



POCITYF

POCITYF Citizen Engagement Plan

D4.1: POCITYF Citizen Engagement Plan

WP4, T4.1 - Definition of engagement strategies for citizens, local communities and stakeholders

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Executive Summary

This deliverable has been prepared as part of Task 4.1 - Definition of engagement strategies for citizens, local communities, and stakeholders from WP4 - Citizens Engagement and Open Innovation Activities.

This WP is dedicated to the engagement of citizens, local communities, and stakeholders under open innovation and co-creation activities that aim at enriching smart city solutions. The citizen engagement is examined and introduced with the ultimate aim to create a sense of ownership of the smart city vision, transition tracks, and innovative solutions and technologies. To further mobilize local stakeholders and support engagement initiatives, the work package also aims to organise contest on open innovation challenges in smart cities to provide small-scale funding.

In this context, task 4.1 focuses on designing engagement strategies based on the analysis of collaborations between stakeholders, citizen needs, preferences and experiences, citizen and community engagement with energy services and solutions, and energy efficiency behaviours in daily life.

The studies in the LHs occurred in parallel and are grounded in different approaches. In both LHs, the work was divided into two stages. In Évora, the first stage comprised the analysis of state of the art and a literature review about citizen engagement in EU projects. The second stage involved a qualitative approach based on interviews with citizens. In Alkmaar, the study also comprised the analysis of state of the art and a literature review about citizen engagement in EU and Dutch projects, followed by the qualitative and quantitative approaches based on, design research, interviews and a survey with citizens.

Building upon the results, the deliverable proposes PESF (POCITYF Engagement Strategy Framework), the development of an online platform to engage by creating different engagement actions for heterogeneous levels of citizens' engagement, and a city spot for gatherings/events/workshops with different co-creation and co-design focus. Moreover, the preliminary journeys identified in Alkmaar indicate stakeholders' specific drivers and barriers as well as those related to the collaboration with other stakeholders. The drivers and barriers provide focus for the design of citizen engagement methods and tools and led to the first concept designs for the physical meeting space for citizen engagement and respective engagement approaches, and an app concept that improves citizen engagement digitally.



Table of contents

1	Introduction	12
1.1	Scope, objectives and expected impact	12
1.2	Structure of the deliverable	14
1.3	Contributions to other tasks and WPs in the project	14
1.4	Partners' Contributions	15
1.5	Task 4.1 - Plan of Activities and COVID-19 Impacts.....	16
2	Literature Review and State of the Art	20
2.1	Literature Review on Citizen Engagement	20
2.2	Literature Review on Actor Engagement	21
2.3	Literature Review on Stakeholder Engagement	21
2.4	State of the Art - EU Projects	29
2.4.1	EU Project Methodologies	30
2.4.2	Outcomes	30
2.4.3	Summary of findings from EU projects.....	32
2.4.5	EU projects - Citizen Engagement Digital Tools.....	32
2.5	POCITYF Framework for Citizen Engagement (PESF).....	37
3	Study with Citizens in the LightHouse Cities	43
3.1	Study and Results - Évora	43
3.1.1	Sample	43
3.1.2	Data Collection	43
3.1.3	Data Analysis	44
3.1.4	Interview Results.....	44
3.2	Study and Results - Alkmaar	48
3.2.1	Survey - Municipality of Alkmaar	48



3.2.1.1 Methodology	49
3.2.1.2 Survey Results.....	49
3.2.2 Journey study with tenants of Van de Veldelaan flat.....	52
3.2.2.1 Context	52
3.2.2.2 Methodology	54
3.2.2.3 Questionnaire Results	55
3.2.3 Pilot Bloemwijk.....	58
3.2.3.1 Methodology	58
3.2.3.2 Results	59
3.3 POCITYF Engagement Strategies Framework (PESF).....	63
3.3.1 Creating New Strategies through PESF.....	63
3.3.2 Mapping solutions - PESF and ETT#4 Integrated Solutions	65
4 Engagement Strategies	70
4.1 Citizen Engagement Objectives.....	70
4.2 Tools to support the engagement strategies	71
4.3 Citizen Engagement Platform	73
4.4 Physical Hub	75
4.5 Co-creation Workshops	75
4.5.1 Workshop with POCITYF Partners responsible for ISs with engagement potential.....	76
4.5.2 Workshop with citizens	77
4.6 Engagement Initiatives	77
4.6.1 Recruitment Process	78
4.6.2 Co-creation directions based on citizens' needs and interests	79
4.7 Further Empowerment	80
5 Ethical Requirements	81
6 Conclusions and Next Steps	82



References	83
Appendix A	86
Appendix B	90

List of Tables

Table 1 - Partners and respective contributions.....	16
Table 2 -First version of the T4.1 plan of activities (before COVID-19).....	17
Table 3 - Second version of the T1.6 plan of activities (after COVID-19).....	18
Table 4 - Example of Citizen Engagement Strategies in EU Projects	31
Table 5 - Examples of Digital tools in EU Projects	35
Table 6 - Examples of Smarten City Project engagement strategies positioned in PESF .	41
Table 7 - Examples of Sharing Cities project engagement strategies positioned in PESF	42
Table 8 - Main highlights of the interviews and citizen testimonies.....	46
Table 9 - Example of PESF use to develop engagement strategies	65
Table 10 - Integrated Solutions (IS) groups of ETT#4 and respective solutions	67
<i>Table 11 - Example of PESF applied to the integrated solutions of ETT#4</i>	<i>69</i>
Table 12 - POCITYF Innovative Elements with Engagement Potential.....	72
Table 13- Possible functionalities of the Citizen Engagement Platform	74
Table 14 - Set of Initiatives to cover the levels and goals of engagement	78
Table 15 - POCITYF solutions as a support for possible participatory processes.....	80

List of Figures

Figure 1 - Smart Energy City Approach.....	23
Figure 2 - Illustration of SEC Approach in Netherlands	24
Figure 3 - Customer journey to a natural gas-free home (Tigchelaar, et al., 2019).	27



Figure 4 - EIP-SCC Network (Source: http://www.remourban.eu/smartcities-network/title.kl).....	29
Figure 5 - Mapping citizen engagement activities in the social innovation process	36
Figure 6 - Ladder of Citizen Participation (Arnstein, 1969).....	37
Figure 7 - POCITYF Engagement Strategies Framework (PESF).....	38
Figure 8 - Citizens' trust in in the municipality of Alkmaar.....	50
Figure 9 - Citizens' knowledge - POCITYF, sustainability and energy transition.....	51
Figure 10 - Integrated Solutions (IS) groups of ETT#4 (Source: POCITYF GA Document) .	66

Abbreviations and acronyms

Abbreviation	Definition
EIP-SCC	European Innovation Partnership on Smart Communities and Cities
e-mobility	Electric mobility
EU	European Union
EV	Electric Vehicle
ETT	Energy Transition Track
FC	Fellow City
GA	Grant Agreement
HEMS	Home Energy Management System
IS	Integrated Solution
LH	Light House City
P2P	Peer-to-Peer
PEB	Positive Energy Block
PED	Positive Energy District
PESF	POCITYF Engagement Strategy Framework
PV	Photovoltaic
RES	Renewable Energy Sources
SCC	Smart Communities and Cities



Abbreviation	Definition
T	Task
WP	Work Package



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1 Introduction

1.1 Scope, objectives and expected impact

POCITYF builds upon intelligent, user-driven, and demand-oriented city infrastructures and services to foster energy efficiency, supported by a substantial increase of renewable energy in synergy with the penetration of e-mobility solutions, leading to the wide deployment and market-uptake of PEDs (Positive Energy Districts). The project aims to transform and add smartness layers in key city infrastructures, technologies, and services (i.e., buildings, energy grid, e-mobility). It will also form an open and collaborative ecosystem towards improving citizens' quality of life, innovation, and sustainability at the district and city level. Overall, POCITYF creates new possibilities to make cities safer, greener, and more responsive to their citizens and other organizations' needs.

In the context of WP4 (Citizens Engagement and Open Innovation Activities), task 4.1 (Definition of engagement strategies for citizens, local communities, and stakeholders) aims to analyse and integrate citizens, businesses, and communities' engagement profiling to design the most effective engagement strategies that leverage all actors' participation in both LH and FCs.

This report describes the result of activities developed in task T4.1: Definition of engagement strategies for citizens, local communities, and stakeholders.

Qualitative and quantitative methods were used to understand how citizens engage with the energy services, the technology and solutions, the city, and other stakeholders. As such, the methods enabled to identify the pressing issues concerning:

- a) How citizens perceive their role and the impact it can have by changing their behaviour.
- b) How energy technology and services help them in achieving sustainable energy use.
- c) The main challenges in becoming active participants.

In this context, task 4.1 focuses on designing engagement strategies based on the analysis of collaborations between stakeholders, citizen needs, preferences and experiences, citizen and community engagement with energy services and solutions, and energy efficiency behaviours in daily life. The activities in the LHs were carried out in parallel and adopted different approaches. In practical terms, the work was divided into two stages. In Évora, the first stage comprised the analysis of state of the art and a literature review about citizen engagement in EU projects. The second stage involved a qualitative approach based on interviews with citizens to understand the overall citizen context of consumption including their interactions with the community, their city view and their openness to adopt smart and sustainable energy solutions. In total, 10 qualitative



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interviews with citizens were conducted, revealing different citizen engagement levels, and therefore different potential to engage in the co-creation of solutions. For example, while some citizens are inclined to engage in the community due to the current professional and civic activities, other citizens show a comprehensive knowledge of the energy market and micro-generation, but are not willing to engage in the community.

The study in Évora resulted in the development of the first version PESF (POCITYF Engagement Strategy Framework). PESF is a flexible tool to collaboratively develop engagement strategies in the LHs and FCs to increase the citizen engagement levels according to each city context. The results also suggested the development of: (1) A physical hub in each LH city that can become a living lab and a space for co-creation and experimentation with citizens; (2) an online engagement platform to inform, involve, and co-create with citizens and other stakeholders; (3) A set of apps from ETT#4 that work on lower levels of engagement and will try to transition them to higher levels of engagement by inviting them to adhere to the online engagement platform and physical hub.

In Alkmaar, the first stage also involved the analysis of state of the art and a literature review about citizen engagement in Dutch and EU projects. The study adopted qualitative and quantitative approaches based on, design research, interviews (with citizens and other stakeholders such as housing corporations) and a survey with citizens. Both approaches aimed to identify citizen's readiness and awareness levels regarding the smart energy solutions and understand their overall context (needs and preferences) taking into account the particularities of each LH (cultural and historical and differences in citizen target groups). In total, 633 citizens responded to a survey, stating their preferred level of engagement in realizing solutions and indicating their experiences and preferences with different technical solutions. Part of this survey focused on societal and personal aspects related to quality of life and collaborations with other citizens and/or stakeholders.

In this sense, the literature review, stakeholder interviews into citizen engagement strategies already applied for multiple years by stakeholders (POCITYF partners) and further survey and design research with citizens resulted in preliminary citizen engagement process descriptions (journeys) from different stakeholders perspectives (citizens, housing corporations, local initiatives and municipalities). These preliminary journeys indicate stakeholders' specific drivers and barriers as well as those related to the collaboration with other stakeholders. The drivers and barriers provide focus for the design of citizen engagement methods and tools and led to the first concept designs for: 1) a physical meeting space for citizen engagement and respective engagement approaches, 2) an app concept that improves citizen engagement digitally.

The study in Évora resulted in the development of PESF (POCITYF Engagement Strategy Framework) to propose strategies and recommendations for pursuing the project objectives. The study in Alkmaar resulted in several journey descriptions and first



concepts for methods/tools for enhancing citizen engagement in practice. Moreover the results enabled to propose the development of an online platform to engage stakeholders by creating different engagement actions for heterogeneous levels of citizens' engagement and of a city spot for gatherings/events/workshops with different co-creation and co-design focus.

It is expected that the engagement strategies developed with the support of the framework leverage the project's social engagement to its full potential and ensure that social engagement is embedded in the project's solutions design stage.

The document will be updated in month 36. Besides that, other WP4 deliverables will be submitted by M24 and M36, when the impacts of the strategies defined can be observed and analysed to improve and complement the approaches suggested according to the outcomes.

1.2 Structure of the deliverable

Deliverable 4.1 is structured as follows:

- **Chapter 2** - Literature review, and state of the art of existing Dutch and European projects, namely the different concepts of citizen engagement and the overall engagement strategy approaches.
- **Chapter 3** - Study with citizens in the LHs and the presentation of the main results.
- **Chapter 4** - Engagement strategies, namely the concept of POCITYF Engagement Strategies Framework (PESF), the proposals of strategies like online platform, physical hub, and co-creative initiatives.
- **Chapter 5** - Ethics requirements followed.
- **Chapter 6** - Conclusions and next steps, addressing the deliverable's main results and highlights, and what will be done in the future.
- **Appendix A** - Interview protocol of the qualitative study in Évora LH.
- **Appendix B** - Survey of the quantitative study in Alkmaar LH.

1.3 Contributions to other tasks and WPs in the project

Within WP4, Task 4.1 contributes to task 4.2 (Training workshops for LH/FCs) which proposes to organize a number of workshops where representatives from LH/FC ecosystems will participate to 'train the trainers/ coaches' on citizen engagement strategies, open innovation and co-creation activities that will be implemented within POCITYF's lifetime. Task 4.1 also contributes to task 4.3 (Citizens Engagement and Participation through Behavioural Insights Mechanism) to implement engagement actions to promote behavioural changes and motivate active participation (e.g. information, education mechanisms, ambassador programs, competitions) through the online platform.



Regarding the other WPs, task 4.1 is closely related with task 1.6 - City Vision and Master Plan for ETT#4: Citizen-Driven Innovation in Co-creating Smart City Solutions from WP1 - POCITYF Smart City Framework Towards an Integrated Deployment. The understanding of citizens' context (needs, interactions and activities) and the engagement strategies are the background to actively involve them in the design, development, and evaluation phases of the project solutions.

Additionally, task 4.1 outcomes will contribute to WP6 - Évora Lighthouse City Demonstration Activities and WP7 - Alkmaar Lighthouse City Demonstration Activities in supporting strategies and actions to enable citizens and third parties involvement in the developments foreseen within both.

In the case of WP2, task 4.1 proposes an online platform to foster citizen engagement through diversified actions that can be measured to identify and monitor the impacts in task 2.6.

1.4 Partners' Contributions

The following partners contributed to the activities of Task 4.1:

Partner	Contribution
EDPL	<p>EDPL contributed with feedback and the validation of the qualitative study protocol.</p> <p>The partners contributed to citizen participation by including an invitation to participate in the qualitative interview (T4.1 - WP4) in the T1.1 survey from WP1. Joining efforts in these tasks ensured citizen participation in the different planned activities, without making citizens feel overwhelmed with too many simultaneous initiatives.</p> <p>The partners also requested the local utility service provider to provide a list of citizens to invite.</p>
CME and DECSIS	The partners contributed to disseminating the project and sending invitations to citizens to participate in the interviews in their respective organizations, in other companies, and between friends and family that fit in the sample profile.
TNO, NEC, the municipality of Alkmaar, and InHolland	TNO and NEC contributed with feedback and the validation of the qualitative study protocol.



Partner	Contribution
	All the partners contributed with the conduction of the surveys in Alkmaar, including the questionnaire development, data collection, and analysis to provide the understanding of citizens and propose engagement strategies.
TNO, InHolland, Woonwaard and Van Alckmaer	These partners contributed to D4.1 development in the sections related to the methodology description, research results, and recommendations in the LH Alkmaar context.

Table 1 - Partners and respective contributions

1.5 Task 4.1 - Plan of Activities and COVID-19 Impacts

T4.1 Plan of Activities - First Version

T4.1 initial plans involved qualitative interviews with citizens in the LHs. The plan was developed to carry out the first year task that started in M1 and finished in M12. This plan included the literature and state of the art review to develop a study protocol, which included the sample design, data collection and analysis descriptions, and the interview protocol. According to the initial task plan (Table 2), partners would help organize a dissemination event to present the project objectives and recruit citizens for the interviews. Initially, it was planned to conduct 30 interviews in each LH city.

Activities	Deadline
Kick-off	October/2019
Meetings with partners and development of the activities plan	December/January 2020
Development and refinement of the study protocol with partners.	February/2020
Project Dissemination Actions: POCITYF Citizen Event in Évora and Participants Recruitment	March/2020
Literature Review and State-of-Art	April/2020
Interviews with citizens	April/May 2020
Data Analysis and Results	June/July/2020
Deliverable D1.11 Draft	August/2020



Activities	Deadline
Deliverable D1.11 review process	September/2020
Deliverable D1.11 submission	October/2020

Table 2 -First version of the T4.1 plan of activities (before COVID-19)

COVID-19 and the Second Version of T4.1 plan

POCITYF dissemination event was cancelled due to the pandemic. A new plan was designed to mitigate the risk of not having the interview outcomes in the end of the task. As conducting face-to-face interviews with citizens became impossible, POCITYF consortium focused on proceeding with the online and/or phone interviews to understand the citizens' context, their engagement levels, and their city view.

Before interviewing citizens, T4.1 team had to find ways to reach citizens during the pandemic. Although the online channels were available, most citizens were unavailable to talk.

The team organized meetings with partners who were facing the same restrictions to contact and invite citizens to participate in the other initiatives like T1.1 Survey.

In this sense:

- A digital invitation was created that unified the invitation for the interviews and the T1.1 survey.
- The sample was redefined to broaden the target group of citizens so consortium could reach a reasonable sample in the pandemic context (considering PEB 1 and locations closer to PEB1).
- Several meetings with Parish Councils and local associations were undertaken get their support and help in disseminating the project and the invitation.

Both T4.1 and T1.6 activities were performed in synergy with T1.1 activities to increase citizen participation in the different planned activities and prevent citizens from feeling overwhelmed with too many simultaneous initiatives. This coordination was particularly sought with the partners from EDPL, as they were also carrying out a study with Évora stakeholders to for D1.1 (T1.1). Following these efforts, partners like CME, DECSIS, and the parish councils corresponding to Positive Energy Block 1 (PEB1) have contacted citizens via email, inviting them to answer the T1.1 survey. CME and DECSIS disseminated the survey to their employees who live in Évora, to the parish councils' remaining employees, and to the citizens who are members of associations and foundations. At the end of the survey, citizens were also asked to leave their contact for future POCITY activities. This enabled INESC TEC to later on invite citizens to participate in the interviews, within the



scope of T4.1 (Definition of engagement strategies for citizens, local communities and stakeholders) of WP4 (Citizens Engagement and Open Innovation Activities). Table 3 shows the new plan developed.

The **engagement plan for the FCs** will be developed in the second year of the project as the strategies developed during the first year and the framework focused on the LHs context will be replicated and adapted according to each FC context. The detailed plan and results will be provided in the updated version of this deliverable in M24.

In Alkmaar, no major deviations occurred in terms of expected effort, deadlines and results. However, due to COVID-19 measures in place, work had to move online. The impact on future activities such as workshops is being evaluated in the Alkmaar ecosystem.

Activities	Deadline
Kick-off	October/2019
Meetings with partners and development of the activities plan	December/January 2020
Development and refinement of the study protocol with partners.	February/2020
Literature Review and State of the Art	April/2020
Methodology and plan adjustments	May/ June 2020
Meetings with parish councils and other partners	June/July 2020
Online/Phone interviews	Late July/August/September
Data Analysis and Results	September/2020
Deliverable D1.11 Draft	Late September/2020
Deliverable D1.11 review process	Late September/ Early October/2020
Deliverable D1.11 submission	Mid October/2020

Table 3 - Second version of the T1.6 plan of activities (after COVID-19)

Interviews could only be conducted after citizens responded to the T1.1 survey, and partners could send the contacts:

- Partners from EDP sent the first email with **9 contacts** on July 21.
- They also sent **9 contacts** of EDP Commercial clients. None of these clients accepted the invitation.
- Partners from EDP sent the second email with **19 contacts** on July 27.
- Partners from EDP sent the third email with **10 contacts** on July 31.



Therefore, the first interview was scheduled for late July, August and September according to citizens' availability. In addition to the unavailability of citizens, August is the vacation period in the LHs cities. Therefore, it was hard to reach citizens during this time. EDP sent us 47 contacts between July 21 and July 31. From these contacts, only 10 citizens accepted the invitation and were interviewed.

Interviews Schedule:

Interview 1: 28/07/2020

Interview 2: 30/07/2020

Interview 3: 31/07/2020

Interview 4: 03/08/2020

Interview 5: 03/08/2020

Interview 6: 04/08/2020

Interview 7: 04/08/2020

Interview 8: 12/08/2020

Interview 9: 02/09/2020

Interview 10: 22/09/2020

COVID-19 Impacts on the results

- Due to COVID-19, consortium could not get a closer relationship with citizens in the LHs. Goal now is to approach them in the second year of the project through the workshops and dissemination events after the pandemic ends.
- The number of interviews reflects the COVID-19 impacts on citizens and the overall cities. Therefore, it was difficult to invite and interview citizens online as they were not available to participate.
- The interviews and the exploratory study will continue during the second year in synergy with T4.2 to refine and adapt the strategies to LHs and FCs. As the first results in the LHs were delayed due to the pandemic, the information concerning the study on citizens on FCs and the Engagement plan for FCs will be provided in the updated version of this deliverable (M36).



2 Literature Review and State of the Art

This section provides an overview of citizen engagement research that has been considered relevant in the analysis phase of citizen engagement strategies. The analysis starts with a literature review of citizen engagement, and actor/stakeholder engagement, followed by the state of the art review on citizen engagement strategies in EU projects and citizen engagement frameworks.

2.1 Literature Review on Citizen Engagement

Citizen participation in city decisions is not new (Simonofski et al., 2017). However, it gained different meanings over the years. The term has evolved without much agreement on how citizens should be engaged, which approaches are most effective, and what outcomes should be expected (Tokoro, 2016). Thus, the form of involvement has ranged from merely being informed of decisions, providing information and feedback (such as in public hearings) to advising on planned programs or controlling implementation. The literature indicates a significant change in the terminology from citizen involvement to citizen participation to the current reference of citizen engagement (Farmer, 2013).

Citizen engagement is defined as the ability of ordinary people to come together, deliberate and take actions on problems or issues that they have described as important (Gibson, 2006) in the context of a country, a state, a city or a neighbourhood. “The form of involvement has ranged from merely being informed of decisions or actions to providing information and feedback (such as in public hearings) to advising on planning programs to influencing or controlling implementation” (Farmer, 2013).

Smart cities provide new solutions in the domains of mobility, environment, economy, governance, quality of life, and education thanks to the innovative use of technology. However, smart cities often do not reach their objectives if the citizens (the end-users) are not involved in their design (Simonofski et al., 2017). In the context of the city, citizen engagement has been associated the smart cities, which have attracted considerable attention because they are considered a response to the complex challenges that modern cities face. As such, Smart City Guidance Package (Beurden et al., 2016) recommends the definition of effective strategies to ensure that citizens are informed and motivated to be responsible, proactive, and co-creators.



2.2 Literature Review on Actor Engagement

Recent studies have evolved from a dyadic view of the engagement between partners (Breidbach et al. 2014 , Jaakkola & Alexander, 2014) to the engagement among multiple actors in service ecosystems (Storbacka et al., 2016, Hollebeek et al. 2016). A service ecosystem is defined as a spatial and temporal structure, in which social and economic actors interact and propose value through institutions and technology to co-produce service offerings, engage in mutual service provision, and co-create value (Vargo & Lusch, 2011pg.185). Therefore, an ecosystem perspective on customer engagement (actor engagement) includes new categories of actors (Alexander & Jaakkola, 2015), as well as new empirical settings, as such, inter-organizational environments (Hollebeek et al. 2016). In this context, actor engagement is conceptualized as the micro-foundation of co-creation in service ecosystems (Storbacka et al., 2016).

Service research has linked the actor engagement to innovation processes (Jaakkola & Alexander, 2014), facilitated by knowledge sharing and dialogue between multiple stakeholders (Vargo & Lusch, 2016). Other research streams pointed to the importance of the social aspect of engagement, recognizing that people are embedded within a network, emphasizing the nature of interactions (Hollebeek & Andreassen, 2018).

The actor engagement lens highlights the multiple contexts in which actor are engaged and the importance to understand not only the contexts, but the interactions with multiple actors to integrate resources, innovate and co-create (Brodie et al.2019).

As such, the actor engagement concept is pretty relevant for the POCITYF context as a smart city encompasses a variety of actors and interactions that address technical, social, economic and organizational issues to provide quality of life and environmental sustainability (Neirotti et al., 2014). Moreover, this concept brings an ecosystem view of engagement that highlights that each actor is involved in a set of value co-creation processes with other actors (Vargo and Lusch 2016).

2.3 Literature Review on Stakeholder Engagement

In the Netherlands, this multiple actor engagement lens has been realised to be a challenge in practice and attempts to integrated different stakeholder perspectives, including the one of citizens, into one (collaborative) approach have been made. Other studies focus on specific actor approaches and how collaboration with other actors (including citizens) and citizen engagement is addressed in these approaches. For example from the perspective of municipalities, housing corporations and citizens themselves. The approaches are characterized by either being mostly top-down and initiated by regional or local governance agencies, housing corporations or other larger existing companies (the



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integral approaches) or mostly bottom-up and initiated by small groups of people or local initiatives (value based approaches).

- **Integral approaches** are characterized by combining two perspectives, technical-economic and social, into one approach. Examples of these approaches are “Built environment energy neutral” (<https://www.tno.nl/media/1111/reisgids-gen-bestaande-bouw-energieneutraal.pdf>), the “Smart Energy City Approach” or “The Neighbourhood approach” most municipalities in the Netherlands have already formulated or are currently formulation. The Smart Energy City Approach is a national approach to facilitate the energy transition of districts in the Netherlands and most other approaches used by municipalities build on this approach or contain elements from it.
- **Value based approaches** are characterized by acknowledging that for most citizens the energy transition is not a main concern. Citizens have other more urgent topics on their mind, like family/friends, health and work. The behaviour of citizens is therefore driven by values like “connectedness”, safety and control, finance and physical well-being (Sheldon, 2001) as shown in research such as reported in The Customer Journey (Tigchelaar, et al., 2019) towards natural gas-free homes. Some approaches try to realize citizen sustainable behaviour and actions in practice by connecting to these values. An example is the Moving together locally approach (<https://energy.nl/publication/samen-lokaal-in-beweging-werkboek/>). This is an approach for local initiatives and/or cooperatives to stimulate and facilitate a group of people in developing its own sustainable measures/proposition alongside improving specific aspects of well-being relevant to that group. The main idea of this approach is that in order to stimulate people to take sustainable actions you have to create social cohesion first.

In the following, each of the three above mentioned approaches and perspectives are briefly described.

The Smart Energy City Approach

The Smart Energy City (SEC) approach (Figure 1) is the result of a private-public collaboration between the ministries of Economic Affairs, Interior Affairs, the national grid operators, the TKI Urban Energy and the TKI ClickNL.



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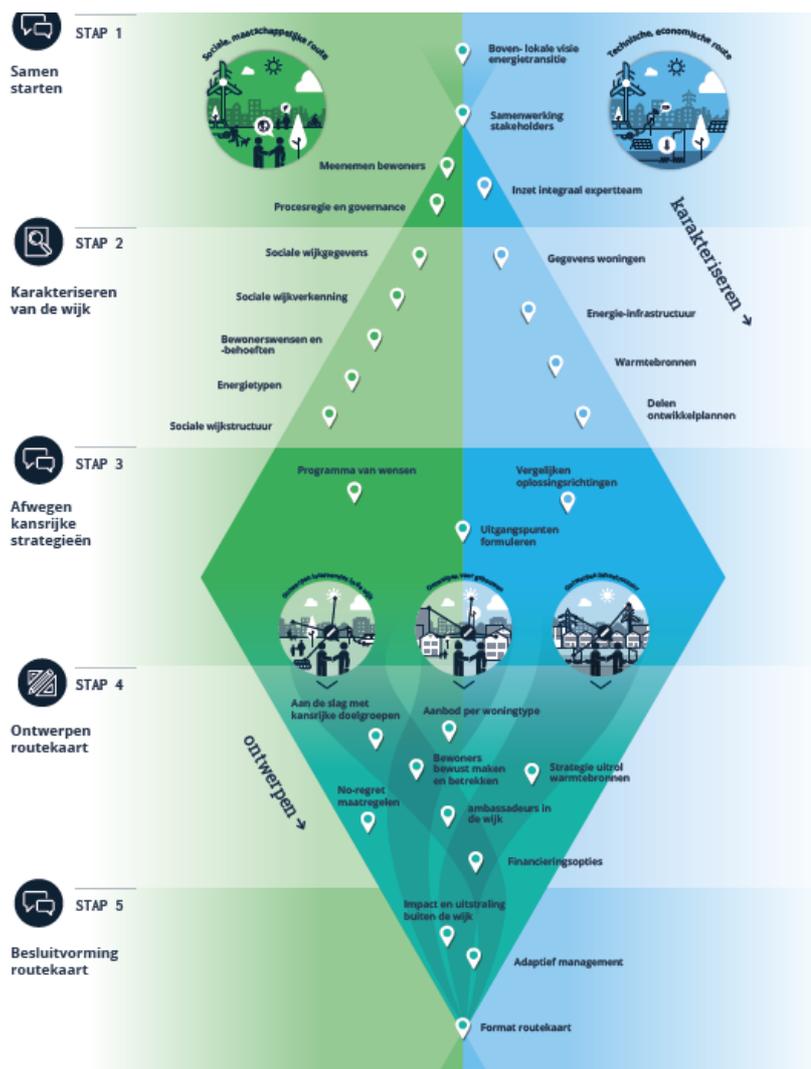


Figure 1 - Smart Energy City Approach

These parties collaborated in order to develop a national-wide applicable approach to facilitate the energy transition of districts in the Netherlands. The approach is the synthesis of the lessons learned in 16 case studies in which municipalities, grid operators, residents and other local organizations collaborated in a district transition approach. SEC offers an integrative model (Figure 2) with a congruent approach to shape and accelerate the transition process in districts with a sustainability ambition. Technical and economic aspects are braced with a social approach in order to implement the required transition innovations in a district. In the model the converging and diverging blue and green tracks visualize the transition process. The blue track outlines the technical-economic transition process and the green track outlines the accompanying social transition process.



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Figure 2 - Illustration of SEC Approach in Netherlands

The two tracks develop individually however simultaneous and aligned. Both the blue and the green track follow the same five process steps:

- **Step 1:** A joint kick-off
- **Step 2:** Characterize the district
 - 2.1 Social characterization
 - 2.2 Technical and economic characterization
- **Step 3:** Weighing promising strategies
- **Step 4:** Design a roadmap
- **Step 5:** Decide on a roadmap

These five steps contain multiple technical (blue) and social (green) transition activities, which are deemed essential in the transition of a district. As of the last two steps, the social and technical tracks converge and are increasingly integrating into the roadmap. After fulfilling the five steps of the SEC approach, a district is able to formulate an adaptive and integrated transition roadmap for the next X years (depends on the city characteristics). In general, a roadmap includes specific technical solutions for the constructions in the district, specific steps for the development of the energy system, an integrated intervention and communication strategy and a concrete investment program for the first period (1 -2 years).

The SEC approach also includes specific guidance on the involvement of citizen. The involvement of citizen is part of the green, social track of the SEC approach. In order to use sustainable energy sources in the district; the houses of the residents, both house-owners and renters, require adaptation. The activities within the five steps of the approach which are relevant for the active involvement of citizens are outlined in the model.

The Moving together locally approach

The transition to sustainable energy is progressing slowly. Local initiatives (even very small) and local energy cooperatives can play an important role in this transition. In the Netherlands there are 484 local energy cooperatives, an increase of 20% in comparison to 2017 (Schwencke, 2018). Almost 70.000 Dutch inhabitants are a member of a cooperative and invest together in solar or wind energy. Small local energy cooperatives however sooner or later experience difficulties in realizing further growth and scaling up.



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One of the main reasons for this is that for many people energy is not the most important issue in their lives. As long as there is energy provisioning little consideration is being given to it. People have other things on their minds, like (keeping) their jobs, taking care of their children and parents, having a comfortable house and a nice neighbourhood to live in.

The Moving together locally approach has been developed by Buurkracht (a Dutch organization that stimulates, facilitates and supports local (energy) initiatives) and TNO with national funding from the Top sector Energie of the Ministry of Economic Affairs and Climate (<https://projecten.topsectorenergie.nl/projecten/samen-lokaal-in-beweging-waardengedreven-verandering-en-groei-00029200>). A further collaboration and knowledge exchange with the Royal Institute of Technology in Stockholm running a parallel project on the sharing economy in a testbed in Stockholm (<https://swedishtestbeds.com/testbed/353/en/>) has resulted in a collaboration of the design of the approach as well as a first validation of the approach in practice, in two countries (Gullstrom and Kort, 2019).

This is a new approach for local initiatives and/or cooperatives to stimulate and facilitate a group of people in developing its own sustainable measures alongside improving specific aspects of well-being relevant to that group. The main idea of this approach is that in order to stimulate people to take sustainable actions you have to create social cohesion first. Social cohesion is the amount in which individuals or groups in a society are connected to each other or feel connected together (de Kam & Needham, 2004). Higher levels of social cohesion relate to higher levels of trust among people (Trust is important for the willingness of people to participate in a local energy initiative (Kalkbrenner & Roosen, 2016), higher levels of altruistic behaviour and more willingness to take action together (first results from the shared research between the Dutch and Swedish projects). Social cohesion is also related to one of the most important basic human needs, relatedness (the feeling of having frequent (deep/intimate)) contact with people you care about and that care for you, to not feel alone and disconnected but to feel connected to others (Sheldon, 2001).

The key element in creating social cohesion in this approach is thus bringing people together and explore shared interests, based on what people find important in their lives, and work together from there. The Moving together locally approach has the following steps:

- **A questionnaire** (neighbourhood scan) with which some demographics, the social cohesion, (public) places frequently visited, basic psychological needs that need improvement, shared activities and some general items on awareness and willingness to participate in shared initiatives or local initiatives are inventoried.



- **A first workshop** in which main insights, gathered about the neighbourhood, are discussed and summarized leading to an identification of the most important things to change within the neighbourhood, next to a summary of what is good about the neighbourhood and what you want to keep. Furthermore, based on this summary, the group of participants is asked to brainstorm and think about their own group values (the psychological needs they stand for) and link these to what needs improvement in the neighbourhood.
- **A follow-up workshop** in which creative ideas and proposition are formulated to address the most important things to change within the neighbourhood. This second workshop is with the same group of people as the first or together with other local initiatives that are identified as interesting in the first workshop to collaborate with. In this workshop the group(s) think about their target group, the value they want to provide to the target group, collaborations and partners in the proposition, important communication channels, their core activities, people and means available, funding and revenues. The outcome of this first workshop is a first proposition supported by the whole group and concrete steps for follow-up activities.

The Customer Journey towards natural gas-free home

The Customer Journey method helps stakeholders to put the perspective of citizens central. In this project, the customer journey may be built on the work that has been developed by TNO (Tigchelaar, et al., 2019). This journey describes the Residents go through different steps residents go through on the way to a natural gas-free home. The customer journey consists of the following steps (see Figure 3):

1. Becoming aware of natural gas-free as an issue
2. Tam-tam phase
3. Awareness of personal situation
4. Choice of orientation, waiting or active resistance
5. Orientation
6. Choosing a solution
7. Living in a home with ongoing work
8. Living in a (partially) natural gas-free home
9. Becoming an ambassador

Residents can get stuck at each step if there is not enough of a reason to move on to the next one. This is most likely to happen from Step 4 onward, when real action is needed. The customer journey offers starting points to stimulate residents to go to the next step.



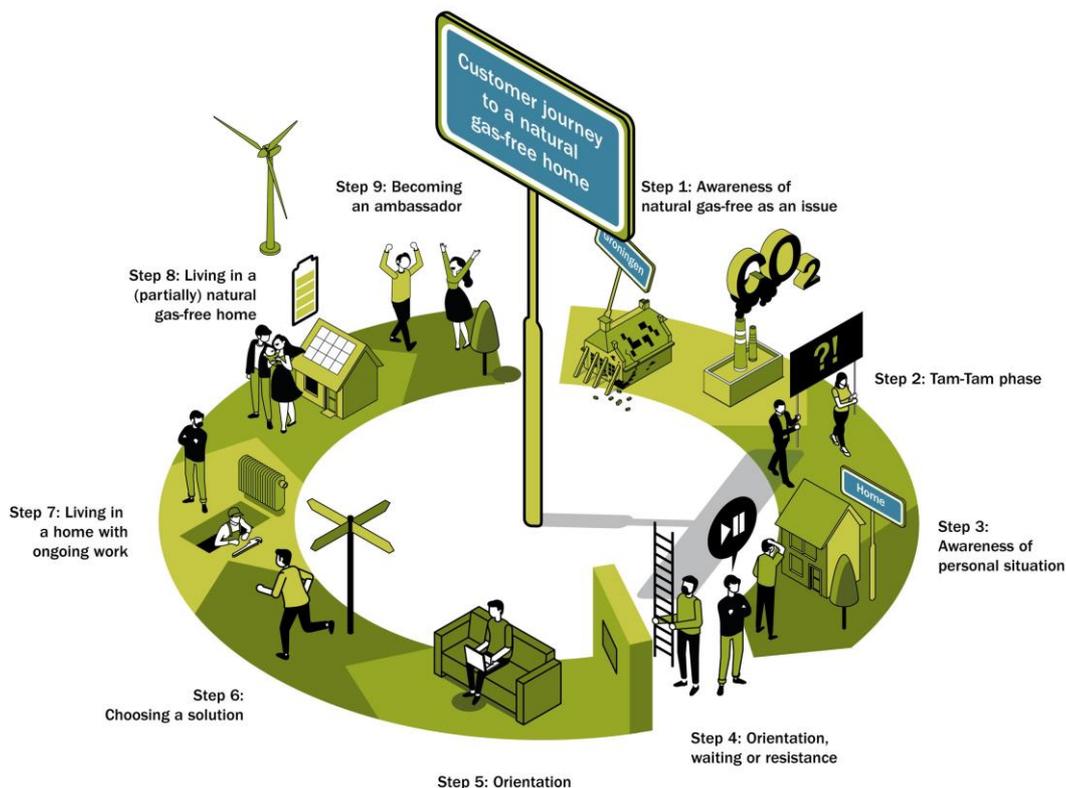


Figure 3 - Customer journey to a natural gas-free home (Tigchelaar, et al., 2019).

Step 1: Becoming aware of natural gas-free as an issue

Before people actually take action, there will be a period in which they become acquainted with the concept of a natural gas-free home. Through various media, people become aware of what a natural gas-free home means (or an alternative concept, depending on the framing). People will move on to the next step if they indeed become aware of natural gas-free homes and see this as something relevant to them.

Step 2: Tam-tam phase

Between the moment that people become aware of the concept of natural gas-free homes and the moment that there is information about everyone’s personal situations (see next phase), there will be a shorter or longer period of time. During this period, people form their opinions on the basis of the information available to them. This is called the ‘Tam-tam phase’ because these opinions may be based on incorrect or incomplete information that people have heard through the ‘tam-tam’: their social network, social media and/or regular media. People will go to the next step when they become convinced of the necessity for themselves.



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Step 3: Awareness of personal situation

At some point, the options for natural gas-free homes will be known for each municipality and neighbourhood. For example, is there a heat network available in the neighbourhood? At that point, it will become clearer to people what natural gas-free homes will mean for their personal situation. At this stage, residents should be given a rough idea of what a natural gas-free home will look like for them. The search for more detailed information will only come in the next phase. People will move on to the next phase when they feel that they can assess whether the alternatives are urgently needed, feasible and attractive enough or not.

Step 4: Choice of orientation, waiting or active resistance

When the personal situation is known, people will consciously or unconsciously make the choice to orientate themselves towards solutions for their home, to wait (do nothing) or to actively resist natural gas-free. In the latter case, for example, people will set up an action group. The most desirable thing is for people to orientate themselves and find out which option would be suitable for them. People will move on to the next phase if they feel that the alternatives are urgent, feasible and attractive enough for them to take action.

Step 5: Orientation

People who have chosen to orientate themselves will obtain information through channels that are logical for them. They will move on to the next phase if they feel that they are sufficiently informed or that there is a suitable decision aid to base their choice on.

Step 6: Choosing a solution

People choose the solution that they find most attractive. To enter this phase, people need to feel that they are either sufficiently informed or that they have found a good heuristic (what is the neighbour doing? how will the municipality advise me?). In addition, a reason is needed for people to actually make a purchase. A reason could be, for example, that they are called by a provider or advisor.

Step 7: Living in a home with ongoing work

People live in a home while the work takes place. This can be a nuisance.

Step 8: Living in a (partially) natural gas-free home

In this phase, the work has been (provisionally) completed and people are living in a natural gas-free home. If a solution has been chosen whereby the house has not been



converted into a completely natural gas-free home all at once, this will be a partially natural gas-free home. In this phase, people experience natural gas-free living.

Step 9: Becoming an ambassador

In this phase, people speak out about how the process went and share very positive or very negative experiences in particular. This is an important information for these people’s social network of those who have not yet completed the entire customer journey.

2.4 State of the Art - EU Projects

The review of citizen engagement strategies in EU projects was based on Project Deliverable documents that are public on the internet.

The relevant projects for this analysis phase are those that focus on positive energy blocks/districts and view citizen engagement as a key element to foster the co-creation of solutions.

The projects integrate the Smart City Community Network (SCC network) and POCITYF has recently joined this network (Figure 4).



Figure 4 - EIP-SCC Network (Source: <http://www.remourban.eu/smartcities-network/title.kl>)

The network basis its principles and efforts on the European Manifesto on Citizen Engagement published in 2016 (EIP SCC’s Citizen Focus Action Cluster, 2016), in which the European Commission declares the commitment to create and foster accessible urban services for citizens to improve the quality of life of all citizens and contribute to sustainable cities and a liveable environment.

According to the Manifesto, citizen engagement strategies should focus on the following activities:

- Raise citizens' awareness of the potential advantages and benefits of smart city projects (smart city literacy).



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- Leadership in citizen engagement.
- Training city officials and urban experts to conduct the meaningful and ethical engagement of citizens.
- Develop and exploit new and existing collaborative models. Focus on co-creation, co-design and co-production of solutions by citizens.
- Implement procurement mechanisms that include citizens' involvement both at the specification and implementation level, while assuring that the final responsibility for providing basic services remains with elected public authorities.
- Promote the use of open data and/or appropriate access to data by citizens.
- Promote open innovation and open science to foster smart citizens.

2.4.1 EU Project Methodologies

In terms of methodology, most projects adopted a qualitative approach through remote/onsite workshops, individual and contextual interviews, surveys, observation, and diaries.

The aim was to create inspiration for the co-design process by providing stories and real-life experiences of the participants involved. This inspiration comes from knowing not just what the problems are, but why they occur.

Other projects used the IAP2 Spectrum (Inform, Consult, Involve, Elaborate, Empower) (IAP, 2007) to communicate face-to-face with people living in demonstration areas to understand their real context in terms of engagement with the environment, the city and energy solutions.

2.4.2 Outcomes

Projects developed flexible tools and referenced frameworks to be replicable in different contexts, such as guide books, toolkits, citizen engagement models and frameworks grounded on the level of participation (Examples in Table 4).

EU Project	Citizen Engagement Strategies and Tools
Iris	Development of measures like Community building by Change agents, Campaign District School Involvement, Co-creation in Local Innovation Hub, among others, grounded on the levels of participation of the Arnstein's Ladder.
Smarten City	Development of CES Model (Citizen Engagement Strategy Model) to create a descriptive tool to map the citizen engagement context of each LH city. Secondly, to make the conditions that enable cities to develop initiatives that change citizen's mind-sets' and behaviour (CO2 emission reduction in this case).



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EU Project	Citizen Engagement Strategies and Tools
Sharing Cities	Development of the Engagement Guide Book aiming to help cities to implement solutions that change the way people think about the role of digital technology and to clarify how all stakeholders can benefit from and contribute to this transformation process.
City Exchange	Development of the citizen participation playbook to help local authorities to enable local communities on how they could become a Positive Energy Block (PEB) and lead the transformation towards Positive Energy Districts (PEDs) and Cities.
Making Cities	The development of new and/or improved tools and methods, resulting in a toolkit aiming to increase citizen engagement and empowerment.
Match Up	Development of a framework based on the citizen engagement process - IAP2 spectrum (Inform, Consult, Involve, Elaborate, Empower) to help the cities to develop a comprehensive communication strategy to increase citizens' knowledge about sustainable urban transformation strategies, empower citizens by giving some authority and power in the decision-making process.
Smarter City	Implementation of a co-design process grounded on Urban Living Lab functions (local communication and participation hub to design and implement innovative solutions and initiatives).
Remourban	Development of a 3 level diagram showing a progressive level of citizens' involvement in the decision-making process. The aim is to clarify the objectives of practices and to acknowledge cities upon the level of citizen engagement they are at the different stages of the project. Grounded on Arnstein's Ladder, the levels are: "Inform and consult", "Include and collaborate", "Empower and co-create".

Table 4 - Example of Citizen Engagement Strategies in EU Projects

The analysed projects generated frameworks and strategies to improve urban life through more sustainable energy integrated solutions. The concept of social innovation is implemented to invoke changes in behaviour and thereby improve the quality of life. Projects focus on finding the right balance between ICT technologies, citizen engagement and institutional governance to deliver smart and inclusive solutions.

In conclusion, citizen engagement strategies should be flexible enough to be adapted and replicated. The review showed that EU Projects engagement strategies were grounded on three basic frameworks:



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- 1) Engagement ladder based, based on Arnstein's ladder of participation (Arnstein, 1969), which advocates that citizen participation ranges from high to low levels. Therefore, different strategies should be framed to improve citizen participation according to each level.
- 2) Guide books.
- 3) Toolkits.

2.4.3 Summary of findings from EU projects

A number of key lessons were taken into account in most SCC-EU Projects:

- Citizens without a background in energy issues are very well capable of producing an energy plan and making a well-balanced decision (IRIS Project).
- The City Exchange project also identifies six best practices for effective citizen participation:
 - Define the community
 - Have a clear purpose toward the citizen engagement
 - Promote the continuous engagement
 - Provide open process, open-source and open data
 - Co-design, co-create and co-produce
 - Promote data privacy by design
- Local teams, with little previous user research experience, were able to conduct user research activities under the guidance of experienced mentors (Sharing Cities).
- Participation, Education and Co-creation.
- Analysis and evaluation of participation processes.

2.4.5 EU projects - Citizen Engagement Digital Tools

Several EU projects were reviewed from the point of view of the digital tools used for supporting the Citizen Engagement Initiatives. This review was based on deliverables and other documents that are available for public consultation. The relevant projects chosen are the ones with focus on positive energy blocks/districts, smart mobility solutions or social innovation, having citizen engagement and value co-creation as key elements of their activities. Each project developed/used digital tools or made recommendations depending on the needs, resources and level of experience of their target groups.

In the case of City Exchange, the profiles of the cities and their citizens were too different in order to create a unified participatory platform flexible enough to serve them all. Therefore, after an extensive analysis of 35 digital tools, customized recommendations were made for each city. These tools were classified into the following categories:



Collaborative Text, Online Debate, Online Mapping, Online Voting, Accountability, Online Proposals, and Participatory Budgeting.

In the case of SharingCities, existing online tools were used for certain engagement strategies (online surveys, digital diary) with the purpose of gathering insights into citizens' everyday life. New mobile applications were developed for engaging citizens in sustainable actions through gamification and social involvement.

IRIS made use of an existing mapping applications that would allow citizens to express their opinions about the city while also exploring it physically and virtually and finding out new information about it. Similarly, MatchUp made use of the existing PinCity application for online mapping, but it was integrated in a platform that would offer citizens access to visual data representation and analysis.

A city dedicated mobility platform was developed through CIVITAS, integrating participatory tools such as thematic forums in order to allow citizen to express their views and opinions. Also dedicated applications, but this time for the employees of one specific building, were developed through GREsBAS project, with focus on gamification, behavioural identification and behavioural change. Table 5 below contains examples of digital tools developed or used in the EU projects.

EU Project	Digital Tools	Category	Description	Features	Link
City Exchange	Decidim	Suite of tools	Participatory platform, Open-source Customizable,	Proposals, Voting, Meetings, Participatory text, Accountability, Surveys, Comments, Notifications	Link
	Consul	Suite of tools	Participatory platform, Open-source Customizable On-going support	Proposals, Voting, Collaborative Legislation, Participatory Budgeting, Debates, Sms, E-mail notifications	Link
	FixMyStreet	Online Mapping	Citizens pin point problems of the city on the map	2D map, Content Upload (text, photo, video), Comment	
	Digital Diary	Online blog	10 days of e-mail submissions from citizens with text/photos of everyday life on different topics	E-mail submission, Content upload, Blog entries	



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EU Project	Digital Tools	Category	Description	Features	Link
Sharing Cities			gathered in a blog		
	Commonplace	Online platform	Participatory platform	Online questionnaire (used in the project), Content Management, Mapping, Comments, Surveys, E-mail notifications, Data analytics	Link
	Sharing Lisboa	Mobile App	Exchange of goods and services to support a common cause	Reward system for sustainable actions from citizens	Link
	Milan e-bike	Gamification Mobile App	Citizens can log in bike rides, earn points, redeem prizes	Competition structure, Challenges, Quizzes, Access to Friends activity, Access to city events and information	
IRIS	MinStad (My City)	Web portal & mobile App	Citizens can give suggestions on several city aspects such as living, walking, cycling, culture, preservation	3D city model, Mapping, Commenting, Posting, City Information, Historical city pictures	
MatchUp	Data4City	Online platform	Collects pin-pointed information from citizens and environmental data from sensors, correlates and allows data visualisation	Mapping, IoT, BI, Data Collection, Data visualization	Link
CIVITAS	MobilnaGdynia	Web platform	Participatory platform focused on mobility in the city of Gdynia, Poland	Thematic forums, Surveys, Simulations, Good practices presentations, Activity description, Planning	Link Info Link



EU Project	Digital Tools	Category	Description	Features	Link
GReSBAS		Mobile/Desktop App	Identify user choreography and suggest tips to improve health at work	Online News, Comfort and Health (gather user input, suggest actions), Gamification & reward system	Link
		Web platform	Identify choreographies that can be changed to reduce energy costs	Consumption information (interactive), Leaderboards, Tips to reduce energy consumption	

Table 5 - Examples of Digital tools in EU Projects

In TEPSIE (Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe), several tools/activities that can be used for citizen engagement have been mapped (Figure 5) in four categories, depending on the purpose of their usage (Informing about present states versus Developing future solutions) and the number of citizens that need to be involved. As far as the digital tools are concerned, the categories are similar with the ones used in the other EU projects (Crowdsourcing Data platforms refer to Online mapping, Rating platforms are similar to Online voting).

The idea of Idea banks represents a different concept, a rewarding system based on co-creation: participants receive points for uploading ideas for social challenges or for ranking/commenting on existing ideas.



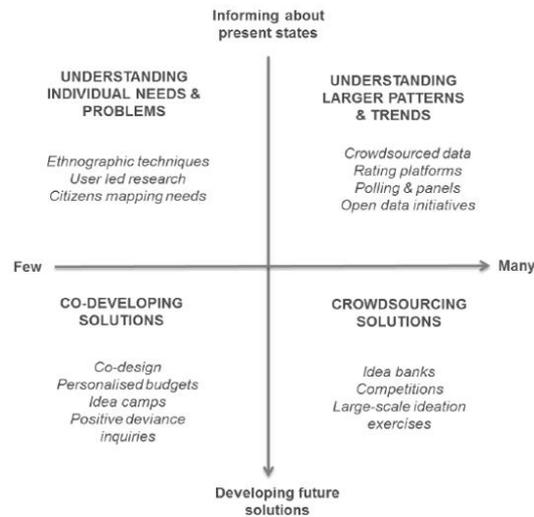


Figure 5 - Mapping citizen engagement activities in the social innovation process
 Source: <https://www.youngfoundation.org/publications/citizen-engagement-in-social-innovation-a-case-study-report>

Overall highlights:

- There is a range of existing digital tools or platforms that can support participatory actions in different stages of the engagement. They can be combined or customized in order to serve the purpose and the level of engagement of the citizens.
- Open-source suites are new initiatives of civic-tech that ensure complex participatory components and great flexibility. They are currently being successfully used by municipalities in partnership with different entities in order to implement citizen engagement activities.
- The participatory process and the target group have to be well defined before choosing the digital tools or their development/customizations.
- The main categories of digital tools that support citizen engagement activities are:
 - Mapping/Content Upload
 - Voting
 - Commenting/Suggesting/Online Proposals
 - Collaborative Text/Debate
 - Surveys/Quizzes
 - Open Data initiatives (data visualization, comparison, interpretation, correlation)
 - Notification Systems (e-mail, sms, app)
 - Rewarding Systems (points, prizes, incentives, social contribution)
 - Gamification (Competitions, Challenges)
 - Educational/Guiding content (tips, simulations, best practices).



2.5 POCITYF Framework for Citizen Engagement (PESF)

In 1969, Arnstein developed a typology of participation depicting the interplay between the powerless and the power holders. Figure 6 shows the ladder of participation, with each of the eight stages indicating the “extent of citizens’ power in determining the end product” (Arnstein, 1969 p. 217).

At the lowest steps, manipulation and therapy are non-participatory for the citizens. In this stage, participants are provided with counselling and training sessions to learn about the topic and events are designed to educate participants.

The next three steps -informing, consultation, and placation - involve officials providing information and seeking advice. Citizen surveys and public hearings are common approaches in this category. However, there is no assurance that citizen voices will be heard (Arnstein, 1969).

At the highest rungs of the ladder are three degrees of power redistribution— partnership, delegated power, and citizen control. The partnership involves negotiations and trade-offs between citizens and officials. At the top are actions that give citizens a voting majority on decision-making bodies or control of policy and management, such as through the establishment of a neighbourhood corporation or decentralization of public services such as police, schools, and health to neighbourhood governing bodies.

In summary, the citizen participation that later on evolved to the citizen engagement in the context of smart cities is not an isolated event that invites citizens to come on-board and make decisions, but a process that comprehends three key concepts - information, participation and co-creation.

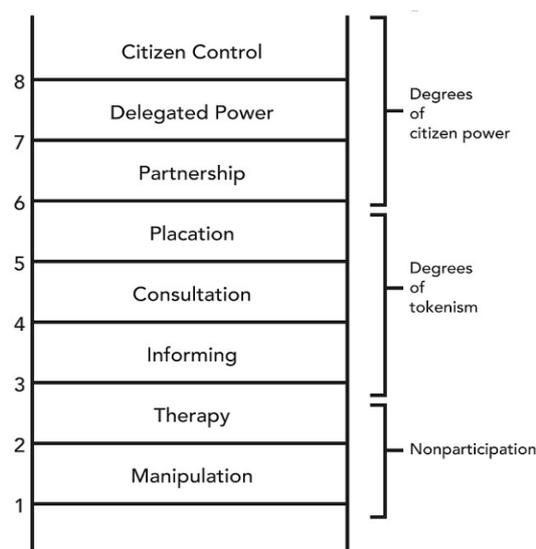


Figure 6 - Ladder of Citizen Participation (Arnstein, 1969)



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The next step consisted of looking at the literature, the state of the art review and the analysis of the interviews to identify what framework fits to the context of POCITYF. Based on this integrated analysis a framework was developed that considers the engagement as a process, the elements of the European Manifesto on Citizen Engagement, and the varied engagement levels and contexts identified in the interviews/surveys.

In the POCITYF engagement strategy framework (PESF), the eight steps of Arnstein ladder were rearranged to represent three engagement levels, ranging from passive participation to the most proactive level that involves citizen control, decision making and co-creation. The levels are associated with goals that the partner aims to achieve (i.e., raise awareness, promote, co-design). As such, the matrix supports the development of different strategies, considering the levels of citizen engagement and the goals to be achieved (Figure 7).

Citizen Engagement Levels Goals	Non-Active Participation <i>(open to one-way information)</i>	Active Participation <i>(open to informing and consultation)</i>	Empowered Participation <i>(open to partnership, delegated power, control and co-creation)</i>
Raise Awareness (Education and information about the concepts and benefits of the smart energy solutions and smart city projects.
Develop new collaborative models or exploit the existing models
Implement mechanisms that include citizens at the solutions implementation and specification phases	
Promote the use of open data and appropriate data access by citizens
Promote open innovation and open science initiatives

Citizen Engagement Strategies

Figure 7 - POCITYF Engagement Strategies Framework (PESF)

Building upon Arnstein’s ladder, different strategies can be designed to specific groups according to their context. It’s considered that different citizens may have different levels of engagement readiness and are therefore open to different engagement activities. The non-active participation represents the lower level of engagement in which citizens do not know about smart energy technologies, solutions, energy efficiency, renewable sources, but are open to know more about these solutions.



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The active participation represents an intermediate level of engagement, in which citizens may have some knowledge about the energy topic. They are open to use some sustainable energy solutions, but they need more inputs to increase their engagement levels. This is an intermediate level, in which different strategies can be developed through two-way communication for feedback, consultation and information. At this level, citizens are open to use some solutions and to share their experience with others.

The empowered participation is the highest level of engagement, at which citizens are prepared to co-design, co-produce and more actively co-create new solutions. Citizens in this level are willing to influence, discuss, make decisions, and bring inputs and insights to be considered in the process of solutions design and implementation. In this sense, the goals aim to help the user to set strategies according to each citizen engagement level.

The corresponding goals in the matrix range from simply raising awareness to promoting open innovation and open science. For example, if a partner identifies that a specific community is positioned in the non-active participation level, strategies that raise awareness could be relevant.

As such PESF allows partners to discuss and co-create the citizen engagement strategies along two axis: on the one hand, Arnstein's ladder of participation (ranging from passive participation to the most active level that involves citizen control, decision making and co-creation), and on the other hand, the goals that follow the European Manifesto on Citizen Engagement.

For example, if the partner positions the community in the active participation level, the engagement goal could be to promote the use of open data and appropriate data access by citizens. After setting the level(s) and the goal(s), strategies can be developed accordingly (i.e., smart application to visualize consumption data, smart energy management systems).

If a partner positions the community in the higher citizen engagement level, it should be interesting to develop strategies that aim to develop new collaborative models or exploit the existing models, implement mechanisms that include citizens at the solutions implementation and specification phases, and promote open innovation and open science initiatives.

This framework also supports the development of strategies aimed at encouraging citizens to evolve towards higher levels of engagement, through a journey from awareness, to active use of sustainable energy solutions, and to empowered co-creation of those solutions.

In order to test the flexibility of the framework, strategies from other EU projects were mapped in Table 6 and Table 7. The ultimate aim was to validate a framework that



considers heterogeneous contexts and communities. This activity was also relevant to ensure that the framework can be replicated to FC's according to each context.

Citizen Engagement Levels Engagement Strategy Goals	Non Active Participation <i>(Open to one-way information)</i>	Active Participation <i>(Open to informing and consultation)</i>	Empowered Participation <i>(Open to partnership, delegated power, citizen control and co-creation)</i>
Raise Awareness (Education, participation and information about the benefits of the smart energy solutions, smart city projects, city map, sustainability, ...)	Retrofitting package is a citizen engagement strategy that helps to communicate and negotiate with each apartment owner of the pilot.		
Develop new collaborative models or exploit the existing models			Social innovation experiments: a number of social innovation models was experimented with in the city in order to facilitate behavioural change and mutual learning among the residents of the pilot area and the city as a whole.
Implement mechanisms that include citizens at the solutions implementation and specification phases			Technical Consultation and community meetings for the retrofitting activities to succeed. The respective housing associations need to be engaged and supported throughout the planning and implementation process - for this, several consultation measures are used.
Promote the use of open data and appropriate data access by citizens		Urban management system is a city platform that integrates all the existing ICT systems and enables to monitor	



		the use of energy in the retrofitted buildings as well as to provide feedback to and get feedback from the citizens.	
Promote open innovation and open science initiatives			Art solutions for pilot area buildings to the full renovation of the pilot area buildings, the city organised an international art competition for finding artists who will create unique artworks for the pilot building facades.

Table 6 - Examples of Smarten City Project engagement strategies positioned in PESF
 Source: <https://smartencity.eu/outcomes/city-solutions/>

Citizen Engagement Levels Engagement Strategy Goals	Non Active Participation (Open to one-way information)	Active Participation (Open to informing and consultation)	Empowered Participation (Open to partnership, delegated power, citizen control and co-creation)
Raise Awareness (Education, participation and information about the benefits of the smart energy solutions, smart city projects, city map, sustainability,...)	Sharing Lisboa promotes environmental awareness and energy efficiency in schools. The app connects and unites citizens around activities which benefit society by focusing on 'common purposes' such as supporting schools and local businesses.		
Develop new collaborative models or exploit the existing models			
Implement mechanisms that include citizens at			



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<p>the solutions implementation and specification phases</p>			
<p>Promote the use of open data and appropriate data access by citizens</p>		<p>‘Greenwich Energy Hero’ is a residential demand-side response (DSR) service being piloted with households to help balance demand from the electricity grid. Alerts are sent to users when demand on the electricity grid is high and supply is low.</p>	
<p>Promote open innovation and open science initiatives</p>			<p>SharingMi was developed and implemented through collaboration of public and private organisations and institutions. SharingMi provides access to a wide range of rewarding partners (both online and offline) which provide unique discounts and access to goods and services in exchange for users’ reward points.</p>

Table 7 - Examples of Sharing Cities project engagement strategies positioned in PESF
 Source: http://nws.euocities.eu/MediaShell/media/2020_Booklets_DSM_Final.pdf



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3 Study with Citizens in the LightHouse Cities

3.1 Study and Results - Évora

The qualitative study in Évora involved semi-structured interviews aiming to understand the citizens' context of energy consumption, how they engage with energy solutions and services, with whom they interact in the local community, and their view of the historical city in the context of smart and sustainable energy solutions. The interview analysis revealed different engagement levels of the participants according to their context. Interviews also enabled to identify their energy solutions and services interests, and the barriers to adopting such solutions. Moreover, interviews indicated that the sense of community varied and their city view indicated to what extent they are available to participate in the city decisions to improve the quality of life.

3.1.1 Sample

The sample was defined to cover different aspects that encompass the citizen engagement. The citizen groups were selected with the support of POCITYF partners located in the demonstration areas to understand and identify engagement drivers. As such, the groups were selected according to the target groups that were pre-defined in the GA document for both LHs (residential energy consumers and/or e-mobility users and public and commercial buildings energy consumers located in the PEBs).

3.1.2 Data Collection

In order to refine the final sample and support researchers on the field, data collection was divided into two phases:

Phase 1 - Information and Resources:

This phase consisted of gathering information from the partners to refine the sample design and define the required resources to interview the citizens.

Due to COVID-19 pandemic, the data collection plan changed. This activity was supported by EDPL and CME to run the study remotely. Other partners like DECSIS were involved in helping with the interview invitations, as they are closer to citizens in the LH. These partners also helped to define what locations in the city of Évora should be involved, aiming to have as much participant as possible.



EDPL contributed to citizen participation by including an invitation to participate in the qualitative interview (T4.1 - WP4) in the T1.1 survey from WP1. Joining efforts in these tasks ensured citizen participation in the different planned activities, without making citizens feel overwhelmed with too many simultaneous initiatives. The partners also requested the local utility service provider to provide a list of citizens to invite, after their corresponding authorization.

CME and Decsis contributed to disseminating the project and sending invitations to citizens to participate in the interviews in their respective organizations, in other companies, and between friends and family that fit in the sample profile.

Phase 2 - Interviews:

In total, ten interviews were held individually with citizens with a duration of 30 to 60 minutes each by phone or online (See Appendix A - Interview Protocol).

3.1.3 Data Analysis

The collected data was analysed in several steps by following the coding process (Charmaz, 2006) as follows:

- Transcribing audio recordings and taken notes.
- Creating a data pool.
- Initial (open) coding and focused (axial and selective) coding.
- Selecting and refining categories.
- Generating initial insights.
- Additional analysis.

The results of data analysis are described in the following section.

3.1.4 Interview Results

The interview analysis revealed that the engagement with the energy services and solutions presented different levels according to their context of consumption. For example, interviewees that have advanced knowledge of energy efficiency and technology could design their energy solutions to include energy production for self-consumption, energy trading, advanced consumption management. On the other hand, other interviewees do not have much knowledge about sustainable and smart energy solutions, and how to adopt them. They mentioned they are open to embrace and use energy more efficiently as the topic is not new for them (they have heard about energy solutions and services). See table 8.



	Interview Results	Indicative Testimonies
Heterogeneous Engagement Levels	<ul style="list-style-type: none"> Different groups can be part of the same community, ranging from citizens that have little knowledge about energy efficiency and consumption and no community sense, to those citizens that have adopted smart energy solutions to save money and positively impact the environment by reducing the carbon emission. 	<p><i>“I am a residential energy trader” (Energy Trader);</i></p> <p><i>“I’ve heard about energy efficiency...I would like to adopt one day.” (An energy user who has not adopted a smart or sustainable solution yet)</i></p>
Energy Solution and Service Interests	<ul style="list-style-type: none"> PV panels. Green and efficient mobility like e-bikes and alternative public transportation. Interest in isolated solutions like Home energy management system can decrease along the time. 	<p><i>“I am interested in the photovoltaic roof solution” (An energy user who has not adopted a smart or sustainable solution yet);</i></p> <p><i>“PV panels could help to save money with energy” (An energy user who has not adopted a smart or sustainable solution yet).</i></p> <p><i>“I like bikes and e-bikes...It fits well to the city” (An energy user with PV solution).</i></p> <p><i>“I had a management system, but after identifying my consumption pattern, I am not interested anymore” (An energy user with PV solution and Home energy management system).</i></p>
Sense of Community	<ul style="list-style-type: none"> Most of the interviewees are not much involved with the community. Other interviewees (two) are closer to the community of students due to their jobs 	<p><i>“I usually do not discuss the topics with the community...” (Energy Trader)</i></p> <p><i>“I have contact with college students every day due to my job” (Energy user and social agent)</i></p>
	<ul style="list-style-type: none"> Évora is still not a sustainable city. 	<p><i>“I cannot find green spaces and sustainable mobility alternatives” (Energy user who has not</i></p>



	Interview Results	Indicative Testimonies
City View and readiness to participate	<ul style="list-style-type: none"> • Interviewees are open to participating in technology implementation projects that value the historical patrimony • They are also open to participating in the next activities of the project, like co-creation initiatives, workshops and consultation. 	<p><i>adopted a smart or sustainable solution yet)</i></p> <p><i>“Maybe Évora will become a sustainable city in the future” (Energy user who has not adopted a smart or sustainable solution yet)</i></p> <p><i>“The historic patrimony should be the priority, but we cannot forget that new technologies enable us to improve our quality of life...” (Energy user who has not adopted a smart or sustainable solution yet).</i></p> <p><i>“People will embrace sustainable and efficient behaviour if the municipality could help with training sessions, financial incentives and alternative solution offerings...” (An energy user with PV solution).</i></p>
Barriers to adoption	<ul style="list-style-type: none"> • Licencing rules in the historic district. • Few public charging stations 	<p><i>“Licencing rules are tough. I could not improve the insulation of my house” (An energy user who has not adopted a smart or sustainable solution yet).</i></p> <p><i>“I do not intend to buy an EV as there are few charging stations installed in the city” (An energy user with PV solution and home energy management system).</i></p>

Table 8 - Main highlights of the interviews and citizen testimonies

Regarding the energy solutions and service interests, most interviewees are very interested in the renewable energy solutions as they could envision the financial benefits with the installation of PV panels and the behavioural change to heating or cooling the house efficiently. Citizens who control and manage the energy consumption mentioned



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that the use of smart applications is interesting in the beginning. However, these solutions become obsolete and uninteresting each day, after citizens identify their consumption patterns. This indicates that citizens are less engaged with isolated solutions decrease if they do not offer different kinds of information and opportunities to integrate with other solutions and interact with different actors. Study results also highlight that participants are very interested in green and efficient mobility like e-bicycles and alternative public transportation.

The sense of community was also assessed in the interviews. Data analysis shows that few interviewees are engaged in the local and city. Two interviewees have a closer contact with local communities due to their jobs as social agents in the community of students. They advocate for the implementation of attractive solutions to foster the community sense through training, education and information, and solutions that enable citizens to visualize the energy consumption from the community perspective. For example, through a platform or smart application, students could visualize the energy consumption of the building school and keep involved through the gamification solutions. See Table 8.

In Évora, the interviewees' city view is not associated with sustainability. For them the city is still not a sustainable city, and the municipality and policymakers should play a significant role in the transition context.

Related to the city view is the readiness to participate. To solve this issues, the interviewees mentioned that they are open to participating in technology implementation projects and/or initiatives that value the historical patrimony and increase the quality of life through sustainability and energy efficiency. It is considered a relevant transition that will shape the future of the city. The interviewees also mentioned that they are open to participating in initiatives that involve consultation and the generation of ideas related to the building of green areas in the city, alternative mobility, and efficient waste collection.

Although the study results indicated that interviewees are interested in adopting more efficient energy solutions and services. They mentioned that there are some barriers to this adoption, namely, the licensing and regulatory rules to install PV panels and insulation in the houses located in the historic district. They also consider that the implementation of a residential energy efficient system still has a higher cost, and to use an EV in Évora is difficult as there are few public stations to charge the car.

In summary, the qualitative study with Évora citizens enabled to characterize the sample assessed in the city of Évora to bring relevant results for the development of PESF and other citizen engagement strategies that aims at the co-creation of solutions in the new socio-economic organization that is foreseen.



3.2 Study and Results - Alkmaar

In Alkmaar several research activities are performed in parallel.

A quantitative survey study was performed as a baseline survey to observe citizen's knowledge levels and interest in POCITYF smart energy technologies; citizens' engagement in local communities and initiatives, their interest in participating in these communities as well as in POCITYF research/activities and more in general what they would like to see improved in their immediate living environment (through psychological human needs).

Other activities are focussed on describing the citizen engagement and collaboration between stakeholders and citizens in different journeys. The Customer Journey towards natural gas-free homes is an example of this from earlier research. The same journeys are described for other stakeholders/actors in Alkmaar involved in the POCITYF project such as the housing corporations Van Alckmaer and Woonwaard and the municipality of Alkmaar. By matching these different journeys in the transition of Alkmaar (a lack of) collaboration points can easily be identified as well as lessons learned from earlier practice in terms of what works in citizen engagement, what doesn't work and what needs extra attention or additional methods and tooling. During this research several methods and tooling to improve collaboration have been identified and the design of concepts based on these observations are on their way. A few examples are: a method for housing corporations to create persona's and customers' journey on what experiences they want to realize in terms of citizen engagement for their renters; an app to promote sustainable behaviour as well as become more active in improving the energy consumption and improve the quality of living environment in general; and a design of a physical space for citizen, or in this case renters' engagement, with belonging activities to ease and become further part of the transition of the old neighbourhood towards the new.

These activities are briefly described in the following, together with the main lessons learned.

3.2.1 Survey - Municipality of Alkmaar

The study in Alkmaar aimed to measure a baseline in terms of citizens' knowledge of and interest in multiple smart energy technologies and solutions in and around their house (e.g. solar panels, different forms of insulation, energy and heating). Moreover, the survey aimed to measure how citizens evaluate ways of participating in citizen engagement activities that are related to sustainability and the energy transition in the local community. Also, citizens were asked about their neighbourhoods and its social cohesion, and what aspects in terms of values in those neighbourhoods need improvement.



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3.2.1.1 Methodology

The municipality of Alkmaar send out a survey to 1703 active members of their panel. This panel exists of a board and representative group of citizens from the municipality of Alkmaar. In total, 633 respondents filled in the survey (37,2% response rate). The outcomes of the knowledge and interest levels of citizens in POCITYF technologies was part of this questionnaire but was reported in D1.1. Hence those results are not reported here.

3.2.1.2 Survey Results

- Values

In the survey respondents were asked which value(s) they would like to see improved in their lives in their neighbourhood. These values are (based on Sheldon, 2001): autonomy and independence, competence, relatedness, influence, pleasure and stimulation, safety and control, physical well-being, self-actualisation and meaning, self-respect, and finance. For each of these values a statement has been defined. The respondents reported that they would like to see improvement in their neighbourhoods mostly on the aspects of safety (feeling safe and in control; 47,4%, n = 300), physical well-being (feeling well in your body; 37,4%, n = 237) and stimulation (feeling that you are enjoying life and having fun. You receive enough exciting stimuli and are not bored; 31,4%, n = 199).

These results are interesting in terms of belonging to a group of people that is overall quite satisfied with life and their neighbourhood (compared to earlier studies performed by TNO within the Moving Together Locally project). These results should however be viewed in the context of the COVID-19 outbreak during which this survey took place. Especially the high score on 'feeling safe and in control' and 'physical well-being' getting highest score is exceptional, since especially the first is often related to a need to have more or better insurance towards a good and stable life in the future.

- Social cohesion

More than half (53,1%, n = 336) of the respondents indicated knowing twelve or more people in their neighbourhood, including their direct neighbours. Only seven respondents indicated not knowing anyone on their neighbourhood. Furthermore, 81,8% (n = 518) indicated that neighbours help each other frequently, for example with small chores around the house, socializing and giving advice, babysitting children and taking care of pets, and lending and borrowing goods. Also, 68,9% indicated to be willing to share and/or tackle things together with their neighbours, whereas only 3,1% indicated not. It was found



that a significant positive relationship between the years respondents have been living in their house and the amount of people they know in their neighbourhood, including their direct neighbours ($r_s = .189$, $p < .001$, $n = 626$).

Compared to other research (from the Moving Together Locally project and the results comparable to these from Stockholm) the social cohesion among the respondents is quite high. In general, social cohesion is found to be very important for citizen engagement. Groups simple participate and get involved more compared to individuals and for other actors it becomes much easier collaborating with groups of well-connected people that show more altruistic behaviour as compared to individuals whom are less socially connected (as found in the Moving Together Locally project).

- Citizen engagement activities in local community

More than half of the panel members indicated they have trust in the municipality of Alkmaar (52,7%), whereas only 8,2% has not (see Figure 8).

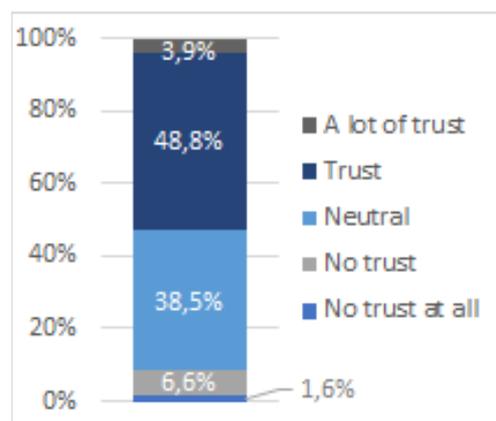


Figure 8 - Citizens' trust in in the municipality of Alkmaar

Overall, citizen engagement activities for citizens of Alkmaar that are related to POCITYF and sustainability and the energy transition are not that well-known. These activities are InnoFest¹, Samen Lokaal in Beweging (SLIB, the Moving Together Locally project)², a

¹ InnoFest engages youth in testing new products and services for the future of the municipality of Alkmaar.

² Samen Lokaal in Beweging (SLIB) is an activity in which neighbourhoods make and execute plans that contribute to the improvement and sustainability of the environment.



citizen information platform (CIP)³, and apps for cultural experiences⁴. For all activities asked, three-quarter or more of the respondents indicated that they are not familiar with them. However, almost a quarter of the respondents indicated to have an interest in them. That is especially true for the citizen information platform (see figures below - Figure 9).

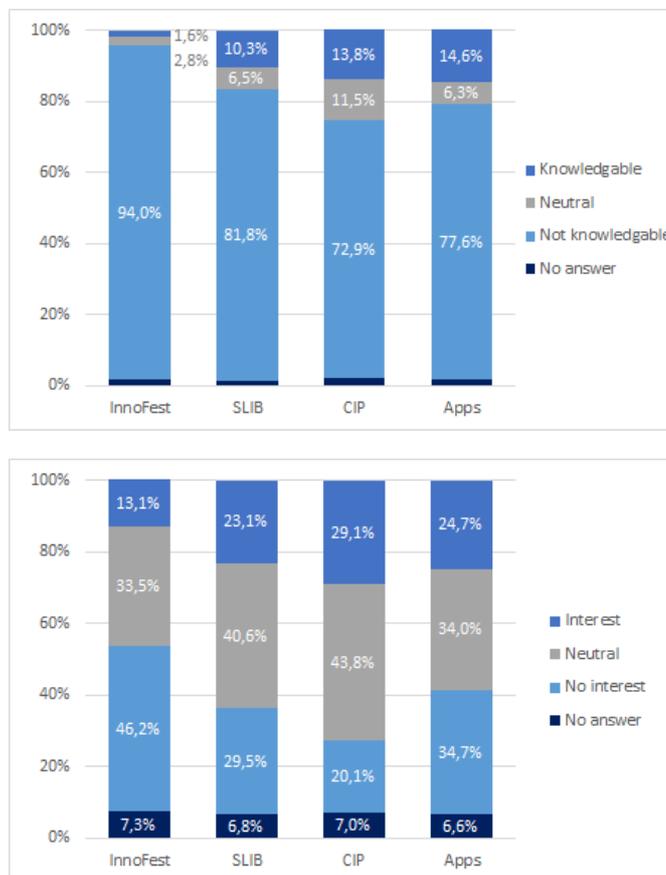


Figure 9 - Citizens' knowledge - POCITYF, sustainability and energy transition

In order to build a user base, the respondents were asked whether they would like to be kept up to date or think along with POCITYF and in what way they prefer this to be. Of the 633 respondents, a few indicated they are willing to work together on making plans and solutions for the municipality of Alkmaar (7,3%, n = 46). Furthermore, 11,5% indicated they would like to respond to those plans and solutions (n = 73) and 20,2% would like to be kept regularly up to date on the developments in POCITYF (n = 128). Almost one third

³ A citizen information platform (CIP) makes information about certain neighbourhoods available, which other organisations can use to develop new products and services for those neighbourhoods.

⁴ Apps for cultural experiences collect information about (touristic) cultural activities in a specific area. By using these apps, people get an indication of the crowdedness and waiting times.



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(30,3%) indicated no need for information in the meantime, until the plans and solutions are ready (n = 192). All of these respondents left their e-mail addresses for the municipality of Alkmaar to contact them in the future.

3.2.2 Journey study with tenants of Van de Veldelaan flat

For the Van de Veldelaanflat (HighRise pilot in Alkmaar), project owners are currently working on a customer journey for renters in the context of the citizen engagement process with stakeholder Woonwaard (housing corporation in Alkmaar and owner of the flat). Woonwaard has renovated a neighbourhood in Heerhugowaard (heatnet implementations) in the past and presented their journey/process towards the end result, this journey is a basis that describes their methods of working in citizen engagement and is used in this (much smaller) context as an example. Knowledge partners in POCITYF (TNO, InHolland and NEC) are involved in designing the citizen engagement process for the Van de Veldelaanflat as well as in the evaluation of the process. Furthermore during the development of the citizen engagement process for this flat suggestions for methods and tools to be designed and applied are made of which some will be implemented in the future.

3.2.2.1 Context

- The flat:

The Van de Veldelaan flat in Alkmaar consists of ten floors. The flat has been built in 1972 and has 130 apartments.

These apartments have been divided into clusters of six apartments. The flat has a lawn behind the flat and parking spaces in front of the flat.

- Tenants of the flat:

In the past this flat had a homogenous set of tenants with an active residents' committee. Over the last years the composition of tenants has changed considerably.

The residents of the Van de Veldelaan flat are now very diverse. The housing corporation, Woonwaard, made a first segmentation of these tenants into ten different segments. This categorization will be fine-tuned later on in the project (see methodology "personas"). These segments are: people that suffer from mental issues and that have guidance from a mental organisation that has an office within the flat, people who suffer from multiple problems, youth (23 years and older), people who are addicted to drugs, residents who already live for quite some years in the flat, older residents who just moved into the flat, residents who have a job, residents that suffer from dementia, residents who do not speak



or understand Dutch and residents who live quite isolated and are not often seen outside their apartments and difficult to reach by the housing corporation.

- Sustainability

In 2010 HR++ windows have been installed and also measurements for isolation have been installed in the flat. 118 apartments have an energy label B, 12 apartments have an energy label C.

On the roof of the flat a Powernest will be installed. A Powernest is an installation for the creation of sustainable solar energy in combination with the creation of sustainable wind energy.

The installation consists out of wind turbines what will be placed on the roof. On top a new roof will be installed for the installation of solar panels.

Most tenants use gas for cooking, only some tenants have an electronic cooker.

- Objectives

For many tenants who live in the Van de Veldelaan flat sustainability is not the most important topic in their lives. They have other issues on their mind, like financial issues, and (mental) health problems. In this research the objective is to create more awareness for sustainability and stimulate and facilitate sustainable behaviour by focusing on another topic that is important for tenants. Since the quality of life within the flat could be improved, quality of life could be this topic of interest for many tenants. The objective is to improve the quality of life for the tenants of the flat and - at the same time - make residents aware of sustainability and stimulate them to show sustainable behaviour.

To realize this objective TNO and InHolland are working together with employees from Woonwaard from two departments/teams: the energy department and the quality of living environment department. A number of physical and digital concepts will be designed and developed together with the residents to stimulate and facilitate citizen engagement in making the necessary improvement in the living environment as well as energy. An example of a physical concept is a location in the flat where tenants can meet and socialize (social cohesion is low in this flat as people indicated as well as a desire to improve this (see below)). An example of a digital concept is the development of an app that could make tenants aware of their energy usage and help them to save energy and/or gives people the opportunity and voice to participate in improving elements of the living environment. In all concepts to be developed much attention will be paid to connect sustainability and quality of life.

The experiences during the development process of these concepts provide insights for the design of “citizen engagement strategies”.



3.2.2.2 Methodology

To initiate the necessary change and facilitate citizen engagement a research plan has been developed. This plan consists of the following phases:

- Needs research
- Design and realisation of concepts
- Evaluating of concepts and “citizen engagement strategies”
- (Re) design or new design of concept

The first phase “Needs research” has been started. In this phase the goal is to get answers on the following questions:

- Are residents aware of the topic sustainability? Are residents trying to make their apartments more sustainable?
- What are the needs of residents with respect to making their apartments more sustainable?
- What are the current experiences of residents with respect to the quality of life of their flat?
- What are the needs of residents with respect to the quality of life of their flat?
- How can needs with respect to sustainability and quality of life both be addressed in solutions?

The following methods have been used:

- Questionnaire
- Customer journey
- Persona’s

Questionnaire

The goal of this questionnaire is to get insights into the attitude towards sustainability and inform the tenants that Woonwaard has plans for a sustainable solution (Powernest) for the building. The questionnaire is also used to investigate the quality of life within the flat.

All tenants have been called by a hired external research agency to answer a number of questions about quality of life, sustainability, the Powernest and whether they are prepared to actively participate in designing plans to improve the quality of life. From the 130 households 81 has participated in the research (response 62%).



Customer Journey

In this research the consortium maps and analyses the journey of tenants who live in the Van de Veldelaan flat. A customer journey provides insights into the steps a tenant goes through, from the perspective of a tenant. At the same time it provides clear indicators for how Woonwaard can adopt their own collaboration processes with tenants in terms of citizen engagement. In this context, the topics sustainability and quality of life are combined. Therefore, it is important to design one integral customer journey, instead of two separate journeys (for sustainability and quality of life as most actors tend to work based on their own organizational structures). Elements for best practices and bottlenecks are distilled throughout the process, in order to improve the journey.

A first version of the customer journey of tenants has been designed and will be improved in the coming months based on Personas research (see below).

Personas

Personas are archetypical persons/users that represent the needs and wishes of a larger group of persons/users. Personas are based on user research. Personas are put central in the design of services and products to make sure that the match with the needs and wishes of the target group.

In this research personas of the tenants of the flat are made. TNO is evaluating and adding to the persona methodology already adopted by Woonwaard.

3.2.2.3 Questionnaire Results

All tenants of the flat have been called to ask them to answer the questions of the questionnaire

Quality of life

Tenants score the way tenants socialize and live together in the flat with the rating 6,8 on a scale from 1 to 10. The top-3 topics that tenants are satisfied with in terms of social interactions (n=70) are:

- Greet each other (93%)
- Having a chat (67%)
- Leave each other in peace (33%)

Noise nuisance is a problem. 52% of the respondents experiencing this (n=61).

Social cohesion is a theme. With respect to the way tenants socialize and live together respondents are not satisfied with the following (n = 61):



- 39% indicates not having contact with others
- 33% indicates they don't know each other (well)
- 23% mentions unpleasant contact/treatment in social interactions

Tenants (n = 80) also experience other nuisances:

- Noise by neighbours (70% experiences a bit or much nuisance)
- Smell of cannabis or smoke (54% experiences a bit or much nuisance)
- Clutter in the public space (41% % experiences a bit or much nuisance)
- Drugs dealing/use of drugs (36% experiences a bit or much nuisance)
- Youngster hanging around (12% experiences a bit or much nuisance)
- Dogs and cats walking around freely (8% experiences a bit or much nuisance)

Out of 80 respondents, 33 would like to think about pleasant living and quality of life within the flat together with the housing corporation. This indicates willingness for engagement.

Sustainability

From the 81 tenants 31% indicate that they are quite active in their houses with respect to sustainability and saving energy, and 43% indicates that they do this from time to time.

The main reasons are:

- Contributing to a better environment (70%)
- Saving money (64%)

A majority of the respondents (75%, n = 80) is positive about the installation of a unit for solar and wind power on the roof that creates electricity.

Customer Journey

A first concept of the customer journey has been designed based on the Customer Journey towards natural gas-free homes (section 2.3 Actor engagement). The concept customer journey consists of nine steps. The customer journey starts with step 1 "Becoming aware of the themes sustainability and quality of life". Tenants become aware via different channels like social media, neighbours and friends. Step 2 is the "Tam-tam phase" that tenants form their opinion based on the available information. This information can be correct or incorrect, and complete or incomplete. In the next step - "Step 3 Awareness of personal situation" the tenants will gain more knowledge about the ideas and plans with respect to improving quality of life and sustainability and what it means for their personal situation and their own apartment. In step 4 "Choice of orientation, waiting or active resistance" tenants will ideally try to get more knowledge about the plans for improving the quality of life and sustainability and think how they can contribute themselves to these plans. Tenants will be actively involved by Woonwaard and asked for their needs and wishes. It is also possible that tenants decide to just wait and see or that they show



active resistance (e.g., protest against the plans or start a protesting group.) The group of tenants that decides to orient themselves will go to the next step, “step 5 Orientation”. Tenants will be more and more involved in the design of the plans by Woonwaard. In step 6 “Choosing how to participate and defining solutions” Woonwaard and the tenants together will make the solutions more and more concrete. In step 7 “Living in a home with ongoing work” the solutions in the apartment and the flat will be installed. In step 8 the tenants live in their apartment within the flat and hopefully the quality of life has been improved and tenants show a more sustainable behaviour. Finally in step 9 “Becoming an ambassador” the tenants will tell others enthusiastically about their experiences.

Each step of the concept customer journey is briefly described. Next to this for each step a first inventory has been made of:

- Experiences of tenants
- Activities and communication by other stakeholders (like the housing corporation and the municipality).

Note that that pilot of the Van de Veldelaan flat has just started. So the research findings within the coming months will provide input for the (steps of the) customer journey. Based on these results the customer journey will be fine-tuned.

Personas

The housing corporation has designed a set of ten concept personas. These personas are:

- people that suffer from mental issues and that have guidance from a mental organisation that has an office within the flat
- people who suffer from multiple problems
- youth (23 years and older)
- people who are addicted to drugs
- residents who already live for quite some years in the flat
- older residents who just moved into the flat
- residents who have a job
- residents that suffer from dementia
- residents who do not speak or understand Dutch
- residents who live quite isolated and are not often seen outside their apartments.

For each of these concept personas the following has been specified:

- “Who am I?”: a brief characterization of the persona
- “What is the challenge?”: a description of the knowledge and abilities of the persona



- “Communication: how can you reach me?”: a description of the optimal way to communicate with this person
- “Customer contact: what is important for me?” : a description of the points of attention when interaction with this persona.

The values and needs of these concept personas will be further analysed. Based on this analysis they will be fine-tuned. A point of attention is to see whether reduction of the number of personas is possible to make them more effective in practice. For this TNO is evaluating the persona methodology used by Woonwaard and changing it where appropriate in collaboration with Woonwaard.

3.2.3 Pilot Bloemwijk

Energy and sustainability are not a priority for most of the residents that live in the Bloemwijk neighbourhood. However, the quality of their daily lives could be improved a lot when energy related issues, such as poor insulation, mold, low levels of comfort and high energy bills, are solved. The objectives in this pilot are improving the quality of life for the Bloemwijk neighbourhood residents, while simultaneously engaging residents and strengthening the social cohesion and creating more awareness for sustainability and more sustainable behaviour. Also, an important objective is to preserve the characteristic aspects of the neighbourhood. To realize these objectives, several concepts have been and will be developed together with the neighbourhood residents. The experiences during the development process of these concepts are mapped on a journey and provide insights for the design of “citizen engagement strategies” as well as additional methods and means or tools for citizen engagement that can be used within these strategies.

3.2.3.1 Methodology

Journey

In the Bloemwijk pilot we map and analyse the journey of Bloemwijk neighbourhood residents from their perspective with or in collaboration with Van Alckmaer (the housing corporation). This provides insights into the process of plan development from the first initial plans by the housing corporation to a definitive masterplan created with residents. The residents have already been through the ten steps in the process of improving the neighbourhood. In retrospect, we analyse and evaluate the process up to the current status to identify what lessons can be learned. Therefore, we distil elements for best practices and bottlenecks. The lessons learned can be used to develop citizen engagement strategies and improve the journey residents in similar future projects will experience. A first version of the customer journey of Bloemwijk residents has been designed.



Concept development ‘Aangenaam, de Bloemwijk’

To engage residents in a fun and approachable way with the housing corporation’s plans and changes in the neighbourhood, a concept is developed to align with the residents’ interests. This concept is about honouring the history of the neighbourhood with art and creating and stimulating meetings with residents to talk about what they think is important in their neighbourhood and should be taken with residents to the new neighbourhood. Also, information is gathered and made available for both residents and the housing corporation. The concept aims to improve the quality of life, and stimulate social cohesion between residents that stay (come back to the new house in the neighbourhood) and newcomers to the neighbourhood. The concept is a meeting space in the neighbourhood itself where old elements (e.g. furniture) is brought in by residents and is used (recycled) to make artwork(s) that will become part of the new neighbourhood. Furthermore the concept provides the means to gather one-sentence insights from residents of what should stay and be present in the new neighbourhood. This can be anything ranging from the typical architectural arches found in the old neighbourhood to wanting to take the cosy atmosphere and social connections one has to the new neighbourhood. These one-sentence wishes are gathered by letting residents write them on small tiles. These tiles will become part of a shared space in the new neighbourhood to honour the past and at the same time look forward towards the new. This concept has been implemented in Bloemwijk and is currently up and running. The results what are gathered (e.g. sentences on tiles and experiences of residents of this process and housing corporation) will be used as input to evaluate citizen engagement strategies in general and this means of stimulating and facilitating citizen engagement specifically.

3.2.3.2 Results

The journey of Bloemwijk neighbourhood residents describes the process of plan development for improving the neighbourhood in ten steps. This process is from their perspective, in collaboration with the housing corporation, and in retrospect. For each step, elements for best practices and bottlenecks are identified. The lessons learned can be used to improve journeys in similar future projects.

Residents’ evenings for introducing the plans

During two residents’ evenings, residents were presented with the objectives of the renovation project, the process and global planning, the stakeholders involved and the way of collaborating. The housing corporation organized this evening. Residents that could not attend the evenings received a newsletter with all the important information addressed on that evening. The renovation by possible demolition led to a diversity of reactions, from happy to angry.



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- **Strengths:** informing residents via several channels about the housing corporation's plans so everyone was reached.
- **Bottlenecks:** letting residents feel like the plans had already been made without them. At least some residents experienced it like that.

Technical housing inspection

The houses in the Bloemwijk neighbourhood were inspected by technical experts. The experts did a visual inspection of the technical and architectural condition. One of the houses in the neighbourhood was converted into an office for the housing corporation to serve as an information point for residents, with walk-in consultation hours.

- **Strengths:** presence and visibility of the housing corporation in the neighbourhood, using several communication channels (e.g. a website, newsletter, approachable information point and easy connection with the housing corporation in the neighbourhood)
- **Bottlenecks:** primary focus on technical aspects through the technical inspections instead of social aspects and participation at this point in time. Some residents still felt left out of the decision to be made about their homes and neighbourhood, for some other aspects of living in the neighbourhood were more important and these were not yet addressed. The housing corporation solved this in part in the next step.

Individual house visits

The housing corporation visited every household to have a conversation about the housing situation and wishes of residents. Also, a more thorough and detailed technical investigation of the houses was done.

- **Strengths:** having personal contact during house visits, getting to know the residents better through publishing personal stories and photos, getting empathy and understanding the residents' situation and concerns in detail. Providing the possibility for residents to have a second opinion investigation about their own house (paid for by the housing corporation).
- **Bottlenecks:** alignment with other stakeholders in the process, residents just get connected to the plans and the housing corporation personnel and are in some ways still a step behind.

Residents' evening for feedback results investigation

A community advisory group was established by a democratic voting procedure, resulting in every street having a representative. During another residents' evening the plans for demolition and rebuilding the neighbourhood were presented.



- **Strengths:** providing the possibility for residents to think along in a community advisory group that was democratically chosen, taking resistance and opposing views seriously and staying in contact with residents.
- **Bottlenecks:** serious resistance from residents against the housing corporation's plans

Writing a social plan

Due to resistance from several residents that formed an active resistance group, a second opinion investigation appeared necessary for more detailed information about the possibility for renovation instead of demolition of houses. This feasibility study showed that renovation would be too expensive and demolition would be the only alternative. This second opinion was performed by a party chosen by the active resistance group of residents and paid for by the housing corporation. Together with residents, the housing corporation started writing a social plan with the rights, duties, facilities and compensations from the housing corporation during the renovation.

- **Strengths:** providing resistant residents with the opportunity to influence and have their own second opinion. Proactively engaging residents in writing a social plan for the improvement of the neighbourhood, incorporating residents' wishes.
- **Bottlenecks:** delay in the planning due to additional investigations and negotiations with residents and other stakeholders.

Inspiration sessions with residents

The housing corporation organized multiple inspiration sessions to collect residents' ideas for the new neighbourhood, by using scale models. During these sessions, participants talked about topics like parking, the location of the neighbourhood centre and green spaces. The community advisory group visited residents to talk about the social plan and answer questions.

- **Strengths:** proactively engaging residents in the process of planning via inspiration sessions, thereby providing residents ways to think along and have an effect on the planning process.
- **Bottlenecks:** inability to live up to certain ideas and expectations

Working groups with residents and other stakeholders

The housing corporation organized multiple working groups with several themes, such as sustainability & energy, green & public spaces and housing forms to collect residents' ideas for the new neighbourhood.



- **Strengths:** proactively engaging residents and other stakeholders in the process of planning via working groups on specific themes, thereby providing residents and other stakeholders ways to think along with the planning process.
- **Bottlenecks:** not enough interest in participation among residents, finding the right balance in communication between residents who want to participate actively in forming plans and residents who want to be informed with definite plans and just want to get it over with as soon as possible.

Develop masterplan by architect with input residents and other stakeholders

After collecting all the input from residents and other stakeholders, an architect developed a masterplan for the new neighbourhood. During this phase, residents were kept up to date with monthly newsletters and the walk-in consultation hours at the office/information point for residents.

- **Strengths:** Staying in touch with residents and residents have a point of contact to ask questions that pop up during this period. Questions from residents change over time when you are further in the process, plans become more concrete, questions as well (e.g., what happens to my dad who's going to live in another home, I take care of him, can he be placed close to my home)? This helps to further detail the (social) planning.
- **Bottlenecks:** finding the right balance in communication between residents who want to participate actively in forming plans and residents who want to be informed with definite plans

Presentation concept and definitive masterplan

Residents were presented with a concept version of the masterplan. The community advisory group was consulted and they gave their advice, based on additional information from third parties. After all, residents were presented with the definitive version of the masterplan.

- **Strengths:** consulting the community advisory board, having frequent contact with the community advisory board and other residents. Residents feel they are heard and taken seriously, the housing corporation gains many very valuable insights in how to plan the whole process in detail the best way possible.
- **Bottlenecks:** For the housing corporation citizen engagement takes a lot of effort and time and at the same time provides many valuable insights and also facilitates the process. There are however many additional things that pop-up (which you normally would not even know) that you need to deal with too (e.g. an elderly



person that does not know how to end and start new electricity contracts, who needs help). Better connecting with other stakeholders also implies your collaboration will become broader in terms of collaboratively solving problems together. Sometimes this is unexpected. This housing corporation found it important though. Another example how this collaboration also broadens in terms of taking each other into account was the fact that during COVID-19 the housing corporation organized a free meals on wheels diner for the residents made by the local neighbourhood centre. Housing corporation personnel delivered these dinners in part to see if their residents were doing okay and coping well.

In general, strengths of the Bloemwijk approach are clear, transparent and honest communication through short lines. The housing corporation has been present in the neighbourhood since the beginning of the process, which made this form of communication possible. Also, the housing corporation gave the residents power in several ways, for example by the ability to think along in a community advisory group that was taken seriously (and that got financial means when necessary and within reason, that also had some executive power in the decision making process) and a second opinion investigation with regard to the demolition. Furthermore, the residents were proactively engaged in the process of planning via inspiration sessions and working groups. Thereby, the housing corporation gave residents multiple ways of participation in the planning of their new neighbourhood.

3.3 POCITYF Engagement Strategies Framework (PESF)

PESF is a systematised and flexible approach to develop effective strategies to engage citizens. The purpose of the framework is twofold: (1) creating new strategies (2) mapping existing solutions.

3.3.1 Creating New Strategies through PESF

Different actions could be designed to educate and inform them about sustainable behaviours and foster awareness about the topic, Events, newsletters, apps with efficient energy consumption tips are examples of actions to be considered. The following step consists in positioning possible actions in the process of citizen engagement according to the engagement levels and goals to achieve (Table 9).

Suppose that the other part of the community is positioned in the active participation level. In that case, it is time to continually inform and educate and consult citizens about their opinions and feedback. According to PESF, to promote the use of open data and appropriate data access by citizens should be a relevant strategy goal to achieve. Partners



could develop solutions that enable customers to visualize his/her own energy consumption or, eventually, the community/city energy consumption. For example, gamification and smart energy monitoring applications can be considered for this purpose (Table 9).

Skilled and advanced citizens on the energy topic can also be part of the community. In most cases, they are in a small number, but they are prepared to co-create. They are positioned in the proactive participation level of PESF. The engagement strategy goals for these citizens range from developing collaborative models to invite them to participate in initiatives to promote open innovation and open science initiatives (Table 9). The table also shows some examples of engagement strategies that can be created using the framework.

Citizen Engagement Levels Engagement Strategy Goals	Non Active Participation (Open to one-way information)	Active Participation (Open to informing and consultation)	Empowered Participation (Open to partnership, delegated power, citizen control and co-creation)
Raise Awareness (Education, participation and information about the benefits of the smart energy solutions, smart city projects, city map, sustainability,...)	Design initiatives to educate and inform. Such as: Events, Newsletter, Smartphone apps with efficient energy consumption tips, touristic information...	Continually inform citizens about the energy and city topics to keep them engaged through periodic events, communication and dissemination.	
Develop new collaborative models or exploit the existing models		Develop a basic collaborative model using simple methods and language to approach citizens to the co-creative mind-set.	
Implement mechanisms that include citizens at the solutions implementation and specification phases			Develop crowdsourcing initiatives in online communities of advanced energy solutions users (ex:



			EV communities, smart home communities).
Promote the use of open data and appropriate data access by citizens		Develop solutions that enable customers to visualize citizen energy consumption by his/her own or eventually, the community/city energy consumption. (Ex: smart applications, gamification).	
Promote open innovation and open science initiatives			Workshops with local start-ups focused on the development of smart and sustainable energy solutions, sustainable mobility, etc.

Table 9 - Example of PESF use to develop engagement strategies

PESF allows to replace or increase the list of goals if the contextual analysis points to it. PESF also enables partners to view and collaboratively devise strategies to continually engage the citizen if the ultimate aim is to move citizens from the non-active level of participation to the proactive level of participation

3.3.2 Mapping solutions - PESF and ETT#4 Integrated Solutions

Partners can also position integrated solutions (IS) in PESF matrix according to the goals to achieve and the engagement levels of end-users.

POCITYF adopts an Energy Transition Strategy that comprises of four Energy Transition Tracks (ETT#1 - ETT#4). Together they provide a universal yet versatile framework to address both common but also diversified challenges and conditions of the 2 LHs and 6 FCs. Within these ETTs, POCITYF seeks to enable, demonstrate, replicate and accelerate the roll-out of a set of 10 Integrated Solutions (IS) built on top of both mature and innovative technologies (more than 60). A portfolio of energy-efficient innovative solutions is already provided and initially profiled to be demonstration ready at the early stage of project implementation. The purpose is to assist the districts to manage better their energy consumption, flow and the broader system, resulting in positive energy balance to serve the needs of the current and future needs of citizens.



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Solutions included in ETT#4 - Citizen-Driven Innovation in Co-creating Smart City Solutions focus on improving citizens’ quality of life and increasing city efficiency by involving citizens in the early development, design and evaluation phases of the solutions. Such an approach will be implemented in activities that:

- Incentivise citizens for co-creating, co-delivering and co-capturing value by the smart city solutions demonstrated.
- Create an open innovation ecosystem between different experimentation set-ups.
- Empower consumers to become ‘prosumers’.
- Innovative solutions to be demonstrated and replicated include P2P energy transactions, gamification of bidding and trading in decentralised systems, infotainment apps, local campaigns, crowdfunding, and energy ambassadors creating local energy communities with the use of platforms.

ETT#4 is divided into groups of integrated solutions (Figure 10) that focus on social innovation, open innovation and interoperable city ecosystem.



Figure 10 - Integrated Solutions (IS) groups of ETT#4 (Source: POCITYF GA Document)

In this sense, different solutions will be deployed according to each IS (Table 10):

IS	Solutions
4.1: Social Innovation Mechanisms towards Citizen Engagement	Digital transformation in Social Innovation. Gamification platform. Tourist apps. Cultural experiences market (mobile app). Mobile apps on energy consumption.



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IS	Solutions
4.2: Open Innovation for Policy Makers and Managers	Tipping approach. Eco-Acupuncture.
4.3: Interoperable, Modular and Interconnected City Ecosystem	City Urban Platform. Wi-Fi data acquisition systems. Data lake intelligence for positive communities. Smart-cloud for innovative Startups. Citizen Information Platform. Data acquisition systems. City Data Hub.

Table 10 - Integrated Solutions (IS) groups of ETT#4 and respective solutions

Table 11 shows the solutions positioned in PESF. The framework can help partners not only to identify the position of solutions according to the current engagement levels and goals but also to visualize how solutions can be improved to follow the increase of citizen engagement level. For example, the gamification platform can start aiming to raise awareness about sustainability and energy efficiency. If the goal is achieved, the citizens can shift from the non-active participation level to the active participation level, and a new goal can be defined. In this sense, new features can be added to the application to follow the increasing citizen level. Consequently, the citizens will be engaged in long terms.

Moreover, solutions like an online engagement platform and a physical space can cover actions toward citizens positioned in different levels of engagement and address different goals at the same time. These solutions can also communicate with the other applications to generate relevant data to partners to measure the impacts and improve the co-creation initiatives.



Citizen Engagement Levels Engagement Strategy Goals	Non Active Participation (Open to one-way information)	Active Participation (Open to informing and consultation)	Empowered Participation (Open to partnership, delegated power, citizen control and co-creation)
Raise Awareness (Education, participation and information about the benefits of the smart energy solutions, smart city projects, city map, sustainability, ...)	Tourist apps (IS-4.1) Gamification Platform (IS-4.1)		
Develop new collaborative models or exploit the existing models		Cultural Experiences market (Mobile App) (IS-4.1)	Integrated solutions from IS-4.3 - Interoperable, Modular and Interconnected City Ecosystem
Implement mechanisms that include citizens at the solutions implementation and specification phases		Online engagement platform that should cover all levels of engagement and serve as a space to implement actions towards sustainability, energy efficiency and co-creation.	
Promote the use of open data and appropriate data access by citizens		Mobile apps on energy consumption (IS-4.1)	Kimatica P2P platform
Promote open innovation and open science initiatives			Digital transformation in Social Innovation (IS-4.1) Integrated solutions from IS-4.2) - Open Innovation



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			<p>for Policy Makers and Managers</p> <p>A physical space that should cover all levels of engagement and serve as a space to discuss the issues regarding the city, local communities, environment, energy efficiency and smart energy solutions to co-create.</p>
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Table 11 - Example of PESF applied to the integrated solutions of ETT#4

The strategies proposed in POCITYF aim to develop mechanisms to keep and increase the levels of engagement with smart energy solutions and services that incentive the energy-efficient behaviours, increase the community sense and the quality of life. Building upon the Arnstein’s ladder of participation, the state-of art review, specifically the EIP-SCC manifesto on citizen engagement (EIP SCC’s Citizen Focus Action Cluster, 2016), and the results of the qualitative study with citizens in the LHs, a flexible framework is proposed to enable the development of engagement strategies according to the engagement levels and goals to achieve. The development of an online platform is also proposed, through which the strategies can turn into actions toward communities and individuals to increase citizen engagement.



4 Engagement Strategies

Based on the findings from literature and the qualitative study carried out with the citizens of Évora, an integrated set of tools and actions is proposed, with the strategic aims of (1) foster engagement with the different citizens at all levels of engagement; (2) encouraging citizens in their journey towards higher levels of engagement; (3) measuring and monitoring citizen engagement impact.

The engagement strategies provide an integrated view of how these objectives will be pursued with a set of different engagement platforms and actions, while the detailed courses of action for each tool will be defined later, with the support of the workshop and through the specific work of each platform leader.

4.1 Citizen Engagement Objectives

The objectives of the citizen engagement strategies are threefold.

Foster engagement at all levels and to citizens with different levels of engagement

As shown in the results of the survey from T1.1 and in the interviews from T4.1, citizens are at different levels of engagement with energy consumption and sustainability on the one hand, and with the city and the community on the other hand. As such, the engagement strategies will provide the basis for customized initiatives to address citizens with all levels of engagement. Moreover, engagement strategies will leverage upon the engagement of citizens with the city and the community to connect and foster engagement with sustainable energy solutions.

Encourage citizens to move along the journey towards higher levels of engagement (from passive to active to empowered participation).

The results of the study with citizens have also shown that they have high level of openness but low level of knowledge about innovative solutions in the energy sector or about engagement strategies. This suggests they have potential of moving up the engagement ladder if they are informed and involved in activities that can activate and elevate their potential. Therefore, our aim is to foster the journey of citizens from passive participation towards active participation, community involvement and, eventually, empowerment and co-design of POCITYF solutions.

Enable monitoring and measuring Citizen Engagement impact and behavioural change.

The engagement strategies aim to provide an integrated view and guidance the detailed actions, and also aim to ensure that the impact of these actions can be assessed. In order to measure engagement impact, but also to understand how citizen engagement strategies



influence behavioural change related to energy consumption, data from several sources will be correlated and analyzed:

- Several ETT#4 platforms and applications will provide full navigation logs in order to track the users' behaviour (ex: Citizen Engagement platform, Tourist app, Gamification Platform).
- The Data Lake will provide access to several POCITYF datasets, including 3rd party Évora ecosystem information systems.

By connecting the data regarding the interaction of users with the platforms/apps and the energy consumption data (provided by HEMS), a detailed analysis can be made. The impact of the Citizen Engagement solutions will be also explored through machine learning algorithms, anomaly detection or engagement levels prediction models. By doing this, POCITYF consortium will be able to further provide valuable information that can be used to generate new requirements or to adapt the POCITYF solutions and engagement strategies continuously, for better outcomes.

The Citizen Engagement Platform, aiming to follow the full engagement journey of the citizens, by providing specific information on all levels of engagement and contributing to measuring the impact of the citizen engagement strategies, will be developed under T4.3. It will create a bilateral connection between the activities conducted face-to-face and the digital representations of them (ex: events/invitations/follow-up material/feedback forms).

4.2 Tools to support the engagement strategies

The implementation of the citizen engagement strategies through a set of detailed engagement initiatives that will be developed in Task 4.3 will be supported by a set of tools.

- **A Citizen Engagement Platform** will be a central piece of the engagement strategy and will work all levels of engagement, also trying to move citizens along the journey towards higher levels of engagement. As an entry point, this citizen engagement platform can provide information about POCITYF solutions to raise awareness and foster initial levels of engagement, as well as invite citizens to join the POCITYF community. At a more active level of participation, the engagement platform can for example invite and enable citizens to share their consumption experiences or energy saving tips. At higher levels of engagement, the platform can support the development of co-creation sessions where citizens are invited to share their experiences, envision new sustainable city futures, and co-design POCITYF initiatives and solutions. Moreover, the platform will also support citizens in their engagement journey, as participants with lower levels of participation can be informed and invited to higher engagement levels initiatives.



- **A Physical engagement Hub** that will work the higher levels of engagement, namely co-design and experimentation of POCITYF solutions. This engagement Hub aims to be a physical location connected to the parish council and local community, where the highly engaged citizens can become co-creators and ambassadors of POCITYF solutions. On the one hand, this hub can become a place for citizens to gain up-to-date information about novel solutions, as well as experimenting and giving feedback about new ideas. The physical hub can also be a place to discuss and explore new future visions of the city, the community, and sustainable energy consumption, and co-design solutions and strategies along the POCITYF project. Finally, the hub can be a key tool to create a group of POCITYF ambassadors that can disseminate and engage citizens in a wider community.
- **ETT#4 IEs and the P2P platform** will work in conjunction with the engagement platform and the physical hub to activate passive and active levels of participation focused on certain groups of citizens, such as with information and gamification initiatives, and will also support citizen's journey towards higher levels of engagement by inviting them to register and participate in the Citizen Engagement Platform and Physical Hub. For example, ETT#4 IEs that focus on lower levels of engagement (Non-Active) such as the Tourist App, may replicate some information actions that are undertaken in the Citizen Engagement Platform (Table 12). On the other hand, they can also invite citizens to register in the online platform or other solutions that work on higher levels of engagement. Regarding the solutions that foster more active levels of engagement, these actions (e.g. Gamification initiatives, donation actions through P2P platform) may be coordinated with the actions of the Citizen Engagement Platform. These solutions may also invite citizens to register and use other solutions that work on higher levels of engagement.

ETT#4 IE	Target Group	Engagement Level
Cultural Market	Cultural agents	Non-Active
Tourist App	Tourists and visitors	Non-Active, Active
Gamification	Students	Active
ETT#1	Target Group	Engagement Level
P2P Platform	HEMS Owners, Solar Panel Owners	Non-Active, Active

Table 12 - POCITYF Innovative Elements with Engagement Potential

- **Conduct two initial online workshops** with the aim of co-creating citizen engagement strategies that will be implemented within POCITYF's lifetime. Further workshops are expected throughout the project to continue to co-create the citizen engagement strategies as they are implemented and evolve.
 - **The first workshop** will involve POCITYF partners that are responsible for IEs that have potential to foster citizen engagement. In these workshops,



- representatives from Évora and Alkmaar Lighthouses will also participate, as well as researchers from INESC TEC (leader of WP4).
- **The second workshop** will involve citizens from Évora Lighthouse. These workshops can be later replicated at Alkmaar with local facilitators.

4.3 Citizen Engagement Platform

The first proposal is the development of an online platform to engage by creating different engagement actions for heterogeneous levels of citizens' engagement. Moreover, the platform proposes to be the all-in-one digital community to drive education, participation, collaboration and co-creation.

The platform should be a reference for citizens to discuss different issues regarding energy efficiency and the adoption of smart energy solutions to improve their lives individually and in community. It is also an appropriate environment to develop activities to co-create and co-design based on participatory workshops with stakeholders, citizens and policymakers. The POCITYF community space (online platform) in and of itself is about diversity and inclusion of society in the energy transition initiatives. As such, the online platform aims to be the means to:

- deliver the citizen engagement strategies under definition;
- foster open innovation, namely by raising awareness, providing educational and training resources, enabling easy collaboration to discover and deliver citizen-driven solutions by citizens and for citizens (e.g. co-creation, co-design, co-production);
- create a centre for the ETT#4 Integrated Solutions to converge to in order to create a consistent engagement ecosystem;
- build and strengthen the sense of community;

Table 13 below presents examples of features that the Citizen Engagement Platform could have in order to support a diverse set of initiatives and activities and serve all levels of engagement.

Functionality	Purpose	Level of Engagement
Content pages	Show informational and educative content (text, photos, video, animation)	Non-Active, Active
Content Upload/Download	Offer citizens access to material (project information, workshop material follow-up)	Non-Active, Active
	Offer citizens a chance to contribute with material, co-create	Active, Empowered



Functionality	Purpose	Level of Engagement
Comment adding	Interaction, feedback from users	Active, Empowered
Debate	Interaction among community, give citizens a voice	Active, Empowered
Voting	Involve citizens in decision making on POCITIF solutions and at city level	Active, Empowered
E-mail connection	Send citizens updates/surveys/tips/notifications/invitations	Non-Active, Active, Empowered
Event creation	Bring together different stakeholders to co-create/make decisions in online representations of physical gatherings	Non-Active, Active, Empowered
Survey Creation	Consult citizens on different topics, profiling, understanding behaviours (Directly on the platform or via e-mail)	Active, Empowered
Access to HEMS data	Data correlation, Data Monitoring	Active
Graphics / Diagrams	User friendly data visualisation	Non-Active, Active
Export Data	Data Analysis (Export comments and other user inputs to Excel or other formal)	
KPI monitoring	Activity and behavioural analysis, Impact	
Access to logs	Activity and behavioural analysis, Impact, Data correlation with other platforms/apps	

Table 13- Possible functionalities of the Citizen Engagement Platform

The review of digital tools from other EU projects has shown different open-source suites that offer the mentioned functionalities. Therefore, the POCITYF Citizen Engagement Platform could be the customization of an existing open-source engagement platform.

The ideation and development process will follow an agile approach, both for discovering exactly what should be the outcomes, features and outputs of the platform (discovery loop), identify technological options and finally how to deliver the expected features of the platform (delivery loop). This double-loop process will better support learning, end-



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to-end, from co-creation and co-design, to development, supporting a fast, pragmatic, effective and flexible implementation of the best platform, the best way.

4.4 Physical Hub

The second proposal consists of a city spot for gatherings/events/workshops with different co-creation and co-design focus.

Citizen Engagement facilities are part of a growing trend in sustainable smart cities, where citizen participation and community engagement have become increasingly important. They are often spaces where concrete engagement activities take place. They also provide a meeting place, where decision-makers, city officials and even companies can reach out and engage people in discussions about novel concepts and future scenarios for their city. For citizens, they provide an arena to get information, build a sense of community, learn about future development, join co-creation efforts, develop their skills and participate in neighbourhood events.

Moreover, the citizen engagement physical space should bring together a wide range of local people for experimentation, prototyping and testing, and safe spaces where failure should be embraced as part of a learning process. Engagement of diverse stakeholders and the use of iterative co-creation methods are, in most cases, key components in a lab methodology.

In summary, the engagement physical space should ground on four fundamental attributes:

- a space where people can learn and gain knowledge;
- a space where different user groups participate actively in the development of the area and their city;
- a physical site extended in the virtual space (online citizen engagement platform) for continuous engagement in POCITYF activities;
- a space that builds and strengthens the sense of community.

4.5 Co-creation Workshops

Co-creation workshops are a human-centered design tool that bring people together to creatively cooperate during the design process (Steen et al., 2011). Co-creation workshops offer several opportunities: they empower stakeholders, help different participants to achieve a common understanding about a problem and a solution, stimulate creativity and innovation, support concept validation and help to deal with complex contexts with multiple actors (Patrício et al., 2018, Steen et al., 2011). They also present multiple



challenges, such as recruiting participants, maintaining their interest and choosing the adequate format and supporting materials (Dietrich et al., 2017, White et al., 2018). Due to the current context of the COVID-19 pandemic, it can be argued that both the opportunities and challenges presented by co-creation workshops are augmented.

Following POCITYF's grant agreement, and according to the limitations imposed by the COVID-19 pandemic, the first co-creation workshops will take place remotely, with the support of online communication tools, namely Microsoft Teams and Mural (www.mural.co). Remote workshops ease the challenge concerning the recruitment of participants. On the other hand, the remote context makes it more challenging to maintain the interest of participants. As such, to maintain the interest of participants and help in the recruitment effort, workshops will have a length of 90 minutes and, following the framework proposed by Dietrich et al. (2017).

After the workshops, the facilitator team will compile the results and share them with the participants, asking for further feedback and ensuring that described results accurately portray what was discussed during the workshop. Along with the aforementioned documentation, participants will be asked to share their opinion about the workshop itself (organization, process, tools), so that these workshops can be constantly improved during the course of the project.

4.5.1 Workshop with POCITYF Partners responsible for ISs with engagement potential

The first one (October 20th 2020) will be dedicated to sensitizing participants to the developments already made to establish engagement strategies. In this first session, the results of T4.1 will be presented. An initial brief about the workshop will also be given. Based on what was shown on the first session the participants will co-create the citizen engagement strategies. The expected length of this session is 120 minutes.

Participants in this workshop will be divided in three groups, covering different types of engagement potential:

- Solutions without active participation from citizens;
- Solutions with active participations from citizens;
- Solutions that empower citizens;

Based on the POCITYF citizen engagement framework, participants will discuss within the three groups and co-create the citizen engagement strategies along two axis: Arnstein's ladder of participation (ranging from passive participation to the most active level that involves citizen control, decision making and co-creation) and goals that follow the European Manifesto on Citizen Engagement. Workshop participants will discuss how to accomplish the different goals across the ladder of participation and how can citizens be



encouraged to raise their engagement levels and thus, climb the participation ladder. Workshops involving stakeholders will also aim to understand how each POCITYF stakeholder is positioned in the POCITY citizen engagement framework, and how can each individual engagement effort can be aligned to increase their impact.

4.5.2 Workshop with citizens

As mentioned before, recruitment for the workshops is expected to be a challenge. The challenge of recruiting workshop participants will be greater for workshops involving citizens. Citizens already collaborating with the project, namely those who participated in the data collection for the initial draft of the engagement strategies, will be invited first. Hopefully, these citizens will show increased interest in continuing their collaboration with the project. To augment the recruitment reach, POCITYF partners from the LH will be asked to help in the recruitment process.

In this workshop with citizens, the sensitizing phase will introduce the participants to the workshop objectives, format and tools and to the current status of the citizen engagement strategies. To take the most advantage of the workshop length, this phase will take place before the actual workshop. A single-page factsheet will be distributed to participants, so they can read before the workshop. This will prepare the participants beforehand and shorten the workshop introductory remarks.

This workshop will take place on Microsoft Teams platform only (or equivalent), as resorting to additional platforms could be harder for citizens that are not at ease with technology. Participants will all share their take on POCITYF's engagement strategies in a single group. As such, this workshop will have an approximate length of 60 minutes. Workshop participants will be invited to continue to collaborate with POCITYF and be part of a user group that will be called regularly to participate in workshops and other feedback activities during the project.

Further workshops are expected throughout the project to continue to co-create the citizen engagement strategies as they are implemented and evolve.

4.6 Engagement Initiatives

Several sets of initiatives will be tailored to cover all levels and goals of engagement (Table 14). They will be carried out through the physical and digital tools proposed in the previous section and will be focused on the three engagement strategies.



Type of initiative	Purpose	Support tools	Examples of activities
Informational	To create Awareness To educate To increase the level of knowledge	Tourist App Citizen Platform Engagement Physical Hub	Provide smart city routes Provide energy saving tips Explain environmental impact Explain financial impact
Interactive	To enable citizens to actively participate To give citizens a voice	Gamification P2P Citizen Platform Engagement Physical Hub	Play and learn Transition\Donate energy Share Experiences Comment, Share Opinions, Suggestions Make proposals, Debate, Vote
Co-Creational	To explore new city visions, to co-design and experiment POCITYF solutions	Citizen Platform Engagement Physical Hub	Explore new city vision and co-design POCITYF solutions Build and strengthen the community and create a pool of ambassadors

Table 14 - Set of Initiatives to cover the levels and goals of engagement

4.6.1 Recruitment Process

Since recruitment is one of the main difficulties when conducting activities/workshops with citizens, it would be important to create a pool of Ambassadors among citizens who can help disseminate information and initiatives and who are constantly in contact with the consortium (from the initial interviews, at least 2 people seem to qualify). These Ambassadors are pivot points with access to certain community groups. They can easily



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and efficiently disseminate information about POCITYF and about future proposed activities in their groups. Furthermore, they can help gather workshop participants and identify citizens that could be representative for certain Personas. Growing the pool of Ambassadors will be an ongoing effort made possible through the online platform and the physical hub.

4.6.2 Co-creation directions based on citizens' needs and interests

Three possible directions were identified based on the interviews carried out in T4.1, surveys carried out in T1.1 and case studies from other EU projects. These choices are to be refined/altered during workshops and further activities with partners, stakeholders and citizens, and new directions can also be added:

- Alternative Mobility

Citizens have shown interest in the mobility topic, having strong opinions about car presence in the historical centre and doubts about electrical car solutions. Also, they seem to be interested in green and efficient mobility solutions like e-bicycles and alternative public transportation and they are open to discuss and co-create new alternative solutions. As such, a possible citizen engagement direction can be to explore new city futures with alternative mobility, and to what extent POCITYF solutions can evolve to empower this vision.

- Open data/consumption monitoring.

Citizens are interested in better understanding the impact of energy consumption and its financial and environmental consequences, and they expressed the need for better data visualization and interpretation solutions. Also, they are not satisfied with the level of general information received at city level. They would like to know more about on-going or future initiatives in their city and be involved in decision-making.

- Foster a sense of community.

The only interviewees that mentioned being involved in the local or city community are those whose job requires this. Otherwise, citizens do not seem to have a strong sense of community and are not used to collaborative city initiatives. In their view, there is a lack of interaction with the municipality. However, they showed interest in being involved in collective and participatory activities.

Table 15 below shows what POCITYF solutions could support/focus the co-creation directions.



Possible Participatory Processes	Under development tools/solutions	Complementary Support tools
Alternative mobility	Smart-cloud for innovative Start-ups, Tourist app	Citizen Engagement Platform, Physical Space
Open Data	Data Lake, P2P Platform, Mobile App for consumption monitoring	Citizen Engagement Platform, Physical Space
Foster a sense of community	Cultural Market app, Gamification	Citizen Engagement Platform, Physical Space

Table 15 - POCITYF solutions as a support for possible participatory processes

4.7 Further Empowerment

The high-level engagement strategies aim to empower citizens in order to co-create and co-design solutions in the POCITYF context, but also at city and community level. Moreover, the activities that citizens will participate in (ex: during online or offline Workshops) are meant also to encourage the creation of a practice beyond the timeline of POCITYF. By doing this, another level of Empowerment was created, in which citizens can take the lead and propose different courses of action in their neighbourhood or at city level, based on what they learned during POCITYF activities. They would go from being Ambassadors of the project to being long-term Ambassadors of engagement and community development, ensuring the continuity of practices, applying the concepts that they discovered in POCITYF or creating new ones that would better serve their future purposes.



5 Ethical Requirements

Collected data from citizens remains strictly confidential and anonymous and was used uniquely for this study. Results do not identify individually the interviewees or any specific characteristics that can be used to identify the participant in any internal or external project documentation.

The POCITYF partners who collaborated with the data collection phase also guarantee the confidentiality of the list of participants.

The data collection phase included an Informed Consent that ensured the voluntary participation, participants' anonymity, and confidentiality. The informed consent explained the potential uses of the data collected and provided the researcher's contact information in case any problem occurs.

To ensure the protection of data, all data was stored in password-protected computers. Devices used for data collection were also password protected.

The ethics principles and privacy rules agree with the Ethics and Security of POCITYF grant agreement (Proposal number: 864400) and Ethics Board (EtB) decisions.



6 Conclusions and Next Steps

Citizen engagement is a way of actively involving citizens in the city's decision-making processes to address their needs. Citizen engagement exists in many different forms, ranging from merely influencing and informing people, to real participation and co-creation (SCIS - Booklet of Engagement, 2020).

This document offers a framework in which partners can design and develop engagement strategies and actions according to each LH/FC context. This framework is the result of an extended analysis of the EU projects and literature, and a qualitative and quantitative study developed in the LHs Évora and Alkmaar. As such, PESF (POCITYF Engagement Strategies Framework) is grounded on the Arnstein's ladder of participation (Arnstein, 1969), the literature and state of the art review, highlighting the activities established by the European Manifesto on Citizen Engagement (EIP SCC's Citizen Focus Action Cluster, 2016), and the fieldwork results, to enable partners develop strategies to engage heterogeneous communities and citizens with flexibility. In POCITYF engagement is considered a process that evolve until reaching high levels of participation and partnerships to innovate and co-create.

The next steps consist of the refinement and replication of the framework to partners through the workshop planned in the context of WP4 - T4.2 and the development of the online platform to promote actions to support the engagement actions and the overall energy transition initiatives.

The first workshop is planned to take place in October 2020 with LHs partners to refine the engagement strategies for the different POCITYF solutions/apps. The second workshop will include citizens to gain feedbacks, aiming to enrich/improve the engagement strategies. Moreover, the phase of understanding citizen and city context is still on-going with the possibility of continuing the interviews to enrich the current data analysis and evaluate the impacts of the engagement actions that will take place in the context of WP4-T4.3. The detailed results will compose the next T4.1 deliverable (M36).

Furthermore, in Alkmaar different citizen engagement strategies for different stakeholders will be further researched and the lessons learned reported as a final citizen engagement process for a specific stakeholder, matching its' role and context.

Methods to be used in these citizen engagement processes of different stakeholders will be developed, implemented in practice and evaluated after which they are reported when found successful for use in FCs. Design for different tools and means to enhance citizen engagement and which can be used in the citizen engagement process to realize something specific in that process in terms of engaging citizens will be implemented and tested as well in and made available for the FCs.



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EU Projects:

City Exchange Project - <https://cityxchange.eu/>

IRIS Project Project- <https://irissmartcities.eu/>

MatchUp Project Project - <https://www.matchup-project.eu/>

Sharing Cities Project - <http://www.sharingcities.eu/>

Smarten Cities Project - <https://smartencity.eu>

Civitas - <https://civitas.eu/measure/mobility-20-communication>

GresBas - <https://gresbas.eu/en/>



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Appendix A

LH Évora - Interview Protocol

Specifically, the interviewer starts the conversation by covering the following areas:

Welcome participant.

Purpose of the interview, context (the project) and the company affiliation.

Why this person was selected for the interview.

Informed Consent and Confidentiality issues.

Amount of time being requested (30 minutes to 45 minutes).

The moderator will audio-record the interview.

Main interview topics and probing question/topics:

Understanding the citizen context:

Tell me about you and your house:

Age, gender, profession

Type of household (apartment, house)

Type of ownership (own, rent, lodger, other)

Area of household (m²)

Number of people living in the house

What kind of services/solutions do you have/use?

For what do you use them?



Understanding the daily energy consumption:

Are you interested in, or are you managing your energy consumption?

What is important in managing your energy consumption? Why are you doing it?

Why are you not interested in managing your energy consumption?

How do you manage your energy consumption? Through what activities, for example?

What do you think are the most important daily activities that consume energy?

What do you like or dislike about the products/services you use?

What would make these products/services more useful for you?

With whom do you interact to managing the energy consumption? (family, service providers, communities)?

Understanding citizen participation in local/online communities/city

If you would make a next step in reducing energy consumption or making it cheaper/ produce your own, would you like to do it together with others? Or would you prefer to do it alone?

If you would like to do it together, are you already part of a community with whom you could do this?

Or would you like to be part of a different community? What should this community look like and do? Take up together?

Understanding the citizen view and participation:

Could you give a brief description of your city? Do you live in the new or old part of the city?

How do you see the historical and cultural heritage of your city?

How do these heritages influence your daily life?



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Do you participate in the city hall initiatives (Ex: sustainability and recycling campaigns, cultural events, etc.). Could you describe them?

How do you interact with the municipality?

Do you envision the implementation of new solutions at the Historic Centre of your town? What solutions would you like to see there?

Understanding citizen engagement with home energy consumption/ smart energy services:

Do you usually try to be informed about how actively manage your home consumption/smart energy services?

Do you carefully consider and plan your energy consumption/usage of smart energy services?

Does home energy consumption mean a lot to you?

What do you do to reduce/improve the energy consumption system of your house?

Understanding the citizen engagement with POCITYF solutions

Would you be interested in an e-car or e-car sharing? Why or why not?

Would you be interested in producing your energy and sell it? Why or why not?

Would you rather store energy in batteries? On which does this depend?

If you would buy new energy systems, what would be the first thing you would add to your home?

Understanding the citizen engagement with e-mobility

What kind of electric vehicle do you have? (car, motorcycle, bike?)

For what purpose do you use it? (work, leisure time)



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What kind of services/gadgets do you use to manage your vehicle?

How do you charge your e-vehicle? (at home, in a public charging station)?

What do you like and dislike?

Are you part of any community dedicated to sharing experiences with electric vehicle?



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Appendix B

Research Alkmaar - Sustainable living/POCITYF

Sustainability is important for the municipality of Alkmaar. Sustainable living is one of the subthemes related to this. The municipality of Alkmaar is part of a European project called POCITYF. In this project, Alkmaar makes historical cities greener, smarter and enhances quality of life, together with other participating European cities. This is being realized with technical, sustainable solutions in houses, neighbourhoods and transportation.

For the municipality of Alkmaar it is important to involve you in the project. By filling in the questionnaire, you participate in creating the future of Alkmaar.

Filling in the questionnaire takes approximately 15 minutes of your time and is anonymous.

We raffle 2 gift vouchers of 25 euro among the people who fill in the questionnaire. Would you like to take part in this raffle? Then please fill in your email address at the end of the questionnaire.

- I consent to participate in this research and agree to the terms of the research (read here the informed consent of this research). *
- I agree with the privacy statement. *

General information

In which neighborhood of Alkmaar do you live?

't Rak-Noord	De Nollen	Oudorp-Centrum
't Rak-Zuid	De Rijp	Oudorp-Noord en Oudorp-Oost
Bergerhof en Blaeustraatkwartier	Dillenburg Stadhouderskwartier	en Oudorperpolder-Midden
Bergermeer	Driehuizen	Oudorperpolder-Noord
Bergerwegkwartier	Emmakwartier	Oudorperpolder-Zuid



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Binnenstad-Oost	Graft	Overdie-Oost
Binnenstad-West	Grootschermer	Overdie-West
Bloemwijk en Zocherkwartier	Huiswaard-1-Zuid	Overstad
Boekelermeer-Zuid	Huiswaard-2-Oost	Rekerbuurt en Ooievaarsnest
Burgemeesterskwartier	Huiswaard-2-West	Schermereiland en Omval
Cranenbroek	Koedijk en De Weijdt	Schermerhorn
Daalmeer-Noordoost	Kooimeer	Spoorbuurt
Daalmeer-Noordwest	Markenbinnen	Staatsliedenkwartier en Landstraten
Daalmeer-Zuidoost	Nassaukwartier en Hout	Starnmeer
Daalmeer-Zuidwest	Noordeinde	Stompetoren
De Hoef I en II	Oost-Grafdijk	Vroonermeer-Noord
De Hoef III en IV	Oosterhout	Vroonermeer-Zuid
De Horn-Noord	Oterleek	West-Grafdijk
De Horn-Zuid	Oud-Overdie	Zuidschermer
De Mare	Oud-Rochdale	

I'm a:

Man

Woman

I'd rather not say

What is your age?

Are you a tenant or owner of your house?

Tenant

Owner

I'd rather not say



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How long have you been living at your current address?

- Between 0 - 3 years
- Between 4 - 7 years
- Between 8 - 15 years
- Longer than 15 years

How long do you think you will be living at your current address?

- Between 0 - 3 years
- Between 4 - 7 years
- Between 8 - 15 years
- Longer than 15 years

Sustainable living**Are you familiar with the possibilities for sustainable living?**

- Not familiar at all
- Not familiar
- Neutral
- Familiar
- Very familiar

Do you think it is important to make you house more sustainable?

- Not important at all
- Not important
- Neutral
- Important
- Very important



Do you already do something with sustainable living? (multiple answers possible)

- Yes, in terms of energy
- Yes, in terms of reducing gas consumption
- Yes, in terms of clean mobility
- Yes, in terms of waste reduction
- Yes, in terms of food
- Yes, in terms of clothing
- Yes, in terms of biodiversity
- No
- Other

If yes, what exactly do you do with sustainability?**Solutions in and around your house**

With sustainable solutions in and around your house you save energy and produce renewable energy. The following questions are about different sustainable solutions. With some of the solutions, an explanation is given.

- Insulation

To insulate your house there are several possibilities. The following questions are related to these possibilities.



Are you familiar with the following distinct possibilities for insulation?

	Not at all familiar	Not familiar	Neutral	Familiar	Very familiar
Flax and hemp	0	0	0	0	0
Recycled concrete	0	0	0	0	0
HR+++ or triple glass	0	0	0	0	0

Are you interested in the different possibilities for insulation?

	Not at all interested	Not interested	Neutral	Interested	Very interested
Flax and hemp	0	0	0	0	0
Recycled concrete	0	0	0	0	0
HR+++ or triple glass	0	0	0	0	0

- Solar energy

There are different possibilities to generate (a part of) your energy yourself via solar energy means and to store them temporarily. The following questions are related to solar energy means and storage.

Are you familiar with the following solar energy solutions and energy storage?

	Not at all familiar	Not familiar	Neutral	Familiar	Very familiar
Solar panels on the roof	0	0	0	0	0



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Solar panels as windows	0	0	0	0	0
Solar panels on outside vertical areas of your house					
Hybrid solar panels (panels that provide both electricity and heat)	0	0	0	0	0
Solar collectors (panels that heat water)	0	0	0	0	0
A home battery	0	0	0	0	0
Recycled electric car battery as home battery or mobile battery	0	0	0	0	0

Are you interested in the different possibilities for solar energy solutions and energy storage?

	Not at all interested	Not interested	Neutral	Interested	Very interested
Solar panels on the roof	0	0	0	0	0
Solar panels as windows	0	0	0	0	0
Solar panels on outside vertical areas of your house					
Hybrid solar panels (panels that provide both	0	0	0	0	0



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electricity and heat)

Solar collectors (panels that heat water)	0	0	0	0	0
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A home battery	0	0	0	0	0
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Recycled electric car battery as home battery or mobile battery	0	0	0	0	0
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- Heating

There are different sustainable solutions to heat your house and to provide warm water. The following questions are related to these possibilities.

Are you familiar with the following solutions for heating your house?

	Not at all familiar	Not familiar	Neutral	Familiar	Very familiar
Heat pump (for warm water and heating of the house)	0	0	0	0	0
Heat network (connection)	0	0	0	0	0
Floor heating	0	0	0	0	0

Are you interested in solutions for heating your house?



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	Not at all interested	Not interested	Neutral	Interested	Very interested
Heat pump (for warm water and heating of the house)	0	0	0	0	0
Heat network (connection)	0	0	0	0	0
Floor heating	0	0	0	0	0

- Electric mobility

Sharing of electric transportation means: sharing of electric cars and bicycles with a group of people to create space on the roads and parking spaces and to reduce emissions.

Smart electric vehicle and network services means: when an electric car is connected to the electricity network, the battery of the car is charging and discharging. With the help of smart technology, the battery charges when electricity is cheap.

Smart charging with sun means: a charging station for electric cars with electricity from solar panels and local electricity storage.

Are you familiar with the following solutions for electric mobility?

	Not at all familiar	Not familiar	Neutral	Familiar	Very familiar
Sharing of electric transportation	0	0	0	0	0
Smart electric car and network services	0	0	0	0	0
Smart charging with sun	0	0	0	0	0



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Are you interested in solutions for electric mobility?

	Not at all interested	Not interested	Neutral	Interested	Very interested
Sharing of electric transportation	0	0	0	0	0
Smart electric car and network services	0	0	0	0	0
Smart charging with sun	0	0	0	0	0

- Energy management systems for own usage or collective usage

There are different possibilities to manage energy flows for own usage (in the house) or for collective usage. The different possibilities are briefly explained below.

An energy management system makes sure that you use electricity when there is plenty available. It manages the energy production, storage, usage and return to the network in your house in a smart manner. This way, your energy usage is reduced and cheaper.

An **energy “market place”** is a platform where citizens can mutually buy and sell energy. For example by selling your own electricity and/or trade it for other means like money or the possibility of having an electric bicycle at one’s disposal.

When you do not have a suitable roof to install solar panels on, you can make use of **collective solar panels** via specific arrangements (also known as the “postcoderoos”). These panels are placed at another location in your neighborhood, not on your roof (for example on a school or a roof of a company). This makes it possible for citizen to invest in solar panels when solar panels are not possible on their own roofs. In this way you produce part of your energy just like with panels on your own roof.



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Streetlights can provide charging possibilities for electric vehicles.

Are you familiar with the following solutions?

	Not at all familiar	Not familiar	Neutral	Familiar	Very familiar
Energy management systems	0	0	0	0	0
Energy “market place”	0	0	0	0	0
Collective solar panels	0	0	0	0	0
Streetlights with charging possibilities for electric vehicles	0	0	0	0	0

Are you interested in the following solutions?

	Not at all interested	Not interested	Neutral	Interested	Very interested
Energy management systems	0	0	0	0	0
Energy “market place”	0	0	0	0	0
Collective solar panels	0	0	0	0	0
Streetlights with charging possibilities for electric vehicles	0	0	0	0	0

- Waste collection



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There are different possibilities to separate waste and to recycle waste and/or to reduce the amount of waste.

If **separate waste collection** is used, the municipality places containers near the houses to recycle green, paper and plastic waste (plastic, metal/tins and cardboard drinking cartons). In this way the amount of residual waste is reduced.

With a **variable tariff** citizens are paying for too much residual waste. The purpose of this system is to stimulate citizens to produce less residual waste and recycle more.

Are you familiar with the described ways of waste collection?

		Not at all familiar				Very familiar
Separate collection	waste	0	0	0	0	0
Variable tariff		0	0	0	0	0

Are you interested in the described ways of waste collection?

		Not at all interested				Very interested
Separate collection	waste	0	0	0	0	0
Variable tariff		0	0	0	0	0

Think along with us about a sustainable future for Alkmaar with a high quality of life!

We are interested to hear how you experience your house and neighborhood with respect sustainability and quality of life.

How happy are you in your neighbourhood on a scale from 1 to 10?



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1 - 10

Has your neighbourhood improved or deteriorated over the past years?

- Deteriorated (go to the question “In which respect has your neighbourhood deteriorated?”)
- The same (go to the question “How happy are you with the life in your neighbourhood?”)
- Improved (go to the question “In which respect has your neighbourhood improved?”)

In which respect has your neighbourhood deteriorated?

In which respect has your neighbourhood improved?

What should be tackled or solved in your neighbourhood?

What should be tackled or solved in your house?

**Which of the following points would you like to see improved in your neighbourhood?
(multiple answers possible)**

- Having the feeling that you yourself decide what you do, when, and how, independently from others or the possibilities around you (*autonomy and independence*)
- Having the feeling that you are very capable and effective in what you do and undertake (competence).



- Having the feeling that you have regular (intensive) contact with people you care about and who care about you, not feeling alone but connected to others (relatedness).
- Having the feeling that you are respected and liked and that you have influence on others or things, your advice or opinion is being valued and taken seriously (influence).
- Having the feeling are stimulated enough and have fun in your life, not feeling bored (pleasure and stimulation).
- Feeling safe and in control in your life instead of feeling insecure or threatened by your own or external circumstances (safety and control).
- Feeling that your body is healthy and is being kept healthy, feeling well in your body (physical wellbeing).
- Feeling that you get the best out of yourself, developing yourself to your maximum possibilities. You do not have the feeling that you're standing still but that life always has something interesting to offer that helps you to improve (self realisation and meaning).
- Feeling that you are a valuable person, as good as anyone else, you do not feel less than others, you are not inferior to others (self-respect).
- Having the feeling that you have sufficient financial means to buy what you need and what you want (finance).

How many people in your neighbourhood do you know by name (including your neighbours)?

- I don't know anyone by name
- I know 1 - 3 people by name
- I know 4 - 6 people by name
- I know 7 - 9 people by name
- I know 10 - 12 people by name
- I know more than 12 people by name

Do you help your neighbours sometimes or do they help you?

- Yes
- No



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How do you help each other?

I'm doing the following for someone else:

- 1.
- 2.
- 3.
- 4.
- 5.

Someone else is doing the following for me:

- 1.
- 2.
- 3.
- 4.
- 5.

Are you willing to share something with your neighbours/the neighbourhood or to act on something collectively?

Not willing at all

Not willing

Neutral

Willing

Very willing

• In what way would you like to think with us and participate with the municipality Alkmaar?



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To which extent do you trust the municipality Alkmaar?

- No trust at all
- No trust
- Neutral
- Trust
- Very much trust

In order to let citizens of Alkmaar participate in the project POCITYF different means and activities are being organized. Could you indicate for these activities to which extent you are already familiar with them (or resembling) activities and indicate to what extent you are interested in the activity?

InnoFest is an activity for young citizens and students to participate in shaping the future of Alkmaar. Young people play their own role in shaping local developments.

Samen Lokaal in Beweging is an activity in which every citizen can participate to make and realize plans, together with others (as a group), that help to improve quality of life and make the living environment more sustainable.

A **citizen information platform** gives citizen insights into information/data about their neighborhood and offers organizations the possibility to develop new products and services for neighborhoods, based on this information/data.

Apps for cultural experiences are mobile apps that show (touristic) experiences and cultural activities in a specific area. With this type of apps you can see waiting times and crowds and plan a visit in a coordinated manner to prevent crowds.

Are you familiar with the described and/or similar activities and developments?

	Not at all familiar				Very familiar
InnoFest	<input type="radio"/>				



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Samen Lokaal in Beweging	0	0	0	0	0
Citizen information platform	0	0	0	0	0
Apps for cultural experiences	0	0	0	0	0

Are you interested in the described and/or similar activities and developments?

	Not at all interested			Very interested	
InnoFest	0	0	0	0	0
Samen Lokaal in Beweging	0	0	0	0	0
Citizen information platform	0	0	0	0	0
Apps for cultural experiences	0	0	0	0	0

At last

Would you like to be informed or even actively involved in shaping the future of Alkmaar through the POCITYF project? Then enter your e-mail address. We only use the e-mail address for the aforementioned purposes.

How would you like to be involved?

- Just let me know when the plans and solutions have been defined. I'm not interested in any information in the meantime.
- I would like to be informed about the developments of the plans and solutions of the municipality Alkmaar.
- I would like to react on the plans and solutions of the municipality Alkmaar.



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O I would like to participate in the design of the plans and solutions of the municipality Alkmaar.

What are your conditions to be able to/willing to react on the plans of the municipality Alkmaar/to participate in the design of the plans of the municipality Alkmaar?

Thank you very much for filling out this questionnaire.

Informed consent

Explanation about the research

Your answers are shared only with the people within the POCITYF project who analyse the results of this questionnaire. You can always let your data be removed from the study and deleted from the data set by sending an e-mail with this request to <e-mail address>. We ask you not to fill in any data that you would not like to share with strangers.

The results of all filled in questionnaires are used to define how we can together make your neighbourhood greener and nicer and are possibly shared with a larger audience. You're not recognizable as a person, your answers are not recognizable either. So everything is anonymous.

Informed consent

I declare to participate on a voluntary basis in this research of the municipality of Alkmaar within the context of the POCITYF project. I confirm that I have read the information about the research and that I have been informed sufficiently.

The goals of the research have been explained to my satisfaction.

I have had the opportunity to ask additional questions and these question have been answered to my satisfaction.



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I have had enough time to think about participation.

I give permission to process my personal data for the purposes described in the information.

I know that my participation in the research is completely voluntary and that I can withdraw my consent at any time if I have given my email address, without giving any reason.

Furthermore, I declare that I have no known obstacles to take part in the research.



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