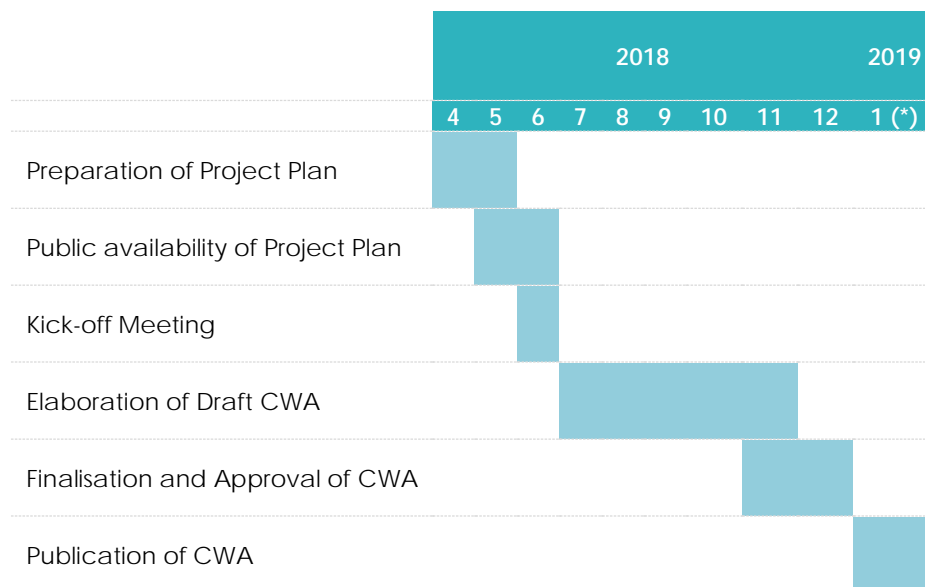
## Workshop programme

The working language will be English and the CWA will be drafted and published in English. The estimated duration of the Workshop is 7 months, no later than January 2019 (\*amendment in approval process). During the Workshop lifetime, several meetings, mainly web meetings are foreseen to draft the CEN Workshop Agreement.

## Work Plan

Anyone can comment on this Project Plan of the envisaged CWA. All comments received will be considered by the chairperson preliminary to the Kick-off meeting. At the Workshop, each comment received shall be presented, discussed and resolved. Any meeting except for the Kick-off and the final meeting can be organised as virtual meetings. The time schedule for the Workshop is influenced by the runtime of SMARTER TOGETHER. If the Work Package 8 "Replication of Smart City solutions" of SMARTER TOGETHER will be extended by an amendment which is in preparation, the elaboration phase of the CWA will be extended by 5 months until April 2019 (\*), which also shifts the finalisation and publication of the CWA.





## Work already delivered

Among the IEE funded project Low Energy Apartment Futures (LEAF) a retrofit roadmap for multi-occupancy residential buildings' owner communities was developed. It defined the very general principles of the workflow in this particular case, but due to the various energy efficiency regulations of every EU country and the scope of the project, a more in-depth EU-wide rethinking of the workflow was not possible.

The workshop will consider individual legal frameworks, as well as ownerships and privacy rights. There is significant variation in the legally-defined processes for ownership and management of multi-owned apartment blocks across Europe. Ownership arrangements tend to fall into one of three roughly-defined categories. In a unitary system (common in Scandinavia), apartment owners own shares in the whole building. In the dualistic (condominium) system, owners own their apartment and jointly own the common parts of the building. The final category is outlier systems, which do not fit easily into either of the first two categories: the major example here is England where there is usually a building owner with individual apartment owners having a lease to their apartments over the very long term (typically 100-1000 years). Alongside differences in ownership arrangements, different jurisdictions set different rules around building management processes, with many countries and regions having amended regulations to facilitate decision making in favour of energy efficiency improvements. The result is that in some jurisdictions (such as France) there are clear processes to make improvements to co-owned residential buildings, but not in others (such as England). In some jurisdictions (England, Sweden) co-owners may need to agree to improvements made entirely inside an individual apartment. Ownership rules can also affect the ability of the co-owners to jointly access finance to make improvements.

A Refurbishment Roadmap (Task 4.3: Deliverable 4.3 in Low-energy districts) for the sustainable retrofit of multi-occupancy residential buildings with owner communities in Germany is currently under development by the City of Munich and Fraunhofer-IBP. This guideline, considering ownership rights and legal German framework, will be finished and published in January 2019 and should to be taken into account, if Work Package 8 "Replication of Smart City solutions" of SMARTER TOGETHER will be extended. A replication framework for Sofia, basing on the preliminary drafts and experiences of the Refurbishment Roadmap was developed by Fraunhofer-IBP in 2017, as a part of Task 7.2.

## Workshop structure

### Workshop Chairperson and Vice-Chair

The Workshop Chairperson has five main responsibilities. If necessary or if assigned to him/her, the Workshop Vice-Chair may take over these duties from the Chair.

- Presides at Workshop plenary meetings;
- Ensures Workshop delivers the agreement in line with its Project Plan;
- Manages the consensus building process, decides when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received;
- Interface with CEN-CENELEC Management Centre (CCMC) and CEN Workshop Secretariat regarding strategic directions, problems arising, and external relationships and;
- Ensures due information exchange with the Workshop Secretariat.

### Workshop Secretariat

The CEN Workshop Secretariat is providing the formal link to the CEN system. The Workshop Secretariat has five main responsibilities:

- Formally register Workshop participants and maintain record of participating organisations and individuals;
- Offer infrastructure and manage documents and their distribution through the electronic platform;
- Prepare agenda and distribute information on meetings and meeting minutes/follow up actions;
- Initiate and manage CWA approval process upon decision by the Chairperson and;

- Advise on CEN rules and bring any major problems encountered (if any) in the development of the CWA to the attention of CEN-CENELEC Management Centre (CCMC).

The CEN Workshop Secretariat provides a professional management support in the form of administrative and operational. DIN will provide the Workshop secretariat subject to formal approval of the Project plan at the Kick-off meeting.

## Resource requirements

Registration and participation at this CEN Workshop are free of charge, but each participant shall bear his/her own costs for travel, accommodation, and subsistence.

The administrative costs of the CEN Workshop Secretariat as well as the logistical support, such as online conference tool, will be covered by SMARTER TOGETHER through its Horizon 2020 funding. The copyright of the CWA shall be with CEN.

## Related activities, liaisons, etc.

The topic of the CWA is related to the following European initiatives:

- CEN/CLC/ETSI/SF-SSCC the CEN-CENELEC-ETSI Sector Forum on Smart and Sustainable Cities and Communities
- EIP-SCC the European Innovation Partnership on Smart Cities and Communities
- CEN/TC 371 Energy performance of buildings
- CEN/CENELEC JTC 14

On international level the following technical committees are the most relevant ones:

- ISO/TC 268 on Sustainable Cities and Communities
- ISO/IEC JTC 1 on Information Technology (WG 11 on Smart Cities)

The Workshop shall ensure appropriate links are in place with these initiatives, in particular with the CEN-CLC-ETSI/SF-SSCC, through liaison or any other means.

## Contact points

Chairperson	Vice-Chair	Secretariat
Georgi Georgiev	Judith Borsboom-van Beurden	Stefanie Müller / Dr. Christian Grunewald
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- <sup>1</sup> CEN-CENELEC Guide 29:  
[ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/29\\_CENCLCGuide29.pdf](ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/29_CENCLCGuide29.pdf)
- <sup>2</sup> CEN-CENELEC website: <https://www.cen.eu/news/workshops/Pages/default.aspx>
- <sup>3</sup> SMARTER TOGETHER Wiki webpage (restricted access):  
[http://smartertogether.iao.fraunhofer.de/index.php/Main\\_Page](http://smartertogether.iao.fraunhofer.de/index.php/Main_Page)
- <sup>4</sup> Finalized CWAs on CEN-CENELEC website:  
<https://www.cencenelec.eu/research/CWA/Pages/default.aspx>
- <sup>5</sup> Approved project plans on CEN-CENELEC website: <https://www.cen.eu/news/workshops/Pages/WS-2018-002.aspx>
- <sup>6</sup> Transparency Dashboard of SMARTER TOGETHER Munich:  
<http://transparency.smartdataplatfom.info/en/>
- <sup>7</sup> Final CEN Workshop Agreements CWA 17381 and CWA 17382 will be published on the CEN-CENELEC website : <https://www.cencenelec.eu/research/CWA/Pages/default.aspx>
- <sup>8</sup> Directorate general for internal policies, policy department: Economic and scientific policy: Boosting Building Renovation: What potential and value for Europe? EN, October 2016
- <sup>9</sup> Office of the European Union: Energy Roadmap 2050, European Union, 2012
- <sup>10</sup> Explanation of main Buildings-related EU policies available on the European Commission webpage:  
<https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings>
- <sup>11</sup> BPIE: Renovation strategies of selected EU countries a status report on compliance with article 4 of the energy efficiency directive
- <sup>12</sup> Jan Paul Baginski, Christoph Weber: A Consumer Decision-making Process? Unfolding Energy Efficiency Decisions of German Owner-occupiers, HEMF Working Paper No.8, August, 2017.
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- <sup>14</sup> Maria Isabel Abreu, Rui Oliveira, Jorge Lopes: Attitudes and practices of homeowners in the decision-making process for building energy renovation; *Procedia Engineering* 172 (2017), pp. 52 – 59.
- <sup>15</sup> F. Bartiaux, K. Gram-Hanssen, P. Fonseca, L. Ozolina, T. H. Christensen, A practice-theory approach to homeowner´ energy retrofits in four European areas, *Build Res Inf.* 42(4) (2014) pp. 525-538.
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*Research, Building and Environment* 118 (2017), pp. 377-388
- <sup>17</sup> Susan Bright, David Weatherall, Roxana Willi: *A case study of deep retrofit in mixed tenure (rented and owned) UK social apartment blocks, 6. Buildings policies, directives and programmes, 6-283-17 BRIGHT ET AL*