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WP8

Deliverable No. 8.2:

Data Management Plan

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Disclaimer

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List of Acronyms

API	Application Programming Interface
CEN	Comité Européen de Normalisation
DMP	Data Management Plan
DOI	Digital Object Identifier
EC	European Commission
EO	Earth Observation
FAIR	Findable, Accessible, Interoperable and Re-usable
GA	General Assembly
GDPR	General Data Protection Regulation
GEOSS	Global Earth Observation System of Systems
GUI	Graphical User Interface
IPR	Intellectual Property Rights
MVP	Minimum Viable Product
OGC	Open Geospatial Consortium
W3C	Worldwide Web Consortium
WMS	Web Map Service
WP	Work Package

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Executive Summary

The **Data Management Plan (DMP)** corresponds to Deliverable 8.2 and addresses the relevant aspects of making data from the project FAIR, meaning Findable, Accessible, Interoperable and Re-usable. The FAIR data principles aim to enable efficient and error-free analysis of data from multiple sources by machines and ultimately by humans.

Within this DMP it is described, which data is expected to come out of the 100kTREEs project, whether and how it will be made accessible for verification and re-use and how it will be curated and preserved. The DMP is set up to guide the process of making project data FAIR ("FAIRification").

The 100kTREEs project will collect raw data that will be further processed and summarized in project deliverables and scientific publications. These raw data, underpinning the published work, constitute the main Research datasets that will be made publicly available. In cases where release of complete raw data sets is impossible due to, for example, privacy or personal data concerns, data will be anonymized to enable publishing.

In the second phase of the "FAIRification" workflow[1] all data as well as metadata is analyzed and a semantic model for the data defined. For each dataset ways for hosting the data and making them FAIR are analyzed.

The design of the data management system will follow these fundamental aspects of efficient data management from a systems implementation perspective including storage, access, organization, indexing, consistency, concurrency, data representations and formats.

Finally project datasets can be assessed by others after the project lifetime in the "Post-FAIRification" phase.

As specified in the guiding document of the EC[5], it is not required to provide detailed answers to all questions in the first version of the DMP. At such an early stage of the project (month 2), there will be mainly indications that need to be continually revised throughout the project.

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1. Introduction

1.1 Purpose and audience of the document

The main purpose of a **Data Management Plan** or **DMP** is to describe Research Data and to outlines how data are to be handled both during the 100kTREEs project, and after completion of the project in a formal document. The scope to consider the many aspects of data management, metadata generation, data preservation and analysis at the early state of the project and to describe datasets with the metadata attached to make them discoverable, accessible, assessable, usable beyond the original purpose and exchangeable between researchers.

The DMP provides guidelines helping the WP-leaders and all other project partners to manage datasets throughout the project and consider also the use of datasets beyond the project lifetime.

According to the EC guidelines[5], Research data should be FAIR, i.e., Findable, Accessible, Interoperable and Re-usable[4].

The DMP therefore

- Provides a description of how the research data collected, processed and generated will be handled during and after the 100kTREEs project.
- Describes which standards and methodology for data collection and generation will be followed, how data will be shared, curated and preserved.

1.2 Relation to other activities

The DMP is part of the activities of WP8 and directly linked to D8.1 the Risk and Project Quality Management Plan. It is therefore also directly linked to all other Work Packages. Section 3 describes in detail the relation of the DMP to each WP as well as the expected data outputs. The implementation of the DMP is the responsibility of the WP-Leaders. ES2 is responsible for collecting related information from them and keeping the DMP up to date.

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1.3 Structure of the document

The document basically follows the template provided by the European Commission on DMP[5].

The executive summary highlights the key points of the report and describes results, conclusions, or recommendations from the report.

Section 1 provides general information about the DMP document.

Section 2 discusses the FAIR principles and how they will be addressed in the project.

In the early "Pre-FAIRification" phase of the project all relevant datasets are identified. These are listed in Section 3 of this DMP, which will be updated throughout the project. Section 3 of the DMP is divided into subsections for each WP describing the expected output datasets.

The DMP is intended to be a living document and, as such, will be periodically updated and elaborated as the implementation of the project progresses and in situations where significant changes occur. Therefore, the WP leads are involved in the compliance of the DMP and asked to regularly revise and update the information on their WP.

Updates are planned after the first reporting period (M18) and at the end of the project (M36), but also when significant changes occur. ES2 is responsible for communicating with the WP-Leaders, collecting the required information and coordinating the revisions of the DMP to keep this deliverable up to date.

2. FAIR principles

In the following section we provide the general strategy to follow the FAIR principles in the 100kTREEs project. We reflect on how FAIR principles can be addressed within the 100kTREEs Data & Services Platform as well as within open data repositories.

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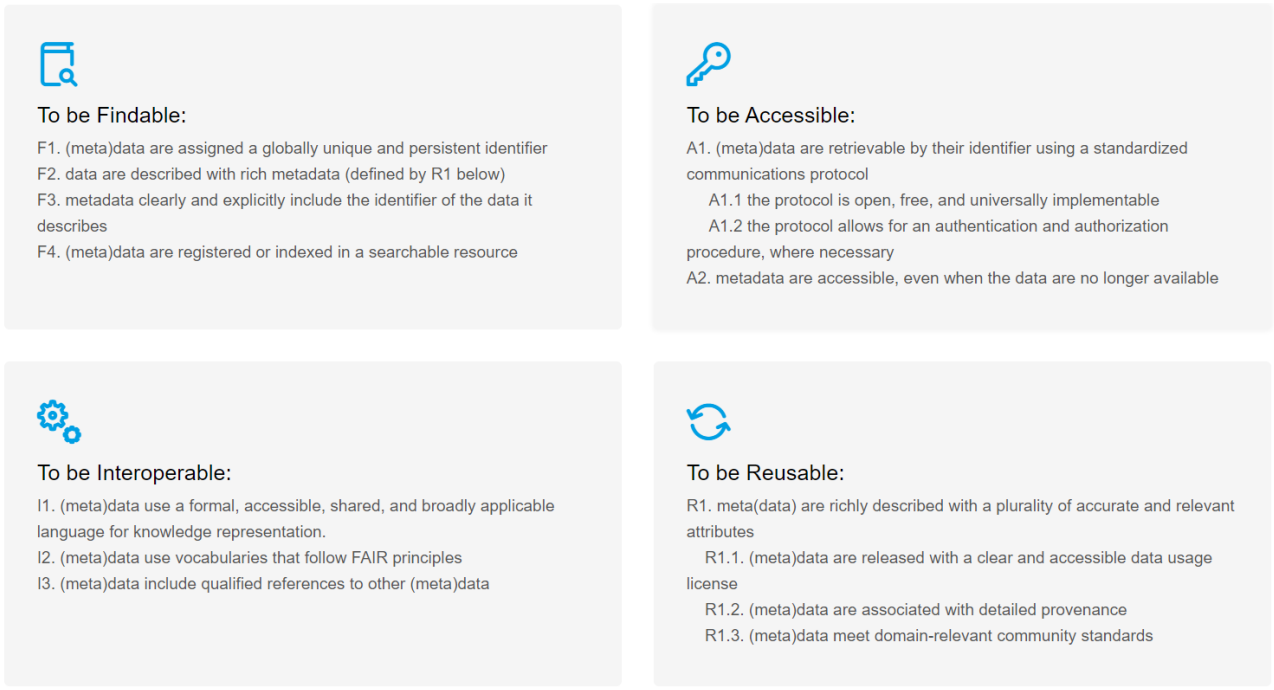

Figure 1: The FAIR principles are guidelines for improving the Findability, Accessibility, Interoperability, and Reuse of digital assets. Source: https://www.incf.org/what-is-fair#

2.1 Making data "Findable"

The key to make datasets "Findable" is to provide good and searchable metadata for both humans and computers. Especially in cases where data is not stored on a centralized database which will be the case for many project datasets, it is important to have all datasets well described, including standardized rich metadata, and to be able to search this metadata intelligently using tools (i.e machine-readable) and standardized web-services.

Data produced within the project will be discoverable in a 100kTREEs Data & Services Platform and will be uniquely identified and described by metadata. It is not envisioned for datasets to be solely discoverable via the 100kTREEs website, but also in other knowledge marketplaces, like OPPLA or others and/or to subject repositories selected from Open Access Infrastructure for Research in Europe (OpenAIRE). Digital Object Identifiers (DOIs) may help to make datasets findable for effective and persistent citation when it uploaded to such repositories.

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In a first step we will define naming conventions which will include the identifier of the project, unique chronological number of the dataset, dataset title, version of the dataset, and an identifier linking the WP with the deliverable/task.

Next to that a dataset description will be included in the metadata file associated to each dataset.

In this log file, we foresee datasets descriptions containing the following main fields:

- Globally unique and persistent identifiers
- Title of the dataset
- Version number
- Responsible partner
- WP
- Dataset actuality (date of acquisition…)
- Dataset quality (e.g. accuracies, spatial resolution, spectral resolution…)
- Dataset description
- Dataset dissemination
- Format
- Expected size
- Source
- Repository (expected/actual repository to be submitted)
- Keywords
- Software that is used should be also named as being important background information given by the responsible partner and in this way will be also documented.
- Other info

All metadata files should be stored and made accessible through a centralized catalogue of project datasets. This data catalogue should include all data stored in a central 100kTREEs Data & Services Platform and also for the cases where the data is located on the local servers of the partners. In this way, the catalogue not only supports the exchange of data and information between all project partners, but also enables anyone who is not directly involved in the 100kTREEs project to search for specific data.

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2.2 Making data "Accessible"; Data Security

The 100kTREEs Data & Services Platform will consist of three types of distribution services:

(1) Data access services

(2) Generic services in regard to tree mapping & monitoring and

(3) Software & modelling tools for analysis and feedback.

The aim of the chosen topology is flexibility for project partners and possibly later on for other users outside of the Consortium to access and connect to the available services with their own data sources and tools.

Intermediate data (i.e., non-final data produced during the processing chain elaboration) will be stored on a central server, but we envision to only be accessible to the project partners.

Final research datasets, will be freely accessible also by external users. This will specifically apply to research data needed for scientific scrutiny and peer review purposes. As already mentioned in the previous section, 100kTREEs will establish a long-term sustainable Data & Services platform to manage and upscale best practices of urban tree mapping & modelling of benefits (improvement of air quality, biodiversity, human well-being and reduction of climate risks) as well as data-driven decision making in urban tree management through open source and freely accessible initiatives, such as pan-European web-based repositories OPPLA or ThinkNature.

The datasets will follow well-established existing standards such as the INSPIRE Directive and OGC formats in order to secure long-term data accessibility, usage and operability. After project completion, and in case of no objection by project partners and by ensuring that anonymization is preserved (i.e., a user cannot be identified from their data) the data may be published, and openly accessible, in an Open Data portal (for example in http://open-data.europa.eu) for future research.

On the other hand, the accessibility of data is always directly linked to **Data Security**. According to Article 15.2 of the Grant Agreement all beneficiaries will process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (especially GDPR (2016). Regulation (EU) 2016/679 of the European Parliament and of

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the Council)[2]. This will be discussed and evaluated on each dataset case by case by the responsible WP-Leaders, who may be assisted by the ES1's legal department.

In this way it can be ensured that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subjects

- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes

- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed

- accurate and, where necessary, kept up to date

- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and

- processed in a manner that ensures appropriate security of the data.

Project partners may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement and they have to ensure that the personnel is under a confidentiality obligation.

In the DMP, security and privacy issues are addressed from the management perspective, but 100kTREEs will also explicitly deal with security issues from a technical perspective. In case of data privacy issues datasets will be stored on secured accounts with special access rights. Each project participant will have secured web access to the previously anonymized data, which will have been automatically checked for consistency, homogeneity and completeness.

2.3 Making data "Interoperable"

The technologies implemented in the 100kTREEs project will facilitate information sharing and analysis across EU Member States and beyond through direct implementation of the INSPIRE directive, and the use of standardized procedures for information exchange and integration on GEOSS data platform (www.geoportal.org) and other data portals.

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Many of the open standards promoted by 100kTREEs are based on OGC formats and are also adopted by the Comité Européen de Normalisation (CEN) and the International Standardization Organization (ISO), but also aligned with wider IT standards, e.g., those from the Worldwide Web Consortium (W3C). 100kTREEs deployments of "Open Standards" enables users, with interfaces implementing the standard, to access data and services of many types available on a wide variety of servers.

2.4 Increase data "Re-use"

This section will be updated on next iterations to provide detailed information on how data will be made useable beyond the original purpose for which it was collected, and more in detail:

- Data availability for re-use
- Data useable by third parties after the end of the project
- Data licensing to permit the widest reuse possible
- Costs for long-term data preservation
- Intellectual Property Rights (IPR)

3. Data Summary

According to EC guidelines, Research data refers to information such as facts or numbers, collected to be examined and considered as a basis of reasoning, discussion or calculation. In a research context, examples of these data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images and in this project context especially digital assets such as geographical datasets, such as digital maps or other data from remote sensing.

Research data, in the context of this DMP, do not include publications, articles, lectures, or presentations.

The DMP explicitly leaves open the handling, use and curation of products such as tools, software and written documents. Thus, the DMP focuses on digital data products like produced model

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data or observation data. Datasets will be available in a variety of easily accessible formats, including Post Script (.pdf, .xps), Excel (.xlsx), text (.txt, .csv), Word (.doc), image (.jpeg, .jpg, .png, .gif, .tiff), audio/video (.mp3, .mp4) and vector (.shp, .geojson, .csv).

Datasets of interest to 100kTREEs currently identified can be basically classified as follows:

Category 1: Structured quantitative data: these data encompass, for example, sensor observations and other measurements collected throughout the monitoring process (e.g. tree attributes)

Category 2: Semi-structured qualitative data: these data include responses from stakeholder consultations (e.g. stakeholder responses).

Category 3: Geo-referenced data: spatial data that can be analyzed for instance in a Geographical Information System (e.g. tree maps, remote sensing data) or other environments (python and jupyter notebooks, R etc.)

3.1 WP1- User Requirements, Co-Creation and Crowd Science

WP1 will evaluate existing management and decision tools and identify sector needs. The WP will translate these user requirements to European standardization process and build on citizen-centric principles of Living-in.eu of interoperability mechanisms and open standards.

One important tool for FAIR data management within 100kTREEs will be the Toolbox User Interface, which will be designed and created within Task 1.7. It communicates with the platform modules via API. In this way it combines and visualizes generated data, provides access to a variety of information and functionality according to the subscription plan. Opportunities will be provided for adapting the platform to specific needs of the user(s). It is planned also that there will be different levels of services linked to the characteristics of the individual user (e.g. size of the city, climate zone or other).

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Task	Data output	Data category/ data format	Data Access
1.1/ 1.4	Results of Stakeholder Analysis & Sector Practises	Category 2/ Report (PDF)	Free & Open Data Access
1.2	User Feedback Reports	Category 2/ Report (PDF)	Free & Open Data Access
1.3	Demonstration Plan for the Use Cases in Copenhagen & Sofia	Category 2/ Report (PDF)	Free & Open Data Access
1.4/ 1.6	Recommondations for EU stakeholders	Category 2/ Report,Webinars	Free & Open Data Access
1.5	Crowd-science data on urban trees	Category 1/ Attributes, Tables… + Geolocation	Free & Open Data Access
1.7	Multilingual User Interface	Category 1/ GUI	Free & Open Data Access

Table 1: Identified datasets for WP1

3.2 WP2- Copernicus Uptake and Spatial Data Lab

WP2 will collect and enhance existing geospatial assets for the Use Cases for the cities of Copenhagen and Sofia, and aims to also add new valuable datasets to the 100kTREEs toolbox to provide a solid base for urban tree management activities and decision making.

The first task of WP2 (T2.1) is an in-depth data inventory of existing relevant geospatial datasets in the municipalities of Copenhagen and Sofia on the one hand and in open data and services from Copernicus and other EO sources on the other hand.

An initial data inventory during the proposal phase showed that for Copenhagen a number of relevant datasets, such as aerial imagery, LiDAR data and different types of vector maps (e.g. urban green/ tree cadastre, sealed areas…) are freely accessible via the *Dataforsyningen* OpenData portal (https://dataforsyningen.dk/data) provided by the Danish Agency for Data Supply and Infrastructure.

In the third task of WP2 (T2.3), tree vitality is analyzed based on Colour-Infrared (CIR) aerial images, taking into account seasonal variations and characteristics of different species. Various available tools for automated detection and mapping of individual trees (e.g. DeepForest, ArcGIS API for Python…) are used and the results are validated with field data collected at selected sites

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(T2.4). For some test sites, height information extracted from LiDAR data is assigned to the mapped trees and taken into account for interference analysis with other objects (e.g. buildings, railways or traffic signs). As described above, T2.3 involves various very high resolution geospatial data layers and time series.

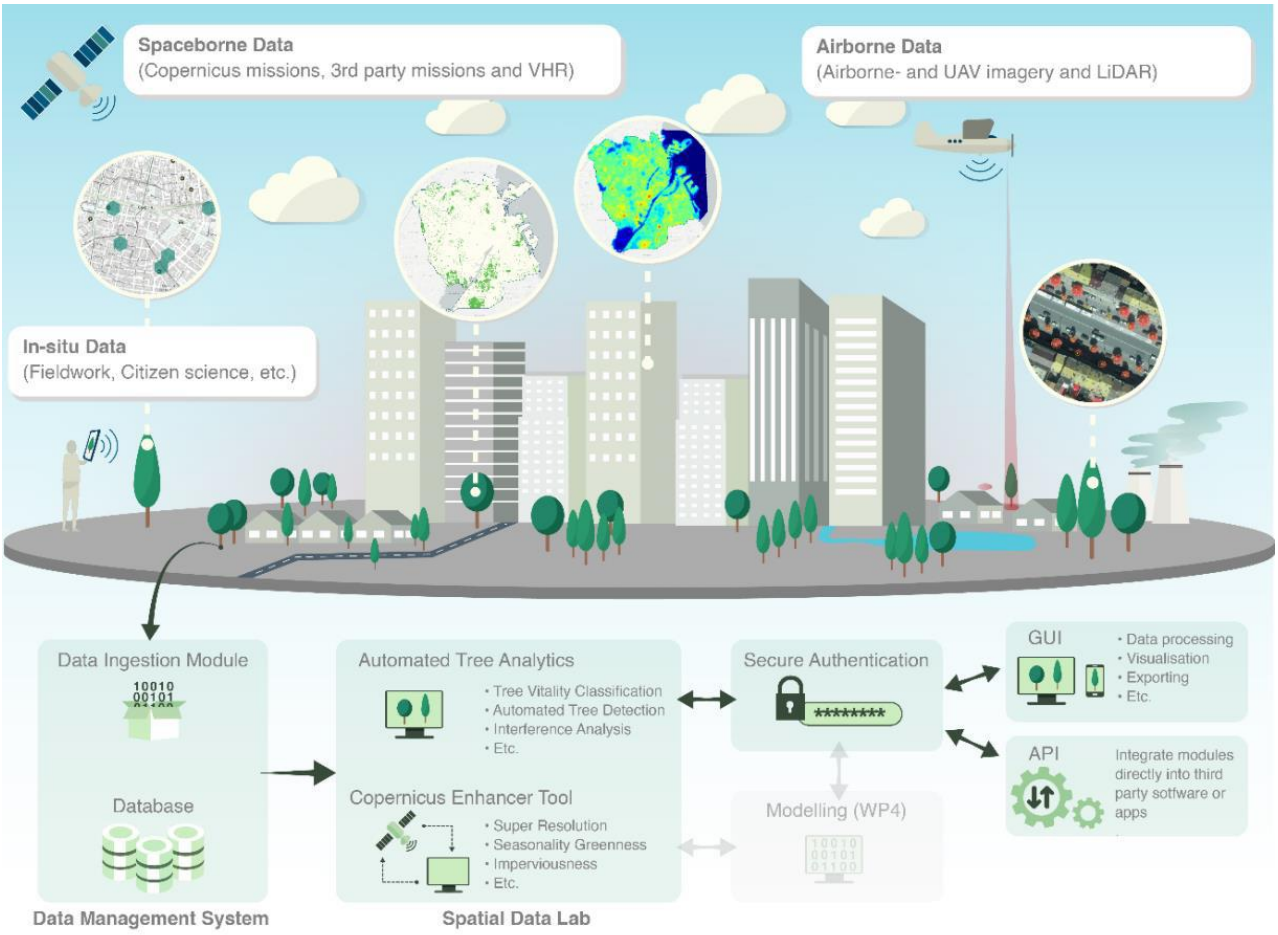

Figure 2: Conceptual Illustration of Data Sources and Modules in WP2

In the fifth task (T2.5), a web-based tool will be developed that will allow urban planners and other stakeholders to integrate existing free and open data with information from the Copernicus services and get more detailed and up-to-date baseline information and input data for their decision-making process.

All frontend and backend system components are deployed using high-level cloud services such as Azure Static Web Apps, Azure Functions, and Azure Database for PostgreSQL, and Azure

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Kubernetes Service or Container Instances. The use of high-level cloud services makes the system durable, scalable, and easy to replicate.

All produced raster data are stored as Cloud-Optimized GeoTIFF (COG) in blob storage and indexed in a STAC-compliant database. Supporting data layers and user generated products are served to a web map directly from the object storage via a Python-based map tile server. Deploying the algorithm and system using high-level cloud services has two great benefits: Firstly, the system is easy to understand, manage, and deploy, as there is separation of concerns down to deployment level. Secondly, the system scales

elastically, which is required because the data processing requires a good deal of compute

resources (CPU and RAM) and needs to have low baseline costs when idle but high performance to quickly deliver the model results to the users.

All in all, WP2 will compile large quantities of structured and unstructured data, which will be implemented in a cloud-based data management system (T2.6), such as a modern relational database for efficient data handling. As described in chapter 2.1 a data model will be defined describing structure, manipulation and integrity aspects of all the data stored in the database.

Task	Data output	Data Category/ Data format	Data Access
2.2/ 2.4	Training Datasets for DeepLearning	Category 1/ Attributes, Tables… + Geolocation	Free & Open Data Access
2.2	3D-tree cadastre	Category 3/ 3D-Shp/ CityGML	Free & Open Data Access
2.3	Tree Vitality Maps for selected AOIs	Category 3/ ESRI-Shp	Free & Open Data Access
2.4	In-situ measurements & sensor data (tree attributes, temperature & soil moisture measurements…)	Category 1/ Attributes, Tables… + Geolocation	Free & Open Data Access
2.5/ 2.6	Raw and enhanced EO & Copernicus data (Urban Atlas. Land Monitoring Service, Climate Service), thematic maps and layers, time series (& functions for automatic ingestions and data integration)	Category 3/ image raster and vector files	Free & Open Data Access

Table 2: Identified datasets for WP2

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3.3 WP3- Tree Attributes

WP3 will establish and design the key attributes of trees and develop standardized tree types to be used as input to the model(s) developed in WP4.

A first list of key attributes for modelling benefits of urban trees has been set up and includes tree species, leaf area index (interception capacity), canopy closure, throughfall (mm of water/minute), tree age and lifetime expectancy, crown and trunk diameter, characteristics for air pollution and noise abatement (density, height, width), biomass, potential of carbon storage & cooling effect (radiation/ transpiration), importance for protected species, pruning regime… This list will be extended, linked directly to the modelling tools and structured in the same way as WP4 (T4.3-T4.7).

The data identified as needed but missing in the previous task is retrieved through field work (in close collaboration with T2.4), citizen science (in close collaboration with T1.5) and tele-detection (in close collaboration with tasks 2.2 and 2.3). Also scientific literature will be explored to complement the applied methods for additional information (e.g. wood density, pollutant emission and absorption rates).

The standardized tree type or 'theoretical trees' will be defined by a set of averaged key tree attributes or parameters of the subset of real trees they represent. These attributes will be specified at specific temporal intervals relevant for the tree growth rate.

Task	Data output	Data Category/ Data format	Data Access
3.1- 3.3	Tree Attributes	Category 1/ Attributes, Tables…	Free & Open Data Access
3.4	Standardized Tree Types	Category 1/ tbd.	Free & Open Data Access

Table 3: Identified datasets for WP3

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3.4 WP4- Modelling Tools

The goal of WP4 is to improve existing open-source programming packages and available geospatial datasets and develop new data processing and modelling.

T4.1 and T4.2 will create a multifunctional GIS tool with user-friendly GUI to assess urban tree scenarios and their Environmental Service (ES) returns. The interface will have a cloud-friendly infrastructure, connecting data management system and modeling tools through an Application Program Interface (API) service that is able to respond to the modeling tool request with the correct datasets.

T4.3 –T4.7 are set up to model and assess the impact of multiple planting scenarios for six ES: flood risk and estimated damages, air pollution reduction, noise abatement, potential carbon mitigation, cooling effect, and biodiversity improvement, while T4.8 is designed to come to an integrated assessment.

A close cooperation between WP3 and WP4 has been started up to define the most important tree attributes to feed into the models. This demand will be worked out in more detail in the coming months by VUB/Bitagreen and communicated to the partners of WP3.

The standardized tree type or 'theoretical trees' will be defined by a set of averaged key tree attributes or parameters of the subset of real trees they represent. These attributes will be specified at specific temporal intervals relevant for the tree growth rate.

Task	Data output	Data Category/ Data format	Data Access
4.1- 4.2	GIS-platform/ Graphical User Interface	Category 1/ GUI	Collaboration and license agreements, Software as a Service
4.3- 4.8	Impact assessments for six ES	Category 3/ ESRI-Shp, Tiff, Geojson	Free & Open Data Access protected by copyright
4.3- 4.8	Video on assessment guidelines	Category 1/ mp4	Free & Open Data Access protected by copyright

Table 4: Identified datasets for WP4

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3.5 WP5- Monetary Valorization, Business Cases & Scenarios

WP5 aims to assess the direct and indirect impacts including cascading consequences of greening our cities. The work will focus on translating the physical impacts into monetary values as far as possible based on available literature and evidence from cities own experiences. The expected outcome will be an assessment of the monetary value of planting trees using the cases of Copenhagen and Sofia as references.

The first task of WP5 (T5.1) is an in-depth assessment of the business cases of planting trees, where a conventional CBA approach will be applied using the case of Copenhagen and Sofia reference.

A literature review of existing studies will be prepared to assess and measure health and environmental impact of urban trees. Non-market benefits (e.g., hedonic pricing, shadow prices etc.) will be analyzed and reviewed by external experts in order to apply the most appropriate valorization approach for each impact category (AQ, biodiversity, air pollution etc.).

In the third task of WP5 (T5.3), results for valorizations of improved AQ, biodiversity, reduced heat stress and pluvial floods, reduced CO2 and noise reduction will be evaluated and validated by relevant external experts. A narrative approach will be used in task T.5.4 to collect literature about the value of human well-being and life quality.

Based on existing studies and estimations the cost of planting trees over its life cycle will be tailored for the Copenhagen case and Sofia case respectively (T.5.5 of WP5).

In collaboration with city stakeholders, a limited number of 'What If' scenarios will be developed for Sofia and for Copenhagen based on different assumptions (high impact/realistic probability) and caused by regulatory interventions or due to climate change. 'What If' scenarios will be compared to a baseline scenario/business as usual. The scenarios will be tested in the models developed in WP4.

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Task	Data output	Data Category/ Data format	Data Access
5.1- 5.4	Business Cases of planting trees with a short- and long-term perspective	Category 1+2/ Report, Tables	Free & Open Data Access
5.5	Costs & Benefits of planting trees	Category 1+2/ Report, Tables	Free & Open Data Access
5.6	What If- Scenarios	Category 1+3/ Reports, Shp-files…	Free & Open Data Access

Table 5: Identified datasets for WP5

3.6 WP6- Exploitation and Business Plan

WP6 can be seen as an important part of the Data Management Plan, as it targets the exploitation of key project results and addresses also the background and foreground Intellectual Property Rights (IPRs) of the partners. Possible exploitation strategies will be analyzed including licensing, royalties, joint agreement, etc.

In this WP, some of the data and analyses will be commercially sensitive and therefore access will be limited to the Consortium partners, e.g. the ownership of background and foreground assets and IPR conditions. Details on the MVP (minimum viable product), future product options and the business plan will be other cases in point. At this stage, these data have been listed in the table below as access by Consortium partners only. However, if after discussions partners, it is agreed that these data access restrictions can be loosened, this will be reflected in updates of this living report.

Data and analysis outcomes of the market research (on other candidate cities and regions) will have open access as will be the SWOT/CAME and PESTEL analyses. The data on collaborative financing mechanisms or investment schemes identified in the last task of this WP (T6.5) are likely to have open access, unless any of the companies identified for such schemes disagree. Should be latter take place, the team could anonymize the results presented in the deliverables, or the access to this data will be modified.

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Task	Data output	Data Category/ Data format	Data Access
6.1- 6.3	MVP & service offerings incl. IPRs	Category 2/ Report (PDF)	Consortium Partners
6.2	SWOT-analysis/ PESTEL- analysis on Scalability	Category 2/ Report (PDF)	Free & Open Data Access
6.4	Exploitation & Business Plan	Category 2/ Report (PDF)	Consortium Partners
6.5	Collaborative Financial Mechanisms	Category 2/ Report (PDF)	Free & Open Data Access

Table 6: Identified datasets for WP6

3.7 WP7- Dissemination & Exploitation

WP7 aims at maximizing impacts and supporting exploitation of key results through the development of a series of communication actions, tools, indicators and web platforms containing results, documents and information material. Part of the strategy is dedicated to create a 100kTREEs branding for a consistent and unified presentation of outputs.

Dissemination material will include leaflet, brochure, periodic (6-monthly) eNewsletters, media pack for journalists, infographics and in general visual material also to engage citizens and promoting the app that is going to be developed in the project.

Videos, such as advertisement, demo and training videos will be available also in the YouTube channel of the project.

T7.1 is dedicated to set strategy and plan for dissemination and communication, and also to set methodologies to monitor and evaluate C&D KPIs (Key Performed Indicators). Data to calculate and assess indicators will be collected along the project through following specific procedures (e.g. Google analytics, Insights …)

T7.3-7.6 contain various actions to promote and disseminate the outputs of the project to other local communities, stakeholders and citizens, such as workshops, training activities, webinars & citizen science events.

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Task	Data output	Data Category/ Data format	Data Access
7.1	Communication & Dissemination Plan and Strategy	Category 2/ Report (PDF)	Consortium Partners
7.1	C&D KPIs	Category 2/ Report (PDF)	Consortium Partners
7.2	Website & web presence	Category 1/ website & Social Media	Free & Open Data Access
7.2	Dissemination Materials	Category 1+3/ leaflets, newsletters, posters, videos..	Free & Open Data Access
7.3	Scientific publications and presentations	Category 2+3 / papers, posters and presentations	Free & Open Data Access protected by copyright
7.3	Training material	Category 1+2+3 / training datasets and texts	Free & Open Data Access protected by copyright
7.4	Co-creation webinars outcomes- see WP1	see WP1	see WP1
7.6	Networking webinar materials	Category 2/ webinars, presentations	Free & Open Data Access

Table 7: Identified datasets for WP7

4. Conclusion

The 100kTREEs consortium has considered and discussed questions related to Data Management already early during the proposal stage and identified relevant datasets that will be produced within the project.

As the project started in December 2022 and the first version of the DMP is already written in January 2023 the data collection and generation is at an early state and there is not yet a complete overview of all datasets that will be collected and generated.

In addition, Intellectual Property Rights (IPR) will be carefully considered in later versions of the DMP and addressed throughout the project duration.

As already stated there will be new versions of this DMP after the first reporting period (M18) and at the end of the project (M36).

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5. References

[1] A. Jacobson *et al.* A Generic Workflow for the Data FAIRification Process. *Data Intelligence* 2 (1-2): 56-65; doi: 10.1162/dint_a_00028 (2020)

[2] GDPR (2016). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). Official Journal of the European Union, Vol. L119, pp. 1-88.

[3] M. D. Wilkinson *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data* 3:160018 doi: 10.1038/sdata.2016.18 (2016)

[4] www.go-fair.org : FAIR principles & Implementation Networks:

[5] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf : Guidelines on Data Management in Horizon 2020

[6] ZBW Leipniz Information Centre for Economics: Databased Science: FAIR becomes the new normal. Press release 11.01.2021

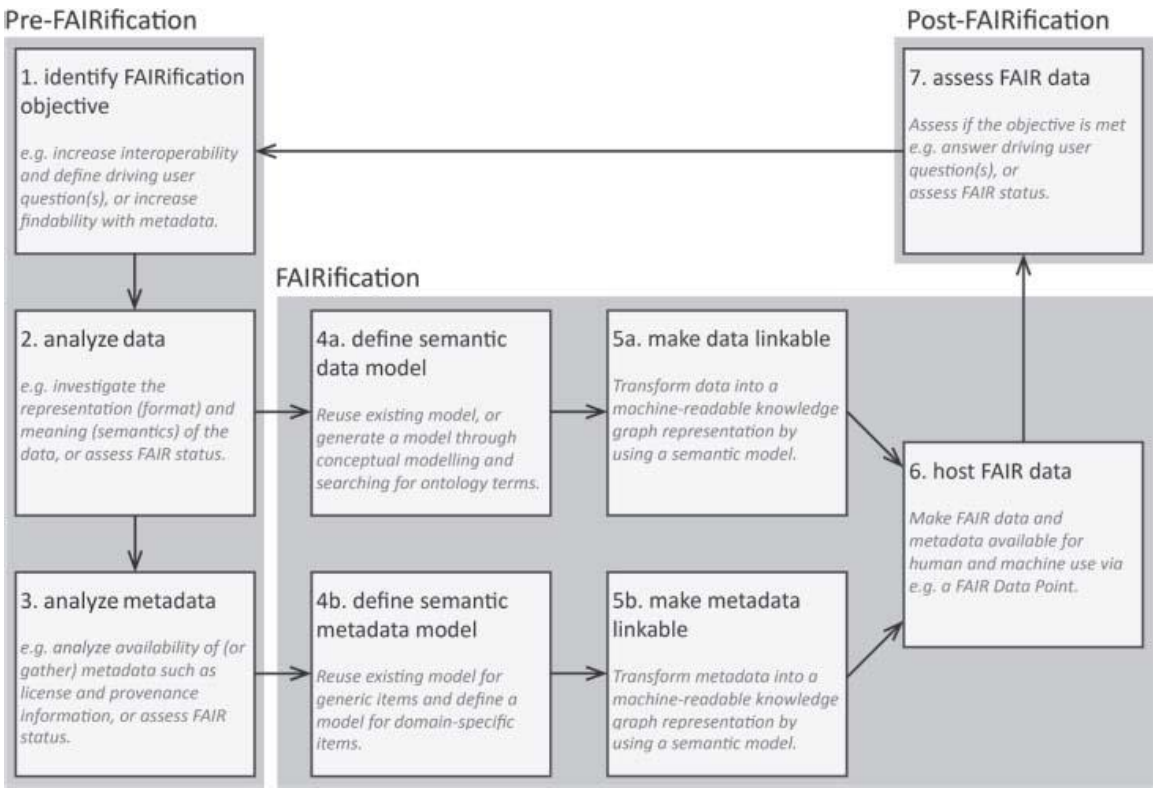

Figure 3: Workflow for the Data FAIRification Process. [1]

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Appendix

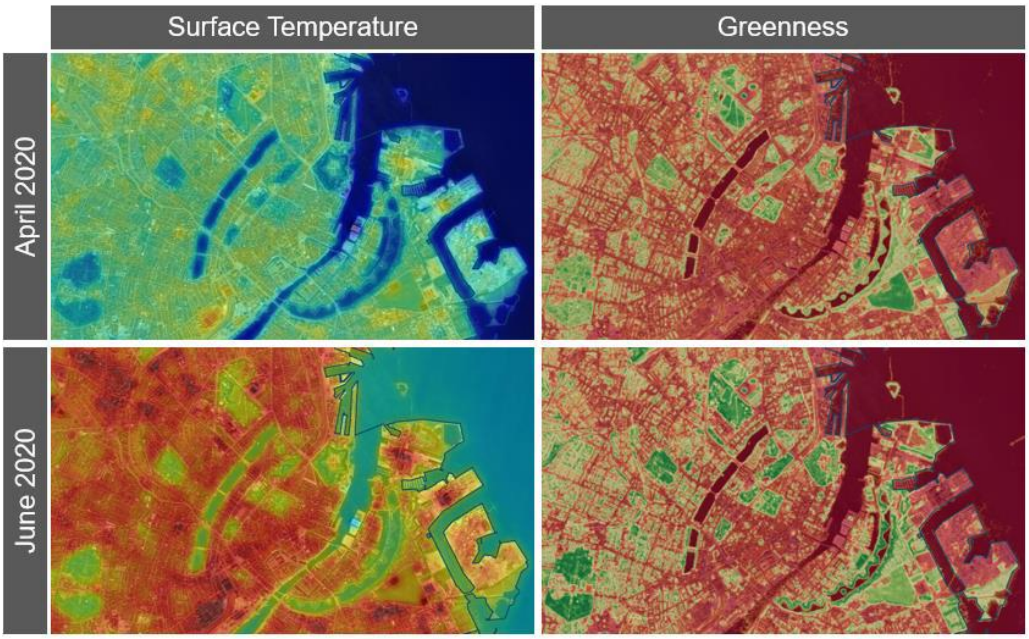

Figure 4: Examples of land surface temperature (left column) and greenness (right column) for the city of Copenhagen derived from EO data

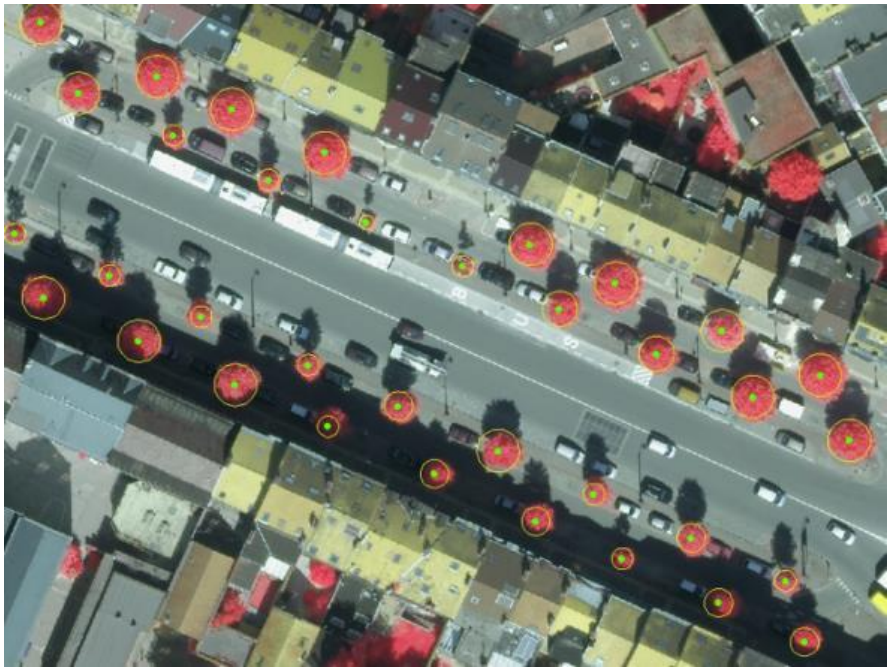

Figure 5: High-Resolution (10cm GSD) Colour-Infrared (CIR)-aerial image

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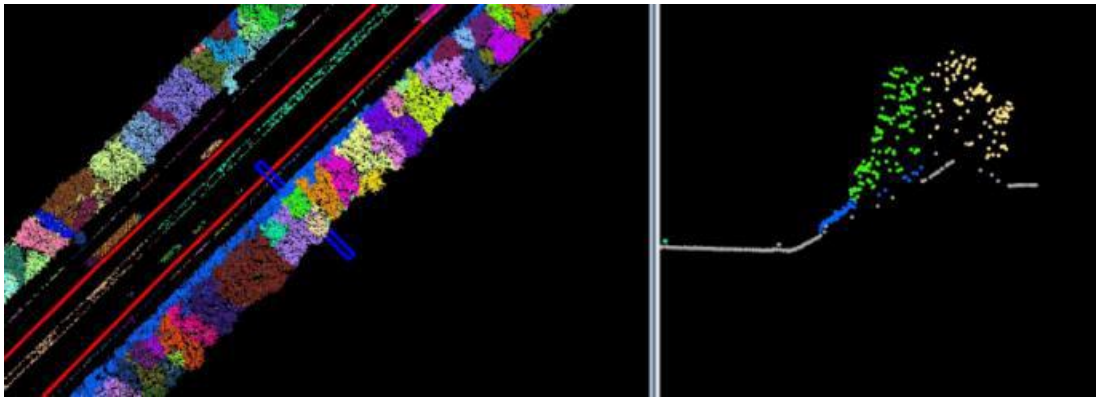

Figure 6: Airborne LiDAR data to detect single trees from 3D point clouds

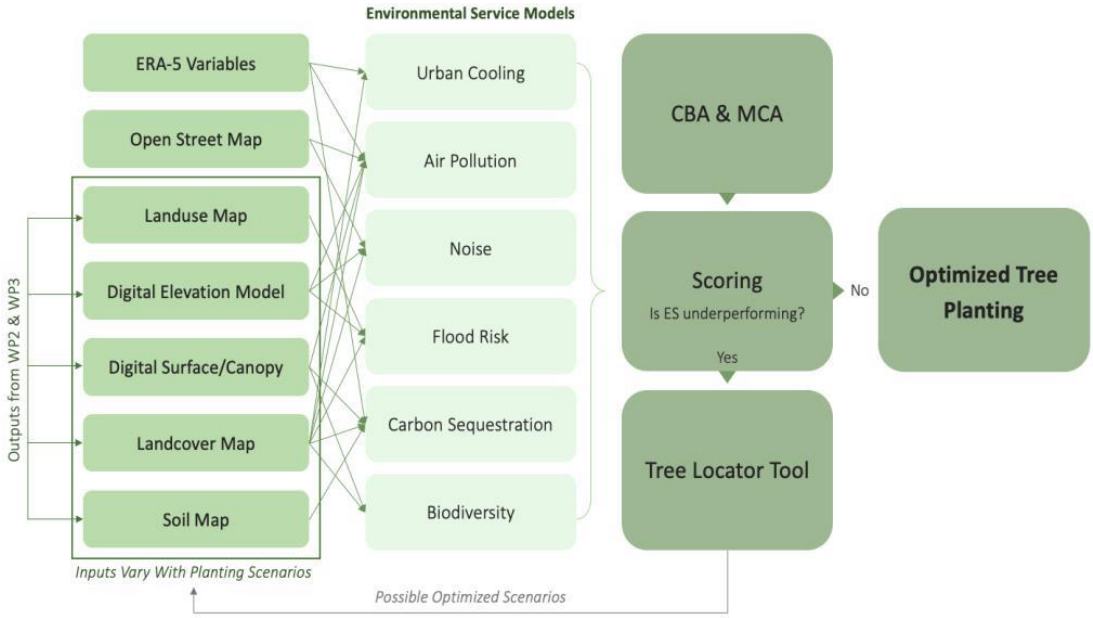

Figure 7: Modelling Scheme of 100kTREEs including input & output datasets

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