



POCITYF

D2.9: Social Engagement Monitoring Plan and Continuous Progress - version 2

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Executive Summary

The present deliverable builds on the monitoring plan and presents the progress reporting for Social Engagement in the lighthouse cities (Évora, Alkmaar) and fellow cities, referring to the work done under T2.6 - *Social Engagement Monitoring*.

Having as base the previous deliverable *D2.8-Social Engagement Monitoring Framework*, the current document will focus on the monitoring of the *social* dimension, presenting the current status of the Social Key Performance Indicators (KPIs) and activities related to *social engagement*. This deliverable complements *D2.6* - which reports on the baseline, progress and status of monitoring data collection for all the other dimensions of POCITYF.

All the activities considered relevant for social engagement have been taken into consideration and are listed in the current deliverable, being associated with one or several Social KPIs. Out of the five Social KPIs, four are being evaluated based on the data collected so far, while one will only be evaluated and reported once, at the end of the POCITYF project.

The further progress of social engagement monitoring activities and respective gathered data will be reported in deliverable *D2.7 - Continuous Progress & Performance Monitoring in LH Cities - version 2*.



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Abbreviations and Acronyms (in alphabetical order)

Abbreviation	Definition
CEP	Citizen Engagement Platform
CIP	City Information Platform
CME	Câmara Municipal de Évora
C&D	Communication & Dissemination
ETT	Energy Transition Track
EV	Electric Vehicle
EU	European Union
FC	Fellow City
GA	Gemeente Alkmaar
HEMS	Home Energy Management System
IE	Innovative Element
IS	Integrated Solution
KPI	Key Performance Indicator
LH	Lighthouse
NEC	New Energy Coalition
P2P	Peer-to-Peer
PEB	Positive Energy Building
PED	Positive Energy District
PV	Photovoltaic
SES	Sustainable Energy Solutions
TNO	Netherlands Organisation for Applied Scientific Research
WP	Work Package



1 Introduction

1.1 Objectives and Scope

The deliverable “D2.9- *Social Engagement Monitoring - Plan and Continuous Progress - version 2*” is the outcome of the work carried out in Task 2.6 - Social Engagement Monitoring & Continuous progress and it reports on the current results of social engagement activities of POCITYF.

The deliverable focuses on the social dimension, therefore, it presents the reporting and evaluation of the Social KPIs previously defined in D2.1 “*EET-centric KPIs definition with all evaluation metrics and formulas derived*”, according to the plan and methodology from “D2.8 - Social Engagement Monitoring Framework”. The monitoring approach includes the timeline of data collection, data points and sources, as well as the relevant solutions and partners that supported the data collection.

The operationalization of the Social KPIs presented in the current deliverable has been adapted for the specific context of the two lighthouse cities in terms of data points and data sources. In the case of the fellow cities, an initial monitoring and reporting approach has been proposed. However, due to the fact that the replication plans are still in an early stage, this approach will be adapted in accordance with the engagement focus of each fellow city, following-up on the replication activities.

This document reports the progress up until M48. It takes into consideration that certain engagement activities were carried out independently from the technical implementation of solutions. Thus, some activities can already be reported, while others will only provide data after the end of technical implementation, i.e. when technical solutions are deployed. The next deliverable, D2.7- *Continuous Progress & Performance Monitoring in LH Cities - version 2*, will include the results of the social engagement monitoring for the remaining period, up until the end of the project.

1.2 Relation to other activities

D2.9 follows up on previous work done in WP2, T2.6 (D2.8 - Social Engagement Monitoring Framework) which has defined the social engagement monitoring plan and on T2.1 (D2.1- *EET-centric KPIs definition with all evaluation metrics and formulas derived*), T2.2 (D2.2 - *Test and Evaluation plans*) and T2.3 (D2.3- *Monitoring Data & Infrastructure, expanding to Cultural Heritage cases*).

It also makes use of the work done under WP4 (*Citizen Engagement and Open Innovation Activities*) and WP1 (D1.11 - *City Vision and Master Plan for ETT#4 Solutions*, & D1.2 - *End-User and Stakeholders Requirements Definition - version 2*).

D2.9 will support WP3, mainly T3.3 -*Social impact assessment of citizen engagement and open innovation in smart cities*, which will later evaluate the Social Engagement, taking into consideration the data reported in the current and future T2.6 deliverables.



D2.9 and future T2.6 deliverables will support WP4, WP6 and WP7 activities, by providing data related to offline & online social engagement activities and usage of solutions.

1.3 Structure of Deliverable

This deliverable is structured as follows:

- Chapter 2 presents the social engagement progress for the case of Évora LH.
- Chapter 3 presents the social engagement progress for the case of Alkmaar LH.
- Chapter 4 presents the social engagement situation in the case of the Fellow Cities.
- Chapter 5 presents the conclusions of the current deliverable.



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2 Progress Reporting for Évora LH

This section focuses on reporting the progress of Évora LH up until M48. Following on the approach detailed in the previous deliverable of Task 2.6 (D2.8), the Social KPIs were operationalized considering the types of social engagement activities planned for the Évora LH during POCITYF. These engagement activities have different natures & goals (e.g., co-creation, communication) and different scales (e.g., small-scale workshop versus large-scale hackathon event) and timeframes (e.g., one-time event versus iterative co-creation process). We clarify that these activities span the full POCITYF timeline, having started in 2020, and do not necessarily depend on the technical development of POCITYF solutions.

In the specific case of Évora, certain initiatives were carried out completely independent from technical development, so they were not influenced by any delays in the implementation, while others have been postponed in accordance with the technical development and will only be carried out once the technical solutions become active.

Thus, in the next sub-chapters, we underline the monitoring approach for each Social KPI, we summarize the progress and results of the engagement activities carried out so far in POCITYF that are relevant for the Social KPIs, and we provide the evaluation of these KPIs (where possible) until M48.

2.1 People Reached

In the case of *People Reached*, the general characteristics are summarized in *Table 1* below. Four different data points are taken into consideration for the evaluation of this KPI, encompassing the different categories of engagement activities relevant. The data points are the following and are shown in Tables 2 to 5 below.

- DP#1 - Number of citizens responding to surveys
- DP#2 - Number of participants in workshops, focus groups and other similar format activities
- DP#3 - Number of citizens reached through POCITYF website
- DP#4 - Number of users of the WP6 / ETT#4 digital solutions

Given the different nature and scale of the activities, we have decided to set a target for each activity and evaluate if this target has been reached, according to the KPI formula. We then have extended the formula to the evaluation of the overall KPI, relying on the total of people reached and total of targets.

Given the spread of the activities over time, we are able to consider baseline the time interval 2020 - 2021 and as monitoring period the time interval 2022-2023. By doing this, we aim to capture if there has been an improvement in terms of social engagement from one period to the next. We mark with (B)-Baseline and (M)-Monitoring the data in the tables below.



Table 1 - General characteristics S1 - People Reached - Évora

Social KPI - S1. People Reached	
<u>General Formula Proposed</u>	$(\text{nr of citizens reached} / \text{target}) * 100\%$
<u>Operationalization of Formula</u>	Set a target for each initiative monitored and apply initial formula to evaluate each initiative. Evaluate overall KPI by applying the formula: $(\text{sum of all people reached} / \text{sum of all targets}) * 100\%$
<u>Baseline vs Monitoring</u>	We consider baseline the interval 2020-2021 We consider monitoring the interval 2022-2023

Observations:

- DP#1 - target overreached for the survey respondents
- DP#2 - an increase in participation can be noticed from the first initiatives (less than 50% target reach) towards the most current ones (90-100% target reach)
- DP#3 - an increase in the nr of new visitors of the POCITYF website can be noticed through the 3 periods of time and a variation of the nr of returning visitors, however staying mostly above 50% target reach.

Table 2 - Data Point #1 for S1- People Reached - Évora

Data Point #1: Number of citizens responding to surveys					
Initiative	Date(s) B-Baseline M-Monitoring	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
Survey - citizens engagement with Sustainable Energy Solutions & perceptions of POCITYF solutions	2022 (M)	INESC TEC EDP	Min 100	107	target overreached (1.07 to 1)



Table 3 - Data Point#2 for S1 - People Reached - Évora

Data point #2: Nr of participants involved in workshops, focus groups and other similar format activities					
Initiative	Date(s)	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
Interviews with citizens - 1st round	2020 (B)	INESC TEC	30 citizens	10 citizens	33% of target
Workshop with citizens	2021 (B)	INESC TEC	10 citizens	4 citizens	40% of target
Valverde engagement initiatives	2021 (B)	EDP	12 citizens	10 citizens	83% of target
Interviews with citizens - 2nd round	2022 (M)	INESC TEC	16	25	target overreached (by 1.56 to 1)
Door 2 Door approach (Interviews of residential/commercial clients for the installation of HEMS and PV inverters)	2022 (M)	INESC TEC	11	10	91% of target
Open Innovation Contest	2022 (M)	PACT	6 students	12 students	target overreached (by 2 to 1)

Table 4 - Data Point#3 for S1 - People Reached - Évora

Data Point #3: Nr of citizens reached through communication events or channels					
Activity	Date(s)	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
POCITYF website general access	Oct 2021- March 2022 (B)	ICONS	New visitors: 100 Returning:	New visitors: 73 Returning:	73% of target



Data Point #3: Nr of citizens reached through communication events or channels					
Activity	Date(s)	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
			50	38	76% of target
	Apr 2022-Sept 2022 (M)		New visitors: 200	New visitors: 285	target overreached (by 1.42 to 1)
			Returning: 100	Returning: 186	target overreached (by 1.86 to 1)
	Oct 2022 - March 2023 (M)		New visitors: 400	New visitors: 879	target overreached (by 2.19 to 1)
			Returning: 200	Returning: 123	61% of target
POCITYF website - access of pages in local language	Oct 2021-March 2022 (B)	ICONS	New visitors: 50	New visitors: 13	26% of target
			Returning: 25	Returning: 4	16% of target
	Apr 2022-Sept 2022 (M)		New visitors: 50	New visitors: 47	94% of target
			Returning: 25	Returning: 34	target overreached (by 1.36 to 1)
	Oct 2022 - March 2023 (M)		New visitors: 50	New visitors: 126	target overreached (by 2.52 to 1)
			Returning: 25	Returning: 12	48% of target

Table 5 - Data Point#4 for S1 - People Reached - Évora

Data Point #4: Nr of citizens using the ETT#4 (or other WP6) digital solutions					
Solution	Nr of (new) registered users	Nr of unique visitors	Nr of returning visitors	Bounce rate / Conversion rate / Churn rate	Evaluation
Évora Smart-City(CEP)	No activity to report yet				-



Data Point #4: Nr of citizens using the ETT#4 (or other WP6) digital solutions					
Solution	Nr of (new) registered users	Nr of unique visitors	Nr of returning visitors	Bounce rate / Conversion rate / Churn rate	Evaluation
City Information Platform (CIP)	No activity to report yet				-
Cultural Experience Interface	No activity to report yet				-
Gamification Platform	No activity to report yet				-
P2P Platform	No activity to report yet				-

2.2 Connection to existing cultural heritage

In the case of KPI *Connection to existing cultural heritage*, the general characteristics are summarized in *Table 6* below. The reporting and evaluation of the KPI will be done only once, at the end of the project, using a Likert scale from 1 to 5. There is only one data point as source, as presented in *Table 7* below, consisting of semi-structured interviews with relevant partners from the LH ecosystem. The interviews will be carried out after the end of implementation and the results from their data analysis will be reported in the next deliverable (D2.7), at the end of the project.

Table 6- General characteristics S2 - Connection to existing cultural heritage - Évora

Social KPI - S2. Connection to the existing cultural heritage	
<u>Evaluated on Likert Scale:</u> Not at all - 1 – 2 – 3 – 4 – 5 – Very much	1. Not at all: no attention has been paid to existing cultural heritage. 2. Fair: heritage places have received some attention in the project, but not as an important element. 3. Moderate: some attention has been given to the conservation of heritage places. 4. Much: heritage places are reflected in the project design 5. Very much: heritage places are included in the project as clear and recognizable landmarks.
<u>Baseline versus Monitoring</u>	No baseline, to be reported only ONCE, after the end of implementation



Table 7 - Data Point for S2 - Connection to existing cultural heritage - Évora

Data Point: Semi-structured Interviews with relevant representatives from each city		
Timeline	Évora ecosystem partners to be interviewed	Related solutions
Interviews to be carried out after end of implementation Expected end of implementation: <u>Dec 2023</u> Expected Interviews: <u>Jan 2024</u>	Site Manager Partners in charge of solutions strongly related to cultural heritage	Solutions with potential cultural heritage connection

2.3 Local community involvement

In the case of *Local community involvement*, the general characteristics are summarized in *Table 8* below. One data point category is considered for the evaluation of this KPI (see *Table 9*), encompassing the engagement activities relevant for involvement of local community in:

- Feedback gathering
- Development of methodology
- Development of technology
- Development of policy

The evaluation of the KPI will be done on a Likert Scale from 1 (No community involvement) to 5 (Community self-development), in two steps, and will take into account types of stakeholders involved and outcomes of the initiatives:

1. Apply scale to evaluate each initiative
2. Considering step 1, evaluate the overall KPI on the same scale, yearly

Given the spread of the activities over time, we are able to consider as baseline period the time interval 2020 - 2021 and as monitoring period the time interval 2022-2023. We mark with (B)-Baseline and (M)-Monitoring the data in the tables below.

Table 8 - General characteristics S3 - Local community involvement - Évora

Social KPI - S3. Local community involvement in the planning and implementation phase	
<u>Evaluated on Likert Scale:</u> No involvement - 1 – 2 – 3 – 4 – 5 – High involvement	1. Not at all: No community involvement. 2. Inform and consult: The more or less completed project is announced to the community either for information only, or for receiving community views. The consultation, however, is mainly seeking community acceptance of the project. 3. Advise: the project implementation is done by a project team. Community actors are invited to ask questions, provide feedback and give advice.



	Based on this input the planners may alter the project. 4. Partnership: community actors are asked by the project planners to participate in the implementation process. The local community is able to influence the implementation process. 5. Community self-development: the project planners have empowered community actors to manage the project implementation and evaluate the results.
<u>Operationalization of Scale</u>	Evaluate each relevant initiative on the scale Evaluate overall KPI based on the initiative evaluation
<u>Baseline versus Monitoring</u>	We consider baseline the interval 2020-2021 We consider monitoring the interval 2022-2023

Table 9 - Data Point for S3 - Local community involvement - Évora

Data Point:

Relevant activities that include involvement of local community in:

- feedback gathering (suggestions, complaints)
- development of tech
- development of policy
- development of methodology

Initiative	Date	Partner in charge	Categories of local community actors	Types of Involvement & Content/Outcome generated by local community	Evaluation (1 to 5)
Interviews & workshop	2020-2021 (B)	INESC TEC	Citizens	<u>Feedback through:</u> • perceptions • opinions • suggestions <u>Outcomes:</u> • Mapping of Citizen Journey with Sustainable Energy Solutions	2 - Inform & consult
Co-creation Tourist App	2021 (B)	UNINOVA	CMÉ and Turismo do Alentejo	<u>Development of tech</u> <u>Outcomes:</u> suggestions about content, interface design and user experience Implementation through a Web APP, instead of a Mobile APP	3-Advise
Co-creation Cultural Experience marketplace	2021 (B)	UBIWHERE	Cultural representatives	<u>Development of tech</u> <u>Outcomes:</u>	3-Advise



Data Point:**Relevant activities that include involvement of local community in:**

- feedback gathering (suggestions, complaints)
- development of tech
- development of policy
- development of methodology

Initiative	Date	Partner in charge	Categories of local community actors	Types of Involvement & Content/Outcome generated by local community	Evaluation (1 to 5)
				Évora evaluates and recognizes sustainable events (both cultural agents and citizens)	
Social Innovation in Digital Transformation & Energy Transition	2022 (M)	DECSIS	Fundação Eugénio de Almeida-Social Innovation Center 3 rd sector organizations Organizations in the FEA CIS ecosystem: https://www.fea.pt/cis	<u>Development of methodology</u> <u>Outcomes:</u> Digital Transformation and Energy Transition Guidelines for 3rd sector organizations Energy Poverty families onboarding to P2P.	4- Partnership
Interviews with citizens	2022 (M)	INESC TEC	citizens	<u>Feedback & suggestions from citizens</u> <u>Outcomes:</u> • Identification of drivers and behaviors related to citizen engagement with energy solutions and sustainability • Identification of best initiatives according to local context	2-Inform & Consult
Open Innovation Contest Secondary School	2022 - 2023 (M)	PACT	Secondary school students Experts	<u>Development of tech</u> <u>Outcomes:</u> • Implementation of winner project: 4 PV cellphone charging stations placed at the school • The stations will be monitored through 2024	4- Partnership



2.4 Degree of Satisfaction

In the case of KPI *Degree of Satisfaction*, the general characteristics are summarized in *Table 10* below. Since this KPI refers to the evaluation of users regarding their experience with certain solutions, Évora LH has done a selection of ISs/IEs that are relevant to be evaluated in terms of satisfaction. Therefore, the specific user groups of the selected solutions will be asked about their experience through a short survey, after at least 6 months of usage (*Table 11*). The final evaluation of the KPI will be done in 2 steps:

1. Apply scale to evaluate single solutions in terms of Degree of Satisfaction
2. Evaluate overall KPI based on the evaluations of single solutions

Since the majority of the solutions selected have not yet been active for at least 6 months, the actual reporting and evaluation of the KPI will be done in the next period and presented in the deliverable (D2.7), at the end of the project.

Considering the scale proposed for evaluation and the fact that Degree of Satisfaction is a measure post-usage, we present baseline as not applicable, and instead, we refer to the results of a survey applied in T1.1 - WP1 to the citizens of Évora LH. We consider these results relevant here, as they are measuring citizen's value perception of general Energy Solutions (already in use) and also citizens' knowledge and potential acceptance level of POCITYF solutions. Therefore, this can depict the overall picture of how citizens currently relate to energy solutions (classic and innovative).

Table 10 - General characteristics S4 - Degree of Satisfaction - Évora

Social KPI - S4. Degree of satisfaction	
<u>Evaluation on Likert Scale:</u> No satisfaction - 1 – 2 – 3 – 4 – 5 – High satisfaction	1. Not at all: No satisfaction. 2. Fair: There is some satisfaction but overall the solution is poorly developed. 3. Moderate: the solution is somewhat satisfactory, with some technical / economic benefits for the users 4. Much: There are some clear technical / economic benefits that makes the related investment meaningful. 5. Very much: There is a very high degree of satisfaction. It is a solution that has created multiple versatile benefits i.e. level of adequateness, benefit (e.g. comfort), usefulness, ease of use, aesthetical solution satisfaction, cost reduction and risk reduction.
<u>Operationalization of Scale</u>	Evaluate satisfaction based on proposed scale for certain solutions - selection of relevant solutions made by Évora LH. Evaluate overall KPI based on the evaluation of relevant solutions.
<u>Baseline versus Monitoring</u>	Consider baseline as 1 (No Satisfaction) on the proposed Likert scale, since the solutions are not yet active, therefore the (future) users can only evaluate their degree of satisfaction after 3/6 months of usage.



	Give a reference of citizens' perception of Sustainable Energy Solutions (in general) and POCITYF Solutions based on T1.1 Survey. Consider monitoring period the interval 2023 - 2024
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Table 11 - Data Point for S4 - Degree of Satisfaction - Évora

Data Point: Online survey		
Timeline	Points of view for the satisfaction survey:	Solutions to be evaluated
Satisfaction survey applied to the specific users of the solutions selected to be monitored Expected end of implementation: Dec 2023 Expected Survey: June -August 2024	• value vs effort • value vs time • ease of use • ease of learn • usefulness • comfort	• BIPV (PV Glass, PV Canopy, PV Skylight, Tegosolar PV, Traditional PV Shingle) • HEMS • BMS • P2P energy trading platform • Community Solar Farm • PAYT • Digital transformation in Social Innovation • Gamification Platform • Tourist Mobile Apps • Mobile Apps on energy consumption • Cultural Experiences Marketplace • City Information Platform

Complementary Survey - Results

We present below the results of a survey that was applied in the LHs in 2022. The survey did not refer to *Degree of satisfaction* of POCITYF solutions, but we believe its results are relevant as a reference of citizens' perceptions of general energy solutions and knowledge and interest of POCITYF solutions. While this data cannot be taken into consideration for the evaluation of the Social KPIs *Degree of Satisfaction* per se, it can suggest how citizens relate to energy solutions.

As a joint work between T1.6, T1.1 and T2.6, a survey was administered in all LH and FC, aimed at the citizens in each city. The survey had two parts. The first one was built of a set of questions regarding the perceptions & behaviors of citizens in relation to Energy Solutions, in general, not related to POCITYF ones. The second part showed a set of questions regarding the citizens' level of knowledge of the solutions developed in the scope of POCITYF and the potential acceptance of citizens in relation to these solutions. The full description of the survey approach and content is available in ANNEX A, while below we refer to the results obtained in Évora LH.



In the case of Évora, the survey received, in total, 107 answers from citizens (62 partial answers and 45 full answers). In *Table 12* below, we present the Mean value for each dimension (evaluated on a scale from 1 to 7).

The dimension with the highest mean value is *Environmental Value*, suggesting that the respondents from Évora consider the usage of Energy Solutions as a valuable contribution to sustainability. *Utilitarian Value* has a mean value above 5, suggesting that the respondents from Évora perceive Energy Solutions as bringing moderate to high benefits against the time, effort and money needed. Also, *Social Value*'s score is close to 4, suggesting that respondents perceive usage of Energy Solutions as a moderate to high contribution to the social approval they get in their social circles.

All engagement behaviors except *Sharing Feedback* scored between 4 and 6, suggesting that respondents from Évora are active when it comes to getting information about Energy Solutions, proactive usage of Energy Solutions or helping other to use these solutions, when needed. They also advocate for Energy Solutions to other citizens, idea suggested also by the high score in perceived Environmental Value. However, the results suggest that the practice of sharing feedback to the providers about Energy Solutions is on a lower level. This could mean that there is a lack of channels for providing this kind of feedback or that it is not yet a common engagement among the citizens of Évora.

In terms of what Energy Solutions respondents of Évora are already using, the results (summarized in *Table 13*) show that the most common ones are energy efficient light bulbs (67 out of 107) and energy efficient home appliances (59 out of 107), followed by energy efficient windows (35 out of 107). On the other hand, the less common Energy Solutions amongst the respondents of Évora are energy related sensors (7 out of 107), hybrid or electric car (7 out of 96), energy related mobile applications (6 out of 96), smart thermostats (4 out of 107) and Home Energy management Systems (3 out of 96). This suggests that citizens of Évora have been using more traditional energy related solutions, however, they are starting to adopt newer technologies.

Regarding the specific POCITYF solutions that are demonstrated in Évora, Figures 1 and 2 below show the measure of knowledge and acceptance of respondents that live outside the city centre (*Figure 1*), but also of the ones that live inside the city centre (*Figure 2*). In both situations the results show low to average level of knowledge and average to high level of acceptance. This suggests that even if respondents might not have yet enough knowledge regarding innovative solutions such as the ones tested by POCITYF, they are interested and open to discover what these solutions have to offer.



Table 12 - Survey results - Value perceptions and engagement behaviors citizen of Évora

Évora	Dimension	Mean value (1 to 7)
	Utilitarian Value	5.73
	Social Value	4.05
	Environmental Value	6.15
	Seeking Information	5.11
	Pro-active Managing	4.54
	Sharing Feedback	2.41
	Helping other users	4.66
	Advocating	5.45

Table 13 - Survey Results - Energy Solutions already used by citizens of Évora

Évora	General Energy Solutions	Nr of citizens already using the Energy Solution
	Energy efficient windows (e.g.: double pane, triple pane windows)	35
	Energy efficient house insulation	10
	Energy efficient home appliances (e.g.: dishwasher, washing machine, air conditioner, refrigerator, fan, heater)	59
	Energy efficient light bulbs (LED or Compact Fluorescent Light Bulbs)	67
	Energy efficient heating system (e.g. geothermal heat pump, radiant heat floors/walls/ceilings, electric resistance heating)	9
	Programmable thermostat (device that allows programming and controlling a home's heating, ventilation or air conditioning depending on the temperature)	12
	Smart thermostat (thermostats that can be accessed via an internet-connected device)	4
	Energy related sensors (e.g.: temperature, light, motion)	7
	Panels (e.g. Photo-Voltaic panels)	13
	Home Management Energy System (HEMS) or Domotics Solution (home automation system that monitors and/or controls home attributes such as lighting, climate, entertainment systems, and domestic appliances)	3
	Energy Related Mobile applications (e.g.: Energy Consumption Tracker, Tips for sustainable energy actions)	6
	Use of electrical or hybrid car	7
	Priority of transport through walk, bike, or public transport	30
	None of the above	0





Figure 1-Citizens' knowledge and acceptance levels (outside the city centre) for all the ISs for the city of Évora



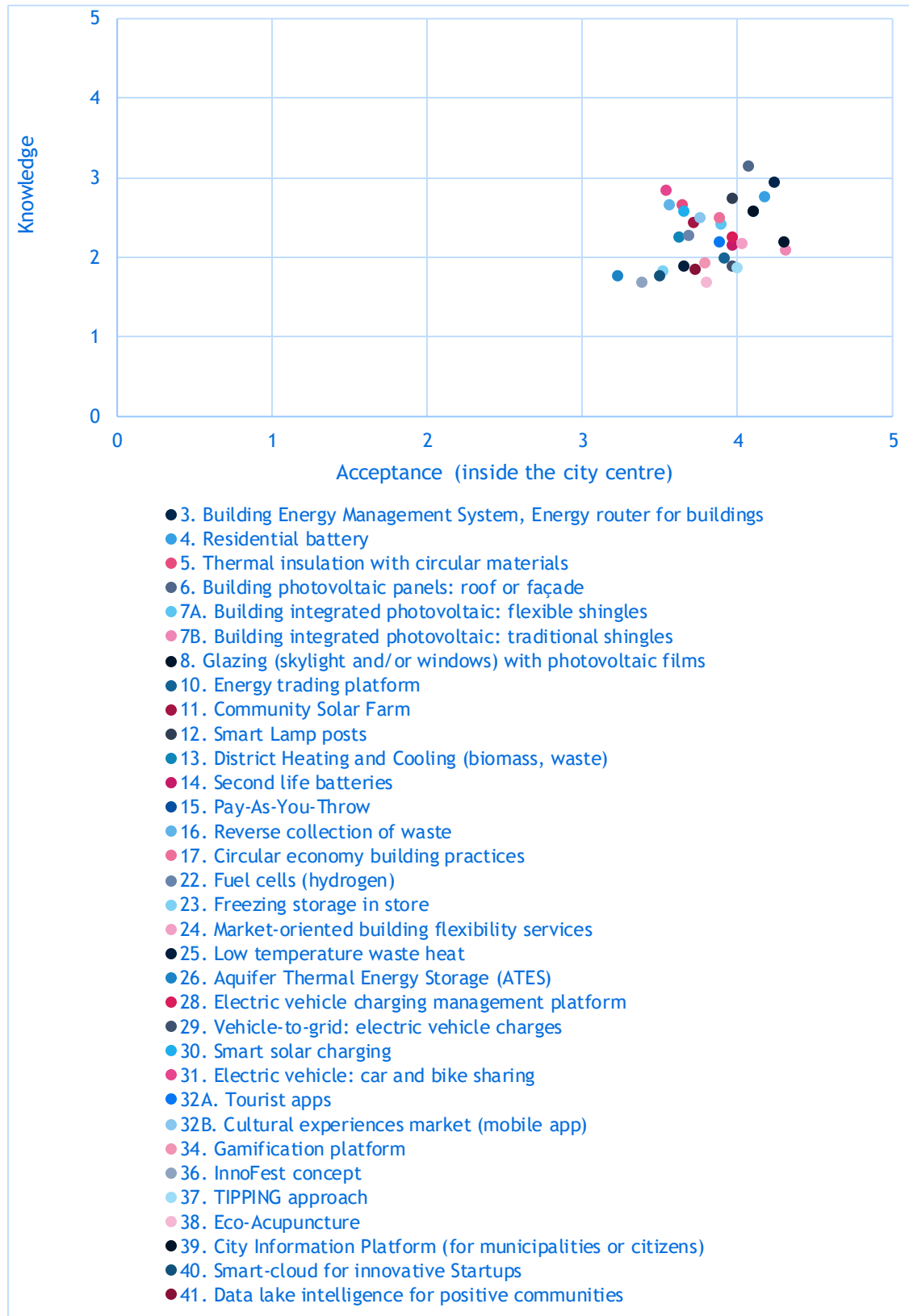


Figure 2- Citizens' knowledge and acceptance levels (inside the city centre) for all the ISs for the city of Évora



2.5 Online decision-making

In the case of KPI *Online decision-making*, the general characteristics are summarized in *Table 13* below. The evaluation of the KPI will be done according to the proposed formula, taking into consideration how many people participate in the online decision-making process, compared to how many people are registered on the online platform that serves as infrastructure. There is only one data point as source, as presented in *Table 14* below, consisting of any online voting or decision-making initiatives carried out in the Évora LH ecosystem. Since there were no online decision-making initiatives carried out yet, any results related to this KPI will be reported in the next deliverable (D2.7), at the end of the project.

Table 14 - General characteristics S5 - Online decision-making - Évora

Social KPI - S5. Percentage of citizens' participation in online decision-making	
Formula	% of (citizens participating / total citizens registered on the online voting platform)
Baseline versus Monitoring	Consider baseline 0, as there are no online decision-making processes to consider yet

Table 15 - Data Point for S5 - Online decision-making - Évora

Data Point: Online voting or decision-making initiatives open to public	
Timeline	Related solutions
At least one voting initiative expected by the end of POCITYF	Évora Smart City (Citizen Engagement Platform)

2.6 Social KPI Evaluation - Évora

Table 16 below summarizes the current status of Social KPIs for the city of Évora, considering the time intervals until M48 (September 2023). Therefore, two of the KPIs can already be evaluated based on the data collected so far, namely *S1-People Reached* (quantitative measure) and *S3-Local community involvement in planning and implementation* (qualitative measure). In the case of the other three KPIs, the evaluation will be done after the next data collection period and will be reported in the next deliverable of T2.6 (D2.7).



Table 16 - Social KPIs Evaluation Summary - Évora

KPI	Formula / Scale	KPI Evaluation	Reported Interval	Evaluation level Évora
S1. People Reached (CORE)	(Sum of all people reached / Sum of all targets) * 100% = (152/277)*100 (Sum of all people reached / Sum of all targets) * 100% = (1846/1183)*100	<u>Baseline</u> 55%	2020 2021	City Level
		<u>Monitoring</u> 156%	2022 2023	
S2. Connection to the existing cultural heritage (CORE)	Measure on a five-point Likert scale: Not at all - 1 – 2 – 3 – 4 – 5 – Very much	To be evaluated after end of implementation	ONCE	PEB level City Level
S3. Local community involvement in the implementation and planning phase (CORE)	Measure on a five-point Likert scale: No involvement - 1 – 2 – 3 – 4 – 5 – High involvement	<u>Baseline</u> 3-Advise	2020 2021	City Level
		<u>Monitoring:</u> 4-Partnership	2022 2023	
S4. Degree of satisfaction (CORE)	Measure on a five-point Likert scale: No satisfaction - 1 – 2 – 3 – 4 – 5 – High satisfaction	<u>Baseline</u> 1 - No satisfaction	2020 2022	PEB level City Level
		<u>Monitoring:</u> To be evaluated after selected solutions have min 6 months of active usage	2023 2024	
S5. Percentage of citizens' participation in online decision-making (SUPPORTING)	% of citizens' participation in online decision-making = citizens participated / total citizens registered on the voting platform	<u>Baseline:</u> 0	2020 2022	City level
		<u>Monitoring:</u> To be evaluated after the city carries out any online decision-making session	2023 2024	



3 Progress Reporting Alkmaar Lighthouse City

This section focuses on reporting the progress of Alkmaar LH up until M48. Following on the approach detailed in the previous deliverable of Task 2.6 (D2.8), the Social KPIs were operationalized considering the types of social engagement activities planned for the Alkmaar LH. Engagement activities have different natures & goals (e.g. co-creation, communication) and different scales (e.g. small-scale workshop, large-scale hackathon event) and duration (e.g. one-time event, composed co-creation process). Moreover, we clarify that these activities span the full POCITYF timeline, having started in 2020, and do not necessarily depend on the technical development of POCITYF solutions.

In the specific case of Alkmaar, most of the initiatives were carried out completely independent, so they were not influenced by any delays in the technical development of POCITYF solutions, while others have been postponed in accordance to the technical development and will only be carried out once the technical solutions become active.

Thus, in the next sub-chapters, we underline the monitoring approach for each Social KPI, we summarize the progress and results of the engagement activities carried out so far in POCITYF that are relevant for the Social KPIs, and we provide the evaluation of these KPIs (where possible) until M48.

3.1 People Reached

In the case of *People Reached*, the general characteristics are summarized in *Table 17* below. Four different data points are taken into consideration for the evaluation of this KPI, encompassing the different categories of engagement activities relevant. The data points are the following and are shown in Tables 18 to 21 below.

- DP#1 - Number of citizens responding to surveys
- DP#2 - Number of participants in workshops, focus groups and other similar format activities
- DP#3 - Number of citizens reached through POCITYF website
- DP#4 - Number of users of the WP7 / ETT#4 digital solutions

Given the different nature and scale of the activities, we have decided to set a target for each activity and evaluate if this target has been reached, according to the KPI formula. We then have extended the formula to the evaluation of the overall KPI, relying on the total of people reached and total of targets.

Given the spread of the activities over time, we are able to consider baseline the time interval 2020 - 2021 and as monitoring period the time interval 2022-2023. By doing this, we aim to capture if there has been an improvement in terms of social engagement from one period to the next. We mark with (B)-Baseline and (M)-Monitoring the data in the tables below.



Table 17 - General characteristics S1 - People Reached - Alkmaar

Social KPI - S1. People Reached	
<u>General Formula Proposed</u>	(nr of citizens reached / target) * 100%
<u>Operationalization of Formula</u>	Set a target for each initiative monitored and apply initial formula to evaluate each initiative. Evaluate overall KPI by applying the formula: (sum of all people reached / sum of all targets) *100%
<u>Baseline vs Monitoring</u>	We consider baseline the interval 2020-2021 We consider monitoring the interval 2022-2023

Observations:

- DP#1 - target was reached and overpassed with a very large nr of respondents for both surveys carried out in the city of Alkmaar
- DP#2 - variation in participation, depending on the initiative, with all activities involving students having reached 100% of target
- DP#3 - increasing trend in the nr of new visitors, following the monitored periods and variation in the nr of returning visitors, but staying above 40% of target

Table 18 - Data Point#1 for S1 - People reached - Alkmaar

Data Point #1: Number of citizens responding to surveys					
Initiative	Date	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
Survey- citizens engagement in local communities and initiatives	2021 (B)	TNO /municipality Alkmaar	min 100 citizens	633 citizens	target overreached (by 6.33 to 1)
Survey - citizens engagement with Sustainable Energy Solutions & perceptions of POCITYF solutions	2022 (M)	INESC TEC/ EDP	min 100 citizens	623 citizens	target overreached (by 6.23 to 1)



Table 19 - Data Point#2 for S1 - People Reached - Alkmaar

Data Point #2: Nr of participants involved in workshops, focus groups and similar activities					
Initiative	Date	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
Survey study with tenants of Van de Veldaan flat (highRise pilot in Alkmaar)	2021 (B)	TNO/Woonwaard	130 households	81 households	62.3% of target
Student hackathons	2021 2022 2022 (M)	INHOLLAND	100 students (in total)	15 students 39 students 75 students	target overreached (by 1.29 to 1)
Tipping Approach - Formulating the POCITYF Dream	2022 (M)	NEC	No target set for this, open participation	24	-
Tipping Approach -workshop	2022 (M)	NEC	40	17	42.5% of target
Tipping Approach - Co-creation session	2022 (M)	NEC	40	16	40% of target
Students Bootcamp	2022 (M)	INHOLLAND	75	75	100% of target
Game development workshops / scrum sessions	2022 (M)	INHOLLAND	39 25	39 25	100% of target
Interviews with citizens	2022 (M)	INESC TEC	16	13	81.25% of target
Student Challenge - Sustainable Product Workshops	2022 - 2023 (M)	INHOLLAND	40	40	100% of target



Table 20 - Data Point#3 for S1 - People Reached - Alkmaar

Data Point #3: Nr of citizens reached through POCITYF website					
Activity	Date	Partner in charge	Target nr of people to reach	Actual nr of people reached	Evaluation
POCITYF general website access	Oct 2021- March 2022 (B)	ICONS	New visitors: 100	New visitors: 109	target overreached (by 1.09 to 1)
			Returning: 50	Returning: 48	96% of target
	Apr 2022- Sept 2022 (M)		New visitors: 200	New visitors: 334	target overreached (by 1.67 to 1)
			Returning: 100	Returning: 181	target overreached (by 1.81 to 1)
	Oct 2022 - March 2023 (M)		New visitors: 400	New visitors: 906	target overreached (by 2.26 to 1)
			Returning: 200	Returning: 108	54% of target
POCITYF website- access of page in local language	Oct 2021- March 2022 (B)	ICONS	New visitors: 50	New visitors: 28	56% of target
			Returning: 25	Returning: 10	40% of target
	Apr 2022- Sept 2022 (M)		New visitors: 50	New visitors: 70	target overreached (by 1.4 to 1)
			Returning: 25	Returning: 37	target overreached (by 1.48 to 1)
	Oct 2022 - March 2023 (M)		New visitors: 50	New visitors: 185	target overreached (by 3.7 to 1)
			Returning: 25	Returning: 17	68% of target



Table 21 - Data Point#4 for S1 - People Reached - Alkmaar

Data Point #4: Nr of citizens using WP7 / ETT#4 digital solutions					
Solution	Nr of (new) registered users	Nr of unique visitors	Nr of returning visitors	Bounce rate / Conversion rate / Churn rate	Evaluation
City Information Platform	No activity to report yet				-

3.2 Connection to existing cultural heritage

In the case of KPI *Connection to existing cultural heritage*, the general characteristics are summarized in *Table 22* below. The reporting and evaluation of the KPI will be done only once, on a Likert scale from 1 to 5. There is only one data point as source, as presented in *Table 23*, below, consisting of semi-structured interviews with relevant partners from the LH ecosystem. The interviews will be carried out after the end of implementation and the results from their data analysis will be reported in the next deliverable (D2.7), at the end of the project.

Table 22 - General characteristics - S2 Connection to cultural heritage - Alkmaar

Social KPI - S2. Connection to the existing cultural heritage	
<u>Evaluated on Likert Scale:</u> Not at all - 1 – 2 – 3 – 4 – 5 – Very much	1. Not at all: no attention has been paid to existing cultural heritage. 2. Fair: heritage places have received some attention in the project, but not as an important element. 3. Moderate: some attention has been given to the conservation of heritage places. 4. Much: heritage places are reflected in the project design 5. Very much: heritage places are included in the project as clear and recognizable landmarks.
<u>Baseline versus Monitoring</u>	No baseline, to be reported only ONCE, after the end of implementation



Table 23 - Data Point for S2 - Connection to cultural heritage - Alkmaar

Data point	Timeline	Alkmaar stakeholders to be interviewed	Related solutions
Semi-structured Interviews with relevant representatives from each city	Interviews to be carried out after end of implementation Expected end of implementation: <u>Dec 2023</u> Expected Interviews: <u>Jan 2024</u>	Site Manager Partners in charge of solutions with direct connection to cultural heritage sites	Solutions with direct connection to cultural heritage site

3.3 Local community involvement

In the case of *Local community involvement*, the general characteristics are summarized in Table 24 below. One data point category is considered for the evaluation of this KPI (see Table 25), encompassing the engagement activities relevant for involvement of local community in:

- Feedback gathering
- Development of methodology
- Development of technology
- Development of policy

The evaluation of the KPI will be done on a Likert Scale from 1 (No community involvement) to 5 (Community self-development), in two steps, and will take into account types of stakeholders involved and outcomes of the initiatives:

3. Apply scale to evaluate each initiative
4. Considering step 1, evaluate the overall KPI on the same scale, yearly

Given the spread of the activities over time, we are able to consider as baseline period the time interval 2020 - 2021 and as monitoring period the time interval 2022-2023. We mark with (B)-Baseline and (M)-Monitoring the data in the tables below.

Table 24- General characteristics S3 - Local community involvement - Alkmaar

Social KPI - S3. Local community involvement in the planning and implementation phase	
Evaluated on Likert Scale: No involvement - 1 - 2 - 3 - 4 - 5 - High involvement	1. Not at all: No community involvement. 2. Inform and consult: The more or less completed project is announced to the community either for information only, or for receiving community views. The consultation, however, is mainly seeking community acceptance of the project. 3. Advise: the project implementation is done by a project team. Community actors are invited to ask questions, provide feedback and give advice. Based on this input the planners may alter the project. 4. Partnership: community actors are asked by the project planners to participate in the implementation process. The local community is able to influence the implementation process.



	5. Community self-development: the project planners have empowered community actors to manage the project implementation and evaluate the results.
Operationalization of Scale	Evaluate each relevant initiative on the scale Evaluate overall KPI based on the initiative evaluation
Baseline versus Monitoring	We consider baseline the interval 2020-2021 We consider monitoring the interval 2022-2023

Table 25 - Data Point for S3 - Local Community involvement - Alkmaar

Data Point: Relevant activities that include involvement of local community in: • feedback gathering (suggestions, complaints) • development of tech • development of policy • development of methodology					
Initiative	Date	Partner in charge	Categories of community actors involved	Types of Involvement & Content/Outcome generated by local community	Evaluation (1 to 5)
Bloemwijk pilot activities	2021 (B)	TNO	Tenants Housing Corporation	Feedback through: • conversations with housing consultants about quality of life and energy solutions; • residents' council.included in implementation phase Development of methodology *more detailed info available in D4.1 Outcomes: • “Make sustainable together with tenants - Workbook for participation and communication for housing corporations”	3-Advise
Student Hackathons	2021 Jan.- June 2022 April 2022 (M)	INHOLLAND	Students University lecturers	Development of sustainable tech Outcome: • Product concepts • Prototypes	3- Advise



Data Point:**Relevant activities that include involvement of local community in:**

- feedback gathering (suggestions, complaints)
- development of tech
- development of policy
- development of methodology

Initiative	Date	Partner in charge	Categories of community actors involved	Types of Involvement & Content/Outcome generated by local community	Evaluation (1 to 5)
Tipping Approach	2022 (M)	NEC	Residents Creative sector SMEs Large companies Non-profit, organisations Young entrepreneurs Developers Tourists, and policymakers	<u>Deployment of methodology</u> <u>Outcomes:</u> • Formulating POCITYF Dream- an artist impression of the digitally collected ideas for a sustainable cultural historic centre of Alkmaar in 2040. • Action Agenda and selection of top 5 project ideas from 150 ideas generated • Co-creation of project ideas into action plans, roadmap towards a more sustainable cultural historic centre of Alkmaar • Learnings have been drawn from the performance of the TIPPING approach and recommendations have been made on improving the method	3-Advise
Students Bootcamp	2022 (M)	INHOLLAND	Students of Industrial Engineering and Business (Inholland) Students of Electronic IT (Artesis Plantijn, Antwerp)	<u>Development of business / tech</u> <u>Outcomes:</u> • Generation of sustainable, innovative, start up worthy business concepts (through business canvas and prototypes). The business concept had to be a solution within the city's sustainability goals concerning waste, energy, mobility and data.	3-Advise
Games development	2022 (M)	INHOLLAND	Students	<u>Development of tech</u> <u>Outcomes:</u> • Development of games with the aim to offer citizens an experience in sustainable energy. • 8 games were developed and 3 were selected to be used • Business models and marketing plans for the games were developed • The games did not meet the requirements of Gemeente Alkmaar and the housing corporations, so no further action was taken.	4-Partnership



Data Point:

Relevant activities that include involvement of local community in:

- feedback gathering (suggestions, complaints)
- development of tech
- development of policy
- development of methodology

Initiative	Date	Partner in charge	Categories of community actors involved	Types of Involvement & Content/Outcome generated by local community	Evaluation (1 to 5)
Interviews with citizens	2022 (M)	INESC TEC	citizens	<u>Feedback & suggestions from citizens</u> <u>Outcomes:</u> • Identification of drivers and behaviors related to citizen engagement with energy solutions and sustainability • Identification of best initiatives according to local context	3-Advise
Robonsbos Mill	2022-2023 (M)	INHOLLAND	Students	<u>Development of methodology</u> <u>Outcomes:</u> • Written report and recommendations to Gemeente Alkmaar and the owner of the mill for making the national monument 'Robonsbosmolen' more sustainable.	3-Advise
Student Challenge Sustainable Product	2022-2023 (M)	INHOLLAND	Students Experts teachers	<u>Development of tech/business:</u> <u>Outcomes:</u> • "Student Companies" based on Sustainable product and reports (business plan, marketing plan, financial plan) • The concept has proven to be so successful that various Student Companies are continued after the minor and are permanent	3-Advise

3.4 Degree of Satisfaction

In the case of KPI *Degree of Satisfaction*, the general characteristics are summarized in *Table 26* below. Since this KPI refers to the evaluation of users regarding their experience with certain solutions, Évora LH has done a selection of ISs/IEs that are relevant to be evaluated in terms of satisfaction. Therefore, the specific user groups of the selected solutions will be asked about their experience through a short survey, after at least 6 months of usage (*Table 27*). The final evaluation of the KPI will be done in 2 steps:

1. Apply scale to evaluate single solutions in terms of Degree of Satisfaction
2. Evaluate overall KPI based on the evaluations of single solutions



Since the majority of the solutions selected have not yet been active for at least 6 months, the actual reporting and evaluation of the KPI will be done in the next period and presented in the deliverable (D2.7), at the end of the project.

Considering the scale proposed for evaluation and the fact that Degree of Satisfaction is a measure post-usage, we present baseline as not applicable, and instead, we refer to the results of a survey applied in T1.1 - WP1 to the citizens of Évora LH. We consider these results relevant here, as they are measuring citizen's value perception of general Energy Solutions (already in use) and also citizens' knowledge and potential acceptance level of POCITYF solutions. Therefore, this can depict the overall picture of how citizens currently relate to energy solutions (classic and innovative).

Table 26 - General characteristics S4 - Degree of Satisfaction - Alkmaar

Social KPI - S4. Degree of satisfaction	
<u>Evaluation on Likert Scale:</u> No satisfaction - 1 – 2 – 3 – 4 – 5 – High satisfaction	1. Not at all: No satisfaction. 2. Fair: There is some satisfaction but overall the solution is poorly developed. 3. Moderate: the solution is somewhat satisfactory, with some technical / economic benefits for the users 4. Much: There are some clear technical / economic benefits that makes the related investment meaningful. 5. Very much: There is a very high degree of satisfaction. It is a solution that has created multiple versatile benefits i.e. level of adequateness, benefit (e.g. comfort), usefulness, ease of use, aesthetical solution satisfaction, cost reduction and risk reduction.
<u>Operationalization of Scale</u>	Evaluate satisfaction based on proposed scale for certain solutions - selection of relevant solutions made by Évora LH. Evaluate overall KPI based on the evaluation of relevant solutions.
<u>Baseline versus Monitoring</u>	Consider baseline as 1 (No Satisfaction) on the proposed Likert scale, since the solutions are not yet active, therefore the (future) users can only evaluate their degree of satisfaction after 3/6 months of usage. Give a reference of citizens' perception of Sustainable Energy Solutions (in general) and POCITYF Solutions based on T1.1 Survey. Consider monitoring period the interval 2023 - 2024



Table 27 - Data Point for S4 - Degree of Satisfaction

Data Point:		
Online survey		
Timeline	Points of view for the satisfaction survey:	Solutions to be evaluated
Satisfaction survey applied to the specific users of the solutions selected to be monitored Expected end of implementation: <u>Dec 2023</u> Expected Survey: <u>June -August 2024</u>	• value vs effort • value vs time • ease of use • ease of learn • usefulness • comfort	• HEMS / BEMS (De Meent, Highrise, Bloemwijk, Investa, Dillenburg. <u>ETT1.1.08</u>) • Insulation with circular materials (Highrise, Bloemwijk, Investa) <u>ETT1.1.12</u> • Solar Roofs and Facades (De Meent, Highrise, Bloemwijk, Investa, Dillenburg (<u>ETT1.1.14</u>)) • Reflex (<u>ETT#2.1.07</u>), TNO, De Meent, Bloemwijk, Investa • Batteries (<u>ETT2.1.08</u>), De Meent, Highrise, Bloemwijk, Investa, Dillenburg) • Indirect Delivery Sets (<u>2.2.04</u>), Dillenburg • Smart Solar Charging (<u>3.1.07</u>) De Meent, Investa • V2G (<u>3.1.04</u>) Bloemwijk • CIP (<u>ETT4</u>, City Level) • Value Based Design (<u>ETT4</u>, Bloemwijk, Highrise)

Complementary Survey - Results

We present below the results of a survey that was applied in the LHs in 2022. The survey did not refer to *Degree of satisfaction* of POCITYF solutions, but we believe its results are relevant as a reference of citizens' perceptions of general energy solutions and knowledge and interest of POCITYF solutions. While this data cannot be taken into consideration for the evaluation of the Social KPIs *Degree of Satisfaction* per se, it can suggest how citizens relate to energy solutions.

As a joint work between T1.6, T1.1 and T2.6, a survey was administered in all LH and FC, aimed at the citizens in each city. The survey had two parts. The first one was built of a set of questions regarding the perceptions & behaviors of citizens in relation to Energy Solutions, in general, not related to POCITYF ones. The second part showed a set of questions regarding the citizens' level of knowledge of the solutions developed in the scope of POCITYF and the potential acceptance of citizens in relation to these solutions. The full description of the survey approach and content is available in ANNEX A, while while below we refer to the results obtained in Alkmaar LH.

In the case of Alkmaar, the survey received, in total, 624 answers from citizens (169 partial answers and 455 full answers). In Table 28 below, we present the Mean value for each dimension (evaluated on a scale from 1 to 7).

The dimension with the highest mean value is *Utilitarian Value*, suggesting that the respondents from Alkmaar perceive Energy Solutions as bringing them valuable functional benefits. *Environmental Value* has a mean value above 5, suggesting that respondents are



aware of the contribution that the usage of Energy Solutions can bring towards sustainability. *Social Value*'s score is above 3, suggesting that respondents perceive usage of Energy Solutions as a moderate contribution to the social approval they get in their social circles.

Three of the engagement behaviors scored above 4, suggesting that respondents from Alkmaar have a moderate to high engagement when it comes to getting information about Energy Solutions, proactive usage of Energy Solutions or advocating for such solutions. In terms of Helping others to use or solve problems regarding Energy Solutions, the score is slightly lower, between 3 and 4, suggesting an above average, but still moderate engagement in this behavior. The results suggest that the practice of sharing feedback to the providers about Energy Solutions is on a lower level (below 3). This could mean that there is a lack of channels for providing this kind of feedback or that it is not yet a common engagement practice among the citizens of Alkmaar.

In terms of what Energy Solutions respondent of Alkmaar are already using, the results (summarized in *Table 29*) show that the most common ones are energy efficient light bulbs (404 out of 624) and energy efficient windows (374 out of 624), followed by energy insulation (343 out of 624) and energy efficient home appliances (343 out of 624). On the other hand, the less common Energy Solutions amongst the respondents of Alkmaar are hybrid or electric car (50 out of 624), Home Energy management Systems (51 out of 624) and energy efficient heating systems (12 out of 624). This suggests that respondents of Alkmaar have been using more traditional energy related solutions that maybe require less of an financial investment, but, that newer, more complex options are also gaining traction.

Regarding the specific POCITYF solutions that are demonstrated in Alkmaar, Figure 3 below show the measure of knowledge and acceptance of respondents, without differentiating between the ones who live in city centre or outside city centre. In both situations the results show low to average level of knowledge and average to high level of acceptance. This suggests that even if respondents might not have yet enough knowledge regarding innovative solutions such as the ones tested by POCITYF, they are interested and open to discover what these solutions have to offer.

Table 28 - Survey results - Value perceptions and engagement behaviors citizen of Alkmaar

Alkmaar	Dimension	Mean value (1 to 7)
	Utilitarian Value	5.35
	Social Value	3.44
	Environmental Value	5.13
	Seeking Information	4.06
	Pro-active Managing	4.59
	Sharing Feedback	2.75
	Helping other users	3.62
	Advocating	4.43



Table 29 - Survey Results - Energy Solutions already used by citizens of Alkmaar

Alkmaar	General Energy Solutions	Nr of citizens already using such Energy Solutions
	Energy efficient light bulbs (LED or Compact Fluorescent Light Bulbs)	404
	Energy efficient windows (e.g.: double pane, triple pane windows)	374
	Programmable thermostat (device that allows programming and controlling a home's heating, ventilation or air conditioning depending on the temperature)	347
	Energy efficient house insulation	346
	Energy efficient home appliances (e.g.: dishwasher, washing machine, air conditioner, refrigerator, fan, heater)	346
	Panels (e.g. Photo-Voltaic panels)	204
	Priority of transport through walk, bike, or public transport	176
	Smart thermostat (thermostats that can be accessed via an internet-connected device)	128
	Energy Related Mobile applications (e.g.: Energy Consumption Tracker, Tips for sustainable energy actions)	112
	Energy related sensors (e.g.: temperature, light, motion)	80
	Home Management Energy System (HEMS) (home automation system that monitors and/or controls home attributes such as lighting, climate, entertainment systems, and domestic appliances)	51
	Use of electrical or hybrid car	50
	Energy efficient heating system (e.g. geothermal heat pump, radiant heat floors/walls/ceilings, electric resistance heating)	12
	None of the above	7





Figure 3- Citizens' knowledge and acceptance levels for all the ISs for the city of Alkmaar



3.5 Online decision-making

In the case of KPI *Online decision-making*, the general characteristics are summarized in *Table 30*, below. The evaluation of the KPI will be done according to the proposed formula, taking into consideration how many people participate in the online decision-making process, compared to how many people are registered on the online platform that serves as infrastructure. There is only one data point as source, as presented in *Table 31* below, consisting of any online voting or decision-making initiatives open to the public, carried out in the Alkmaar LH ecosystem.

The only online decision-making initiatives carried out until now is reported in *Table 31* and it refers to a voting session that is part of the Tipping Approach. The overall results related to this KPI will be reported in the next deliverable (D2.7), at the end of the project.

Table 30 - General characteristics S5 - Online decision-making

Social KPI - S5. Percentage of citizens' participation in online decision-making	
<u>Formula Proposed</u>	% of (citizens participated / total citizens registered on the online platform)
<u>Baseline versus Monitoring</u>	We consider the voting session of the Tipping Approach as baseline for nr of participants in an online decision-making process.

Table 31 - Data Point for S5 - Online decision-making

Data Point:				
Online voting or decision-making initiatives open to public				
Initiative	Related solutions	Nr of voters	Nr of users registered	Evaluation
Tipping Approach Voting session	-	149	No registration required for voting	-
Online decision-making processes on CIP	City Information Platform	No data yet		



3.6 Social KPIs Evaluation - Alkmaar

Table 32 below summarizes the current status of Social KPIs for the city of Alkmaar, considering the time intervals until M48 (September 2023). Therefore, two of the KPIs can already be evaluated based on the data collected so far, namely *S1-People Reached* (quantitative measure) and *S3-Local community involvement in planning and implementation* (qualitative measure). In the case of the other three KPIs, the evaluation will be done after the next data collection period and will be reported in the next deliverable of T2.6 (D2.7).

Table 32- Social KPIs Evaluation Summary Alkmaar

KPI	Formula / Scale	KPI Evaluation	Reported Interval	Evaluation level Alkmaar
S1. People Reached (CORE)	(Sum of all people reached/sum of all targets)*100 = (909/455)*100	Baseline: 199%	2020 2021	City Level
	(Sum of all people reached/sum of all targets)*100 = (2896/1525)*100	Monitoring: 189%	2022 2023	
S2. Connection to the existing cultural heritage (CORE)	Measure on a five-point Likert scale: Not at all - 1 – 2 – 3 – 4 – 5 – Very much	To be evaluated after end of implementation	ONCE	PEB Level City Level
S3. Local community involvement in the implementation and planning phase (CORE)	Measure on a five-point Likert scale: No involvement - 1 – 2 – 3 – 4 – 5 – High involvement	Baseline: 3-Advise	2020 2021	City Level
		Monitoring: 3-Advise	2022 2023	
S4. Degree of satisfaction (CORE)	Measure on a five-point Likert scale: No satisfaction - 1 – 2 – 3 – 4 – 5 – High satisfaction	Baseline: 1-No Satisfaction	2020 2022	PEB Level City Level
		Monitoring: To be evaluated after selected solutions have min 6 months of active usage	2023 2024	
S5. Percentage of citizens' participation in online decision-making (SUPPORTING)	% of citizens' participation in online decision-making = citizens participated / total citizens registered on the voting platform	149 voters (no registration required)	2020-2023	City level



4 Social Engagement Monitoring for Fellow Cities

As part of the activities carried out in WP8 (*Replication Plan and 2050 vision by Fellow Cities*) and WP4 (*Citizen Engagement and Open Innovation Activities*), each FC have built a first version of their Replication plan, as well as a first version of an Engagement Plan, following up on the lessons learnt from the LH and in the context of the WP8 and WP4 workshops. However, there will be no demonstration activities in the FCs and the expectation is that they will concentrate their efforts on improving the replication plans and not necessarily on executing engagement activities or implementing solutions.

Therefore, we revise the previous approach and we propose that the social engagement monitoring for the case of the FC will focus only on *People Reached*, having two Data Points, as seen in Table 33 and Table 34 below:

- DP#1 - Nr of people reached through POCITYF website (data available for 3 periods of 6M each)
- DP#2 - Nr of people reached through engagement platforms (no data collected yet, to be reported in the next deliverable (D2.7)).

Observations:

- DP#1 - for all the FCs, the number of new visitors accessing the POCITYF website has increased considerably over the 3 periods of time monitored. There is also an increase in the nr of returning visitors, but at a much slower pace. This suggests that the project is gaining visibility in the FCs.

Table 33 - Data Point#1 for People Reached FCs

Data Point #1: Nr of people reached through POCITYF website				
FC	Source	Date(s) 6M intervals	New visitors	Returning visitors
Bari	POCITYF website usage-English	Oct 2021-March 2022	74	6
		Apr 2022- Sept 2022	203	46
		Oct 2022-March 2023	408	47
	POCITYF website page in local language	Oct 2021-March 2022	23	2
		Apr 2022- Sept 2022	49	4
		Oct 2022-March 2023	104	13
Celje	POCITYF website usage- English	Oct 2021-March 2022	27	2
		Apr 2022- Sept 2022	61	25
		Oct 2022-March 2023	140	21
	POCITYF website page in local language	Oct 2021-March 2022	3	0
		Apr 2022- Sept 2022	13	3
		Oct 2022-March 2023	26	3



Granada	POCITYF website usage- English	Oct 2021-March 2022	12	4
		Apr 2022- Sept 2022	57	35
		Oct 2022-March 2023	249	30
	POCITYF website page in local language	Oct 2021-March 2022	6	0
		Apr 2022- Sept 2022	18	6
		Oct 2022-March 2023	52	10
Hvidovre	POCITYF website usage- English	Oct 2021-March 2022	11	5
		Apr 2022- Sept 2022	31	14
		Oct 2022-March 2023	94	10
	POCITYF website page in local language	Oct 2021-March 2022	6	0
		Apr 2022- Sept 2022	6	1
		Oct 2022-March 2023	8	0
Ioannina	POCITYF website usage- English	Oct 2021-March 2022	67	6
		Apr 2022- Sept 2022	118	35
		Oct 2022-March 2023	215	95
	POCITYF website page in local language	Oct 2021-March 2022	10	2
		Apr 2022- Sept 2022	20	8
		Oct 2022-March 2023	26	2
Ujpest	POCITYF website usage- English	Oct 2021-March 2022	2	0
		Apr 2022- Sept 2022	22	18
		Oct 2022-March 2023	153	29
	POCITYF website page in local language	Oct 2021-March 2022	0	0
		Apr 2022- Sept 2022	4	2
		Oct 2022-March 2023	23	7



Table 34 - Data Point#2 for People Reached FCs

Data Point#2: Nr of people reached through engagement platform				
FC	Platform Name	Type	Link	Possible indicators of People Reached
Bari	Bari Partecipa	Web platform	https://partecipa.ba.it/	- nr of new visitors - nr of returning visitors
Celje	Servis48	Web Platform	http://www.servis48.si	- nr. of participants - nr. of initiatives/comments from citizens and organizations
Granada	Granada Decide	Web platform	https://decide.granada.org/	- nr of participants in a certain activity - nr of comments from citizens - nr of new visitors - nr of returning visitors
	Granada Mejora	Mobile Application	https://play.google.com/store/apps/details?id=granada.gecorsystem.gecorn	- nr of new users - nr of active users
Hvidovre	Avedøre Green City	Web Platform under development	https://avedoregreencity.eu https://avedoregreencity.dk	- nr of new visitors - nr of returning visitors
Ioannina	Public Consultation	Web platform	http://www.diavouleusi.eu/	- nr of comments on each public consultation - nr of comments from citizens - nr of comments from each citizen (registered user) - nr of new visitors - nr of returning visitors
Ujpest	-	Web Platform under discussion	-	Indicators to be proposed if/after the platform choice is defined



5 Conclusion

The present deliverable is the outcome of *T2.6-Social Engagement Monitoring* and presents the reporting of the results related to the social dimension of POCITYF until the current date (M48). Based on the previous work done in WP2 and presented in D2.1, D2.2 and D2.3, a detailed methodology for collecting data, assessing and reporting Social KPIs in the LH has been prepared in D2.8. This plan served as guidance for partners who are in charge of/supporting the data collection process.

An initial approach was defined for the monitoring of Social Engagement in the FCs, however this approach is dependent on the context of each FC, on the replication plans and engagement plans, considering that FCs do not have allocated effort and budget for carrying out engagement activities.

The progress of social engagement monitoring activities and respective gathered data for the LHs has been presented here in terms of Baseline and Monitoring of the Social KPIs, considering the time interval 2020 - 2023. The data collection will continue and the progress of the social dimension will further be reported in the next deliverable D2.7 (M60), together with the other monitoring dimensions. The present document, as well as the next deliverables of T2.6 will support the work of *WP3-Evaluation Activities, Socioeconomic Impact and Recommendations*, mainly *T3.3-Social Impact assessment of citizen engagement and open innovation in smart cities*.

Any additions, changes or reevaluations of the monitoring plan presented in the current document will be detailed and motivated in the next deliverable of T2.6, namely D2.7, due in the end of the POCITYF project.



ANNEX A

In the first part of the survey, we provided a list of the most commonly used Energy Solutions and asked citizens to check the ones that they have used or are currently using. We considered Energy Solutions technology-based products and services that promote sustainable energy production and consumption by enabling the use of renewable energy sources and improving energy efficiency (the definition was also provided to citizens, rephrased). Having in mind the solutions that they chose from the list, citizens were asked to provide information about the period of time for which they have been using the solutions.

The first part of the survey was focused on the perceived value that Energy Solutions give to citizens. In this sense, citizens were asked about Utilitarian Value (referring to benefits versus time, money, effort invested), Social Value (referring to social recognition, good impression on others) and Environmental Value (referring to a positive contribution towards the environmental issues).

Next, the survey was focused on engagement behaviors related to the Energy Solutions. We asked citizens questions about the following behaviors, trying to see how do they already engage with the SES they use: *Seeking Information, Pro-active Managing, Sharing Feedback, Helping other consumers, Advocating for SES*. Full definitions are provided in Table 33 below.

All the items in this part of the survey were formulated based on existing scales from literature. Each dimension had 3, 4 or 5 items. Each item was measured using a Likert scale from 1 to 7 (1=Strongly Disagree, 7 = Strongly Agree). The Survey items for each dimension are available in Table 34 below. Results are provided in the subsections below, as the mean score for each dimension. We use the mean score to present the results, since the dimensions are composite (based on multiple items) and assuming equal intervals between the Likert scale levels (1 to 7).

Table 35 - Definitions of dimensions included in Citizens Survey

Dimension Name	Definition
Utilitarian Value	“the customers’ general assessment of the utility of a product or service based on the perception of what is received and what is given” (Busalim et al., 2021)
Social Value	refers to the utility of products to enhance consumers’ status or value in social groups, such as recognition and approval of others (Zhang et al., 2020)
Environmental Value	value that emphasizes the positive contribution to the environment, to sustainability
Seeking Information	collect & gain better knowledge about the solutions. (My-Quyen & Hau, 2021)
Pro-active Managing	behaviours related to the regular usage and management of the solutions
Sharing Feedback (to the provider)	solicited and unsolicited information that the consumer provides to the provider, which helps provider and the firm to improve the solution or the solution creation process in the long run” (Yi, 2013)
Helping (other consumers)	assisting other consumers (Yi, 2013)



Dimension Name	Definition
Advocating	recommending the solutions to others such as friends or family (Yi, 2013)

Table 36 - Items composing the dimensions of the Citizen Survey

Utilitarian Value	1 Strongly Disagree	2 Disagree	3 Somew hat Disagree	4 Neither agree, nor disagree	5 Somew hat agree	6 Agree	7 Strongly Agree
Compared to the money I need to spend, the use of Sustainable Energy Solutions offers value for money.							
Compared to the effort I need to put in, the use of Sustainable Energy Solutions is beneficial to me.							
Compared to the time I need to spend, the use of Sustainable Energy Solutions is worthwhile to me.							
Overall, the use of Sustainable Energy Solutions delivers good value to me.							
Social Value	1 Strongly Disagree	2 Disagree	3 Somew hat Disagree	4 Neither agree, nor disagree	5 Somew hat agree	6 Agree	7 Strongly Agree
Using Sustainable Energy Solutions improves the way I am perceived by others.							
Using Sustainable Energy Solutions makes a good impression on others.							
Using Sustainable Energy Solutions helps me feel accepted by others.							
Overall, using Sustainable Energy Solutions gives me social approval.							
Environmental Value	1 Strongly Disagree	2 Disagree	3 Somew hat Disagree	4 Neither agree, nor disagree	5 Somew hat agree	6 Agree	7 Strongly Agree
Using Sustainable Energy Solutions enables me to protect the environment.							
Using Sustainable Energy Solutions enables me to reduce the negative environmental impact of energy production.							
Using Sustainable Energy Solutions enables me to increase global energy sustainability.							
Using Sustainable Energy Products/Services enables me to conserve natural resources.							

Information Seeking	1 Strongly Disagree	2 Disagree	3 Somew hat Disagree	4 Neither agree, nor disagree	5 Somew hat agree	6 Agree	7 Strongly Agree
I search for information about Sustainable Energy Solutions through official online channels (eg: Commercial/Provider websites,							



Municipality website, EU Projects websites)							
I read information about Sustainable Energy Solutions on social media (e.g. Facebook/Instagram/Twitter)							
I ask others for information on what Sustainable Energy Solutions offer.							
I pay attention to how others use Sustainable Energy Solutions.							
Using & Managing	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neither agree, nor disagree	5 Somewhat agree	6 Agree	7 Strongly Agree
I monitor my energy consumption when using Sustainable Energy Solutions.							
I analyze my energy consumption when using Sustainable Energy Solutions..							
I adapt my routines to make the best of Sustainable Energy Solutions's benefits.							
I actively control my energy consumption through Sustainable Energy Solutions.							
Sharing feedback	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neither agree, nor disagree	5 Somewhat agree	6 Agree	7 Strongly Agree
I provide feedback about my experiences with Sustainable Energy Solutions to the Provider.							
I provide suggestions for improving the existing Sustainable Energy Solutions to the Provider.							
I provide feedback about the new Sustainable Energy Solutions to the Provider.							
I provide suggestions for developing new Sustainable Energy Solutions to the Provider.							
Helping	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neither agree, nor disagree	5 Somewhat agree	6 Agree	7 Strongly Agree
I share my experience with Sustainable Energy Solutions with other consumers..							
I help other users of Sustainable Energy Solutions if they have problems.							
I teach other consumers to use Sustainable Energy Solutions.							
I give advice to other users about Sustainable Energy Solutions.							
Advocating	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neither agree, nor disagree	5 Somewhat agree	6 Agree	7 Strongly Agree



I encourage friends and relatives to use Sustainable Energy Solutions.							
I try to get others interested in Sustainable Energy Solutions.							
I actively defend Sustainable Energy Solutions from its critics.							
I say positive things about Sustainable Energy Solutions to other people.							

