

# D7.8: Data Collection and Management Guideline Report (2)

+CityxChange | Work Package 7, Task 7.4

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## List of Acronyms

<b>API</b>	Application Programming Interface
<b>BCV</b>	Bold City Vision
<b>CEM</b>	Common Energy Market
<b>CC</b>	CommunityxChange
<b>DP</b>	Demonstration Projects
<b>DPEB</b>	Distributed Positive Energy Block
<b>DST</b>	Decision Support Tool
<b>EC</b>	European Commission
<b>eMaaS</b>	eMobility as a Service
<b>FAC</b>	Future Analytics Consulting
<b>FC</b>	Follower Cities
<b>GDPR</b>	General Data Protection Regulation
<b>GHG</b>	Greenhouse Gas
<b>ICT</b>	Information and Communication Technology
<b>IEW</b>	Information Exchange Workshops
<b>IDP</b>	Integrated Planning and Design
<b>KPI</b>	Key Performance Indicator
<b>LCCC</b>	Limerick City and County Council
<b>LHC</b>	Lighthouse Cities
<b>M</b>	Month
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MERT</b>	Monitoring and Evaluation Reporting Tool
<b>NTNU</b>	Teknisk-Naturvitenskapelige Universitet
<b>POW</b>	Powel AS
<b>QDWG</b>	Qualitative Data Working Group
<b>RES</b>	Renewable Energy Source

<b>SB</b>	Sestao Berri
<b>SCIS</b>	Smart Cities Information System
<b>SCM</b>	Smart Cities Marketplace
<b>SRT</b>	Self-Reporting Tool
<b>SV</b>	Statkraft Varme AS
<b>TBD</b>	To Be Determined
<b>TE</b>	Trønderenergi AS
<b>TK</b>	Trondheim Kommune
<b>UI</b>	User Interface
<b>UL</b>	University of Limerick
<b>WP</b>	Work Package

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## Executive Summary

Task 7.4 sets out the requirement to create practical recommendations and guideline reports which detail, analyse and interpret the aggregated data collected during the M&E process, and deliver technical recommendations related to the Information and Communication Technologies (ICT), energy, community, mobility, environmental and regulatory interventions implemented in the project. *Deliverable 7.5* provided initial guidelines for these processes to which future iterations of the report would be structured. The guidelines provided in D7.5 were refined in this document to develop a framework for the evaluation of project activities and interventions, and set out a way to report on the feedback and provide actionable guidelines and recommendations..

The implementation of project interventions and initiatives generates data that is captured by project partners. Through the KPI framework developed for the project, partners are able to capture specifically defined quantitative KPI-related data that would suit the requirements in the calculation of the KPI. The consistent capturing and sharing of data to the Monitoring and Evaluation Reporting Tool (MERT) enables accurate capturing and processing of quantitative KPI data which, alongside broader quantitative, qualitative and experiential data collected throughout the overall project work, is used in the analysis and derivation of insights.

Mainly, partners will be using the manual data upload process through the individual interface of each KPI in the MERT. This might cause additional workload for partners until the automated process has been enabled. A limited number of partners currently share data through the automated process using Application Programming Interface (API) connections between partner and MERT servers. The way data is shared is not only dependent on the type of data available, but also on when the data is available. Uncertainty relating to the sharing and availability of data is being worked on.

A first level of insights derived from project data is based on the analysis of the KPI monitoring data, compared to the baseline situation and the expected and targeted impact for the indicator. The comparison of these points makes it possible to assess and track the indicators' performance over time to identify trends, track growth, and highlight significant changes, from which quantitative insights can be formulated. The insights drawn from the data are then used to formulate recommendations on M&E topics such as data monitoring, data modelling, evaluation of the expected impact, performance of the indicator, and technical points regarding the implementation of a particular indicator.

To get a better understanding of the overall impact of project activities or interventions it is important to have partners' feedback and input that describe the quantitative data and other impacts or results achieved. Feedback will be sourced from partners through various processes, including feedback forms, interviews, learning sessions, informal discussions, and the review of relevant project documentation. The monitoring data will be used together with the additional information provided by the project partners and the

intervention results documented in formal project deliverables, to derive insight and inform recommendations. As data capturing and management using online ICT systems and tools such as the +CityxChange MERT and Smart Cities Marketplace (SCM) (formerly known as the Smart Cities Information System (SCIS)) Self Reporting Tool (SRT) will continue throughout and beyond the project lifecycle, it is important to consider the best possible way of integration and interoperability between these systems. Seamless interoperability (as documented in Deliverable 1.3<sup>1</sup>: Report and catalogue on the ICT data integration and interoperability) will ensure efficient use of the available systems. In support of this ideal, the MERT will be reviewed periodically to determine whether all functionalities are still fit for purpose. In addition, other tools such as the +CxC Decision Support Tool (DST) and the SRT will be reviewed alongside the MERT to determine the level of possible interoperability and ease of use for the systems.

The ongoing sharing and analysis of data, engagement with partners, and use of data management and modelling tools will result in suggestions for improvement in efficiency of execution and processes being generated. The extraction of insights and development of recommendations are therefore not only based on quantitative data, but also the coherent insight and additional validating information informed by it.

Ongoing collaboration between Work Packages 7, 8, 9 and other partners will refine a framework for the accumulation of quantitative and qualitative data and information. The framework will set out the process for the identification of project activities to be evaluated, and demonstrate the evaluation procedures (feedback forms, workshops, interviews, informal interactive group discussions, review of relevant project documentation) that can be applied in the evaluation process. The application of the framework will ensure a collaborative methodology to analyse and interpret the evaluation of project activities to enable the extraction of useful insights and recommendations to inform future decision-making in the project. This framework development is described in this report.

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<sup>1</sup> D1.3 available at:  
<https://cityxchange.eu/knowledge-base/d1-3-report-and-catalogue-on-the-ict-data-integration-and-interoperability/>





# 1. Introduction

This *Deliverable 7.8 - Data Collection and Management Guideline Report (2)* is the second installment in a series of annual reports with the aim to provide derived insights and practical recommendations from monitoring and evaluation data and engagement with project partners with regard to the various interventions executed in the Lighthouse Cities (LHC) and Follower Cities (FC). It provides an update on M&E status and collected KPI data and sets out to present a draft version of a framework for overall qualitative evaluation of the project and its interventions, based on initial guidelines from D7.5.

The deliverable D7.5 provided an initial structure and outlook for reports in the series once monitoring data became available. This report is a revision of *Deliverable 7.5*, and will provide the latest update to the structure and content set out therein.

## 1.1 Reference for Quantitative and Qualitative Monitoring and Evaluation

The following excerpt from the description of the related Task 7.4 highlights key factors of the deliverables in this series.

**Task 7.4: This task will create practical recommendations and guideline reports which detail, analyse and interpret the aggregated data collected during the monitoring and evaluation processes. The reports will act as health checks for the +CityxChange project partners and will be included and added to the SCIS website (T9.2) for further dissemination, as well as translated into policy briefs (T10.4). The reports will include technical recommendations related to Distributed Positive Energy Block (DPEB), Community Grid, eMobility as a Service (eMaaS), storage solutions, Energy Trading and Flexibility Markets; regulatory and legal aspects; socio-economic and gender perspectives; and spatial and urban planning to support roll-out of positive energy blocks, districts and cities. They will also follow up on ICT architecture, ecosystem, and data integration and its implications and feedback from the DPs and use cases as reusable blueprints with recommendations on digitisation and big data, ICT use, data management, security and protection.**

Furthermore, the task description identifies the inclusion of project partners' experience and feedback on the interventions implemented. The feedback will also be captured in the replication profiles in Task 8.1, and used to disseminate project experiences to European Commission and national stakeholders (Work Package (WP) 9-10), while also bringing recommendations into SCM through the "Lessons Learned" category.

The data analysed in this report is mainly KPI data generated by the design and execution of +CityxChange Demonstration Projects (DPs). This data is captured by partners and modelled according to the measurement requirements of the Key Performance Indicator

(KPI) Framework developed in *Deliverable 7.1 - Approach and Methodology for Monitoring and Evaluation*<sup>2</sup>. This quantitative data in itself does not always provide insight to the performance of project activities and interventions, and underlines the need for further qualitative interpretation. Additional quantitative and qualitative data and information is evaluated concurrently to provide an overall representation of the functioning performance of project interventions.

Through engagement and collaboration with LHCs, FCs, and other project partners, the identification, sourcing, and analysis of quantitative and qualitative data is an ongoing process. The collaborative reflection on, and assessment of data and information received through these processes will inform practical and technical recommendations, and highlight lessons learnt that can be shared with a wider community.

Recent collaboration with project partners has included the refinement and adjustment of KPI calculation methodologies as data generation from project interventions has increased, while work is ongoing with the SCM to refine DPEB related data capturing in the SCM Self-Reporting Tool (SRT) and reporting qualitative information to its Lessons Learned repository.

**Note:**

Cognisant of the diverse readership and purview of SCM, and to facilitate ease of access to WP7 findings and overall M&E data for the project, FAC have made key insights available in *Deliverable 7.8, Deliverable 7.9 - Reporting to the SCIS System (4)*<sup>3</sup> and *Deliverable 7.10 - Reporting to the SCIS System (5)*. Insights that can be found in both deliverables include the following (reference to location in this deliverable):

- Section 3.3, Table 10: Overall KPI Performance per Theme
- Section 4.1, Table 14: Improvements to the MERT
- Section 4.2 Sharing Insights - MERT and SCM
- Annex 1: KPI Performance Overview (M30)

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<sup>2</sup> D7.1 available at:

<https://cityxchange.eu/knowledge-base/approach-and-methodology-for-monitoring-and-evaluation/>

<sup>3</sup> D7.9 available at: <https://cityxchange.eu/knowledge-base/d7-9-reporting-to-the-scis-system-4/>



## 2. Quantitative and Qualitative Evaluation Framework

The evaluation of activities and interventions implemented through the +CityxChange project will be done through a combination of quantitative and qualitative measures to ensure that impacts and results are assessed throughout the project lifetime.

Initially, WP7 drafted a framework and carried out an assessment of relevant deliverables. However, the project Executive Board suggested that more engagement and large-scale co-creation would boost the qualitative framework and evaluation of the project, so WP7, in collaboration with other relevant project partners, established an intensive Qualitative Data Working Group (QDWG) in December 2020. The QDWG has regular meetings to discuss the qualitative evaluation framework to achieve this important goal for the project. In addition to catalysing a qualitative data collaborative team, the QDWG has produced a refined Qualitative Framework, consolidated project themes, set up a resource space within the project's documentation repository which contains all outputs from the collaborative framework development, including templates, procedures, and checklists. These supporting documents and tools are available to project partners to assist in the application of evaluation processes defined in the framework.

### 2.1 What is a Framework?

The Cambridge Dictionary<sup>4</sup> defines a framework as *"a system of rules, ideas, or beliefs that is used to plan or decide something"* or *"the ideas, information, and principles that form the structure of an organization or plan"*. This definition of a framework is also applicable to the development of a framework for evaluation, as it sets out the processes, structure, and persons involved in the evaluation of project activities. This is done to better understand the impact, successes, and challenges faced, and what insights, guidelines, and recommendations can be drawn from the evaluation of activities that would improve future application and replication of such activities.

The Cambridge Dictionary further mentions that a guideline is *"a piece of information that suggests how something should be done"* or *"... what something should be"*. The development of a framework for evaluation provides a *guideline* that project partners can reference and follow in order to efficiently and effectively report on qualitative data related to their project activities. The reporting of qualitative data will, in turn, inform the creation of other guidelines for the implementation and replication of interventions. With various processes for the monitoring of quantitative data already in place (such as the submission of KPI monitoring data to the MERT), the framework for evaluation provides a process through which qualitative data can be submitted by partners that would complement and elaborate on the qualitative data submissions.

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<sup>4</sup> Cambridge Dictionary: <https://dictionary.cambridge.org/>

### 2.1.1 Interaction between Qualitative and Quantitative Data for Evaluation

The evaluation process considers both qualitative and quantitative data. The quantitative data that will be considered in the evaluation process is primarily based on the KPI framework as developed in D7.1. The KPI framework provides quantitative data as aggregated by KPI owners from the implementation of their project interventions and in some cases based on larger sets of raw measuring data. The KPI data provides a quantitative measure of interventions' performance and overall progress. The view on overall progress provided by the KPI data is assessed alongside qualitative data received from the partners. The KPIs are also aligned to the qualitative evaluation process, as indicated in Table 3, and the qualitative data received in the evaluation process will provide context and insight into the reported quantitative figures.

## 2.2 Development of a Framework for Evaluation

To ensure a collaborative process was used for the development of the evaluation framework, a *Qualitative Data Working Group (QDWG)* was established. The QDWG involves all partners listed in Task 7.4, as well as various relevant partners that need to report qualitative data and information in accordance with the task description. Together, various aspects of the framework for evaluation have been, and will be, developed and refined over the course of the project.

The QDWG approach is underpinned by the social science methodology of Action Research. The action research methodology, as depicted in Figure 1, forms the basis of the ongoing engagement of the QDWG, where ideas, suggestions, and proposals are shared and tested. All partners involved in the QDWG have equal grounds to provide inputs and comments on the development of the evaluation framework which are discussed and refined within the group.





Figure 1: Action Research Methodology<sup>5</sup>

### 2.2.1 Evaluation Framework Overview

The elements of the evaluation framework and the related process and timelines are summarised here. The quantitative data collection and review takes place alongside the qualitative process, after which the results from both processes are considered in the finalisation of guidelines and recommendations on the defined project themes. This process is followed in the evaluation of the project, and will be repeated throughout the project. The figure below further illustrates the framework.

<sup>5</sup> Source: Education Research in the Canadian Context. International Journal of Education Policy and Leadership. (2019). Laitsch, D., et al.

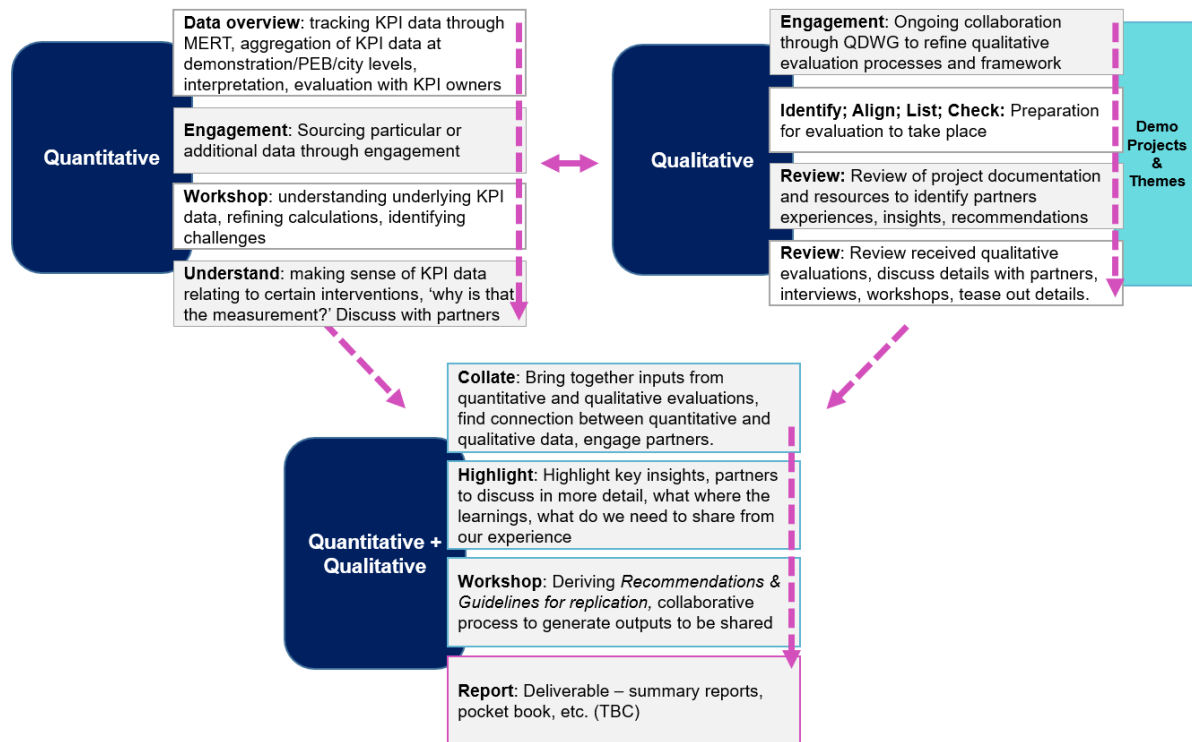


Figure 2: Evaluation Framework Process.

From the figure above, the following sets out the understanding of the framework process in terms of the quantitative and qualitative elements.

**Quantitative** - The quantitative side of the evaluation process will consider KPI data and other quantitative data produced in the project and reported by partners, that will be reviewed and analysed to highlight trends or specific relevant data points to consider in the overall evaluation. KPI data is captured, aggregated and tracked through the MERT, while ongoing engagement with partners will identify other quantitative data points to take into consideration. In the evaluation framework, the quantitative data will be assessed with input from partners and KPI owners (through workshops, discussions, and other engagement) to understand how the data should be interpreted.

**Qualitative** - The qualitative side of the evaluation process will consider all the engagement with partners and stakeholders regarding the evaluation of project activities, interventions, and insights into quantitative data. This includes the evaluation of activities/interventions received from partners (through feedback forms, interviews, informal discussions, group workshops) and the review of relevant project documentation (deliverables, meeting notes, etc.). The ongoing QDWG collaboration will further refine the planning and implementation of the evaluation process that is applied throughout.

The quantitative and qualitative inputs are reviewed and discussed in conjunction, through a collaborative process where partners discuss and refine guidelines and recommendations from the inputs provided. These are then collated and reported in the most suitable format and shared internally and publically.

Following an initial methodology for the collection of qualitative information (online workshop followed by a survey / questionnaire), a more detailed framework has been co-developed to better understand the process and structure for the provision of qualitative data related to project activities. The development of the evaluation framework is underpinned by four main pillars collaboratively developed in the QDWG - *Who, What, When, and How* - as indicated in Table 1. Key elements defining each pillar are mentioned within the four columns. The description within the pillars (columns) provide an overview of some important aspects to consider in the evaluation process. All aspects are considered equally important and are not ranked or prioritised in any way. Key questions in defining the pillars could be summarised as follows:

- Who - Who is involved in the evaluation process?
- What - What information needs to be considered? Where does the information come from, and how is it managed?
- When - When does evaluation need to take place?
- How - How is the evaluation done? How is the evaluation reported?

The following table provides an overview of the considerations within each pillar.



Table 1: Pillars of the Qualitative Data Evaluation Framework

Qualitative Evaluation Framework Pillars			
WHO	WHAT	WHEN	HOW
Key actors	What data is available?	Scheduling of data provision requests	How to gather the data that is needed
Focus groups	What do the partners want to highlight from each DP?	Data collection during workshops	Questionnaires, interviews or other process to collect data
Partners	What needs to be recommended for replication?	After-action reviews (feedback form)	How will we be reporting results?
<p>Primary involvement: +Cityxchange Partners</p> <p>LHC - TK, LCCC FC - SB, MAI, SMO, VORU, MP KPI/data owners Partners' internal networks of key actors (e.g. Network of people developing sensors)</p> <p>Secondary involvement: Community/public</p> <p>Community groups - Business chambers, colleges, community forums, activist groups, etc. Positive Energy Champion campaigns Building owners Mailing list such as city databases, list for community groups</p>	<p>Quantitative data: What is available? - Look at current deliverables / presentations from meetings held / meeting minutes / etc.</p> <p>How is this data captured?</p> <p>Where is it stored/shared (DST, MERT, etc.)?</p> <p>Consideration of KPI monitoring data and other quantitative data available.</p> <p>Qualitative data: What is it that we need to highlight?</p> <p>Demo projects - what project activities do we need to evaluate?</p> <p>What lessons do we need to share? Review of relevant deliverables or other project documentation.</p> <p>What happened with your intervention? Review of relevant deliverables or other project documentation.</p> <p>What information / insights / ideas / solutions / lessons are crucial to know for replication?</p> <p>Online learning workshops - learnings presented and minuted - can be used to inform further data collection processes</p>	<p>Formulating a process for the recurring collection of qualitative data for the next 3 years of the project</p> <p>Delivering feedback on or shortly after events or activities take place</p> <p>Sharing of 'event calendars' to inform the necessary people in advance of the activity</p> <p>Setting up a structure for recurring evaluation of activities / interventions that take place throughout the course of the project.</p> <p>After action reports (based on planned interventions)</p> <p>Focus group exchange workshops (interviews)</p> <p>Important to provide feedback shortly after the activity</p> <p>"Feedback on recurring project activities (like PEC), and how regular the reporting on these needs to take place? - Link in with dissemination WP for details"</p> <p>Making use of the template to guide interaction and gathering of information during engagement and project activities</p>	<p>Recurring processes for the next 3 years - ongoing collaboration in the QDWG</p> <p>Series of focussed questionnaires / templated reporting</p> <p>Development of a qualitative data assessment checklist</p> <p>Development of a qualitative data feedback form</p> <p>Refinement of themes and topics to be evaluated (based on task description, DPs, KPIs)</p> <p>Focussed sourcing of information - i.e. following up on data received, interventions completed, etc.</p> <p>Use of Information Exchange Workshops - focussed interviews, calls, workshops, meetings to get partner input and context on provided qualitative data</p> <p>Sharing feedback: Developing the best formats in which results, findings, recommendations and guidelines should be shared</p> <p>Online sharing (websites, dashboards)</p> <p>Condensed reporting formats, such as pocket books, fact sheets, etc.</p>





The pillars will still undergo refinement over the next 6 months, to finalise the processes through which partners can participate in the delivery of qualitative data, recommendations and guidelines regarding project activities (to be included in D7.11).

To align the project activities and interventions that need to be evaluated and reported on, reference is made to the related Demonstration Projects (DP), important themes already highlighted in the DoA and Task 7.4 description, and KPIs (as refined in D7.1). Aside from the description of types of interventions and activities in Task 7.4, the themes of evaluation set out below are current and central to what the +CityxChange project has set out to achieve. The project aims to create solutions for DPEBs which highlights the potential and advantages of DPEBs; enables the involvement of citizens, local stakeholders, and community groups in the establishment of a PEB; drives innovative technologies and ICT system development (including regulatory mechanisms, testing and implementation of new innovations, e-mobility, etc.); enables fair price for energy through microgrids and flexible local trading; and ensures a sustainable roll-out of these strategies over a long term.

Thus, the themes used in the evaluation process include the following::

- Theme 1: DPEBs,
- Theme 2: Community Grids,
- Theme 3: eMobility as a Service (eMaaS),
- Theme 4: Storage solutions,
- Theme 5: Energy Trading and Flexibility Markets,
- Theme 6: Regulatory and legal aspects,
- Theme 7: Socio-economic and gender perspectives,
- Theme 8: Spatial and Urban Planning to support roll-out of PEBs, districts and cities, and
- Theme 9: ICT architecture, ecosystem, and data integration recommendations on digitisation and big data, ICT use, data management, security and protection

These themes were then aligned with related DPs and KPIs, and reviewed to understand what key learnings, topics, and insights need to be highlighted from each DP. This will form the basis of topics that partners will provide qualitative feedback on, and will focus discussions on the particular topics that are important to evaluate and derive guidelines and recommendations for replication. Table 3 sets out the categorisation and alignment of DPs, themes and KPIs for the evaluation process.

Table 2: Alignment of DPs, Themes and KPIs for Evaluation

DP #	Demonstration Projects	Task 7.4 Themes	Related KPIs
1	Record data and provide integrated decision support to cities	Th 8: ICT architecture, ecosystem, and data integration, recommendations on digitisation and big data, ICT use, data management, security and protection	KPI 1, 2, 3
2	Co-create a Bold City Vision, to Plan, Implement, Replicate & Scale-up to Positive Energy Districts & Cities	Th 6: Regulatory and legal aspects, Spatial and urban planning to support roll-out of DPEBs	KPI 5, 6, 7



3	Co-Create Positive Energy Blocks through Citizen Participation	Th 1: DPEB/Ds	KPI 4, 10, 11, 13, 14, 15
		Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32
4	Enable innovation through regulatory mechanisms	Th 6: Regulatory and legal aspects, Spatial and urban planning to support roll-out of DPEBs	KPI 5, 6, 7
5	Foster Innovation and Accelerate Disruptive Technologies to Market	Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32
		Th 8: ICT architecture, ecosystem, and data integration, recommendations on digitisation and big data, ICT use, data management, security and protection	KPI 1, 2, 3
6	Create PEBs through improved energy performance and integration with the energy system	Th 1: DPEB/Ds	KPI 4, 10, 11, 13, 14, 15
7	Creating the +CityxChange Approach to Community Grids	Th 2: Community Grid, Storage solutions	KPI 12, 16 - 20
8	Integrate seamless e-mobility within the PEB	Th 3: eMaaS	KPI 21
9	Enable Peer-to-Peer trading within the DPEB	Th 5: Energy Trading and Flexibility Markets	KPI 12, 16 - 20
10	Enable a fair deal to all consumers through a flexibility market	Th 5: Energy Trading and Flexibility Markets	KPI 12, 16 - 20
11	Enable consumers to invest in their buildings, which is critical to the creation of a PEB	Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32

Following the alignment of the DPs, themes, and KPIs, a collaborative approach was taken to identify certain topics of evaluation. These topics form the basis of what the evaluation process is trying to achieve, and provide an indication to partners of what topics might be covered during the evaluation of an activity (intervention). These topics were co-created and developed with partners through the QDWG Meetings, as a guideline for them to reference when doing evaluation. These will be refined throughout the project as the evaluation needs and intervention types progress. The following table provides an overview of the evaluation guidelines for each DP and themes.



Table 3: Qualitative Evaluation Guidelines

DP #	Demonstration Projects	Task 7.4 Themes	Qualitative Evaluation Guidelines
1	Record data and provide integrated decision support to cities	Th 8: ICT architecture, ecosystem, and data integration	A) Value add of ICT systems (i.e. success of integrating ICT systems for use by cities) B) Common issues faced for ICT system integration and use by cities/partners C) Challenges faced by users of ICT systems D) Raising awareness of ICT tools - internal and external E) Positive or negative opinions/perceptions associated to the use of ICT systems AND how these were addressed F) GDPR (Complications faced with data management; data sharing; data protection) G) Processes of data collection (i.e. how was data sourced from private owners, energy providers; internal data collection process from gov buildings vs external data collection from private owners) H) Use of automated systems for data collection
2	Co-create a Bold City Vision, to Plan, Implement, Replicate & Scale-up to Positive Energy Districts & Cities	Th 6: Regulatory and legal aspects	A) Regulatory interventions needed to ensure financial viability of large investments. B) Processes for effectively addressing regulatory/legal challenges (lessons learned, key factors for replication) C) Regulatory interventions needed for the integration and development of BCV policies D) Linking BCV policies with larger regional/national/international policies (e.g. regional or national development plans and goals, SCM initiatives, SDGs, etc) E) Impact of COVID-19 on public engagement for the planning process F) Impact of COVID-19 on financial investment decision-making G) Risk mitigations associated to COVID-19 impacts H) How the BCV enables innovation in the city administration and the community I) Link between the BCV and project activities to the broad understanding of SDGs



3	Co-Create Positive Energy Blocks through Citizen Participation	Th 1: DPEB/Ds	<p>A) Identification of relevant stakeholder groups for various project activities (e.g. Citizens as in the relevant tasks; businesses/startups through innovation labs; building owners based on the ongoing work)</p> <p>B) Defining the role of various stakeholders (Municipality, energy partners, community, etc)</p> <p>C) How each stakeholders role is communicated, and how it is promoted to ensure participation / buy-in</p> <p>D) Main investment (financial) items to promote community/stakeholder engagement and participation - Link between citizen engagement and prosumer recruitment - what engagement activities translated into consumer to prosumer transitions</p>
		Th 7: Community Engagement Activities	<p>A) Lessons learned and challenges faced in getting sustained public participation and buy-in</p> <p>B) Behaviour change, around project objectives.</p> <p>C) How are citizens directly/indirectly contributing to the establishment of DPEBs?</p> <p>D) Most effective CE tools</p> <p>E) Most effective CE interventions implemented to date</p> <p>F) Open calls to promote innovations and solutions driven by the community</p> <p>G) Governance structure issues between stakeholders (formal) and the community - mindshift</p>
4	Enable innovation through regulatory mechanisms	Th 6: Regulatory and legal aspects	<p>A) Regulatory changes (incl planning, policies, etc) needed for the development of DPEB technologies</p> <p>B) Regulatory changes needed for financial investment / infrastructure development / public participation / etc.</p> <p>C) Processes for effectively addressing regulatory/legal challenges</p> <p>D) Lessons learned, how to do this in future</p> <p>E) Impact of COVID-19 (as above)</p> <p>F) Process: What are the steps to follow?</p>
5	Foster Innovation and Accelerate Disruptive Technologies to Market	Th 7: Community Engagement Activities	<p>A) Lessons learned and challenges faced in getting sustained public participation and buy-in</p> <p>B) Behaviour change, around project objectives.</p> <p>C) How are citizens directly/indirectly contributing to the establishment of DPEBs?</p> <p>D) Creation of physical space in the city for collaboration / participation / innovation</p> <p>E) Impact of COVID-19 on community engagement activities</p>
		Th 8: ICT architecture, ecosystem, and data integration	<p>A) Creation of virtual space for collaboration / participation / innovation</p> <p>B) Value add of ICT systems (i.e. success of integrating ICT systems for use by cities)</p>



			<p>C) Common issues faced for ICT system integration and use by cities/partners (understanding of the systems)</p> <p>D) Deployment of smart technologies in the city (public space) and in buildings for use by community</p> <p>E) Raising awareness of ICT tools - internal and external</p> <p>F) Positive or negative opinions/perceptions associated to the use of ICT systems AND how these were addressed</p> <p>G) GDPR (Complications faced with data management; data sharing; data protection)</p> <p>H) Processes of data collection (i.e. how was data sourced from private owners, energy providers; internal data collection process from gov buildings vs external data collection from private owners)</p> <p>I) How are ICT campaigns run across the various cities? e.g. DPEB innovation labs</p>
6	Create PEBs through improved energy performance and integration with the energy system	Th 1: DPEB/Ds	<p>A) Identification of relevant stakeholder groups for various project activities (e.g. Citizens as in the relevant tasks; businesses/startups through innovation labs; building owners based on the ongoing work)</p> <p>B) Defining the role of various stakeholders (Municipality, energy partners, community, etc)</p> <p>C) Deployment of various suitable RES systems</p> <p>D) Monitoring energy production and consumption</p> <p>E) Scaling of PEB solutions due to space restrictions - development of solutions to get around the limitations of space and infrastructure</p>
7	Creating the +CityxChange Approach to Community Grids	Th 2: Community Grid, Storage solutions	<p>A) Type of storage solutions developed (electrical or thermal)</p> <p>B) Creation of community grids and connecting to end users</p>
8	Integrate seamless e-mobility within the PEB	Th 3: eMaaS	<p>A) Use of different modes of e-mobility (e.g. electric cars, electric busses for public transport, electric bikes)</p> <p>B) V2B and V2G considerations / challenges / solutions</p> <p>C) Development of ICT systems for eMaaS roll-out to the community</p> <p>D) Identification of e-vehicle sites</p> <p>E) Development of business models</p> <p>F) Community buy-in to eMaaS solutions (change in mindset/perception of the community)</p>
9	Enable Peer-to-Peer trading within the DPEB	Th 5: Energy Trading and Flexibility Markets	<p>A) Application of different types of technologies/ICT solutions for different uses</p> <p>B) Highlighting of benefits</p> <p>C) Integration of physical and digital infrastructure</p> <p>D) GDPR Considerations: getting data from private consumers (perception of GDPR issues in</p>



			the community). Soft learnings on how the GDPR issue is addressed.
10	Enable a fair deal to all consumers through a flexibility market	Th 5: Energy Trading and Flexibility Markets	A) Support structures provided by the City to stakeholders (such as residential management agencies or associations), e.g. subsidies, advice on technologies, legal and regulatory solutions and advice B) Development of ICT solutions to promote consumer engagement in energy management and flexibility market
11	Enable consumers to invest in their buildings, which is critical to the creation of a PEB	Th 7: Community Engagement Activities	A) How are citizens directly/indirectly contributing to the establishment of DPEBs? B) Motivations for participation in engagement activities C) Understanding by stakeholders of key project concepts D) Level of buy-in from the community E) Behaviour change, around project objectives. F) Level of 'empowerment' felt by citizens to influence/shape a clean energy future in their city G) Overcoming psychological impact of COVID-19 and getting investment into buildings H) Perception of the 'difficulties' of realising RES solutions I) How to make sure that RES are top of mind for new investment? J) How to get through to community stakeholders on adopting solutions that are 'irregular' K) How to extract knowledge from partners?

Due to the complexity of project actions and interventions, it is important to set out the key topics that need to be evaluated from the perspective of recommendations and guidelines that can inform future replication. This way, evaluation is focussed on certain activities within the themes, and qualitative feedback is gathered for crucial topics. The feedback received on the evaluation of these topics will be collated (together with other streams of information, such as deliverable/report reviews, quantitative data assessment), reviewed, further discussed where needed, and then assessed for the derivation of guidelines and recommendations for the replication of activities in each particular theme.

### 2.3 Mechanisms and Process for Qualitative Assessment

Through a collaborative effort, a qualitative data assessment and evaluation process was devised. To provide an easy-to-use QD Pack, it was agreed that relevant materials and documentation for these mechanisms are stored in an agreed location on the project's documentation repository for partners to access and consult prior to reporting on project activities. The following subsections provide more detail on the different mechanisms proposed for evaluation. Partners can use any combination of these in their evaluation process, the results of which are then captured and stored in the documentation repository for future review and evaluation.



### 2.3.1 Evaluation and Review Workshops

The review of the quantitative and qualitative data received will highlight where potential gaps exist in context and information to be evaluated. Different forms of engagement such as interviews, learning sessions<sup>6</sup>, informal discussion sessions and similar workshops can be used as a source of data and information, as well as the review thereof. Workshops can be used as a mechanism by partners to do evaluation of interventions, but also to validate and elaborate on feedback following the evaluation of interventions. The workshops for the review of evaluation findings will be targeted, where partners can be asked to elaborate on the feedback provided, should there be any ambiguity, or a need for further context to the project activity and the information reported from it.

This will also be an opportunity for partners to elaborate on the guidelines and recommendations provided, to ensure a clear and concise message is delivered that would inform decision making on future replication of similar project activities.

### 2.3.2 Qualitative Assessment Feedback Form

WP7 wanted to assist partners in the difficult task of recording different kinds of qualitative data from an array of people in differing environments and sectors and so co-created with QDWG a QD pack which contains an online editable feedback form that can be used by all partners evaluating activities or interventions. The use of the feedback form is to gather feedback on activities or interventions which are then assessed together with partners (as a whole, or grouped in a relevant way) to gain insights at a higher (project/city) level. This template-based feedback form was developed in collaboration with partners to have a dedicated form with guiding questions and notes on how to report qualitative data related to project activities.

The feedback form is based on an interdisciplinary approach to the rich and varied methodology required for Task 7.4 drawing inspiration from robust qualitative frameworks innovated and evaluated in the fields of medical anthropology and gender equality research methods, rooted in Action Research (O'Brien, Harris & Beckman, 2014: 3). This document sets out a standard and format for qualitative reporting under four headings - Title, Methods, Results and Findings, and Discussions. The standard and format set out was used to inform the development and structure of the feedback form developed for the evaluation framework, by informing the sectional breakdown of the form and guiding the content requirements for each question in the form. The form was refined within the QDWG to adapt and structure and content to be relevant for use in the +CityxChange context, and to ensure partners understand the requirements and the use of the form to respond to and match the consortium's needs in their endeavours to map, capture and report qualitative data.

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<sup>6</sup> See examples in D9.9 and similar on intra-project collaboration and lessons, <https://cityxchange.eu/knowledge-base/d9-9-report-on-intra-project-collaboration-including-study-visits-and-peer-to-peer-workshops-4/>



The feedback form, as co-created with the QDWG, now presents a simple structure to which partners can fill in information and descriptions on project activities under four headings as aligned with the source paper - Title, Methods, Results and Findings, and Discussions. The headings were deemed suitable for use in the adapted feedback form as it sets out a clear structure and guidance on the type of feedback that can be provided under each heading. The use of the headings will assist in the identification of the project activity or intervention being evaluated (Title), how partners are evaluating the activity/intervention (Methods), and what the key findings and insights resulting from the evaluation are (Results and Findings, and Discussions). Potentially most important, the Results and Findings, and Discussions headings request feedback on the key findings highlighted, successes achieved, challenges encountered, solutions developed, and recommendations derived during and after the execution of the activity. A copy of the Feedback Form is available in Annex 2. It is acknowledged that certain project activities already have a reporting structure, meeting minutes, learning sessions, etc., and it is the aim of the Feedback Form to provide partners with an optional format in which captured information from other reports can easily be transposed. It is envisaged that the Feedback Form will undergo more refinement with the QDWG, various partners and WPs to find the most efficient structure and way of capturing qualitative data.

After the collection of Feedback Forms, and together with the data and information gained from the review of other deliverables, reports, documents, and monitoring data, the information is assessed and evaluated. The initial evaluation of the information received is performed by WP7 to highlight important trends or key points, which are considered in the overall evaluation of project activities. Points highlighted from the initial review can then be discussed with partners through further engagement or workshops to extract additional insights and co-develop guidelines and recommendations. The evaluation will identify key insights, similarities, differences, opinions, guidelines, and recommendations provided by the partners, which are then collated and summarised across the various project themes being evaluated. Through this process it will be highlighted where additional information might be required, which would initiate further collaboration with the relevant partners.

### **2.3.3 Review of Relevant Deliverables and other Project Documentation**

WP7 in collaboration with WP8, WP9, and KPI/data owners will proactively determine which deliverables can be reviewed in order to extract qualitative information and lessons learned related to interventions and activities evaluated. Further to this, frequent engagement with partners on the development of the framework will culminate into improved collation and evaluation of qualitative aspects and lessons learned. A review of relevant examples of this process will also be conducted, as seen in Documented paths to successful deployment (Vandevyvere, 2019). The development of the framework will guide future qualitative evaluation processes for deliverables in this series. The insights gained from the review of deliverables and other documentation will be discussed during partner engagement to elaborate on their observations, processes and understanding of project activities/interventions, and what guidelines or recommendations can be taken from these.





### 2.3.4 Application of the Evaluation Framework at Activity Level

Ongoing discussions and collaboration with the QDWG highlighted the need for a simple process for the qualitative assessment of project activities. The application of the framework for evaluation of a project activity can be broken down in a simple 4-step process. The 4-step process is also based on the action research methodology (used as a guideline), as the process was developed and refined within the QDWG. The steps were identified and discussed in the working group meetings where partner feedback was collected and incorporated. The steps form an interconnected process where partners identify the DPs and KPIs related to their project intervention, align their intervention with what needs to be evaluated, list the stages of when and how evaluation should be conducted, and check that the process for evaluation is in place before the execution thereof. **This process has been presented below, using a project activity as a hypothetical example, Positive Energy Campaign, and setting out a potential application of the framework approach and process of evaluation.**

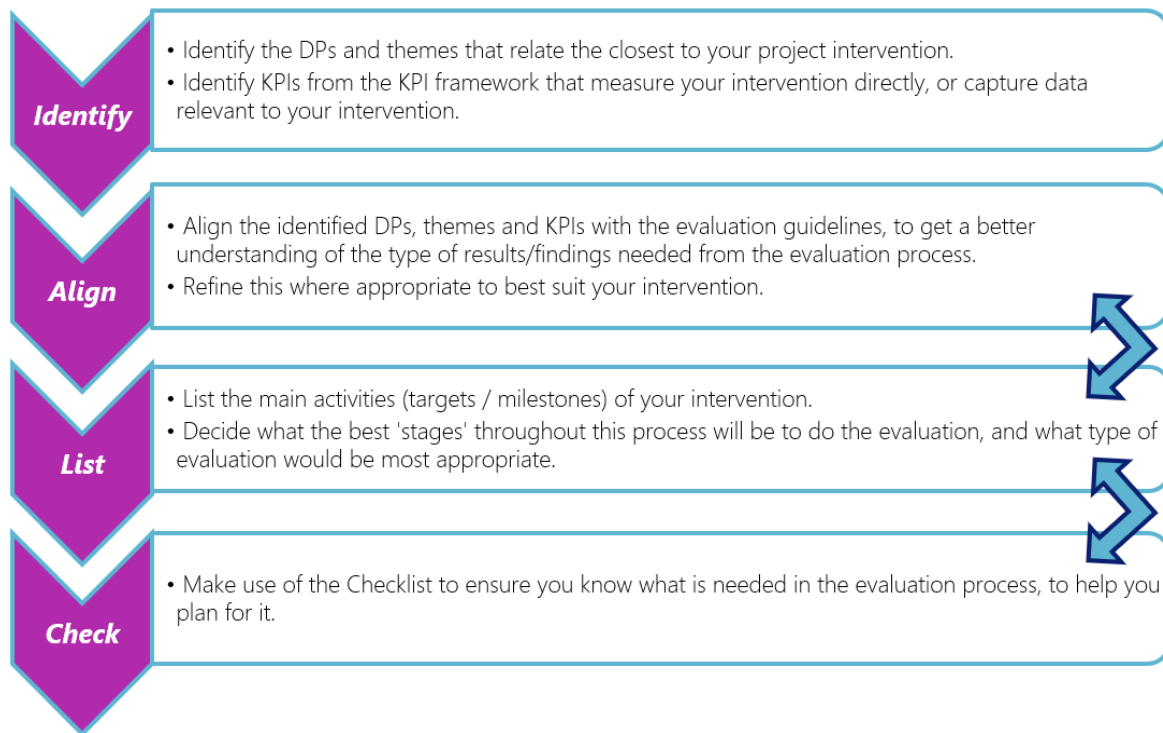


Figure 3: Evaluation Process at Activity Level

#### **Identify - DPs, themes and KPIs related to an Intervention**

This step is the first to identify which DPs, themes, and/or KPIs are closely aligned with an intervention being evaluated. Partners will review the categorisation of DPs and themes highlighted in Task 7.4 to align their project intervention and identify the relevant DPs, themes and KPIs as per the example below.



Table 4: Example of alignment between Intervention and DPs, Themes and KPIs (PEC example)

Project Intervention: PEC Campaign			
Demo Project		Theme	KPI
3	Co-Create Positive Energy Blocks through Citizen Participation	Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32
5	Foster Innovation and Accelerate Disruptive Technologies to Market	Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32
11	Enable consumers to invest in their buildings, which is critical to the creation of a PEB	Th 7: Community Engagement Activities (socio-economic perspectives)	KPI 22, 27 - 32

**Align - Alignment of Intervention and Evaluation Guidelines**

In the second step, partners review the qualitative evaluation guidelines to get a better understanding of the type of results that are needed from the evaluation process. The guidelines presented are not set in stone, and will be adjusted as the project progresses. Partners are therefore encouraged to review the guidelines and refine them where appropriate. The following table presents the guidelines under the aligned DPs and themes, with particular relevance to the PEC evaluation.

Table 5: Alignment of Evaluation Guidelines to Intervention (PEC example)

DP #	Demonstration Projects	Task 7.4 Themes	Qualitative Evaluation Guidelines
3	Co-Create Positive Energy Blocks through Citizen Participation	Th 7: Community Engagement Activities	A) Lessons learned and challenges faced in getting sustained public participation and buy-in B) Behaviour change, around project objectives. C) How are citizens directly/indirectly contributing to the establishment of DPEBs? D) Most effective CE tools E) Most effective CE interventions implemented to date F) Open calls to promote innovations and solutions driven by the community
5	Foster Innovation and Accelerate Disruptive Technologies to Market	Th 7: Community Engagement Activities	A) Creation of physical space in the city for collaboration / participation / innovation B) Impact of COVID-19 on community engagement activities
11	Enable consumers to invest in their buildings, which is critical to the creation of a PEB	Th 7: Community Engagement Activities	A) How are citizens directly/indirectly contributing to the establishment of DPEBs? B) Motivations for participation in engagement activities C) Understanding by stakeholders of key project concepts D) Level of buy-in from the community E) Behaviour change, around project objectives. F) Level of 'empowerment' felt by citizens to influence/shape a clean energy future in their city G) Overcoming psychological impact of COVID and getting investment into buildings



			<p>H) Perception of the 'difficulties' of realising RES solutions</p> <p>I) How to make sure that RES are top of mind for new investment?</p> <p>J) How to get through to community stakeholders on adopting solutions that are 'irregular'</p> <p>K) How to extract knowledge from partners?</p>
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**List - Listing the Main Activities of an Intervention, When to Evaluate, and How to Evaluate**

This step sees the development of a list of the main activities (can also be called 'milestones' or 'targets') partners will be doing throughout their intervention. This will set out the different stages of the intervention, and assist in identifying periods throughout where a simple evaluation exercise can be conducted. Partners can then decide what the best 'stages' throughout this process will be to do the evaluation, as seen in the table below. As mentioned earlier, the below table (Table 6) considers the example of the Positive Energy Champion (PEC) Campaign, to illustrate the list of intervention activities and timing of evaluation. Please note, the activity list in the example below has been assumed to demonstrate this step and is not reflective of the exact functioning of the PEC Campaign undertaken in WP4. The process does not necessarily reflect the exact process to be followed by relevant partners.

Table 6: List of Intervention Activities and Timing of Evaluation (PEC example)

Activity list	Timing	When to Evaluate?	How?
PEC open call	M36	not yet...	
PEC recruitment	M37	Now	Feedback Form / Self-evaluation
PEC interviews	M38	Now	Post-activity interview
PEC selection	M39	not yet...	
PEC training 1	M40	not yet...	
PEC training 2	M41	not yet...	
PEC training 3	M42	Now	Feedback Form / Self-evaluation
PEC implement	M43	not yet...	
PEC implement	M44	not yet...	
PEC implement	M45	Now	Post-activity interview
PEC M&E	M46	not yet...	
PEC M&E	M47	not yet...	
PEC M&E	M48	Now	Feedback Form / Self-evaluation + IEW

In addition, the type of evaluation conducted at each stage can be set out. The type of evaluation can depend on the type of activity evaluated, or partners' preference of evaluation method. Evaluation is conducted using one of a few very simple tools:

- Self evaluation using a simple feedback form (template provided). This can also be provided through any other documents/reports that partners are already doing.



- Evaluation and review workshops: larger format workshop call with a broader range of stakeholders to discuss feedback, lessons learned, challenges, recommendations in more detail; Post-activity interview: very short call with activity hosts/partners involved to talk about success, challenges, recommendations.

As seen in the table, it is the intention that evaluations are carried out only after particular phases of the intervention, such as after a training phase (M40 - M42) or an implementation phase (M43 - M45).

**Check - Qualitative Data Assessment Checklist**

A checklist was developed as a reference for partners to consult in preparation for the qualitative assessment of a project intervention. The checklist provides five easy steps that set out what partners should consider before and after the execution of the intervention. The checklist is provided in the table below.

Table 7: Qualitative Data Assessment Checklist

Qualitative Data Assessment Checklist		
Step	Description	Notes
A	Share event calendar	Share activity list of project activities that will take place as part of the larger implementation of project interventions. Activities can include: physical implementation of hardware in the DPEB; strategic meetings to discuss the development of certain aspects of an intervention; joint calls with partners such as learning workshops or planning meetings; etc. The events or activities evaluated must align with the topics of evaluations identified for the themes/DPs, i.e. the events or activities evaluated must be those that you are trying to learn more from, and those that should be evaluated in order to provide guidelines and recommendations for replication.
B	Allocate person to take notes/minutes	Dedicated person(s) from event organiser and/or attendees to take notes/minutes that will assist in completing the feedback form.  This can be more than one person, perhaps a stakeholder and another person from the event/activity organiser, to compare notes and results after the event/activity. The persons can be supplied with a feedback form to take notes on, or the person can be asked to submit their notes in a feedback form on the GDrive after the event/activity (link provided to feedback form document).
C	Access feedback form or other mechanisms	Template feedback form to be made available on the project repository at an agreed location. Partners can also review other forms of feedback provision, such as interviews or workshops.
D	Complete/populate feedback form	To be completed by event host (within 2 weeks)



E	Submit completed feedback form	Host uploads completed form to agreed location on GDrive, or makes sure that feedback forms are completed on the GDrive.
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The first step in the checklist requires the hosting partner(s) to notify all other relevant partners in advance of the intervention that will be taking place, should they wish or need to participate in the activity. The hosting partners should then assign the person(s), usually from their own organisation, and/or other partners to take notes/minutes of the activity. This would ensure that information is being captured efficiently and with accountability. The information captured can be filled directly into the template Feedback Form, that is available on the project repository, after which the completed Feedback Form is then uploaded to the same folder in the online repository, or completed directly in the online repository folder itself within two weeks after the activity has taken place. No personal information is requested in the provision of feedback and therefore GDPR concerns or issues will arise. This creates an efficient process through which qualitative feedback is captured and saved to a repository for review and evaluation described in section 2.3.6.

### 2.3.5 Assessment and Analysis of Evaluation Outputs to Derive Guidelines and Recommendations

Assessment of the evaluation feedback received (all information collated that reflect partners’ views and experience on interventions/activities) will enable the derivation of guidelines and recommendations for the replication of activities or interventions, which can be shared internally and externally as a summary of experience and learnings from a project. Assessment of the information and insights is a joint activity between relevant partners and WP7, where views are reflected on and common, or unique, insights are highlighted, which form the basis of the guidelines and recommendations.

Assessment of the information and insights will be viewed in line with the initial categorisation of the interventions evaluated into relevant DPs and themes. The feedback relating to each DP will be grouped, and reviewed, to highlight universal or unique insights on a topic (informed also by the evaluation guidelines). These will be presented back to the relevant partners involved, at which point a collaborative effort will aim to identify the guidelines and recommendations for each categorisation. The collaborative assessment of information and insights will be guided by three levels of assessment - strategic, tactical, and operational.

#### *Strategic Level Assessment*

Will assess the information received to highlight insights that are universal or unique for project-level interventions and activities, and how overall goals and objectives of the project were addressed.

#### *Tactical Level Assessment*

Will assess the information received to highlight insights that are universal or unique for partners at DP level, to consider how interventions addressed the requirements defined in



different DPs and the impact it has on the location (demonstration area, PEB, PED, and/or city, etc.)

### *Operational Level Assessment*

Will assess the information received to highlight insights that are universal or unique for partners at intervention/activity level, looking at data or information generated directly by the intervention, KPI data, or other specific reports of an intervention or series of interventions.

The collaborative process will refine insights, guidelines, and recommendations that will be collated in the best suitable format for sharing internally and externally. This process will be applied flexibly, to accommodate partners' potentially changing needs in relation to the evaluation process.

### **2.3.5.1 Preparation of Outputs for Reporting**

The information from the abovementioned steps will be collated by WP7, and compiled appropriately to deliver results, findings, insights and recommendations according to the categorisation of DPs, project themes and topics of evaluation. The collated information will be presented in the annual iterations of this deliverable, but will be in a format that can be extracted for different uses. Through discussions with the QDWG it was decided that the information should be made available in a simple standardised, readable, and visual format that can be shared with internal and external stakeholders.

Format options for the delivery of the guidelines and recommendations include the use of fact sheet<sup>7</sup> elements, solution booklets<sup>8</sup>, and pocket book<sup>9</sup> structure and presentation, and elements that can be shared online through platforms such as the MERT, SCM, and +CityxChange website. Further refinement of the format options are underway through the QDWG. WP7 will collate all inputs and suggestions from partners and provide a draft format (template) to be used for reporting in following deliverables.

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<sup>7</sup> Fact sheet example: <https://smart-cities-marketplace.ec.europa.eu/sites/default/files/HumbleLamppost.pdf>, [https://smart-cities-marketplace.ec.europa.eu/sites/default/files/EIP\\_HumbleLamppost\\_infographic.pdf](https://smart-cities-marketplace.ec.europa.eu/sites/default/files/EIP_HumbleLamppost_infographic.pdf)

<sup>8</sup> SCIS Solution Booklet example: <https://cityxchange.eu/scis-citizen-engagement-solution-booklet/>

<sup>9</sup> Pocket book example: <https://fvh.io/pocketbook>, [Smart City - What is a smart city? \(wien.gv.at\)](https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008403j.pdf), <https://sharingcities.eu/sharingcities/smartbooklets>, <https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008403j.pdf>



## 3. Data Analysis and Partner Engagement

The following subsections provide an overview of the data collection and modelling approaches implemented by partners to provide KPI data and relevant qualitative insights. As an update to the content in *Deliverable 7.5*, KPI owners and other partners were requested to provide qualitative feedback on their interventions implemented, and in accordance with the topics described in Task 7.4.

### 3.1 Data Collection Approaches

With changes in the amount and availability of monitoring data, WP7, KPI owners, data owners and other project partners involved in project data management are working on ways to refine and improve data capturing and management processes. The annual iterations of reports in this series will gather feedback from partners on the data collection processes they employ, how it has served them, what they would do differently, and how data is processed and shared between different data platforms in the ICT ecosystem.

#### Quantitative Data

Data is generated at different stages during the implementation of various project interventions. The generated data is initially captured and stored by partners involved in the implementation and management of the interventions, after which relevant data points are processed (where necessary) and shared to the appropriate data repository. In this case, and as detailed in *Deliverable 7.3*<sup>10</sup> and *Deliverable 7.4*<sup>11</sup>, KPI data is captured by KPI and data owners, who manage and process the data, whereafter the relevant data points are submitted to the online +CityxChange Monitoring and Evaluation Reporting Tool (MERT) for further processing and the calculation of KPI performance. Currently, two methods of data sharing are employed, **manual data sharing** and **automated data sharing**. Manual data sharing entails users uploading data points directly to data capturing fields in the MERT KPI interface, while automated data sharing, enabled through Application Programming Interface (API) connections, where data is pulled from a data providers database to the MERT repository. To date, the development of a standardised API structure is still ongoing, and partners have been using the manual data sharing process to submit data to the MERT (see Section 3 for further updates).

#### Qualitative Data

The qualitative data evaluation process started with the delivery of Deliverable 7.5, which provided an initial outlook on qualitative data sourcing and collation. Further refinement led to an initial methodology applied in May 2020 to source feedback from partners, that was later refined to the framework presented in this deliverable. As an initial qualitative data collection process, prior to the development of a more detailed evaluation framework by the QDWG, partners were requested to provide qualitative insight and feedback (using a

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<sup>10</sup> D7.3 available at:

<https://cityxchange.eu/knowledge-base/data-collation-management-analysis-methodolgy-framework/>

<sup>11</sup> D7.4 available at: <https://cityxchange.eu/knowledge-base/monitoring-and-evaluation-dashboard/>

data capturing form (as described in Section 3.2) on the topics related to the establishment of DPEBs, such as community grids, eMaaS, energy storage solutions, energy trading and flexibility markets, regulatory and legal aspects. The template divided the requested responses into various sections of technologies used, lessons learned and feedback on project interventions, which shed light on their experience of data collection and management in relation to their particular involvement. This feedback was collated through various avenues, including an online survey process using the capturing form and an interactive workshop where the data capturing form was explained in detail, clarification on the type of feedback required was provided and partners were encouraged to complete the data capturing form. The use of this initial process and the feedback received informed the further development of the evaluation framework as detailed in Section 2.

Together with quantitative data, qualitative insights from the evaluation process are reviewed to provide further insight and recommendations from interventions in the project. An initial methodology was followed, but has since been refined into the Qualitative Evaluation Framework (as described in Section 2) where partners proactively identify project activities and interventions to be evaluated in line with DPs and themes highlighted in Task 7.4, and follow structured engagement and information capturing processes to get specific and detailed first-hand feedback. This information will be collated and analysed to inform future guidelines and recommendations.

### **General Data Collection**

Since the development and launch of the online MERT with *Deliverable 7.4* in Month 12, partners have been encouraged to interact with the tool after being given login credentials and the ability to submit data. Recent updates, including the user interface (UI) for Login and Forgot Password were completed and while functionality still remains the same, the UI of the individual KPI pages have improved the way data is submitted to the MERT's KPI data repository.

Current challenges faced in the capturing and sharing of data are the 'unknown' factors related to data availability, scale, volume, and variables. As KPI monitoring data related to the setup of the ICT systems, deployment of renewable energy systems, e-mobility, environmental and regulatory aspects generally have a long lead time in the project, available and usable data has been very limited. As such, KPI owners cannot yet confirm when data for certain KPIs will be available. Once interventions are implemented and operational, KPI owners will be able to confirm the scale (spatial scale, i.e. building level, block level, city level) and volume of data, as well as the variables collected that can be used in the performance calculation of a KPI. Engagement with KPI and data owners have been, and will be, ongoing to ensure the KPI calculation methodology and processing in the MERT and SRT are in order for when data becomes available. As the project is in its implementation phase, it is expected that the availability and volume of monitoring data will increase, specifically for KPIs in the Common Energy Market theme. This will enable KPI owners and WP7 to better understand the type of data available, and how it will be used to track KPI performance.



### 3.2 Initial Evaluation Methodology

As this report encapsulates a review of quantitative and qualitative data, the following methodology was initially used (before the development of a more detailed framework which will be applied going forward) to collate and analyse the data and information to draw insights from and provide recommendations. This process was tested initially, and later developed further in collaboration with project partners to provide a more encompassing evaluation framework approach. The table below delineates the initial methodology for collating and framing pertinent data for Task 7.4 and D7.8 in more specific terms.

Table 8: Initial Quantitative and Qualitative Data Sourcing Methodology

Steps	Actions	Month
1	Building on the identification of related tasks and deliverables in D7.1, other deliverables reporting quantitative and/or qualitative project intervention data were reviewed, to extract any further insight or learnings regarding the establishment of DPEBs and project experience related to other project interventions.	M20, M22-23
2	Design and development of a survey based questionnaire to collect qualitative information regarding partners' experience with project interventions (so far). The survey questionnaire was developed with consideration for the Task 7.4 description, and the categorisation of data for the SCM. The questions asked addressed the themes highlighted in the task description.	M20-21
3	Circulation of survey questionnaires to all KPI/data owners, and other relevant partners.	M20-22
4	Setup of a workshop to discuss the survey with all partners, and prompt live completion, discussion and engagement with partners on how the form must be completed.	M23
5	The feedback received directly from the project partners was collated by subject (data collection approaches, quantitative and qualitative data driven insights, and ICT ecosystem insights), with the feedback reviewed and compared to derive insights and recommendations.	M23-24
6	The qualitative information received was reviewed alongside insights gained from other project deliverables and quantitative KPI data to review the performance of KPIs and the experience of KPI/data owners.	M24
7	The information and data was collated, summarised and compiled for the purpose of this report.	M24

For the initial evaluation process, a data capturing form was used in a survey and workshop format to gather partner feedback on various project aspects related to the eventual development of positive energy blocks and districts in the LHCs and FCs. The following table provides a breakdown of the information and feedback requested from relevant partners. This form did not include the capturing of qualitative data in the format of the proposed



framework, the development of which is explained in Section 2 of this Deliverable and the implementation of which will start in M31.

Table 9: Initial Request for Information from Partners on Data Collection, Insights and ICT related to the establishment of DPEBs

Feedback Required	
Subject	Question
<b>Data Collection Approaches (all KPI/Data Owners and other partners)</b>	What are the Data collection processes employed to capture KPI data?
	How have these processes served KPI/data owners?
	What other/different processes would you apply to improve on your current data collection process?
	Describe the way data is managed and processed before it is reported to the MERT or other systems in the project that require periodic or consistent data provision.
	Apart from the MERT, which other systems do you report data to?
<b>Quantitative and Qualitative Data Driven Insights (All KPI/Data Owners and other partners)</b>	Has the KPI target and/or baseline changed from what was initially planned? (Reference to KPI framework in D7.1)?
	Please describe how your planned and implemented +CxC project interventions/activities/projects have contributed to the following: (whichever are applicable to your scope of work)
	<ul style="list-style-type: none"> <li>Establishment and functioning of a Positive Energy Block/District/City</li> </ul>
	<ul style="list-style-type: none"> <li>Establishment and functioning of Community Grids</li> </ul>
	<ul style="list-style-type: none"> <li>Establishment and functioning of eMaaS</li> </ul>
	<ul style="list-style-type: none"> <li>Establishment and functioning of Energy Trading and Flexibility Markets</li> </ul>
	<ul style="list-style-type: none"> <li>Establishment and functioning of ICT systems</li> </ul>
	<ul style="list-style-type: none"> <li>Regulatory and Legal aspects of delivering +CxC solutions</li> <li>Citizen engagement and buy-in to +CxC solutions</li> </ul>
<b>ICT Ecosystem Insights (Relevant KPI Owners and other partners that use ICT platforms)</b>	Describe your view on usage of data platforms such as the MERT, the DST, data portals provided by the cities, etc. Have these been efficient, easy to use, and sufficient in managing, sourcing or submitting data?
	Any particular positive or negative opinions associated with the use of these platforms?
	Complications faced with data management; data sharing; and/or data protection (GDPR)?

The data capturing form was circulated to all KPI owners and related partners assisting in the development of interventions and/or managing of project data. The feedback received directly from partners was collated and examined, and used to inform the development of the revised qualitative evaluation framework. The initial process highlighted the need and importance of having a defined process in which feedback can be provided, whilst being agile in the facilitation and collation of feedback. Partners stressed the preference of using multiple methods of providing feedback, which include feedback forms, self evaluation, interviews, workshops, informal discussions and learning sessions.



### 3.3 Insights from the Submission of Quantitative Data

The quantitative KPI data is assessed using the actual monitored values, the baseline values, and the expected or targeted impact set for each indicator. The baselines and expected or targeted impact was set for each KPI in the refinement of the KPI framework detailed in *Deliverable 7.1*. The comparison of the monitoring data to the baseline and expected/targeted impact (at the various reporting intervals and the final targeted impact at M60) enables the identification of progress trends and tracking of performance.

Both Limerick City and County Council (LCCC) and Trondheim Kommune (TK) have KPI monitoring data available, with TK measuring KPI data in all three Integrated Planning and Design (IPD), Common Energy Market (CEM), and CommunityxChange (CC) KPI themes, and LCCC for KPIs in the IDP and CC KPI themes. In addition, Norwegian University of Science and Technology (NTNU), Statkraft Varme AS (SV), and Trønderenergi AS (TE) have also submitted monitoring data.

As the project moves further into the implementation phase, it is expected that more data will become available for KPIs in the CEM theme, and progress of these KPIs will be tracked more clearly. With data for only 19 KPIs having been submitted, extraction of insights are limited to the data available. As the volume of monitoring data increases throughout the implementation stage, it is expected that analysis and evaluation of results will provide better insight into the status of project activities.

In a recent series of KPI calculation workshops the refinement of KPIs in the CEM theme has seen progress made, which will assist in the accurate reporting and submission of KPI data to the MERT once data is available. The calculations for KPI 8, 9, 12, 14, 15, 17, 18, 23, 24, and 26 are undergoing review in a joint effort between WP7 and KPI owners, which will ensure the KPIs' performance are tracked accurately and consistently for the duration of the project once monitoring data is available.

When looking at different focus areas of the project and KPI types, KPIs related to the investment in, planning, and development of new solutions aimed at the establishment of DPEBs have performed well, seen in the performance of KPI types 'innovation' (KPI 30), 'Investment' (KPI 23), and 'Decision/planning support' (KPI 2). The inclusion of the community and relevant stakeholders in the project activities thus far is also reflected in the performance of KPI types 'Community participation' (KPI 27-29) and 'Behaviour influence' (KPI 32) (see Annex 1 for detailed KPI performance status at M30). As the project progresses further in the implementation of interventions, it is expected that KPIs related to Renewable Energy Sources (RES), air quality, and the enabling of DPEBs will deliver higher performance scores.

### 3.4 Partner Engagement and Collaboration

Through a structured process of periodic engagement, WP7 has been engaging with KPI and data owners regarding the refinement of KPI calculations, and more recently also to

source qualitative data and feedback on data submitted and interventions implemented in the project. The sourcing of qualitative information is aimed at providing insight to the DPs and interventions applied in the cities, the processes that happen before, during, and after - interventions or activities are implemented, how they have performed and what the key lessons learnt were. Building from the requirements of Task 7.4, feedback from partners was requested in relation to KPIs and the planning and implementation of interventions, covering community grid, eMaaS, energy storage, energy trading and flexibility markets, regulatory aspects, environmental and community aspects, and project activities contributing to the establishment of positive energy blocks and districts. The analysis of quantitative and qualitative data received from partners are evaluated to highlight key commonalities, differences, issues, stories of failure, and success factors that could inform decision making and planning of future upscaling and replication of the project's initiatives.

As more quantitative and qualitative data and information is provided by KPI and data owners, future iterations in this series of reports will enable long term monitoring and evaluation of the effect that the community, energy, mobility, ICT, and environmental impact related projects have had on each LHC and how these can or have been applied in the FCs.



## 4. MERT and Other ICT Systems

### 4.1 MERT Improvements

The MERT has been developed as a tool to allow partners to submit KPI data as and when it becomes available. Since its launch as a prototype online dashboard as part of *Deliverable 7.4 (M12)*, the MERT has undergone, and will periodically receive, various updates and improvements to adjust to project and partner requirements. The planned improvements to the MERT, as detailed in *Deliverable 7.10*, are included in the table below.

Table 10: Improvements to the MERT

Modification Type	Theme	Improvement	Status
Front-end	Mobile responsiveness	To improve the way the dashboard is viewed on a mobile device	Improvements in progress [M30-36]
Front-end	Fix designs	Fixing design issues on few pages (filtering data, button functionalities, descriptions)	In progress [M30-36]
Back-end	Graphs Presentation	Update Graphs for KPI to enhance KPI data representation. Supported by ISOCARP	Completed [M30]
Back-end	Application Dependencies	Updating application dependencies (manage bug fixes) and improve overall security of the application.	Ongoing (recurring) [M30-36]
Back-end	KPI Calculations	Update KPI headers in accordance with confirmed calculations (as in Table 5).	Completed [M30]
Back-end	API	Initial partner testing of API functionalities	In progress [M30-36]

As seen in the table, the updates to the MERT focus on the improvement of its operational features and functionality. Due to the disparity in data availability across various partners and cities, there are functionalities of the MERT dependent on KPI monitoring data that will not be operational until such time as data is available, and the use of such data can be confirmed by the KPI owners. This will mean that certain features of the MERT, specifically related to the performance calculation of the MERT will not be operational until data is available, as the format, frequency, complexity and granularity of the data will likely dictate the calculation methodology in the MERT, and the way it is represented in the KPI user interface on the MERT.



The MERT will make use of APIs to enable automated data sharing, thereby getting KPI monitoring data into the MERT database without the need for manual data submission by KPI owners. The development of the API catalogue in WP1 has brought together the different requirements and specifications of partners' APIs that will enable connection and automated data sharing between data repositories/portals, to which the MERT's API specifications have also been added. WP7 will review the API specification and requirements as set out in the catalogue to identify which partners' repositories can be linked with. Partners will be required to provide API endpoints in accordance with the KPI API structure, while FAC will be developing logic for the integration of partner APIs into MERT and provide API endpoints to be integrated in partner systems.

Feedback indicated that many partners are still exploring the functionalities provided by the available ICT systems for use in their own project interventions, and that there are still further development of systems taking place which will be used at a later stage in the project.

## 4.2 Sharing Insights - MERT and SCM

As described in *Deliverable 7.10*, the MERT and SCM (formerly SCIS) are two platforms used in the project by WP7 to disseminate project monitoring data and contextual information that relate to project activities.

**SCM provides guidelines in its KPI Guide (SCIS, 2018) for the capturing, modelling and sharing of KPI data, but also provides a 'Lessons Learned' section where qualitative information related to the quantitative data can be captured (as cited in Section 4.5, Deliverable 7.10).**

The data is captured, modelled, and presented in the SCM where it is available for further interpretation and dissemination. In addition to the quantitative data, the SCM Lessons Learned section provides a dedicated space where contextual and qualitative inputs relating to project activities can be uploaded for dissemination. The quantitative and qualitative feedback from partners will be reviewed in conjunction with the SCM to develop an efficient process for transfer of the data and information to the SCM, with relevant insights taken from outputs of the evaluation framework and other data sources available. This will ensure that quantitative and qualitative data and insights are shared to the SCM. To date there has not been KPI monitoring data available to be reported to the SCM SRT. Work is ongoing with WP7 and KPI owners to refine the data capturing forms according to the SRT requirements, which will ensure that quantitative data is reported accurately once available.

**The MERT provides an online platform where the performance of the 33 +CityxChange KPIs is disseminated. The user interfaces provided for each KPI also enable KPI/data owners to submit data points for the calculation of the KPI (as cited in Section 4.2, Deliverable 7.10).**

As of Month 30, KPI data for 14 of the 33 KPIs have been submitted to the MERT through its manual data capturing process, and is displayed in each KPI's individual interface. Users of the MERT are able to see the data captured, and view the overall performance of the KPI compared to its expected/targeted impact. This data is shown on the interface, illustrated using graphs, and is also downloadable in a summary PDF format. The ability for KPI and data owners to add comments or clarification notes to the data submitted will enable a better understanding and interpretation of the data, which will contribute to the assessment and reporting of the KPI and its performance.



## 5. Conclusion

Building on *Deliverable 7.5*, this report includes aspects of an initial quantitative and qualitative assessment of data and information generated by the implementation of project interventions, whilst delivering an evaluation framework for future assessment of the same nature.

Although the initial methodology followed contains elements of the defined framework, the framework now delivers a clear structure and process that will guide partners, in collaboration and with support from WP7, in their process of qualitative data evaluation and reporting. The framework, centred around the four core pillars of *Who, What, When, and How*, provides the principles that form the structure of the evaluation process, which is supported by the breakdown of evaluation according to DPs and themes (in line with Task 7.4). The breakdown provides partners with a more detailed perspective on the different types of project activities to be evaluated, and provides guidelines on the type of evaluation outputs required.

Through the QDWG process, it was also highlighted that partners needed to know what steps to follow, and what materials would be used. Therefore, a simple step-by-step process was proposed, an evaluation checklist and template feedback form were developed as tools to reference in the evaluation process. WP7 will continue its collaboration with partners to further refine the evaluation process where needed, and to assist in the tracking of qualitative feedback collation. Partners will be able to use the material co-developed by the QDWG (such as the proposed listing of activities, the feedback forms, and assessment checklist discussed in Section 2) to provide the qualitative assessments of their relevant interventions as identified in the breakdown of DPs and project themes. Information and data received is set to be reviewed together with partners, where further details will be teased out if necessary. The feedback will be captured in a standardised format (as proposed by the framework, and with relevant refinements over the project lifetime) that will promote efficient sharing and dissemination of guidelines and recommendations through the project website and potentially other platforms (such as the SCM, or partners' own web pages).

Multiple data points were captured and reported for KPIs measuring aspects of community and stakeholder engagement (CommunityxChange theme - data reported for 6 of 7 KPIs), planning, training, ICT, and regulation (Integrated Planning and Design theme - data reported for 6 of 7 KPIs), while data for 7 of 19 KPIs in the Common Energy Market theme have been reported (as expected, with known current and temporary limitations on data). Partner feedback indicated that community engagement is recognised as a critically important part of the project, and are actively trying to ensure community and citizen buy-in to project interventions.

Insights gained from the review of quantitative data (KPI data and the refinement of data capturing and management processes) and the qualitative data (partner specific feedback and review of relevant deliverables) highlight a crucial stage in the project for data collection





and management processes. As more interventions are and will be implemented in the next reporting period, collaboration and structured engagement between partners and WP7 will be required to close open issues such as KPI calculation confirmation (in the MERT and the SRT), the setup of API connections to enable automated data sharing, efficient usage of the MERT as a data capturing and processing platform, and the general framework for the reporting of data and information. Similarly, partners are encouraged to make use of available aids for the setup and use of ICT systems that can assist in their data collection and management processes. The COVID-19 pandemic has had an impact on various aspects of the project, limiting the engagement between partners and stakeholders, and curtailing the ability to physically implement interventions.

Future processes of quantitative and qualitative data collation and review will be conducted according to the framework proposed. It is envisaged that the next crucial steps for partners in the application of the framework will include steps 1-3 of the 4-step process of the framework application:

- Identification of project activities/interventions to be evaluated (in line with the DPs and themes for evaluation set out).
- Alignment with evaluation guidelines
- Identification of the phases, timing and methods of evaluation

The application of the proposed framework thereby aims to guide the provision of insights and recommendations through later iterations of this deliverable.



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## Annex

### Annex 1: KPI Performance Overview (M30)

As cited in Table 8, Deliverable 7.10 - Reporting to the SCIS System (5)

KPI ID	KPI Definition	Expected Impact (Target) / KPI Owner	Measured data (per KPI owner)	Performance vs Target (%) per partner	Overall Expected Target	Overall Achievement	Overall Performance
1	No. of APIs connected to the Decision Support Tool (DST) <sup>12</sup>	IESRD: 20	IESRD: 12	IESRD: 60%	20	12	60%
2	No. of use case stories in the ICT Ecosystem repository	NTNU: 15	NTNU: 17	NTNU: 113%	15	17	113%
3	No. of municipal staff trained to use the DST	LCCC: 15; TK: 15; MAI: 2; MP: 2; SB: 2; SMO: 2; VORU: 2	LCCC: 3; TK: 22; MAI: 0; MP: 0; SB: 0; SMO: 0; VORU: 0	LCCC: 20%; TK: 147%; MP: 0; SMO: 0	40	25	63%
4	No. of new DPEB/DPED-enabling prototypes	LCCC: 13; TK: 13; MP: 2; SMO: 2	LCCC: 7; TK: 0; MP: 0; SMO: 0	LCCC: 54%; TK: 0%; MP: 0; SMO: 0	30	7	23%
5	No. of study visits by regulatory authorities	LCCC: 20; TK: 20; MAI: 4; MP: 4; SB: 4; SMO: 4; VORU: 4	LCCC: 11; TK: 9; MAI: 0; MP: 0; SB: 0; SMO: 0; VORU: 0	LCCC: 55%; TK: 45%; MAI: 0; MP: 0; SB: 0; SMO: 0; VORU: 0	60	20	33%
7	No. of changes in regulation	LCCC: 5; TK: 6; MP: 2; SMO: 2	LCCC: 3; TK: 0; MP: 0; SMO: 0	LCCC: 60%; TK: 0; MP: 0; SMO: 0	15	3	20%
8	Tonnes of CO <sub>2</sub> -equivalent emission reduction per year	LCCC: 1.188; TK: 11.613	LCCC: 0; TK: 564	LCCC: 0; TK: 4.86%	12,801	564*	4%*
9	Tonnes per year Nitrogen Oxides	LCCC: 1.5; TK: 4.7	LCCC: 0; TK: 0.62	LCCC: 0; TK: 13.2%	6.2	0.62*	10%*

<sup>12</sup> KPI 1 title and description currently under review to also include non-API data integration.

	(NOX) emissions reduction						
10	The percentage of total Renewable Energy Sources (RES) self-supply	LCCC: 100%; TK: 75%	LCCC: 0; TK: 43%	LCCC: 0; TK: 57%	-	-	LCCC: 0; TK: 57%*
11	Increase in new renewable energy system integration	MPOWER: 1.29GWh; SV: 1.99GWh; TE: 1.28GWh	MPOWER: 0 SV + TE: 1.17GWh	MPOWER: 0; SV + TE: 36%	4.538	1.17	26%
12	Percentage district level production versus total energy consumption	MPOWER: 24.7%; SV: 46.5%; TE: 28.8%	MPOWER: 0; SV: 27%; TE: 7%	MPOWER: 0; SV: 58.1%; TE: 24.3%	47.7%	17.0%*	36%*
15	Net useful thermal recovery/year (GWh)	MPOWER: 0.143GWh <sup>13</sup> ; SV: 1.99GWh	MPOWER: 0; SV: 0.510	MPOWER: 0; SV: 25.6%	2.134	0.510*	24%*
23	Total new investments generated (€M)	Total contribution from multiple partners: 40	Sum of total contributions: 48,4	121%	40	48.4	121%
27	No. community participation events organized across all +CityxChange cities	LCCC: 8; TK: 7	LCCC: 5; TK: 4	LCCC: 63%; TK: 57%	15	9	60%
28	No. citizen observatories established	LCCC: 1; TK: 4	LCCC: 1; TK: 4	LCCC: 100%; TK: 100%	5	5	100%
29	No. of community participation events/actions	LCCC: 30; TK: 25	LCCC: 12; TK: 31	LCCC: 40%; TK: 124%	55	43	78%
30	No. of innovation labs/playgrounds contributing to the creation of DPEB	LCCC: 1; TK: 4	LCCC: 1; TK: 11	LCCC: 100%; TK: 275%	5	12	240%
31	No. of Positive Energy Champions trained	LCCC: 20	LCCC: 1	LCCC: 5%	20	1	5%

<sup>13</sup> Clerical error corrected. Expected impact (target) for MPOWER was previously stated as 1.43GWh, but now corrected to 0.143GWh. Overall KPI target is not affected.

\* Data as reported in Month 18, but since the initial report, the KPIs calculations are undergoing another review and refinement process, and therefore are subject to change once calculations have been confirmed.



32	No. of organisations with new sustainable energy approaches	LCCC: 30; TK: 30	LCCC: 14; TK: 15	LCCC: 47%; TK: 50	60	29	48%
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## Annex 2: Example of the Qualitative Assessment Feedback Form

The table below provides an example of the feedback form, and how it can be completed. An example of the evaluation of activities at the LCCC City Engage Week (September 2019) is used to populate the feedback form.

No.	Topic	Item	Example Answers
<b>Title and abstract</b>			<b>From City Engagement hosted by SE (17.09.2019)</b>
S1	Project activity title		City Engage Week, LCCC, (date)
S2	Activity description	Brief description of the project activity, context to the project, goals, rationale	an event assisting communities in framing the challenges rather than the solution – identifying ‘what works?’, ‘what’s not working?’ and ‘what could work?’. The objective was to walk around Georgian Laneways and identify issues that make passers-by reluctant to use those lanes, identify the positive aspects that can be used to enhance its usage and think about what rectification would be required for those laneways to become more – accessible, safe, visually appealing along with promoting positive energy.
S3	Partners involved	List of all partners involved in the setup of the project activity	LCCC, SE, FAC, etc
S4	Related Demo Project / Theme / Topic		DP02, DP03, DP05
<b>Methods</b>			
S5	Data collection instruments and technologies	Description of instruments (e.g., interview guides, questionnaires, minutes taken) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	Survey, individual reporting, group workshops
S6	Quantitative data collection	Any data captured for KPI or monitoring purposes	N/A
S7	Qualitative data collection	Any descriptive data/information captured with regard to the project activity - challenges, solutions, experiences, etc.	Opinions on ‘what works?’, ‘what’s not working?’ and ‘what could work?’ around Georgian Laneways



S8	Data processing	Methods for processing data prior to and during analysis, including transcription, data entry, data management - where is the data captured/stored? How can it be accessed for M&E purposes?	Feedback collected by the hosting partner, saved to CxC Google Drive, feedback evaluated and included in deliverables.
<b>Results &amp; Findings</b>			
S9	Synthesis and interpretation	Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	<p>Glenworth's Lane:                      What 'works' in the lane?                      - Access (shortcut)                      - Circulation                      What 'doesn't work' in the lane?                      - Looks dingy                      - 'Wouldn't use it at night, rather take the longer way' (psychological safety feeling)                      What 'could work' in the laneway?                      - Bins could be collectively put under one box (visuals)                      - More lighting (safety)                      - A dead-end mirror – to enable individuals to see if a car is coming from the other side (safety)                      - Fold out benches – to make it look more approachable (visuals)                      - Painted walls (appearance)</p>
S10	Links to empirical data	Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings, related tasks/deliverables, meeting minutes, notes taken (location)	Related deliverables
S11	Activities completed successfully	Brief description of activities completed successfully, what happened, why was this successful	Respective groups left for different laneways and walked around Georgian neighbourhood of Limerick and discussed what the problem could be, what could work for specific laneways and identified additional aspects that can be incorporated to make the laneway usable by passers-by.
S12	Challenges faced	Brief description of challenges / stumbling blocks / unforeseen issues	- The link wasn't working on some mobile devices, or the application was inaccessible – means work needs to be done on having the link reachable and easily available to access
S13	Solutions developed (or under development)	Brief description of how the abovementioned were addressed	



S14	Next steps	What still needs to be addressed, and how would it contribute to the success of the activity/intervention?	<ul style="list-style-type: none"> <li>- Privacy needs to be incorporated on the portal – maybe a username and password for individuals to upload images to have data on who uploaded what and be able to maintain the objective of this initiative, without spam uploads.</li> <li>- Resolution and accuracy of the map to pin location needs to be improved so that the exact location can be pointed out – Google maps will have to be updated to include the actual names of the lane.</li> </ul>
<b>Discussion</b>			
S15	Key insights highlighted	Summarised (qualitative) evaluation of the activity/event. What were the key insights highlighted? Key questions/issues raised? Key solutions developed?	<p>General Observation on the walk included (common for most of the laneways):</p> <p>What works?</p> <ul style="list-style-type: none"> <li>- Access (shortcuts)</li> <li>- Circulation</li> <li>- Planter boxes (help with visual appearance)</li> <li>- River landscape</li> <li>- Not having graffiti – illusion and appearance wise</li> </ul> <p>What doesn't work?</p> <ul style="list-style-type: none"> <li>- Two-way lanes; dead ends</li> <li>- Can't put street furniture on roads with cars passing through the lanes</li> <li>- 'ugly machines' (appearances)</li> </ul> <p>What can be added?</p> <ul style="list-style-type: none"> <li>- Mirrors on dead ends</li> <li>- CCTVs?</li> <li>- Flushed pavements</li> <li>- Eye-level signage</li> <li>- Signage in general (even in Braille if possible)</li> <li>- Visually clear signs</li> <li>- Lighting</li> <li>- History related to the lane or area to put on the walls</li> <li>- Well painted walls</li> <li>- Markets – food trucks to attract people; or events such as Treasure Hunts</li> <li>- Foldout benches</li> <li>- Add names to lanes, give them an identity or a signage to be associated with – in order to create awareness about lanes and their usage</li> </ul>
S16	Key recommendations for replication of activity	How can things be improved for future activities of the same kind? Apart from this activity, how can other activities under the same theme benefit from the key insights highlighted?	<ul style="list-style-type: none"> <li>- The application should have some information about CityxChange and what it means; its objectives and what its impact may be on citizens and Limerick in general – so that citizens can personally associate themselves with the cause and are encouraged to engage and contribute to CityxChange.</li> <li>- Feedback session at the end is paramount for the success of the programme since an open discussion helps point out vital points and helps with better feedback analysis.</li> </ul>

