



# IRIS

Integrated and Replicable Solutions  
for Co-Creation in Sustainable Cities

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## Deliverable 9.11

### Fourth and final update of the Data Management Plan (DMP)

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<b>Task:</b>	T9.2 Defining the data model and the data management plan for performance and impact measurement
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0.2	04-04-2023	Final draft to be reviewed by WP9 team
1.0	06-04-2023	Final version to be submitted to the EC

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# Executive Summary

The scope of this document is to provide the procedure adopted by the project partners and subcontractors when producing, collecting and processing the data from the IRIS demonstration activities. The adopted procedure follows the guidelines provided by the European Commission in the document [Guidelines on FAIR Data Management in Horizon 2020](#).

This document is based on the Horizon 2020 FAIR Data Management Plan (DMP) template (Version: 26 July 2016) [1], which provides a set of questions that the partners should answer. Furthermore, the Horizon 2020 template from DMP online [2] is utilized to expand the questions and provide more detailed explanations. This fourth and final report on DMP, submitted at M60 (Spring 2023) of the project, describes the plan for data production, collection and processing, and the final inputs from the different lighthouse cities. It was continuously updated until the end of the project, as part of work package 9, WP9 Monitoring and evaluation, activities.

The development of the DMP is part of the work undertaken in T9.2 Defining the data model and the data management plan for performance and impact measurement (M4-M66). The DMP development started in M4 (spring of 2018) of the project, this fourth and final report of the DMP provides the templates that were used for data reporting and the resulting tables with information about the data gathered withing the project.

An important part of this document is the data management template (DMP template). This template was used by all partners who produce or handle datasets within the IRIS project. For example, the partners responsible for the implementation of the measures in the Lighthouse cities. By making use of this template, it is ensured that the project research data will be 'FAIR', that is findable, accessible, interoperable and re-usable. This is achieved by:

- Making data Findable, including provisions for metadata
- Making data openly Accessible
- Making data Interoperable
- Increase data Re-use (through clarifying licences)

The template is accompanied by a chapter which describes all topics that were filled in.

Besides the Ethical aspects as defined in the DMP template for all 'sub'-projects, a separate chapter is written on these aspects on IRIS level.

After D9.10, the third update of the data management plan, some new datasets were obtained, and some changes were made to the set described in the last version. In this final version the DMP consists of 24 datasets. The resulting information as tables in Annex A6.



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## List of Abbreviations and Acronyms

Abbreviation	Definition
BIPV	Building Integrated Photo Voltaics
CERTH	Centre For Research and Technology Hellas
CIP	City Innovation Platform
CSV	Comma Separated Values
DMP	Data Management Plan
DoA	Description of the Action
EU	European Union
FAIR	Findable Accessible Interoperable Reusable
FC	Follower City
GA	Grand Agreement
GDPR	General Data Protection Regulation
GOT	Gothenburg
IMCG	IMCG Sweden AB
IMREDD	Institut Méditerranéen du Risque de l'Environnement et du Développement Durable
IPR	Intellectual Property Rights
IRIS	Integrated and Replicable Solutions for Co-Creation in Sustainable Cities
KML	Keyhole Markup Language
KPI	Key Performance Indicator
LH	Lighthouse City
M	Month (in project)
NCA	Nice
ORD	Open Research Data
RISE	Research Institutes of Sweden
SCIS	Smart City Innovation System
SCT	Municipality of Santa Cruz de Tenerife
T	Task
TIFF	Tagged Image File Format
TT	Transition Track
UNS	University of Nice Sophia Antipolis
USI	Utrecht Sustainability Institute
UTR	Municipality of Utrecht
UU	Utrecht University
UVA	University of Vaasa
VAASA	City of Vaasa
WP	Work Package



# 1 Introduction

The Data Management Plan (DMP) consists of a description of the data management life cycle for the data to be produced, collected, and processed, and includes information on the handling of data during and after the end of the project, i.e. what data was produced, collected, and processed, which methodology and standards were applied, whether data was shared and/or made open access, and how data was curated and preserved (including after the end of the project).

## 1.1 Scope, objectives and expected impact

The scope of this document is to provide the procedure to be adopted by the project partners and subcontractors to produce, collect, and process the research data from the IRIS demonstration activities. The adopted procedure follows the guidelines provided by the European Commission in the document [Guidelines on FAIR Data Management in Horizon 2020 \[1\]](#).

This document has been built based on the Horizon 2020 FAIR DMP template (Version: 26 July 2016), which provides a set of questions that the partners should answer with a level of detail appropriate to the project. The DMP is intended to be a living document where more in-depth information is added through updates, as the implementation of the project progresses and when significant changes occur. As a minimum, the DMP should be updated in the context of the periodic evaluation or assessment of the project.

This final report on the DMP, submitted at M66, describes a comprehensive plan for data production, collection, and processing, and has been continuously updated until the end of the project, as part of WP9 activities. This final update is mainly a continuation of D9.10 including the details of all new datasets that were gathered or aggregated in the period between D9.10 and the moment this final update is delivered.

The availability and sharing of project data increase the impact of IRIS **activities**, enabling access to many stakeholders. The DMP considers (see Figure 1):

- Data Types, Formats, Standards and Capture Methods
- Ethics and Intellectual Property
- Access, Data Sharing and Reuse
- Resourcing
- Deposit and Long-Term Preservation
- Short-Term Storage and Data Management





*Figure 1 Aspects considered in the data management plan.*

## 1.2 Contributions of partners

The main project partners in T9.2 are Utrecht University (UU), RISE and CERTH. UU, as the leader in T9.2, was responsible for coordinating the activities related to the definition of the data model and the DMP for performance and impact measurement. RISE, as the WP9 leader, ensures that all activities were in line with other related WPs by establishing communication with the respective WP leaders. Part of this work entailed cooperation with ongoing projects, initiatives and communities in WP2 (EU wide cooperation with ongoing projects, initiatives and communities). Examples of these projects are the H2020-SCC CITYKEYS project for smart city performance indicators, and facilitation for all performance data to be incorporated into the database of the EU Smart City Innovation System (SCIS).

During the project, the project partners were guided by the T9.2 leader and the WP9 leader on how to provide input and report on data to be generated or collected during the project by using the templates, which were listed for the first time in the third update on the DMP.

## 1.3 Relation to other activities

In Figure 2, the timeline for the DMP development within the IRIS project is illustrated, pointing out interactions with other tasks and WPs. This DMP is a final update of D9.10.

WP9 (Monitoring and Evaluation) and WP4 (City Innovation Platform) activities are connected. This includes the linkage to activities in T4.3 'Data Governance Plan' which is meant to facilitate a smooth, secure and reliable flow of data, including the description of supporting processes and assets, and addressing privacy and ethical issues. The work in T9.2 was performed in close and continuous collaboration with WP 5-7 (Lighthouse cities Utrecht, Nice and Gothenburg) to ensure that the DMP addresses data and relevant developments from the IRIS demonstration activities in the LH. Furthermore, with respect to ethical aspects each LH and FC had its own Ethics Committee and one person was nominated per site as responsible for following the project's recommendations and the National and European legislations (See Section 4.2), thus linking WP9 to WP 5-7 and to WP8 (Replication by Lighthouse regions, Follower cities, and European market uptake). Finally, T9.2 also



ensures privacy and security of sensitive information, for legal or ethical reasons, for issues pertaining to personal privacy, or for proprietary concerns linking to WP3.

The data management plan on a first glance might have some similarities with D9.5 (Data model and management plan for integrated solutions) and D9.5 (Report on monitoring framework in LH cities and established baseline). The main differences are that the data management plan and its updates have its primary focus on the definition of datasets while D9.5 defines the variables within these sets, and how these variables determine the KPIs.

## 1.4 Structure of the deliverable

**Section 2 Methodology:** How the Data management template is defined and updated. How data are gathered from project partners.

**Section 3 Data Management Template:** Introduces and explains all topics that are mentioned in the Data Management Template. This chapter can also be used as a guide to fill in the template.

**Section 4 Ethical aspects:** Refers to the ethical aspects that arise during the production and utilization of data in the IRIS project.

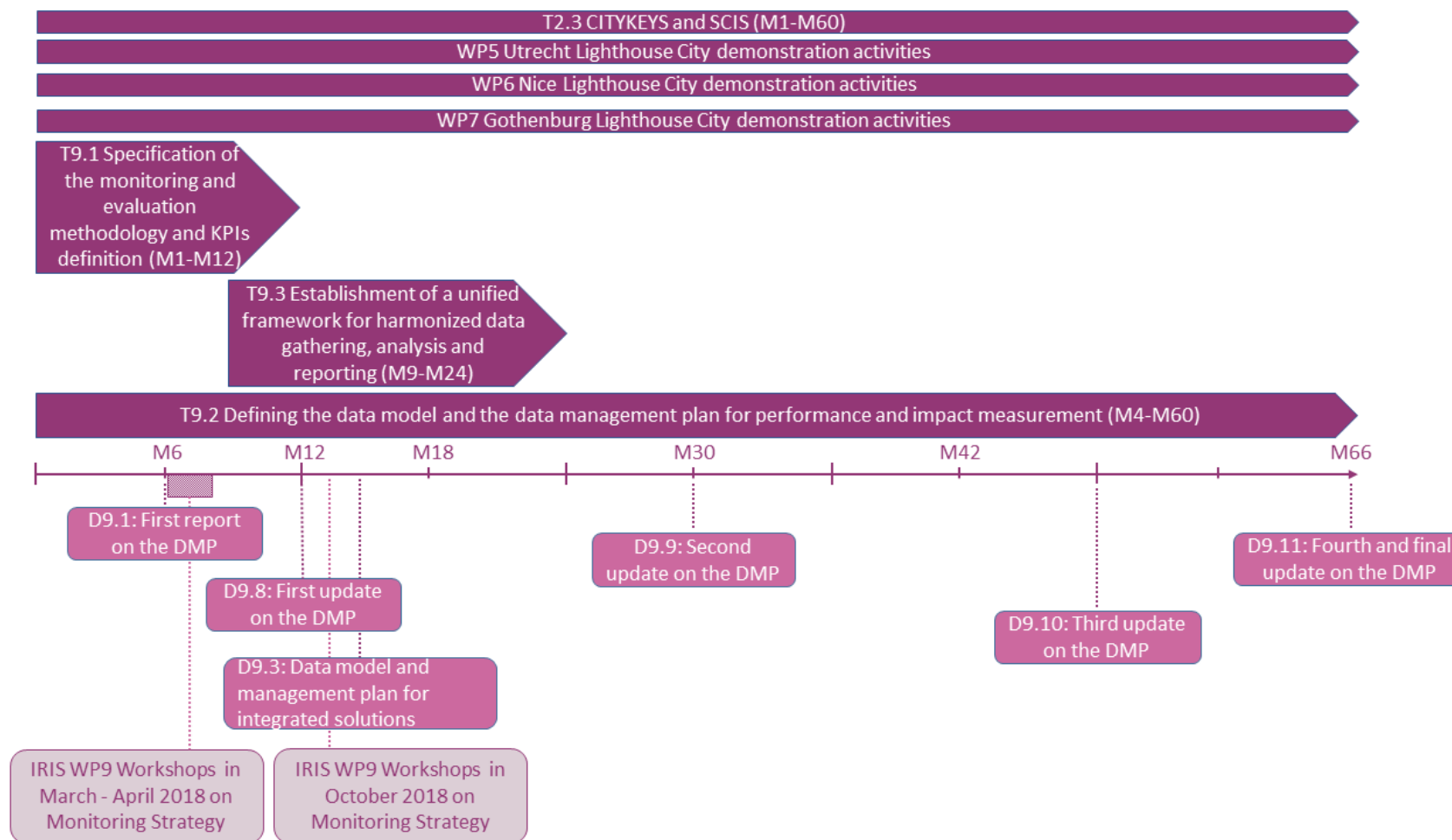


Figure 2 Timeline for the DMP development within the project duration, indicating interactions with other work tasks and packages.



## 2 Methodology

IRIS is a large project, consisting of many smaller Tasks, each one having its own plan for data management. The IRIS data management plan is therefore a combination of several plans. To make sure that these subplans contain all required information about the collected data, the following methodology was developed.

The DMP template was originally based on the horizon 2020 DMP, described in the earlier version of the DMP - D9.1 and D9.8 [3] [4]. New insights that arose from the continuous work on the monitoring and evaluation (WP9), led to the updates made in this report, especially the development of the description of the monitoring plans of the measures in the lighthouse cities (D9.5: Report on monitoring framework in LH-cities and established baseline [5]). Version (D9.9 [6]) gave more explanation and examples, to make it easier for the users to provide the data. In version (D9.10 [7]), the template was filled in for a large part of the datasets. In the final version (D9.11), the DMP template of D9.10 was maintained, only the table of the datasets is updated with the changes made in the final years of the IRIS project.

Figure 3 illustrates the main steps of the methodology (blocks within the circle), and the relevant input to these steps (blocks outside the circle), described in the following paragraphs.

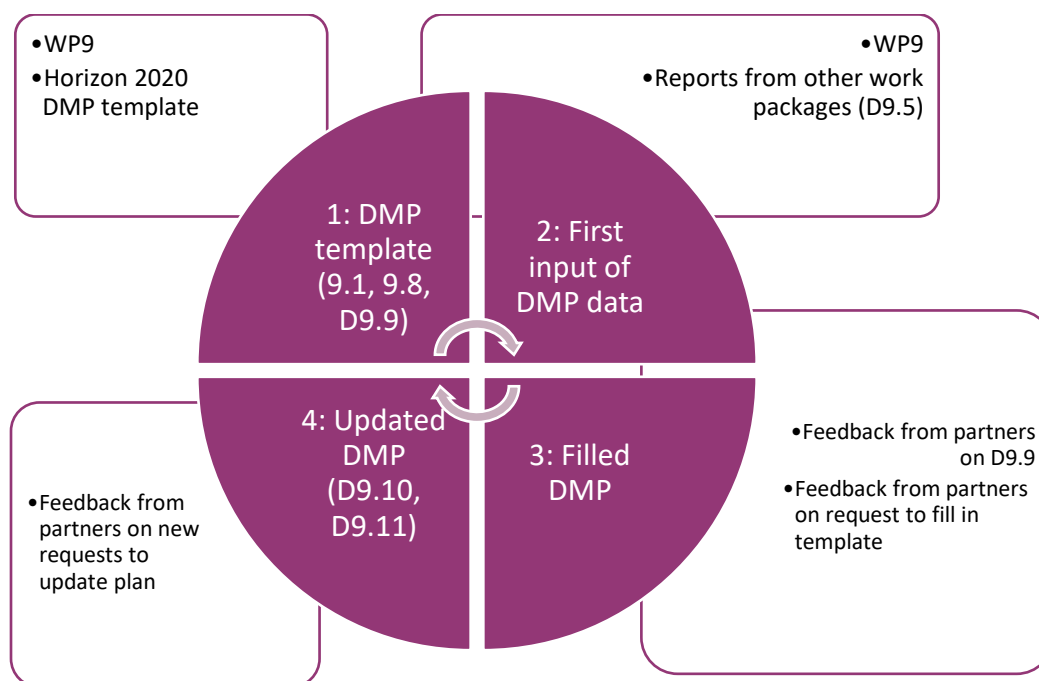


Figure 3 Methodology for updating DMP and DMP template

### 2.1 Development of DMP template

The first quarter of Figure 3 stands for the first versions of the DMP template as it was developed by the WP9 team (D9.1, D9.8 and D9.9). This was based on the Horizon 2020 template and DMP online. The explanations in the DMP template are partly acquired from DMP online [2], which is a website that is built to manage DMP-plans. Instead of making use of this website for creating plans for all subprojects, an Excel



template was made to share with the project partners. This approach was chosen for the following reasons:

- Ease of use:
  - Partners are familiar with the use of Excel
  - Files are easy to share and update within the Emdesk repository (the IRIS project's internal portal), no new logins are required. Plans are saved together with all project data.
- Differences compared to online template:
  - In consultation with different partners that are dealing with data management of their projects, the IRIS DMP template has some additional questions.
  - Explanations of certain topics in the IRIS plan is more detailed and are more directly related to the project.

The DMP template is included in this document in Annex A4 and further described in chapter 3.

## 2.2 First input of DMP data

The next step in developing the template is illustrated with the second quarter in Figure 3. Different reports in the IRIS project already describe where and how certain datasets are generated, as D9.5 (Report on monitoring framework in LH cities and established baseline) - providing a detailed overview of many data variables [5]. With this information at hand, a first compilation of DMP-subplans from several demonstrators was obtained, which was mainly done in the spring of 2021 by the WP9 team.

## 2.3 Revision of DMP data

To accommodate collaboration and ease of data input, the Excel spreadsheet of The Data Management Plan was uploaded into google drive, so it could be shared and edited by means of a link to a webpage.

As soon as the first input into the DMP template was received, lighthouse city managers of Utrecht, Gothenburg and Nice were made aware of the template and the pre-filled data (third quarter in Figure 3).

They were requested to share the information with project partners responsible for the development of datasets within the IRIS project in order to:

- Check if prefilled data was correct
- Update blank fields as far as possible
- In case fields remain blank because the required input was still unknown, to provide information about if, how and when the input will be made clear.
- 3 and 1 month before the 3<sup>rd</sup> update of the DMP (M45), a new request was sent out to the partners to update their data management plans.

The result of this operation is a spreadsheet with information about different datasets that are created during the IRIS project. Which were exported in D9.10 [7].

Although useful information was shared about the above datasets, revision and completion of this information was necessary for the formation of D9.11 (the final version of the DMP). On top of that, new datasets were added to the DMP.



For this reason, another revision loop was organised by WP9 in the final period of the IRIS project, consisting of:

- Checking if prefilled data was correct
- Suggesting new datasets from the information as presented in D9.7
- Updating blank fields as far as possible
- In case fields remain blank because the required input was still unknown, asking for information about if, how and when the input will be made clear.
- 2 months before the final update of the DMP (M66), a new request was sent out to the partners to update their data management plans.

In this final revision loop three datasets were removed from the DMP as the measures which were connected to these sets did not produce the expected data. Furthermore, some changes and updates were done in the detailed information of a part of the datasets.

Table 1 shows an overview of all 24 datasets that are described in the DMP as of March 2023. For each dataset a table is exported with all provided input per topic, these tables can be found in annex A6.

*Table 1 Overview of Datasets in the DMP per city*

City	Dataset
<b>Nice, Annex A6.1</b>	IMREDD Electrical Energy Monitoring Data
	IMREDD Electrical Energy Data
	REPERE Data for Towers 13 & 14
	Thermal Energy Monitoring Data for Towers 13 & 14
	NCA shared EVs Fleet Data
	NCA air quality data
<b>Gothenburg, Annex A6.2</b>	BRF Viva EMS data
	HSB living lab data
	Akademiska hus data
	BRF Viva EC2B data
	Campus EC2B data
	City Information Model evaluation data
	Energy Cloud evaluation data
	Gothenburg City data
<b>Utrecht, Annex A6.3</b>	EnergyDataToon
	Energy data Benext
	Manual data V2Grid car sharing fleet
	Manual data V2Grid bus fleet
	Occupation data of EV charging points
	Smart Street lighting
	Battery usage data
	Wedrivesolar V2G E-cars
	QBuzz monitoring data
	Manual data Questionnaires



## 2.4 Revision for DMP template

The DMP template was, just like the DMP itself, a working document. Even though a lot of effort has been put in the content, questions from partners or new insights led to further improvements of the plan. Each time a revision was made, the template file was updated. After D9.10 no revisions to this template were required anymore. Therefore, the DMP template of this version is like the one represented in D9.10 [7]



## 3 Data management template

The data management template (DMP) is supposed to be used by all partners who produce or handle datasets within the IRIS project, as the partners responsible for the implementation of the measures in the Lighthouse cities. The DMP provides short descriptions and an example for each topic. This information will most likely not be able to provide clarity in all cases, therefore this chapter contains a detailed description of all requested topics in the DMP template. When completing the template for a project, this description should be used to make sure that the proper data was filled in.

Table 2 shows a small excerpt of the template, which consists of the first 4 columns.

- **Section:** The main theme of the underlying topics
- **Topic:** The requested topic of each dataset entry
- **Info:** Short description for each topic
- **DMP §:** Reference to the paragraph in the Data Management Plan (D9.9) for more info

The adjacent column(s) were used by the project partners to provide the requested data. The full template is presented in annex A4.

*Table 2 Excerpt of the Data Management Plan Template*

Section	Topic	Info	DMP §
Data summary			
	<b>Title of dataset</b>	Each dataset should have a unique name which is self-explanatory.	3.1.1
	<b>City</b>	Specify the relevant city for the corresponding data set.	3.1.2
	<b>Transition track</b>	Specify to which specific transition track(s) the data is mainly related. If this is not clear, leave blank.	3.1.3
	<b>Integrated solution</b>	Specify to which specific integrated solution(s) the data is mainly related. If this is not clear, leave blank.	3.1.4

Additional to the examples in this chapter, 3 DMP examples are added to illustrate what is expected in Annex A5.

### 3.1 Data summary

The first section of the table summarizes identification information of the data to be generated or collected during the project. This table includes standardised items and lists as described below.

#### 3.1.1 Title of data set

Each dataset should have a unique name which is self-explanatory. To assure that, keep the following in mind when defining a name for a dataset:





- There is no general rule of what data is covered per dataset. It could be all data being managed in one transition track of a city, but the dataset could also cover one integrated solution only. Datasets which are not clearly related to any transition track are also possible.
- If using abbreviations in the name, make sure that they are commonly understood.
- Since more information about the dataset is covered in later parts of the data management plan, it could be helpful to reconsider the title after having completed the full template.

### 3.1.2 City

Specify the relevant city (Lighthouse or Follower) for the corresponding data set.

### 3.1.3 Transition track

Specify to which specific transition track(s) the data is mainly related. If this is not clear, leave blank.

### 3.1.4 Measure

Specify to which measure(s) the data is mainly related. If this is not clear, leave blank.

### 3.1.5 Purpose

State the purpose of the data collection and generation. Answer questions like: Why is this dataset generated? What is it used for? Are there certain KPIs related to the data collection?

### 3.1.6 Data type

Give a summary of the data you will collect or create. Be sure to note the content, coverage, and data type, e.g., tabular data, survey data, experimental measurements, models, software, audio-visual data, physical samples.

### 3.1.7 Data formats

Specify what data formats are used to store the data:

- Clearly note what format(s) the data will be in, e.g., plain text (.txt), comma-separated values (.csv), geo-referenced TIFF (.tif, .tfw).
- Explain why you have chosen certain formats. Decisions may be based on staff expertise, a preference for open formats, the standards accepted by data centers or widespread usage within a given community.
- Using standardized, interchangeable or open formats ensures the long-term usability of data; these are recommended for sharing and archiving.
- See UK Data Service guidance on [recommended formats](#) or Data ONE Best Practices for [file formats](#). [8] [9]



Examples of format<sup>1</sup> of data to be generated/collected:

- Geo-referenced TIFF (TIF, TFW)
- Hypertext Markup Language (HTML)
- Keyhole Markup Language (KML)
- MS Word (DOC/DOCX)
- MS Excel (XLS/XLSX)
- MS Access (MDB/ACCDB)
- OpenDocument Spreadsheet (ODS)
- Open Document Text (ODT)
- Rich Text Format (RTF)
- SPSS portable format (POR)
- ASCII text-formatted data (TXT)
- CAD data (DWG)
- Comma-separated values (CSV)
- dBase (DBF)
- eXtensible Mark-up Language (XML)
- Tab-delimited file (TAB)
- Geospatial open data based upon JavaScript Object Notation (GeoJSON)

### 3.1.8 Re-use of existing data

Specify if existing data is being reused.

- For example, the use of weather data, or baseline data from other databases.
- If purchasing or reusing existing data, explain how issues such as copyright and Intellectual Property Rights (IPR), have been addressed. You should aim to minimize any restrictions on the reuse (and subsequent sharing) of third-party data.

### 3.1.9 Origin of the data

Specify in plain text the origin(s) of the data. For example, a smart meter, results of a survey, or maybe a combination.

### 3.1.10 Expected size of the data

Specify the expected size of the data and add the appropriate units: Megabytes (MB), Gigabytes (GB) or Terabytes (TB).

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<sup>1</sup> **Note:** When choosing the right **format** for **open data**<sup>1</sup> it is recommended to start with comma separated values (CSV) files. CSV is perfect for tabular data and can be easily loaded into and saved from applications like Excel, making it accessible to users. For geospatial open data formats, formats to be considered are geoJSON (based upon JavaScript Object Notation - JSON) and Keyhole Markup Language (KML) which is based upon Extensible Markup Language – XML. These formats are specifically designed with usability in mind and can easily be imported and exported from specialist mapping tools like Open Street Map and CartoDB.



- Indicate the proportions of raw data, processed data, and other secondary outputs (e.g., reports).
- Consider the implications of data volumes in terms of storage, access and preservation. Do you need to include additional costs?
- Consider whether the scale of the data will pose challenges when sharing or transferring data between sites; if so, how will you address these challenges?

### 3.1.11 Data utility

Specify at least the most important work packages (WP) or tasks (T) in the IRIS project to which the data is related.

- How might your data be reused in other contexts?
- To whom / which fields of research might your data be useful?

## 3.2 Fair data

The IRIS project partners will ensure that the project research data will be 'FAIR', that is findable, accessible, interoperable, and re-usable.

For all the data produced and/or used in the project, the project partners will put effort in:

- Making data Findable, including provisions for metadata
- Making data openly Accessible
- Making data Interoperable
- Increase data Re-use (through clarifying licences)

More information about FAIR can be accessed through the FORCE11 community [10]. The following paragraphs cover all topics that should be treated for each dataset to make sure that FAIR data will be achieved within the IRIS project.

### 3.2.1 Metadata provision

Outline the discoverability of data (metadata provision)

- What metadata will be provided to help others identify and discover the data?
- Researchers are strongly encouraged to use community metadata standards where these are in place. The Research Data Alliance offers a [Directory of Metadata Standards](#). Data repositories may also provide guidance about appropriate metadata standards [11].
- Consider which documentation is needed to enable reuse. This may include information on the methodology used to collect the data, analytical and procedural information, definitions of variables, units of measurement, any assumptions made, the format and file type of the data and software used to collect and/or process the data.
- Consider how you will capture this information and where it will be recorded, e.g., in a database with links to each item, in a 'readme' text file, in file headers, etc.



## 3.2.2 Identifiability

Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?

## 3.2.3 Naming conventions

Outline naming conventions used.

For example:

- Using of capitals letters to delimit words, instead of spaces
- Stating dates back to front: YYYYMMDDHHMM
- The meaning of abbreviations used in the datasets.

## 3.2.4 Search keywords

Outline the approach towards search keywords, for example:

- A table of keywords for the dataset has been developed by the project leaders.
- Keywords and their hierarchy were produced in consultation with project partners.
- Keywords will be reviewed and updated with each revision of the dataset.

## 3.2.5 Versioning

Outline the approach for clear versioning, for example:

- Including the version number in the file names and within the documents.
- A version control table to provide further details on changes to a document/ file.

## 3.2.6 Open Data

Specify which data will be made openly available. If some data is kept closed provide rationale for doing so.

Participating in the Open Research Data (ORD) Pilot does not necessarily mean opening all your research data. Rather, the ORD pilot follows the principle "as open as possible, as closed as necessary" and focuses on encouraging sound data management as an essential part of research best practice.

The EU Commission recognizes that there are good reasons to keep some or even all research data generated in a project closed. Where data need to be shared under restrictions, explain why, clearly separating legal and contractual reasons from voluntary restrictions.

Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if relevant provisions are made in the consortium agreement and are in line with the reasons for opting out.

## 3.2.7 Availability

Specify how the data will be made available.



For example, by deposition in a repository. The [Registry of Research Data Repositories](#) provides a useful listing of repositories that you can search to find a place of deposit [12].

If you plan to deposit in a repository, it is useful to explore appropriate arrangements with the identified repository in advance.

### 3.2.8 Accessibility (software / method)

Specify what methods or software tools are needed to access the data. Is documentation about the software needed to access the data included? Is it possible to include the relevant software, e.g., in open-source code?

### 3.2.9 Deposition / storage

Specify where the data and associated metadata, documentation and code are deposited.

- Where will the data be deposited? If you do not propose to use an established repository, the data management plan should demonstrate that the data can be curated effectively beyond the lifetime of the grant.
- It helps to show that you have consulted with the repository to understand their policies and procedures, including any metadata standards, and costs involved.
- An international list of data repositories is available via [re3data](#) and some universities or publishers provide lists of recommendations e.g., [PLOS ONE recommended repositories](#). [13]

### 3.2.10 Access restrictions

Specify how access will be provided in case there are any restrictions.

For example, is there a need for a data access committee?

### 3.2.11 Interoperability

Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.

Interoperability means allowing exchange and re-use of data between researchers, institutions, organisations, countries, etc. Which means adhering to standards for formats, as much as possible compliant with available (open) software applications and facilitating re-combinations with different datasets from different origins.

### 3.2.12 Vocabulary

Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability. If not, will you provide mapping to more commonly used ontologies?

### 3.2.13 License

Specify how the data will be licensed to permit the widest reuse possible.



The [EUDAT B2SHARE](#) tool includes a built-in license wizard that facilitates the selection of an adequate license for research data [14].

### 3.2.14 When available? (Embargo?)

Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is required.

Reasons for embargoes may include time to publish or seek patents. If an embargo is sought, specify why and for how long, bearing in mind that research data should be made available as soon as possible. Research funders expect timely release, and typically allow embargoes but not prolonged exclusive use.

### 3.2.15 Restrictions for use

Specify whether the data produced and/or used in the project is useable by third parties, after the end of the project. If the re-use of some data is restricted, explain why. Who will be able to use the data? If access needs to be restricted to certain communities, or data sharing agreements need to be applied, explain why. Consider strategies to minimise restrictions on sharing. These may include anonymising or aggregating data, gaining participant consent for data sharing, gaining copyright permissions, and agreeing a limited embargo period.

### 3.2.16 Quality assurance

Describe data quality assurance processes.

- Explain how the consistency and quality of data collection will be controlled and documented. This may include processes such as calibration, repeat samples or measurements, standardised data capture, data entry validation, peer review of data or representation with controlled vocabularies.
- See the DataOne Best Practices for [data quality](#). [9]

### 3.2.17 Preservation

Specify the length of time for which the data will remain re-usable.

## 3.3 Allocation of resources

Note that costs related to open access to research data are eligible as part of the Horizon 2020 grant (if compliant with the Grant Agreement conditions). [15]

Costs are eligible for reimbursement during the duration of the project under the conditions defined in the H2020 Grant Agreement, in particular Article 6 and Article 6.2.D.3, but also other articles relevant for the cost category chosen.

### 3.3.1 Costs for FAIR data

Estimate the costs for making your data FAIR. Describe how you intend to cover these costs.



- Carefully consider and justify any resources needed to deliver the plan. These may include storage costs, hardware, staff time, costs of preparing data for deposit and repository charges.
- Outline any relevant technical expertise, support and training that is likely to be required and how it will be acquired.
- If you are not depositing in a data repository, ensure you have appropriate resources and systems in place to share and preserve the data. See UK Data Service guidance on costing data management.

### 3.3.2 Responsibilities

Clearly identify responsibilities for data management in your project.

### 3.3.3 Costs for preservation

Describe costs and potential value of long-term preservation. Consider who decides what data will be kept and for how long.

## 3.4 Data security

Address data recovery as well as secure storage and transfer of sensitive data. Also consider whether the data is safely stored in certified repositories for long term preservation and curation.

For all the data produced and/or used in the project, the project partners will ensure data security. For each described dataset the partners will state the provisions taken for data security. This includes data recovery as well as secure storage and transfer of sensitive data. Further on, it defines how long-term preservation and curation in certified repositories will take place.

## 3.5 Ethical aspects

Consider whether there are any ethical or legal issues than can have an impact on data sharing. For example, is informed consent for data sharing and long-term preservation included in questionnaires dealing with personal data?

- Investigators carrying out research involving human participants should request consent to preserve and share the data. Do not ask for permission to use the data in only one study or make unnecessary promises to delete it at the end.
- Consider how to protect the identity of participants, e.g., via anonymization or using managed access procedures.
- Ethical issues may affect how to store and transfer data, who can see/use it and how long it is kept. You should demonstrate that you are aware of this and have planned accordingly.
- See chapter 4
- See UK Data Service guidance on [consent for data sharing](#).
- See [ICPSR approach to confidentiality](#) and Health Insurance Portability and Accountability Act ([HIPAA regulations for health research](#)).



## 3.6 Other

Refer to other national, funder, sectorial or departmental procedures for data management that you are using (if any).

- Consider whether there are any existing procedures that you can base your approach on. If your group/department has local guidelines that you work to, point to them here.

List any other relevant funder, institutional, departmental or group policies on data management, data sharing and data security.





## 4 Ethical aspects on project level

Apart from the ethical aspects as described in 3.5 for each subproject within IRIS, ethical aspects are also considered on IRIS level, briefly described in this chapter. More information can be found in the ethics deliverables D12.1: H - Requirement No. 1 and D12.2: POPD - Requirement No.2 [16] [17]

For all the data produced and/or used in the project, the project partners will consider ethical aspects. Specifically, the project partners will address all obligations as described in the Description of the Action (DoA), in ARTICLE 34 'ETHICS AND RESEARCH INTEGRITY' [15]. Thus, the IRIS project will assure the investigation, management and monitoring of ethical and privacy issues that could be relevant to its envisaged technological solution and will establish a close cooperation with the Ethics Helpdesk of the European Commission. The consortium is aware that several privacy and data protection issues could be raised by the activities in WP5, WP6 and WP7 performed in the scope of the project. The project involves the carrying out of data collection in all LHs and FCs to assess the effectiveness of the proposed solutions. For this reason, human participants will be involved in certain aspects of the project and data will be collected. This will be done in full compliance with any European and national legislation and directives relevant to the country where the data collections are taking place, as well as with the EU General Data Protection Regulation (GDPR), which replaces the Directive 95/46/EC, with enforcement date the 25<sup>th</sup> of May 2018 [18].

### 4.1 IRIS Ethical Policy

IRIS will follow the opinions of various expert committees in the field (e.g., the European group on ethics in science and new technologies to the European Commission. In addition, all national legal and ethical requirements of the Member States where the research is performed will be fulfilled. Any data collection involving humans will be strictly held confidential at any time of the research. This means in detail that:

- All the test subjects will be informed and given the opportunity to provide their consent to any monitoring and data acquisition process. All the subjects will be strictly volunteers and will receive detailed oral information about the data acquisition process.
- No personal or sensitive data will be centrally stored. In addition, data will be scrambled where possible and abstracted in a way that will not affect the final project outcome.

In addition, test subjects will receive in their own language:

- An easily understandable written description of the project and its goals.
- The planned project progress and the related testing and evaluation procedures.
- Advice on unrestricted disclaimer rights on their agreement.

On the other hand, an Ethics Helpdesk will scrutinise the research, to guarantee that no undue risk for the user, neither technically nor related to the breach of privacy, is possible. Thus, the IRIS consortium shall implement the research project in full respect of the legal and ethical national requirements and code of practice. Whenever authorisations must be obtained from national bodies, those authorisations shall be considered as documents relevant to the project. Copies of all relevant authorisations shall be submitted to the EU Commission prior to commencement of the relevant part of the research project.



## 4.2 IRIS Ethics Helpdesk

All used assessment tools and protocols within IRIS' LHs and FCs will be verified beforehand by its Ethics helpdesk regarding their impact to business actors and end users before being applied to the sites. The helpdesk takes responsibility for implementing and managing the ethical and legal issues of all procedures in the project, ensuring that each of the partners provides the necessary participation in IRIS and its code of conduct towards the participants. Each LH and FC will have its own Ethics Committee and one person will be nominated per site as responsible for following the project's recommendations and the National and European legislations.

## 4.3 Data to be collected within IRIS' LHs and FCs

Data will be collected both manually and automatically by smart sensors and other proprietary equipment installed at selected areas during the execution of the demonstration activities, and will be further analysed within WP5, WP6 and WP7. In most cases the collected data will be needed for monitoring the contextual conditions of the pilot areas (energy consumption, energy production, temperature, humidity, weather etc.). Since some of the collected data in the latter case may involve sensitive personal data, all provisions for data management will be made in compliance with national and EU legislation, including the European Network for Information and Security Agency<sup>2</sup> security measures to minimise the risk to data protection arising from smart metering, and the British Sociological Association's Statement of Ethical Practice, as described in the following paragraphs.

The project research data will be collected in two phases:

- Before the implementation of the demonstration activities in the LH (for baselines, references and design data).
- After the implementation of the demonstration activities in the LH (for evaluation purposes).

The consent procedure for the pilot use case realisation at each of the selected sites will make use of a consent form template, to be adopted as required to each site. Such a template is included in the Consent form template, see Annex 3. These templates are provided in English but should be translated into the most important spoken languages of the related Lighthouse Cities for easy understanding by the end users.

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<sup>2</sup> European Network and Information Security Agency - Appropriate security measures for smart grids - Guidelines to assess the sophistication of security measures implementation, 2012-12-06



## 5 Conclusion

The main objective of the Data Management Plan (DMP) was to accommodate the availability and sharing of project data in order to increase the impact of IRIS activities. The DMP was developed as an iterative process together with different stakeholders. The basis of the DMP was the data management template, which provides an overview of all required information for each dataset, as well as examples and an explanation of what is meant for each case.

By filling in the DMP-template for different measures in the 3 Lighthouse Cities; Nice, Gothenburg and Utrecht, 24 unique datasets were defined and described in Annex A6.

During the final year of the IRIS project, the last version of the DMP was updated one last time to reflect the most up-to-date information. This involved the addition of new datasets, removal of some datasets and updating of existing datasets with the latest available information.



## References

- [1] EC, “European Commission,” 26 07 2016. [Online]. Available: [https://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-data-mgt\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf).
- [2] DMPonline, “Horizon 2020 DMP,” 30 3 2020. [Online]. Available: <https://dmponline.dcc.ac.uk/>.
- [3] IRIS, “D9.1: First report on data management plan (DMP),” Utrecht, 2018.
- [4] IRIS, “D9.8: First update of the Data Management Plan (DMP),” Utrecht, 2018.
- [5] IRIS, “D9.5: Report on monitoring framework in LH-cities and established baseline,” Utrecht, 2020.
- [6] IRIS, “D9.9: Second update of the Data Management Plan (DMP),” Utrecht, 2020.
- [7] IRIS, “D9.10: Third update of the Data Management Plan,” Utrecht, 2021.
- [8] UKDataService, “UK Data Service,” 30 03 2020. [Online]. Available: <https://www.ukdataservice.ac.uk/manage-data/format/recommended-formats>.
- [9] DataOne, “DataOne,” 30 03 2020. [Online]. Available: <https://www.dataone.org/best-practices/document-and-store-data-using-stable-file-formats>.
- [10] FORCE11, “The FAIR data principles,” 2017. [Online]. Available: <https://www.force11.org/group/fairgroup/fairprinciples>. [Accessed 1 Mar. 2018].
- [11] RDA, “RDA Metadata Standards Directory,” 30 3 2020. [Online]. Available: <http://rd-alliance.github.io/metadata-directory/>.
- [12] re3data, “Registry of Research Data Repositories,” 03 30 2020. [Online]. Available: <https://www.re3data.org/>.
- [13] PLOS, “PLOS ONE,” 01 05 2019. [Online]. Available: <https://journals.plos.org/plosone/s/data-availability>.
- [14] EUDAT, “EUDAT,” 30 03 2020. [Online]. Available: <https://b2share.eudat.eu/>.
- [15] IRIS, “IRIS Grant Agreement,” 2016.
- [16] IRIS, “D12.1: H - Requirement No. 1,” Utrecht, 2018.
- [17] IRIS, “D12.2: POPD - Requirement No.2,” Utrecht, 2018.



- [18] P. T. AG, “Complete guide to GDPR compliance,” 2020. [Online]. Available: <https://gdpr.eu/>. [Accessed 02 04 2020].

# A1. Summary Table

Table 3 provides a summary of all the issues to be covered in the DMP and will be used as a checklist for all reported datasets in the update of the DMP.

*Table 3 Summary table of FAIR Data Management.*

DMP component	Issues to be addressed
1. Data summary	<ul style="list-style-type: none"> <li>• State the purpose of the data collection/generation</li> <li>• Explain the relation to the objectives of the project</li> <li>• Specify the types and formats of data generated/collected</li> <li>• Specify if existing data is being re-used (if any)</li> <li>• Specify the origin of the data</li> <li>• State the expected size of the data (if known)</li> <li>• Outline the data utility: to whom will it be useful</li> </ul>
<b>2. FAIR Data</b> 2.1. Making data findable, including provisions for metadata	<ul style="list-style-type: none"> <li>• Outline the discoverability of data (metadata provision)</li> <li>• Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?</li> <li>• Outline naming conventions used</li> <li>• Outline the approach towards search keyword</li> <li>• Outline the approach for clear versioning</li> <li>• Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how</li> </ul>

2.2 Making data openly accessible	<ul style="list-style-type: none"> <li>Specify which data will be made openly available? If some data is kept closed provide rationale for doing so</li> <li>Specify how the data will be made available</li> <li>Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g., in open-source code)?</li> <li>Specify where the data and associated metadata, documentation and code are deposited</li> <li>Specify how access will be provided in case there are any restrictions</li> </ul>
2.3. Making data interoperable	<ul style="list-style-type: none"> <li>Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.</li> <li>Specify whether you will be using standard vocabulary for all data types present in your data set, to allow interdisciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?</li> </ul>
2.4. Increase data re-use (through clarifying licences)	<ul style="list-style-type: none"> <li>Specify how the data will be licenced to permit the widest reuse possible</li> <li>Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed</li> <li>Specify whether the data produced and/or used in the project is useable by third parties, after the end of the project? If the re-use of some data is restricted, explain why</li> <li>Describe data quality assurance processes</li> <li>Specify the length of time for which the data will remain re-usable</li> </ul>
3. Allocation of resources	<ul style="list-style-type: none"> <li>Estimate the costs for making your data FAIR. Describe how you intend to cover these costs</li> <li>Clearly identify responsibilities for data management in your project</li> <li>Describe costs and potential value of long-term preservation</li> </ul>
4. Data security	<ul style="list-style-type: none"> <li>Address data recovery as well as secure storage and transfer of sensitive data</li> </ul>
5. Ethical aspects	<ul style="list-style-type: none"> <li>To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former</li> </ul>
6. Other	<ul style="list-style-type: none"> <li>Refer to other national/funder/sectorial/departamental procedures for data management that you are using (if any)</li> </ul>



## A2. Further support in developing the DMP

The Research Data Alliance provides a [Metadata Standards Directory](#) that can be searched for discipline-specific standards and associated tools.

The [EUDAT B2SHARE](#) tool includes a built-in license wizard that facilitates the selection of an adequate license for research data.

Useful listings of repositories include: [Registry of Research Data Repositories](#)

Some repositories like [Zenodo](#), an OpenAIRE and CERN collaboration, allow researchers to deposit both publications and data, while providing tools to link them.

Other useful tools include [DMP online](#) and platforms for making individual scientific observations available such as [ScienceMatters](#).



## A3. Consent form template



**IRIS**

Integration and Replication  
for Sustainable Cities

### Consent Form

#### Project Purpose

- *A commonly understandable written description of the project and its goals even for people that are not familiar to the project scope (2-3 paragraphs)*

#### Project Progress Schedule

- *The progress schedule of the project and the related testing and evaluation procedures (1-2 paragraphs)*

#### Disclaimer Rights

- *Advice on unrestricted disclaimer rights on their agreement.*

## Voluntary Participation Form

### 1. General Information

- *Participant basic information*
- *ID (reference code) of the participant, which will be used throughout the pilot trial execution)*

### 2. Study Information

- *Details about the Demonstration*

### 3. Participant's Questionnaire

- *has been fully informed on the purpose, duration, procedures of the study;*
- *has been informed on the rights to deny participating or to quit from the study and about the corresponding consequences.*
- *has been informed on the contact person in case that I have questions and queries about the study.*
- *had adequate time to make my decision concerning my participation in the study.*
- *comprehend that he/she can quit from the study at any time without having to justify his/her decision.*
- *has been informed about potential effects, difficulties and dangers.*
- *has been informed about the sensors equipment that will be used to collect data.*
- *has been informed about the security of the study data and results.*
- *has been ensured about the confidentiality of his/her personal information. Publications of the study results do not allow the personal data recognition, due to the principle of anonymity. Always under the confidentiality principles.*

### 4. Signed Consent to Participate

- *A signed consent of the participant allowing the study responsible to examine and inspect the data collected during the study.*

## A4. Data management plan template

Section	Topic	Info	DMP §
<b>Data summary</b>			
	<b>Title of dataset</b>	Each dataset should have a unique name which is self-explanatory.	3.1.1
	<b>City</b>	Specify the relevant city for the corresponding data set.	3.1.2
	<b>Transition track</b>	Specify to which specific transition track(s) the data is mainly related. If this is not clear, leave blank.	3.1.3
	<b>Measure</b>	Specify to which specific measure the data is mainly related. If this is not clear, leave blank.	3.1.4
	<b>Purpose</b>	State the purpose of the data collection/generation	3.1.5
	<b>Relation to project objective</b>	Select the objective of the project (1-8) that relates to the purpose of the data to be generated or collected (check sheet 'project objectives' or D9.9 for full list)	3.1.6
	<b>Data types</b>	Give a summary of the data you will collect or create	3.1.7
	<b>Data formats</b>	Specify what data formats are used to store the data	3.1.8
	<b>Re-use of existing data</b>	Specify if existing data is being reused.	3.1.9
	<b>Origin of the data</b>	Specify in plain text the origin of the data. For example, a smart meter, results of a survey,	3.1.10
	<b>Expected size of the data</b>	Specify the expected size of the data and add the appropriate units:	3.1.11
	<b>Data utility</b>	To whom will the data be useful? Specify at least the most important work packages (WP) or tasks (T) to which the data is related.	3.1.12
<b>FAIR data</b>			
<b>Findable</b>	<b>Metadata provision</b>	Outline the discoverability of data (metadata provision)	3.2.1
	<b>Identifiability</b>	Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?	3.2.2
	<b>Naming conventions</b>	Outline naming conventions used	3.2.3
	<b>Search keywords</b>	Outline the approach towards search keywords	3.2.4

Section	Topic	Info	DMP §
<b>Available</b>	<b>Versioning</b>	Outline the approach for clear versioning	3.2.5
	<b>Open data</b>	Specify which data will be made openly available? If some data is kept closed provide rationale for doing so	3.2.6
	<b>Availability</b>	Specify how the data will be made available	3.2.7
	<b>Accessibility (software / method)</b>	Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?	3.2.8
	<b>Deposition / storage</b>	Specify where the data and associated metadata, documentation and code are deposited	3.2.9
	<b>Access restrictions</b>	Specify how access will be provided in case there are any restrictions	3.2.10
<b>Interoperable</b>	<b>Interoperability</b>	Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.	3.2.11
	<b>Vocabulary</b>	Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?	3.2.12
<b>Reusable</b>	<b>License</b>	Specify how the data will be licensed to permit the widest reuse possible	3.2.13
	<b>When available? (embargo?)</b>	Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed	3.2.14
	<b>Restrictions for use</b>	Specify whether the data produced and/or used in the project is useable by third parties, after the end of the project. If the re-use of some data is restricted, explain why	3.2.15
	<b>Quality assurance</b>	Describe data quality assurance processes	3.2.16
	<b>Preservation</b>	Specify the length of time for which the data will remain re-usable	3.2.17
<b>Allocation of resources</b>			
	<b>Costs for fair data</b>	Estimate the costs for making your data FAIR. Describe how you intend to cover these costs	3.3.1
	<b>Responsibilities</b>	Clearly identify responsibilities for data management in your project	3.3.2
	<b>Costs for preservation</b>	Describe costs and potential value of long-term preservation	3.3.3

Section	Topic	Info	DMP §
Data security		Address data recovery as well as secure storage and transfer of sensitive data	3.4
Ethical aspects		To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former	3.5
Other		Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)	3.6

## A5. DMP examples

### A5.1 Example 1

Section	Topic	Example 1
Data summary		
	<b>Title of dataset</b>	EnergyDataToon
	<b>City</b>	Utrecht
	<b>Transition track</b>	Mainly related to TT1, also partly related to TT5
	<b>Integrated solution</b>	1.1, 1.4, 1.5
	<b>Purpose</b>	Data is collected through the Home Energy Management System (HEMS) Toon device for the following purposes: -Calculation of the annual energy production of the installed solar panels -Calculation of the Electrical energy consumption of the households before, after and during renovation -Calculation of the Thermal energy consumption of the households before, after and during renovation
	<b>Relation to project objective</b>	Objective 1: Demonstrate solutions at district scale integrating smart homes and buildings, smart renewables and closed-loop energy positive districts
	<b>Data types</b>	The data mainly consists of tabular data with floating point numbers
	<b>Data formats</b>	The data is stored in CSV files, metadata in ODF files
	<b>Re-use of existing data</b>	Non-reuse of existing data
	<b>Origin of the data</b>	Toon is a Home Energy Management System (HEMS) which uses a smart meter as input
	<b>Expected size of the data</b>	For the whole project this will not exceed 10 GB
	<b>Data utility</b>	WP9, WP5. The data is useful for people interested in: -NZEB refurbishment -Energy use of households -PV production -Home Energy Management Systems -Smart electric heat pumps
FAIR data		

Section	Topic	Example 1
<b>Findable</b>	<b>Metadata provision</b>	The dataset description on the CIP will include a readme file (in ODF) format, which provides specific information about the dataset
	<b>Identifiability</b>	Not known yet
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	15 minute data, aggregated per apartment building will be made openly available. Aggregation up to this level must be done to protect privacy
	<b>Availability</b>	The data will be made available through the CIP
	<b>Accessibility (software / method)</b>	The use of CSV makes it accessible without special tools
	<b>Deposition / storage</b>	Raw data will be stored on servers of Quby
	<b>Access restrictions</b>	Access to aggregated data can be done through the data market of the CIP
<b>Interoperable</b>	<b>Interoperability</b>	
	<b>Vocabulary</b>	
<b>Reusable</b>	<b>License</b>	CC
	<b>When available? (embargo?)</b>	The data is available as soon as it is connected to the CIP
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	Quby automatically deletes extreme outliers from the dataset
	<b>Preservation</b>	The data will remain available until 2030
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	Costs for fair data are expected to be around 5k € for the whole project, this is being paid partly from the project budget and partly from the general costs for IT services
	<b>Responsibilities</b>	Eneco is the owner of the data and has the responsibility towards its customers to respect their privacy. It has the responsibility towards the IRIS project to make data available for scientific research. Quby stores data and shares aggregated data with the CIP Civity manages the City Innovation Platform (CIP) which shares aggregated data with the KPI-tool.
	<b>Costs for preservation</b>	Costs for storage of 1GB of data for 10 years are negligible

Section	Topic	Example 1
Data security		Sensitive data is only accessible through a username and password.
Ethical aspects		All privacy sensitive data will be protected as described in XXX. Access and utilization of the data is only allowed as described in XX
Other		

## A5.2 Example 2

Section	Topic	Example 2
Data summary		
	<b>Title of dataset</b>	BRF Viva EMS data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT1 and TT2
	<b>Integrated solution</b>	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.4
	<b>Purpose</b>	Data is collected to the advanced energy management system of Brf Viva to: -Implement intelligent control of the installations to optimize the use of them -Follow up and evaluation of performance of the installations
	<b>Relation to project objective</b>	Objective 1: Demonstrate solutions at district scale integrating smart homes and buildings, smart renewables, and closed-loop energy positive districts. Objective 2: Demonstrate smart energy management and storage solutions targeting Grid flexibility.
	<b>Data types</b>	The data mainly consists of floating-point numbers.
	<b>Data formats</b>	Data is delivered to IRIS in XLS files? Or CSV?
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	In Brf Viva there are smart meters gathering data to the energy management system.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in: - Advanced energy management system to optimize storage and utilization of renewable energy
FAIR data		
Findable	<b>Metadata provision</b>	The dataset will include a readme file providing specific information about the dataset
	<b>Identifiability</b>	Not know yet



Section	Topic	Example 2
Available	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	
	<b>Accessibility (software / method)</b>	Data will be available online, but requires authentication.
Interoperable	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	Access to data requires authentication.
	<b>Interoperability</b>	
Reuseable	<b>Vocabulary</b>	
	<b>License</b>	
	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Confidential data
	<b>Quality assurance</b>	
	<b>Preservation</b>	
Allocation of resources		
	<b>Costs for fair data</b>	?
	<b>Responsibilities</b>	Brf Viva and Göteborg Energi.
	<b>Costs for preservation</b>	Negligible
<b>Data security</b>		The data is confidential and only available after authentication
<b>Ethical aspects</b>		
<b>Other</b>		

## A5.3 Example 3

Section	Topic	Example 3
Data summary		
	Title of dataset	HSB living lab data
	City	Gothenburg
	Transition track	TT1
	Integrated solution	1.7
	Purpose	Data is collected at HSB living lab to evaluate the Building Integrated Photo Voltaics (BIPV) in the facade.
	Relation to project objective	Objective 1: Demonstrate solutions at district scale integrating smart homes and buildings, smart renewables and closed-loop energy positive districts.
	Data types	The data mainly consists of floating-point numbers.
	Data formats	Not know yet
	Re-use of existing data	
	Origin of the data	In HSB living lab there are smart meters gathering data.
	Expected size of the data	Expected to be some MB.
	Data utility	WP9, WP7. The data is useful for people interested in BIPV.
FAIR data		
Findable	Metadata provision	The dataset will include a readme file providing specific information about the dataset
	Identifiability	Not know yet
	Naming conventions	No naming conventions
	Search keywords	
	Versioning	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
Available	Open data	All data is stated to be confidential.
	Availability	
	Accessibility (software / method)	Data will be available online, but requires authentication.
	Deposition / storage	
	Access restrictions	Access to data requires authentication.
Interoperable	Interoperability	
	Vocabulary	

Section	Topic	Example 3
Reusable	License	
	When available? (embargo?)	
	Restrictions for use	Confidential data
	Quality assurance	
	Preservation	
Allocation of resources		
	Costs for fair data	
	Responsibilities	
	Costs for preservation	
Data security		The data is confidential and only available after authentication
Ethical aspects		
Other		

## A6. Input of the Data Management Plan

### A6.1 Nice

Section	Topic	
Data summary		
	<b>Title of dataset</b>	IMREDD Electrical Energy Monitoring Data
	<b>City</b>	NCA
	<b>Transition track</b>	1
	<b>Measure</b>	1
	<b>Purpose</b>	Evaluate the expected impact
	<b>Data types</b>	<p>Monthly data for:</p> <ul style="list-style-type: none"> <li>- Delivered electrical energy from energy carrier (MWh)</li> <li>- Exported electrical energy to energy carrier (MWh)</li> <li>- Electric energy consumption Reference (kWh/year)</li> <li>- Electric energy production by RES Baseline (kWh/month or year)</li> <li>- Electric energy production by RES (kWh/month or year)</li> <li>- Electric energy consumption (kWh/year)</li> </ul> <p>Annual data for:</p> <ul style="list-style-type: none"> <li>- Storage capacity installed (kWh)</li> <li>- investments for energy/CO2 related measures annualized (€)</li> <li>- Annual costs related to energy/CO2 measures (€)</li> </ul> <p>Reference values for:</p> <ul style="list-style-type: none"> <li>- the CO2 coefficient from delivered electrical energy carrier (t CO2/MWh)</li> <li>- the CO2 coefficient for exported electrical energy carrier (t CO2/MWh)</li> <li>- Building Area (m<sup>2</sup>)</li> </ul>
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	no reuse of data
	<b>Origin of the data</b>	KPI tool

	<b>Expected size of the data</b>	
	<b>Data utility</b>	
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
<b>Available</b>	<b>Versioning</b>	
	<b>Open data</b>	
	<b>Availability</b>	KPI tool
<b>Section</b>	<b>Topic</b>	
<b>Data summary</b>		
	<b>Title of dataset</b>	IMREDD Electrical Energy Data
	<b>City</b>	NCA
	<b>Transition track</b>	1
	<b>Measure</b>	1
	<b>Purpose</b>	Increase self-consumption
	<b>Data types</b>	<ul style="list-style-type: none"> <li>• Building electricity loads separately (private spaces, common spaces, park areas ...).</li> <li>• Electricity generated by the PV panels.</li> <li>• Electricity imported from the grid.</li> <li>• Electricity exported to the grid.</li> <li>• Electricity provided by the battery to the building.</li> <li>• Level of charge of the electric battery relative to its capacity, SoC (provided by the battery management system).</li> <li>• Electricity demand from auxiliary system (ventilation, lighting, micro controllers from EMS and BMS etc.).</li> </ul>
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	Reuse of dataset IMREDD Electrical Energy Data
	<b>Origin of the data</b>	Smart meters, BESS, EMS
	<b>Expected size of the data</b>	

**Data utility**

Section	Topic	
Data summary		
	<b>Title of dataset</b>	REPERE Data for Towers 13 & 14
	<b>City</b>	NCA
	<b>Transition track</b>	1
	<b>Measure</b>	3
	<b>Purpose</b>	Assess the achieved energy savings using the REPERE service
	<b>Data types</b>	<ul style="list-style-type: none"> <li>- Air temperature</li> <li>- Humidity sensor</li> <li>- Thermal energy consumption</li> <li>- Electrical energy consumption</li> </ul>
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	no reuse of data
	<b>Origin of the data</b>	
	<b>Expected size of the data</b>	
	<b>Data utility</b>	

Section	Topic	
Data summary		
	<b>Title of dataset</b>	Thermal Energy Monitoring Data for Towers 13 & 14
	<b>City</b>	NCA
	<b>Transition track</b>	1
	<b>Measure</b>	2
	<b>Purpose</b>	Evaluate the expected impact
	<b>Data types</b>	Annual data for: <ul style="list-style-type: none"> <li>- Thermal energy consumption (kWh/year)</li> <li>- Thermal energy consumption Reference (kWh/year)</li> </ul>

FAIR data Findable             Available		<ul style="list-style-type: none"> <li>- investments for energy/CO2 related measures annualized (€)</li> <li>- annual costs related to energy/CO2 measures (€)</li> </ul> <p>Reference values for:</p> <ul style="list-style-type: none"> <li>- Building Area (m<sup>2</sup>)</li> <li>- the CO2 coefficient for thermal energy consumption (t CO2/MWh)</li> </ul>
	Data formats	
	Re-use of existing data	REPERE Data for Towers 13 & 14
	Origin of the data	
	Expected size of the data	
	Data utility	
	Metadata provision	
	Identifiability	
	Naming conventions	
	Search keywords	
	Versioning	
	Open data	
	Availability	KPI Tool
	Accessibility (software / method)	
	Deposition / storage	
	Access restrictions	

Section	Topic	
Data summary		
	Title of dataset	NCA shared EVs Fleet Data
	City	NCA
	Transition track	3
	Measure	2
	Purpose	Povision, evaluation and optimisation of the solution

<b>FAIR data</b>  <b>Findable</b>          <b>Available</b>	<b>Data types</b>	Data collected from VULOG
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	VULOG platform
	<b>Expected size of the data</b>	
	<b>Data utility</b>	
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	
	<b>Open data</b>	
	<b>Availability</b>	NCA CIP
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	NCA air quality data
	<b>City</b>	NCA
	<b>Transition track</b>	4
	<b>Measure</b>	1
	<b>Purpose</b>	Run the service
	<b>Data types</b>	Data collected from ATMOSUD air sensors
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	



<b>FAIR data</b>	<b>Origin of the data</b>	Air Sensors
	<b>Expected size of the data</b>	
	<b>Data utility</b>	
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
<b>Available</b>	<b>Versioning</b>	
	<b>Open data</b>	
	<b>Availability</b>	NCA CIP
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	

## A6.2 Gothenburg

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	BRF Viva EMS data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT1 and TT2
	<b>Measure</b>	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.4
	<b>Purpose</b>	Data is collected to the advanced energy management system of Brf Viva to: -Implement intelligent control of the installations in order to optimize the use of them -Follow up and evaluation of performance of the installations
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	

<b>FAIR data</b>	<b>Origin of the data</b>	In Brf Viva there are smart meters gathering data to the energy management system.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in: - Advanced energy management system to optimize storage and utilization of renewable energy
	<b>Metadata provision</b>	
<b>Findable</b>	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
<b>Interoperable</b>	<b>Access restrictions</b>	Acces to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
	<b>License</b>	
<b>Reusable</b>	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Riksbyggen and Göteborg Energi.
	<b>Costs for preservation</b>	

<b>Data security</b>		Confidential data is only available after authentication
<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

<b>Section</b>	<b>Topic</b>	
<b>Data summary</b>		
	<b>Title of dataset</b>	HSB living lab data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT1
	<b>Measure</b>	1,7
	<b>Purpose</b>	Data is collected at HSB living lab to evaluate the Building Integrated Photo Voltaics (BIPV) in the facade.
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	In HSB living lab there are smart meters gathering data.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in BIPV.
<b>FAIR data Findable</b>		
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
<b>Available</b>	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	

<b>Interoperable</b>	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	Acces to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
<b>Reusable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
<b>Allocation of resources</b>	<b>Preservation</b>	
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	HSB
<b>Data security</b>	<b>Costs for preservation</b>	
	<b>Ethical aspects</b>	N/A anonymized data

<b>Section</b> <b>Data summary</b>	<b>Topic</b>	
	<b>Title of dataset</b>	Akademiska hus data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT2
	<b>Measure</b>	2.1, 2.2
	<b>Purpose</b>	Data is collected to evaluat: - PV solar cells and battery storage - PSM cooling storage
	<b>Data types</b>	The data mainly consists of floating point numbers.

<b>FAIR data</b>	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	In Akademiska Hus there are smart meters gathering data.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in cooling storage and PV+battery storage
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
<b>Findable</b>	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYYYMMDD
	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
<b>Available</b>	<b>Access restrictions</b>	Access to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
	<b>License</b>	
<b>Interoperable</b>	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Reuseable</b>		
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Akademiska hus
	<b>Costs for preservation</b>	
<b>Allocation of resources</b>		

<b>Data security</b>		
<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

<b>Section</b>	<b>Topic</b>	
<b>Data summary</b>		
	<b>Title of dataset</b>	BRF Viva EC2B data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT3
	<b>Measure</b>	3.1
	<b>Purpose</b>	Data is collected to evaluate the EC2B solution at BRF Viva
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	Surveys with tenants and metering of use of vehicles.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in MaaS solutions
<b>FAIR data</b>		
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
<b>Available</b>	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	

<b>Interoperable</b>	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	Acces to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
<b>Reuseable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
<b>Allocation of resources</b>	<b>Preservation</b>	
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Trivector
<b>Data security</b>	<b>Costs for preservation</b>	
<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

<b>Section Data summary</b>	<b>Topic</b>	
	<b>Title of dataset</b>	Campus EC2B data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT3
	<b>Measure</b>	3.2
	<b>Purpose</b>	Data is collected to evaluate the EC2B solution at Campus
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	

<b>FAIR data</b>	<b>Origin of the data</b>	Surveys with users of the app and metering of use of vehicles/transport solutions.
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in MaaS solutions
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
<b>Interoperable</b>	<b>Access restrictions</b>	Access to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
	<b>License</b>	
<b>Reusable</b>	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Trivector
	<b>Costs for preservation</b>	
<b>Data security</b>		



<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

<b>Section</b> <b>Data summary</b>	<b>Topic</b>	
	<b>Title of dataset</b>	City Information Model evaluation data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT4
	<b>Measure</b>	4.1
	<b>Purpose</b>	Data is collected through surveys to evaluate a City Information Model of XX
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	Surveys
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in implementing CIM
<b>FAIR data</b> <b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	Acces to data requires authentication?

<b>Interoperable</b>	<b>Interoperability</b>	
	<b>Vocabulary</b>	
<b>Reuseable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
<b>Allocation of resources</b>	<b>Quality assurance</b>	
	<b>Preservation</b>	
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Gothenburg city
<b>Data security</b>	<b>Costs for preservation</b>	
<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

<b>Section Data summary</b>	<b>Topic</b>	
	<b>Title of dataset</b>	Energy Cloud evaluation data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT4
	<b>Measure</b>	4.2
	<b>Purpose</b>	Data is collected to evaluate the quality of data in an Energy Cloud, developed for Akademiska Hus Chalmers
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	Surveys and inventory of data in the Energy cloud

<b>FAIR data</b>	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in implementing Energy Cloud
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
<b>Interoperable</b>	<b>Access restrictions</b>	Acces to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
	<b>License</b>	
<b>Reuseable</b>	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Metry
	<b>Costs for preservation</b>	
<b>Data security</b>		
	<b>Ethical aspects</b>	N/A anonymized data
	<b>Other</b>	

Section	Topic	
Data summary		
	<b>Title of dataset</b>	Gothenburg City data
	<b>City</b>	Gothenburg
	<b>Transition track</b>	TT5
	<b>Measure</b>	5.1; 5.2; 5.3; 5.4
	<b>Purpose</b>	Data is collected through surveys to evaluate citizens engagement in planning phase of activities arranged by the city of Gothenburg
	<b>Data types</b>	The data mainly consists of floating point numbers.
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	
	<b>Origin of the data</b>	Surveys
	<b>Expected size of the data</b>	Expected to be some MB.
	<b>Data utility</b>	WP9, WP7. The data is useful for people interested in user engagement
FAIR data Findable		
	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	No naming conventions
	<b>Search keywords</b>	-
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYYYMMDD
Available	<b>Open data</b>	All data is stated to be confidential.
	<b>Availability</b>	KPI-tool
	<b>Accessibility (software / method)</b>	
	<b>Deposition / storage</b>	
Interoperable	<b>Access restrictions</b>	Access to data requires authentication?
	<b>Interoperability</b>	
	<b>Vocabulary</b>	
Reuseable	<b>License</b>	
	<b>When available? (embargo?)</b>	
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	

<b>Allocation of resources</b>	<b>Preservation</b>	
	<b>Costs for fair data</b>	
	<b>Responsibilities</b>	Gothenburg city
	<b>Costs for preservation</b>	
<b>Data security</b>		
<b>Ethical aspects</b>		N/A anonymized data
<b>Other</b>		

## A6.3 Utrecht

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	EnergyDataToon
	<b>City</b>	Utrecht
	<b>Transition track</b>	Mainly related to TT1, also partly related to TT5
	<b>Measure</b>	1.1, 1.4, 1.5, 1.6
	<b>Purpose</b>	Data is collected through the HEMS Toon device for the following purposes: -Calculation of the Electrical energy consumption of the households before, after and during renovation -Calculation of the Thermal energy consumption of the households before, after and during renovation
	<b>Data types</b>	-The data consists of electricity import and export at smart meter level with 15 minute resolution and gas demand with an hourly resolution. Data at building level.
	<b>Data formats</b>	Data is stored in the CIP and can be downloaded as CSV files through the CIP dashboard or the API.
	<b>Re-use of existing data</b>	The aggregated data is obtained from detailed electricity demand and production data per household, and stored on the server of Quby. Due to privacy reasons, values are aggregated to building level.

	<b>Origin of the data</b>	Toon is a Home Energy Management System (HEMS) which uses a smart meter as input
	<b>Expected size of the data</b>	For the whole project this will not exceed 1 GB
	<b>Data utility</b>	WP9, WP5. The data is useful for people interested in: -NZEB refurbishment -Energy use of households -PV production -Home Energy Management Systems -Smart electric heat pumps
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	Metadata is available at the CIP
	<b>Identifiability</b>	Not known yet
	<b>Naming conventions</b>	Naming conventions are based on SCIS
	<b>Search keywords</b>	
	<b>Versioning</b>	
<b>Available</b>	<b>Open data</b>	15 minute data, aggregated per apartment building will be made openly available. Aggregation up to this level is done to protect privacy
	<b>Availability</b>	The data is available through the CIP, it can be accessed through an API, and through a web based CIP data platform: <a href="https://tst-ckan-dataplatform-nl.dataplatform.nl/dataset/toon-energieverbruik/resource/toon_measurement_value_cepontod">https://tst-ckan-dataplatform-nl.dataplatform.nl/dataset/toon-energieverbruik/resource/toon_measurement_value_cepontod</a>
	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	Data will be stored in the CIP
	<b>Access restrictions</b>	Access to aggregated data can be done through the data market of the CIP
<b>Interoperable</b>	<b>Interoperability</b>	
	<b>Vocabulary</b>	

<b>Reuseable</b>	<b>License</b>	CC
	<b>When available? (embargo?)</b>	The data is available as long as the CIP remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	Quby automatically deletes extreme outliers from the dataset
	<b>Preservation</b>	
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	Costs for fair data are expected to be around 5k € for the whole project, this is being paid partly from the project budget and partly from the general costs for IT services
	<b>Responsibilities</b>	Eneco is the owner of the data and has the responsibility towards its customers to respect their privacy. It has the responsibility towards the IRIS project to make data available for scientific research. Quby handles all TOON data and prepares the aggregated datasets Civity is the dataplatform which retrieves the data from quby, and redistributes the data via CIP.
	<b>Costs for preservation</b>	Costs for storage of 1GB of data for 10 years are negligible
<b>Data security</b>		Sensitive data is only accessible through a username and password.
<b>Ethical aspects</b>		All privacy sensitive data is anonymized
<b>Other</b>		

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Energy data Benext
	<b>City</b>	Utrecht
	<b>Transition track</b>	Mainly related to TT1, also partly related to TT5
	<b>Measure</b>	1.1 1.8

	<b>Purpose</b>	Data is collected through the Benext platform for the following purposes: -Calculation of the annual energy production of the installed solar panels -Calculation of the Electrical energy consumption of the households after renovation
	<b>Data types</b>	-The data consists of electricity consumption production of Henrietteedreef aggregated at building level with 15 minute resolution. -PV production data of Columbuslaan I with 15 minute resolution.
	<b>Data formats</b>	Data is stored in the CIP and can be downloaded as CSV files through the CIP dashboard or the API.
	<b>Re-use of existing data</b>	The aggregated data is obtained from detailed electricity demand and production data per household, and stored on the server of BeNext. Due to privacy reasons, values are aggregated to building level.
	<b>Origin of the data</b>	Data comes from kWh meters connected to BeNext platform
	<b>Expected size of the data</b> <b>Data utility</b>	1 Gb WP9, WP5. The data is useful for people interested in: -NZEB refurbishment -Energy use of households -PV production
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	Metadata is available at the CIP
	<b>Identifiability</b>	
	<b>Naming conventions</b>	Naming conventions are based on SCIS
	<b>Search keywords</b>	



<b>Available</b>	<b>Versioning</b>	
	<b>Open data</b>	hourly data, aggregated per apartment building will be made openly available. Aggregation up to this level is done to protect privacy
	<b>Availability</b>	The data is available through the CIP, it can be accessed through an API, and through a web based CIP data platform: <a href="https://tst-ckan-dataplatform-nl.dataplatform.nl/dataset/benext-energieverbruik/resource/be_next_measurement_cepontod">https://tst-ckan-dataplatform-nl.dataplatform.nl/dataset/benext-energieverbruik/resource/be_next_measurement_cepontod</a>
<b>Interoperable</b>	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	Data will be stored in the CIP
	<b>Access restrictions</b>	Access to aggregated data can be done through the data market of the CIP
	<b>Interoperability</b>	CSV files
<b>Reusable</b>	<b>Vocabulary</b>	
	<b>License</b>	CC
	<b>When available? (embargo?)</b>	The data is available as long as the CIP remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	Quby automatically deletes extreme outliers from the dataset
<b>Allocation of resources</b>	<b>Preservation</b>	
	<b>Costs for fair data</b>	Costs for fair data are expected to be around 5k € for the whole project, this is being paid partly from the project budget and partly from the general costs for IT services
	<b>Responsibilities</b>	Eneco is the owner of the data and has the responsibility towards its customers to respect their privacy. It has the responsibility towards the IRIS project to make data available for scientific research. Quby handles all TOON data and prepares the aggregated datasets Civity is the dataplatfrom which retrieves the data from quby, and redistributes the data via CIP.

	<b>Costs for preservation</b>	Costs for storage of 1GB of data for 10 years are negligible
<b>Data security</b>		Sensitive data is only accessible through a username and password.
<b>Ethical aspects</b>		All privacy sensitive data is anonymized
<b>Other</b>		

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Manual data V2Grid car sharing fleet
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT3
	<b>Measure</b>	3.1
	<b>Purpose</b>	Data is collected by WeDriveSolar to monitor the utilization of the car sharing fleet. The amount of driven kilometers is used as an input to calculate the emission reduction as a result of this measure.
	<b>Data types</b>	The data consists of yearly totals of driven kilometers by the car sharing fleet in Utrecht, And the emission factors for CO2, CO, FPM and NOx for the BAU and IRIS- case
	<b>Data formats</b>	The manual data is stored in an Excel template, this template is easy to work with for the partners and could be automatically read out by the KPI tool.

	<b>Re-use of existing data</b>	The annual data is aggregated from detailed data which is stored and maintained by WeDriveSolar
	<b>Origin of the data</b>	The data is based on all car sharing transaction per car of the car sharing fleet in Utrecht of the years 2020 till 2022.
	<b>Expected size of the data</b>	<10 MB
	<b>Data utility</b>	WP9, WP5. Data is useful for monitoring of the utilization of V2G car sharing within the IRIS project in Utrecht.
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	Metadata is provided within the dataset
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	The aggregated annual values are open and will be shared. Detailed data is confidential
	<b>Availability</b>	Data will be made available through the KPI tool
	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	Data is stored within the KPI tool
	<b>Access restrictions</b>	
<b>Interoperable</b>	<b>Interoperability</b>	CSV files
	<b>Vocabulary</b>	

<b>Reuseable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	The data is available as long as the CIP remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	Costs for fair data are expected to be around 5k € for the whole project, this is being paid partly from the project budget and partly from the general costs for IT services
	<b>Responsibilities</b>	KM data is checked and extracted from more detailed data by UU and communicated with WeDriveSolar before admission to KPI tool.
	<b>Costs for preservation</b>	
<b>Data security</b>		
<b>Ethical aspects</b>		
<b>Other</b>		

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Manual data V2Grid bus fleet
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT3
	<b>Measure</b>	3.2
	<b>Purpose</b>	Data is collected by QBuzz to monitor the bus fleet. The amount of driven kilometers is used as an input to calculate the emission reduction as a result of this measure.

	<b>Data types</b>	The data consists of yearly totals of driven kilometers by the bus fleet in Utrecht. And the emission factors for CO2, CO, FPM and NOx for the BAU and IRIS- case
	<b>Data formats</b>	The manual data is stored as an Excel template, this template is easy to work with for the partners and could be automatically read out by the KPI tool.
	<b>Re-use of existing data</b>	The annual data is aggregated from detailed data which is stored and maintained by Qbuzz
	<b>Origin of the data</b>	Data is based on monthly km data of the E-busses, which is provided by Qbuzz
	<b>Expected size of the data</b> <b>Data utility</b>	<10 MB WP9, WP5. Data is useful for monitoring of the utilization electric busses within the IRIS project in Utrecht.
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	Metadata is provided within the dataset
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD

<b>Available</b>	<b>Open data</b>	The aggregated annual values are open and will be shared. Detailed data is confidential
	<b>Availability</b>	Data will be made available through the KPI tool
	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	Data is stored within the KPI tool
	<b>Access restrictions</b>	
<b>Interoperable</b>	<b>Interoperability</b>	CSV files
	<b>Vocabulary</b>	
	<b>License</b>	
<b>Reuseable</b>	<b>When available? (embargo?)</b>	The data is available as long as the KPI tool remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	Costs for fair data are expected to be around 5k € for the whole project, this is being paid partly from the project budget and partly from the general costs for IT services
	<b>Responsibilities</b>	KM data is checked and extracted from more detailed data by UU and communicated with Qbuz before admission to KPI tool.
	<b>Costs for preservation</b>	
<b>Data security</b>		
<b>Ethical aspects</b>		
<b>Other</b>		

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Occupation data of EV charging points
	<b>City</b>	Utrecht

	<b>Transition track</b>	TT4
	<b>Measure</b>	4.1
	<b>Purpose</b>	Occupation data of 40 EV charging spots is collected in order to see whether EV -parking spots are illegally used to park cars that aren't charging.
	<b>Data types</b>	
	<b>Data formats</b>	Data can be downloaded as CSV files
	<b>Re-use of existing data</b>	No
	<b>Origin of the data</b>	
	<b>Expected size of the data</b>	
	<b>Data utility</b>	
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	
<b>Available</b>	<b>Open data</b>	
	<b>Availability</b>	The data is available through the CIP, it can be accessed through an API, and through a web based CIP data platform: <a href="https://tst-ckan-dataplatform-nl.dataplatform.nl/">https://tst-ckan-dataplatform-nl.dataplatform.nl/</a>
	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	
<b>Interoperable</b>	<b>Interoperability</b>	CSV files
	<b>Vocabulary</b>	
<b>Reuseable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	The data is available as long as the CIP remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse
	<b>Quality assurance</b>	
	<b>Preservation</b>	
<b>Allocation of resources</b>		
	<b>Costs for fair data</b>	

	<b>Responsibilities</b>	
	<b>Costs for preservation</b>	
<b>Data security</b>		
<b>Ethical aspects</b>		
<b>Other</b>		

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Smart Street lighting
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT4
	<b>Measure</b>	1.7 and 4.2
	<b>Purpose</b>	Activity and tilt of 50 smart lampposts.
	<b>Data types</b>	Data collected from smart lamp posts including-o -Power usage (kWh) -Burn time (hours) -Malfunctions
	<b>Data formats</b>	Data can be downloaded as CSV files
	<b>Re-use of existing data</b>	No
	<b>Origin of the data</b>	Data originates from the Luminext management system
	<b>Expected size of the data</b>	
	<b>Data utility</b>	
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	Metadata is provided within the dataset
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	



<b>Available</b>	<b>Open data</b>	The aggregated annual values are open and will be shared. Detailed data is confidential
	<b>Availability</b>	The data is available through the CIP, it can be accessed through an API, and through a web based CIP data platform: <a href="https://tst-ckan-dataplatform-nl.dataplatform.nl/">https://tst-ckan-dataplatform-nl.dataplatform.nl/</a>
	<b>Accessibility (software / method)</b>	No special software is required to access the data
	<b>Deposition / storage</b>	
	<b>Access restrictions</b>	
<b>Interoperable</b>	<b>Interoperability</b>	CSV files
	<b>Vocabulary</b>	
<b>Reusable</b>	<b>License</b>	
	<b>When available? (embargo?)</b>	The data is available as long as the CIP remains online
	<b>Restrictions for use</b>	Use of aggregated data is free to reuse

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Battery usage data
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT2
	<b>Measure</b>	2.3
	<b>Purpose</b>	Utilization of a battery which is installed in a neighbourhood and delivers flexibility at the FCR and FRR market
	<b>Data types</b>	Data from the stationary battery -FCR data (4 second resolution) -Unbalance data to recharge battery (1 minute) -kWh data (15 minute)
	<b>Data formats</b>	Data is stored as CSV files
	<b>Re-use of existing data</b>	No
	<b>Origin of the data</b>	Data originates from the battery management system
	<b>Expected size of the data</b>	

	<b>Data utility</b>	Data is used as input for model to investigate the use of stationary batteries for congestion management
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	
<b>Available</b>	<b>Open data</b>	No
	<b>Availability</b>	Not available

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Wedrivesolar V2G E-cars
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT2
	<b>Measure</b>	3.1
	<b>Purpose</b>	Utilization of V2G E-cars in Utrecht
	<b>Data types</b>	Detailed data on the utilization of the We Drive Solar car sharing fleet within Utrecht
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	No
	<b>Origin of the data</b>	Lomboxnet monitoring platform?
	<b>Expected size of the data</b>	
	<b>Data utility</b>	WP9, WP5, Research on Car sharing, EV charging, V2G cars, Mobility in Utrecht
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	
<b>Available</b>	<b>Open data</b>	No

	<b>Availability</b>	Only aggregated data is shared through the KPI tool
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Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	QBuzz monitoring data
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT2
	<b>Measure</b>	3.2
	<b>Purpose</b>	Utilization of V2G E-busses in Utrecht
	<b>Data types</b>	Detailed data form the monitoring system of the E-busses
	<b>Data formats</b>	
	<b>Re-use of existing data</b>	No
	<b>Origin of the data</b>	Qbuzz monitoring platform (Viriciti)
	<b>Expected size of the data</b>	
	<b>Data utility</b>	
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	
	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	

	<b>Versioning</b>	
<b>Available</b>	<b>Open data</b>	No
	<b>Availability</b>	Only aggregated data is shared through the KPI tool

Section	Topic	
<b>Data summary</b>		
	<b>Title of dataset</b>	Manual data Questionnaires
	<b>City</b>	Utrecht
	<b>Transition track</b>	TT1, TT5
	<b>Measure</b>	1.3, 5.1, 5.3, 5.4,
	<b>Purpose</b>	Answers received from questionnaires to measure KPI's related to the measures.
	<b>Data types</b>	Data consists of amount of given answers in likert scale (1-5) to measure KPI 17 for M1.3, KPI 19 for M5.1, KPI 12, 3 and 23 for M5.3, KPI 23 for M5.4 and KPI 12 for M5.5
	<b>Data formats</b>	The manual data is stored as an Excel template, this template is easy to work with for the partners and could be automatically read out by the KPI tool.
	<b>Re-use of existing data</b>	Yes, data is obtained as part of larger questionnaires
	<b>Origin of the data</b>	Questionnaires
	<b>Expected size of the data</b>	<10 MB
	<b>Data utility</b>	WP9, WP5
<b>FAIR data</b>		
<b>Findable</b>	<b>Metadata provision</b>	

	<b>Identifiability</b>	
	<b>Naming conventions</b>	
	<b>Search keywords</b>	
	<b>Versioning</b>	Each time the dataset is saved or updated, the date and time will be added to the name in the form: YYMMDD
<b>Available</b>	<b>Open data</b>	
	<b>Availability</b>	