A SOCIO-ECOLOGICAL APPROACH TO COMBAT DESERTIFICATION FOR SUSTAINABLE FUTURE

EcoFuture

Work Package 7

Deliverable 7.2.1 Data Management Plan v.1

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Executive Summary

The current document constitutes EcoFuture's first version of the Data Management Plan (DMP). The DMP will address information related to the types of data the project will generate and collect, the standards that will be used to represent the data during the project and how partners will use, control, process, access, store, share and exploit the resulting data. The DMP is a living document that will evolve and be updated along the course of the project. In the first version a summary of the data that will be collected and generated from the project will be presented, including the purpose of data collection/generation as well as origin, type, format of data etc. Moreover, the actions to be taken for making data fair will be outlined. The DMP will set robust management procedures that will protect personal data collected from project activities, as well as client owned data, from unauthorized use or sharing while supporting GDPR compliance.

In the current version, a data summary concerning the data collection is presented. Moreover, the use of historical data, the ethics and the data security are also identified. The DMP will be revised and updated at M36.

In conclusion, the DMP describes how the research data generated by the project will be made findable, accessible, interoperable and reusable.

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1. Introduction

According to the PRIMA regulation, a DMP is a key element to make the research data collected, processed or generated by EC financed projects, accessible with as few restrictions as possible, while at the same time protecting sensitive data from inappropriate access and respecting Intellectual Property Rules.

It is part of the activity of WP7 – Project Management and aims at integrating all WPs activities regarding data collection, to give to project activities all the framework needed for an efficient exploitation of actions, data, and results. A DMP describes the data management life cycle for the data to be collected, processed and/or generated by a research project. In order to make research data findable, accessible, interoperable and re-usable (FAIR), a DMP should include information on:

- the handling of research data during & after the end of the project;
- what data will be collected, processed and/or generated;
- which methodology & standards will be applied;
- whether data will be shared/made open access and
- how data will be curated and preserved (including after the end of the project).

The DMP of the EcoFuture project is developed based on the Horizon 2020 FAIR Data Management Plan template (2016), provided by the European Commission and recommended to be used but on voluntary basis.

The DMP allows the consortium, from the early stages of the project, to identify the related sets of data that will be collected/generated/utilized in the project lifetime. It includes: i) key data required for the provision of EcoFuture services, the output of models and auxiliary data from various sources as well as several other data to be collected and utilized throughout the project, ii) data gathered through the stakeholder meetings, living labs and transnational living labs; iii) data collected in the pilots areas.

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2. Data summary

Using the Jordan Valley (JV) as a test case, the overall objective of EcoFuture is to develop a climate-change adaptation Plan oriented towards improving socio-economic welfare for people in the Mediterranean region. This Plan will be based on the Water-Energy-Food-Ecosystem (WEFE) nexus methodologies. A series of data will be collected within the WPs in order to achieve the overall objective. WP1, WP2, WP3, WP5 and WP6 will mainly collect historical data, while WP4 will generate data through pilot demonstrations.

The initially identified data for each WP can be summarized as follows:

2.1 Data collection within WP1

WP1 aims to conduct a comprehensive WEFE analysis for JV. The objective of Task 1.1 is to map the WEFE resources now and in the near future, to obtain the baseline data that can be used in the planning for improving the socio-economic welfare of people in JV. The data that will be collected (Table 1) will provide the basis to all other Tasks in WP1 and to all other WPs. The idea is to map all WEFE resources in three periods: (1) The current situation, (2) existing plans for the coming years, and (3) The prospected needs of WEFE resources in 30-50 years.

Table 1. Type of historical data collected in WP1

Type of data	Units	Origin-Provider	Time period	Format
General Information				
JV area	(KM^2)		Current 2030 (If available) 2050 (If available)	Excel
Population	Capita		Current 2030 (If available) 2050 (If available)	Excel
Ratio of area covered by wastewater network	%		Current 2030 (If available) 2050 (If available)	Excel

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Water Quantity				
Surface Water	MCM		Current 2030 (If available) 2050 (If available)	Excel
Treated Wastewater MCM	MCM		Current 2030 (If available) 2050 (If available)	Excel
Ground Water	MCM		Current 2030 (If available) 2050 (If available)	Excel
Drinking water /Supply and demand	MCM		Current 2030 (If available) 2050 (If available)	Excel
Irrigation water/Supply and demand	MCM		Current 2030 (If available) 2050 (If available)	Excel
Industrial water /Supply and demand	MCM		Current 2030 (If available) 2050 (If available)	Excel
Water Quality				
pH			Current 2030 (If available) 2050 (If available)	Excel
Dissolved Oxygen (DO)	mg/l		Current 2030 (If available) 2050 (If available)	Excel

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Total Dissolved Solids (TDS)	mg/l		Current 2030 (If available) 2050 (If available)	Excel
Fecal Coliform and E. coli	CFU 100ml		Current 2030 (If available) 2050 (If available)	Excel
BOD	mg/l		Current 2030 (If available) 2050 (If available)	Excel
Total N	mg/l		Current 2030 (If available) 2050 (If available)	Excel
PO4	mg/l		Current 2030 (If available) 2050 (If available)	Excel
EC	dS/m		Current 2030 (If available) 2050 (If available)	Excel
Food sector				
Plant production (Category 1, Category2, Category 3)	ton		Current 2030 (If available) 2050 (If available)	Excel
Animal production (Category 1, Category2, Category 3)	ton		Current 2030 (If available) 2050 (If available)	Excel

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Energy sector/ source				
Renewable energy (solar, water, wind, ..)/ Supply and demand	KWh		Current 2030 (If available) 2050 (If available)	Excel
Non Renewable (crude oil, gas, ..)/ Supply and demand	KWh		Current 2030 (If available) 2050 (If available)	Excel
Energy sector/ consumption of water sector				
Drinking (Renewable/nonrenewable)	KWh		Current 2030 (If available) 2050 (If available)	Excel
Wastewater (Renewable/nonrenewable)	KWh		Current 2030 (If available) 2050 (If available)	Excel
Irrigation (Renewable/nonrenewable)	KWh		Current 2030 (If available) 2050 (If available)	Excel
Industrial (Renewable/nonrenewable)	KWh		Current 2030 (If available) 2050 (If available	Excel
Land use distribution (area)				
Uncultivated / nature reserves	ha		Current 2030 (If available) 2050 (If available)	Excel
Agriculture (Irrigated area)	ha		Current 2030 (If available) 2050 (If available)	Excel

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Built up area	ha		Current 2030 (If available) 2050 (If available	Excel
Fish Farms	ha		Current 2030 (If available) 2050 (If available)	Excel
Water reservoirs	ha		Current 2030 (If available) 2050 (If available	Excel
Wadis	ha		Current 2030 (If available) 2050 (If available)	Excel

2.2 Data collection within WP2

WP2 aims to map the current socio-economic situation in the JV, develop national and transnational living labs that will be comprised of key stakeholders from all sectors and assess WEFE alternatives that will be comprised of combinations/bundles of Nature Based Solutions that will optimize the WEFE Nexus and improve the well-being of the citizens of JV. Socio-economic indicators/data will be used for this analysis.

Table 2. Type of historical data collected in WP2

Type of data	Units	Origin-Provider	Time period	Format
Population - density, employment, age, gender, income, consumption statistics, skills				
Governance – health education, stakeholder engagement, subsidies				
Agriculture – ag statistics, yield, area under tillage,				

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income, livestock management				
Land use-land cover statistics				
Economic activities				
Infrastructure accessibility				
Industries				
cultural (tourism, history, geology,)				
environmental services				

2.3 Data collection within WP3

WP3 aims is to obtain the historical data and apply the necessary tools to conduct a sustainability assessment analysis for the JV by considering the hydrologic and energy balance of the region, the distribution of water resources as well as the ecosystem services under current and future climatic conditions. These tools will be used to evaluate adaptation measures to be proposed to combat the impacts of climate change as well as to contribute the Strategic Planning for the JV region in order to optimise the WEFE Nexus.

Within Task 3.1 historical precipitation, meteorological and hydrologic flow data will be used to calibrate the SWAT model for the JV (Table 3). Within Task 3.4 historical geochemical data from the JV will be used to calibrate the Karst-SWAT-ICZ model and quantify the ecosystem services provided in each of the 3 countries as well as optimising the WEFE Nexus for the region (Table 3).

Table 3. Type of historical data collected in Tasks 3.1 and 3.4

Type of data	Units	Origin-Provider	Time period	Format
Digital Elevation Model				GIS
Land use and land cover				GIS
Soil characteristics				GIS
Geologic formations for bedrock				GIS
Precipitation (daily/monthly step)	m			Comma-Separated Values(.csv), or any other suitable file type
Meteorological data (daily step)				Comma-Separated Values(.csv), or any other suitable file type
Evapotranspiration (monthly step)	m			Comma-Separated Values(.csv), or any other suitable file type

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Air temperature (monthly step)	°C			Comma-Separated Values(.csv), or any other suitable file type
Bulk density	g cm^{-3}			Comma-Separated Values(.csv), or any other suitable file type
Soil chemistry: Ca, Mg, Na, K, H^+, F, NO_3^-, PO_43^-, NH_4^+	mol L^{-1}			Comma-Separated Values(.csv), or any other suitable file type
Precipitation chemistry: Ca, Mg, Na, K, H^+, Al, SO_4^{2-}, NO_3^-, PO_4^{3-}, NH_4^+ (monthly step)	mol L^{-1}			Comma-Separated Values(.csv), or any other suitable file type
Clay content	%			Comma-Separated Values(.csv), or any other suitable file type
Silt-clay content	%			Comma-Separated Values(.csv), or any other suitable file type
PAR (photosynthetic active radiation) (monthly step)	µmol m^{-2} s^{-1}			Comma-Separated Values(.csv), or any other suitable file type

Within Task 3.2 the MYWAS-VALUE integrated model will be enhanced and recalibrated to include detailed water consumption, supply and the connections between the two for the JV area, as well as agricultural production decisions and their envrionmental effects. For that purposes high resolution level data will be collected and synthisized from the Israeli Water Authority (IWA), Ministry of Agriculture and Rural Development (MOARD), Israeli Central Burau of Statistics (CBS), Natural Protection Agency (NPA) and other offical data sources (Table 4).

Table 4. Type of historical data collected in Task 3.2

Type of data	Units	Origin-Provider	Time period	Format
Natural recharge to groundwater aquifers	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Pumping capacity from groundwater aquifers	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Pumping costs from groundwater	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Surface flows	MCM/year			Comma-Separated Values(.csv), or any other suitable file type

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Pumping capacity from surface water sources	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Pumping costs from surface water sources	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Capacity of conveyance pipelines	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Costs of conveyance	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Water consumption for domestic, industrial and agricultural uses (of all water types)	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Water prices (for all types of water)	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Sewage generation in domestic, industrial and agricultural use	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Treatment plant capacity	MCM/year			Comma-Separated Values(.csv), or any other suitable file type
Costs of wastewater treatment	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Capital cost of infrastructure development	$/CM			Comma-Separated Values(.csv), or any other suitable file type
Natural water salinity levels	dS/m			Comma-Separated Values(.csv), or any other suitable file type
Land allocation to various crops	Hectares			GIS
Crop yield	Ton/hectare			Comma-Separated Values(.csv), or any other suitable file type
Costs of agricultural inputs	$/hectare $/ton			Comma-Separated Values(.csv), or any other suitable file type

Within Task 3.3 the current and future analysis of energy supply and demand systems will be performed. Data related to electricity and heat & power demand and supply will be collected. The database will be established in Excel sheets (Table 5). The data will be provided by the Israeli Electrical Company (IEC),

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the Israeli Electricity Authority, the Israeli Natural Gas Authority and Ministry of Energy. The parralel authorities in Jordan and Palestine are supposed to contribute their share to the database. The demand will be further analyzed based on discussions with the stakeholders within WP4.

The Western Side of the JV is divided by now into 9 subareas shown in Figure 1.

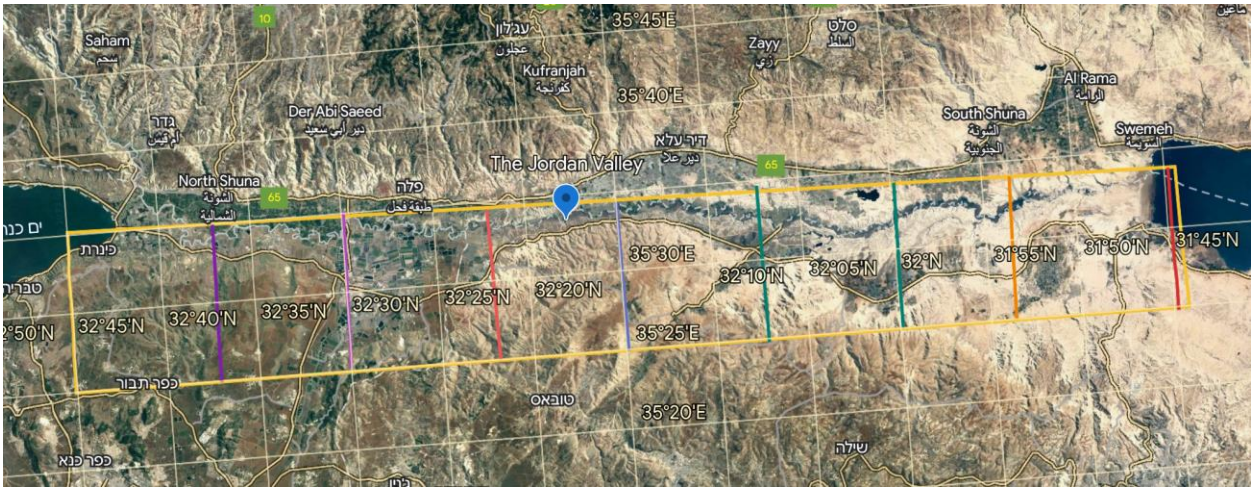

Figure 1. Subareas in the western JV to be used by the energy team.

For each subarea the following information is to be accumulated. All data will be inserted into Excel sheets.

Table 5. Type of historical data collected in Task 3.3

Data type and Units		Explanation				
Subdivision		Explanation	Notes	Year		Remarks
Subdivision number	No....			2023	2050	
Renewble energy - electricity	Planned area and installed power for solar energy [1000m^2] & [MW$_p$]	Future prospect and current situation of solar energy in this sub-area				
	Current installed power [KW$_p$]					
	Capacity Factor					
	Planned area and power for wind [1000m^2] & [MW]	Future and current of wind energy situation in this sub-area				
	Installed wind power [kWp]					
	Capacity Factor					
	Other sources (specify type)					

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	Planned area and power [1000m^2] & [MW]	such as biogas etc. Specify the resource type.				
	Installed power [kW]					
	Capacity Factor					
	CO_2 equivalent emission per kWh [mg/kWh]	For environmental impact evaluation				
	known and estimated CAPEX per unit installed power [€/KW_p]	Needed for expantion estimation				
	known and estimated OPEX per unit installed power [€/KW_p]					
	Financing terms and government arrangements	Financial terms and relevant regulations regarding renewables				
Renewble energy - thermal	Thermal sources (specify type)	This recsources can be for example PVT (their electrical contribution is presented in the electricity section as well), bioenergy etc.				
	Supply [kW]					
	Capacity Factor					
	Existing /planned					
	known and estimated CAPEX per unit installed power [€/KW_p]	Needed for expantion estimation				
	known and estimated OPEX per unit installed power [€/KW_p]					
	Financing terms and government arrangements	Financial terms and relevant regulations regarding renewables				
Transmission Netw	Serial No. of the transmission line					

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	Transmission line [kV] / [kW]	Voltage & Max. power permitted				
	Existing/planned	Yes/No				
	From source/subdivisions of the source	adjacent sub-areas from where the line comes and where it goes				
	Existing **transformer station No. &** [kV_{in}] / [kV_{out}]	connection to other transmission line or to the distribution network				
	Planned transformer station No. & [kVin] / [kVout]					
	known and estimated CAPEX per transformer station [€/unit]	Needed for expantion estimation				
	known and estimated CAPEX per unit line length [€/km]	Needed for expantion estimation				
	known and estimated OPEX per unit line length [€/km]					
Distribution networks	Serial numbers for the **distribution network**	Distribution network can cover few sub-areas				
	Feed from transmission line #					
	Covered area [km^2]					
	Power density supply per unit area [kW/km^2]					
	Planned Power Density supply per unit area [kW/km^2]					
	known and estimated CAPEX for increment of power density [$€/kW/km^2$]	Needed for expantion estimation				
	known and estimated OPEX for increment of power density [$€/kW/km^2$]					

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Electricity consumption	Number of customers	Number of consumers distributed according to their clasification as: residential, commercial, industrial, agriculture and desalination/water treatment (if any)				
	Primary customers' annual consumption [kWh/year]	Detail per customer type (residential, commercial, industrial, agriculture and desalination/water treatment (if any)				
	Current consumption curve (kW(t))	Provide link to a graph/table at a 30-minute resolution level				
	Future consumption curve (kW(t), year)	Provide link to a graph/table at a 30-minute resolution level				
Thermal consumption	Primary customers' annual consumption (MJ/year)	Detail per customer type (residential, commercial, industrial, agriculture and desalination/water treatment (if any)				
	Current thermal consumption KJ(t)	Link to a graph/table at an hourly resolution level				
	Future consumption KJ(t)/Year)	Link to a graph/table at an hourly resolution level				
	[T_1-T_2 ^oC] Temperature zone					
Natural gas supply	Natural Gas pipeline - existing/not existing/planned [Yes/No/P] [bar]					
	From source/subdivisions of the source	adjacent sub-areas from where the line comes and where it goes				
	PMRS existing/not/planned [Yes/No/P]					
	Natural gas suppliers					

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	Procurement conditions and contract duration	Take-of-pay contracts; options for procurement, government guaranteees, contract durations				
	Financing terms and government arrangements	Capital structure obligations; government grants, and other government benefits				
Other fossil-fuel supply	Annual fuel consumption [fuel type] [toe/year]	type and quntity				
	Suppliers of fossil-based resources					
	Procurement conditions and contract duration	Take-of-pay contracts ; options for procurement, government guaranteees, contract durations				
	Financing terms and government arrangements	Capital structure obligations; government grants, and other government benefits				
	Energy supplied as a function of time	link to a graph/table of fuel demand on daily resolution level				

2.4 Data generation within WP4

WP4 aims to establish three pilots to be constructed in existing demonstration sites in the JV. The pilots may include wastewater treatment, irrigation methods, climate-controlled greenhouses, Agri PV techniques, and renewable energy production. WP4 is the only WP that will generate data (Table 6).

Table 6. Type of data generated in WP4

Palestine Pilot Demo					
Input/Output	**Type of data**	**Units**	**Origin-Provider**	**Time period**	**Format**
	Temperature	°C	DCD	M13-M30	

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Wastewater input & treated wastewater output	TSS	Mg/L			Comma-Separated Values(.csv), or any other suitable file type
	pH value	pH scale			
	DO	ppm			
	BOD	BOD_5			
	COD	Mg/L			
	Nitrogen	ppm			
	Phosphorus	ppm			
	Chlorine	ppm			
Agricultural water input	Quantity	CM/area/D			
	Chlorine	ppm			
Agricultural output	Yield	Kg/area			
Renewable Energy output/consumption	Electricity	KW/h			
Green House ambient conditions	Average Daily Temperature	°C			
	Average Daily Humidity	%humidity			
Jordan Pilot Demo					
Input/Output	**Type of data**	**Units**	**Origin-Provider**	**Time period**	**Format**
Wastewater input & treated wastewater output	Temperature	°C	NARC	M13-M30	Comma-Separated Values(.csv), or any other suitable file type
	TSS	Mg/L			
	pH value	pH scale			
	DO	ppm			
	BOD	BOD_5			
	COD	Mg/L			
	Nitrogen	ppm			
	Phosphorus	ppm			
	Chlorine	ppm			
Agricultural water input	Quantity	CM/area/D			
	Chlorine	ppm			
Agricultural output	Yield	Kg/area			
Renewable Energy output/consumption	Electricity	KW/h			
Israel Pilot Demo					
Input/Output	**Type of data**	**Units**	**Origin-Provider**	**Time period**	**Format**
Wastewater input & treated wastewater output	Temperature	°C	AIES	M13-M30	Comma-Separated Values(.csv), or any other suitable file type
	TSS	Mg/L			
	pH value	pH scale			
	DO	ppm			
	BOD	BOD_5			
	COD	Mg/L			
	Nitrogen	ppm			

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	Phosphorus	ppm			
	Chlorine	ppm			
Renewable Energy output/consumption	Electricity	KW/h			

2.5 Data collection within WP5

WP5 aims to integrate all data accumulated from the first four WPs in addition to the analysis that will be conducted as part of this WP, which relates to mapping of existing governance structures and regulations, the identification of policy gaps and conflicts, and the use of techno-economic models for policy making to develop a cohesive, integrated, bottom-up, stakeholder driven strategic management plan for the JV that will optimize the WEFE resources for all countries involved (Table 7). Use will be made by all data collected in WP1-4. An example of Waste-Water regulation limits is presented in Table 8.

Table 7. Type of historical data collected in WP5

Type of data	Units	Origin-Provider	Time period	Format
Waste water regulations	Text	Water Authorities		PDF or WORD
WW Regulatory limits	mg/l (etc.)			Excel table
Drinking water regulations	Text	Water Authorities		PDF or WORD
Drinking water regulatory limits	mg/l (etc.)			Excel table
Air Pollution regulations	Text	Ministry of Environmental protection		PDF or WORD
Air Pollution limits regulations	Ppm (etc.)			Excel table
Planning	Text	Planning authorities		PDF or WORD
Planning	1000m^2			GIS maps

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Table 8. Example of Waste-Water regulation limits

Maximum levels and maximum value of monthly average levels

		Unlimited agricultural irrigation			Required quality for river release		
Parameter	Units	Maximal monthly arithmetic average	Maximal value	Minimal value	Maximal monthly arithmetic average[1]	Maximal value	Minimal value
Group A							
Escherichia coli	unit/100ml	10	50		200	800	
Total BOD[2]	15mg/l	10	15		10	15	
TSS (105°C)	mg/l	10	15		10	15	
Total COD	mg/l	100	150		70	100	
ammoniacal nitrogen	mg/l	10	15		1.5	2.5	
Total nitrogen[3]	mg/l	25	35		19	15	
Total phosphorus	mg/l	5	7		1	2	
Group B							
Chlorides (Cl)	mg/l	250	280		400	480	
Elec. Conductivity	dS/m	1.4	1.8				
Fluorides (F)	mg/l	2	3				
Sodium (Na)	mg/l	150	200		200	240	
Dissolved oxygen (O)	mg/l			0.5			3
pH[4]			8.5	6.5		8.5	7.0
Mineral oil[5]	mg/l						
Residual Cl[6]	mg/l	1	2.5	0.8	0.05	0.1	
Anionic detergents	mg/l	2	3		0.5	1	
SAR	$(Mmo/l)^{0.5}$						
Boron (B)	mg/l	0.4	0.5				
Group C							
Mercury (Hg)	mg/l	0.002	0.005		0.0005	0.0025	
Cromium (Cr)	mg/l	0.1	0.25		0.05	0.25	
Nikel (Ni)	mg/l	0.2	0.5		0.05	0.25	
Selenium (Se)	mg/l	0.02	0.05				
Lead (Pb)	mg/l	0.1	0.25		0.008	0.04	
Cadmium (Cd)	mg/l	0.01	0.025		0.005	0.025	
Zinc (Zn)	mg/l	0.2	5		0.2	0.1	
Arsen (As)	mg/l	0.1	0.25		0.01	0.05	
Iron (Fe)	mg/l	2	5				
Cupper (Cu)	mg/l	0.2	0.5		0.02	0.1	
Manganese (Ma)	mg/l	0.2	0.5				
Aluminum (Al)	mg/l	5	12.5				

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Molybdenum (Mo)	mg/l	0.01	0.025				
Vanadium (V)	mg/l	0.1	0.25				
Beryllium (Be)	mg/l	0.1	0.25				
Cobalt (Co)	mg/l	0.05	0.125				
Lithium (Li)	mg/l	2.5	6.25				
Cyanide	mg/l	0.1	0.2		0.005	0.01	

2.6 Data collection within WP6

WP6 aims to support the engagement and outreach activities between the Ecofuture consortium and stakeholders, and accelerate the impact of Ecofuture solutions and uptake by key target audiences through effective communication and dissemination strategies and activities.

This work package will collect the following data (Table 9):

- Stakeholder Mailing List for dissemination of Newsletter

  (Environmental experts, NGOs, Government officials)

- KPIs of Social Media Outlets
  - Facebook & Twitter: Number of Followers, Number of Views & Post Engagement
  - YouTube: Number of uploads, Number of Views
- Webpage
  - Number of views per page
- Leaflets
  - Number of Leaflets distributed.
  - Number of Events that leaflet was distributed

Table 9. Type of data collected in WP6

Type of data	Units	Origin-Provider	Time period	Format
Stakeholder Mailing List	Email addresses	Environmental experts, NGOs, Government officials	Ongoing	Excel
Facebook & Twitter	Number of Followers	Facebook & Twitter	Ongoing	Excel
Facebook & Twitter	Number of Views & Post Engagement	Facebook & Twitter	Ongoing	Excel
YouTube	Number of uploads	YouTube	Ongoing	Excel

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YouTube	Number of Views	YouTube	Ongoing	Excel
Webpage	Number of views per page	Webpage	Ongoing	Excel
Leaflets	Number of Leaflets distributed.	Leaflets	Ongoing	Excel
Leaflets	Number of Events that leaflet was distributed	Leaflets	Ongoing	Excel

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3. Fair Data

3.1 Making data findable, including provisions for metadata

The results of data analysis will be made public via EcoFuture public deliverables and any publications or conference presentations given by the partners. EcoFuture deliverables/publications will be made available online through the dedicated website created for this project. The data collected from living labs and other stakeholder activities will be deposited on the secure EcoFuture Intranet and will be available for analysis only from the EcoFuture partners.

A series of data, tables and figures will be produced to feed into the preparation of modelling in the different WPs and deliverables. Unique and persistent identifiers will not be used for this dataset. Keyword search will be based on typological terms. Versioning will follow the versioning approach defined by the project.

3.2 Making data openly accessible

Datasets will not be made publicly available for privacy reasons and to avoid disclosing relevant information. They will only be accessible through the EcoFuture Intranet to which only the members of the consortium will have access. Datasets will be updated when new data becomes available. GA regulates in Article 36.1 that during implementation of the action and for four years, the parties must keep confidential any data, documents, or other material (in any form) that is identified as confidential at the time it is disclosed ('confidential information'). Raw data will be available to project partners although publishing from this needs to be in accordance with ethics requires. Contact lists for stakeholders will be used internally and not be available publicly. This agrees with Article 36 on confidentiality. Data collected from living labs could be recorded and transcribed into Microsoft Word format. All data will be de-identified for any publication and participants will remain anonymous – we will use identifier codes stating which stakeholder category the response is from, but this will not expose our participants.

3.3 Making data interoperable

All data will be interoperable, as they will be produced in vocabularies and standards formats compliant with selected open access repository requirements.

3.4 Increase data re-use

There is no licensing foreseen for any of the data thus allowing the widest possible re-use. All peer-reviewed scientific publications relating to its results, will have open access. Gold Open Access will be used for publishing which grants immediate access through a publisher.

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4. Allocation of resources

All costs for making data FAIR in the EcoFuture project during the implementation phase are foreseen costs and are included in the budget of the project. No additional costs will be required for that purpose. After the end of the project, the data cannot be modified but will still be maintained by partners with costs that have been foreseen for them in the budget.

5. Data security

Partners will store the data in the EcoFuture Intranet (Microsoft Teams), that guarantees replication between regions, access patterns and with encryption features to ensure high security. They also will store personal data of stakeholders in the internal access management system with next generation firewalls, intrusion protection, artificial intelligence etc. for maximum security. Personal data will be permanently and irreversibly destroyed at end of the project.

6. Ethical aspects

EcoFuture will follow all ethics principles and relevant national, EU and international legislation for the implementation of the research and innovation activities of the project (Article 34.1 of DoA). While we have not identified and declared any ethics issues in the proposal, we will follow the provisions outlined by the EU Directive 95/46/EC (Data Protection Directive) on personal data protection. Similarly, even though we have not identified any environmental health and safety risks, we will consider EHS rules in our pilot demonstrations.

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7. References

EcoFuture Grant Agreement

EcoFuture Consortium Agreement between TUC and the EcoFuture partners

H2020 Programme Guidelines on FAIR Data Management in Horizon 2020, version 3.0, 26 July 2016

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Project Coordinator

Project Partners

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