the LENSES project

LEarning and action alliances for NexuS EnvironmentS in an uncertain future

LENSES

WP8

D8.2 LENSES pilots' data generation

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(CREA)

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Project partners

Project coordinator

Project Website:
www.prima-lenses.eu

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Executive summary

WP8 activities foster the implementation and validation of LENSES solutions and innovations in the seven pilot areas identified across project beneficiary countries, with the final aim to support local communities and institutions in the paradigm shift towards the operationalization of a resilient Nexus.

Focusing on Task 8.2, the aim of this task is to generate data that will be then used as input to the project activities.

The present deliverable aims to describe the methodologies implemented for collecting data in the seven pilot areas of the project, and to summarize all relevant data generated and used so far in all above mentioned activities. Over 140 datasets were requested by WP leaders to be generated by each pilot area to successfully conduct the activities foreseen in all project WPs. Requested datasets were made available by each pilot area, in percentages varying from 48 to 77%.

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1 Introduction

WP8 activities foster the implementation and validation of LENSES solutions and innovations in the seven pilot areas identified across project beneficiary countries, with the final aim to support local communities and institutions in the paradigm shift towards the operationalization of a resilient Nexus.

WP8 structure design includes targeted flows of information among the various LENSES WPs and the collection of several feedbacks from partners leading the 7 pilot areas established in the context of the project, with the aim to maximise the integration of task activities.

Task 8.2 "Assembly and deployment of LENSES solution elements" has implemented its activities in the context of the framework set up by Task 8.1 "Pilot implementation set-up: Baseline, framework, benchmarking" (see Deliverable 8.1 – "Baseline description and implementation framework" available in the section "Partner Area" of the LENSES project website).

2 Objectives

The overall objective of Task 8.2 is to generate data that will be then used as input to the following project activities:

- developing of themes and issues to be discussed with local stakeholder communities in the LAA process (WP2);
- supporting pilot teams in the context of Task 8.3, to apply the LENSES nature-based solutions (NBS) selection framework developed in the context of WP5 and completing with the criteria explored in WP6;
- implementing the activities foreseen in WP4 "Participatory System Dynamics Modelling";
- developing and implementing the LENSES observatory, and the Climate risk assessments foreseen in the context of WP7 "Nexus Operationalization for SDGs delivering".

The present deliverable aims to describe the methodologies implemented for collecting data in the seven pilot areas of the project, and to summarize all relevant data generated and used so far in all above mentioned activities.

The first part of this deliverable describes the methodology adopted to finalize the collection of data at the pilots. Then, it reports on the main results achieved and summarizes both activities and results in the conclusions. Ultimately, this deliverable includes 2 Annexes. Annex 1 reports the template of the shared spreadsheet used to finalize step 1 of Task 8.2 methodology. Annex 2 reports a list of all data requested by WP leaders to each pilot area.

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3 Methodology

3.1 LENSES methodology for data generation in pilot areas

Task 8.2 used a stepwise approach. Initially, all LENSES WP leaders have been required to provide comprehensive list of all data needed to be generated in each of the 7 pilot areas identified within the partner countries, in order to finalize the activities foreseen in the context of each WP. Following this first step, pilot leaders have been required to provide their feedback on the actual availability, and ease of collection of required data at local level. Data requested by WP leaders have been grouped by task and reported in Table 1.

To facilitate the identification and completion of the lists of data needed within each WP's activities, a common spreadsheet has been compiled and shared among partners. This spreadsheet included the following columns: Title of the Task in which the data will be used; Partner(s) requiring the data; Short description of the data needed; further specifications. Data needed were classified in 4 types: Documents-Reports, Spatial data, Time series data, and Document &/or Spatial Data.

Annex 1 of the present deliverable includes the template of the shared spreadsheet used to finalize step 1 of Task 8.2 methodology.

In preparation of step 2, all pilot leaders were invited in a meeting aiming at clarifying the data generation objectives and implementation pathway. Thereafter, pilot leaders were asked to classify each data set needed in one of the following 4 categories, according to data availability and ease to retrieve: "Currently available", "Can be available", "To be examined", and "Not feasible".

3.2 Challenges and mitigation actions of data generation methodology

The implementation of the methodology for data generation described in Section 3.1 has encountered the following challenges:

- The list of data requested for each WP activities is resulted too long;
- WP leaders asked very similar data sets written in different words. This problem generates confusion among pilot team members;
- In some case, Pilot leaders could not manage to obtain the exact type of data needed, or at the level of required resolution and accuracy;
- In many cases, data requested were very difficult to be retrieved.

To overcome or reduce the impacts of the above-mentioned challenges, mitigation actions have been proposed and implemented, as in the list reported below:

- Harmonisation and grouping data entry in the list;

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- Shifting from the ideal situation to a more realistic demand-based data availability and prioritising data collection and retrieval based on theme and time they are required for;
- Clarifying what analysis is going to be done in each pilot, thus reducing the potential data requirements;
- Organising bilateral meeting to discuss on data needs, availability, required quality and resolution and possible alternative or proxies that could be retrieved and be used.

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4 Results

All data generated and collected in the context of Task 8.2 have been archived along with the ones generated in Task 7.1 "LENSES Observatory".

A total number of 141 types of data were requested by LENSES Task leaders to be generated in each pilot area. The full list of data requested by WP leaders is summarized in Annex 2 of this deliverable. The total number of data sets requested by LENSES WP leaders per each pilot area is reported in Table 1, grouped by task. 10 dataset were requested for several WP activities.

Table 1: Number of data requested by WP Leaders, grouped by task

TASK	Data sets requested (count)
T4.1	65
T4.2	14
T4.3	3
T5.3	3
T6.1	2
T6.2	1
T6.3	2
T7.2	8
T7.3	17
T7.4	16
More than 1 tasks	10
Total	**141**

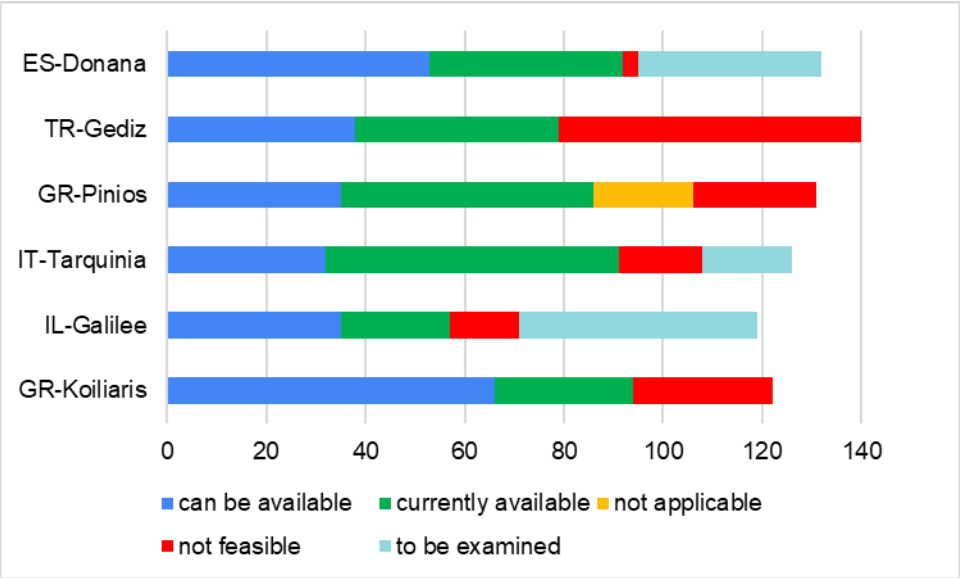
Required data were classified in 4 typologies: Documents-Reports, Spatial data, Time series data, and Document &/or Spatial Data. The results of this classification are reported in Table 2.

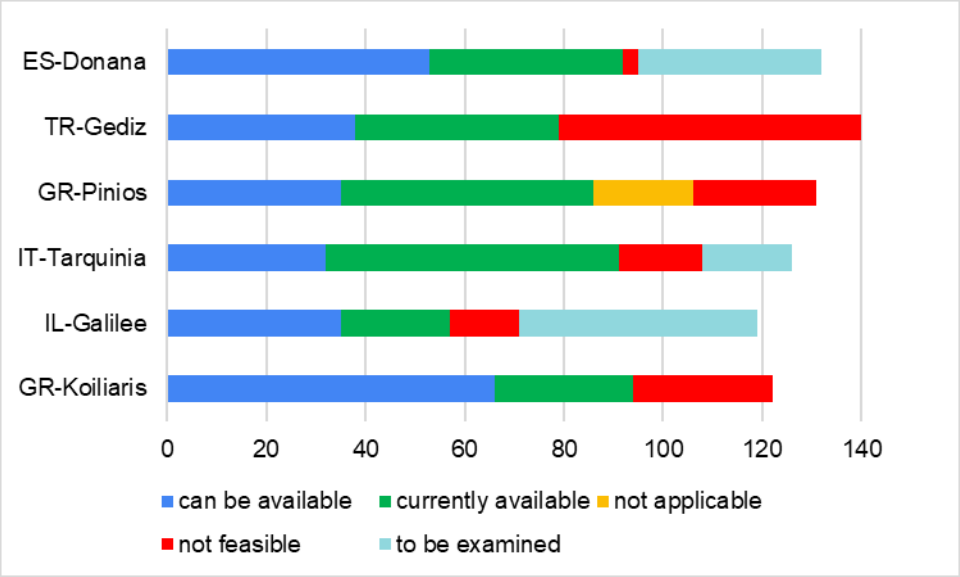
Table 2: Typology of requested data

Types of requested data	Count
Documents-Reports	48
Spatial Data	16
Time series data	48
Document &/or Spatial Data	29
Total	**141**

ALL PILOT LEADERS WERE ASKED TO CLASSIFY EACH DATA SET NEEDED IN ONE OF THE FOLLOWING 4 CATEGORIES, ACCORDING TO DATA AVAILABILITY AND EASE TO RETRIEVE: "CURRENTLY AVAILABLE", "CAN BE AVAILABLE", "TO BE EXAMINED", AND

"NOT FEASIBLE". THE RESULTS OF THIS CLASSIFICATION ARE SHOWED IN





Data classified in the categories "Currently available" and "Can be available" have been further grouped as "Almost available". Table 3 shows the results of the analysis of requested data availability in 6 out of 7 LENSES pilot areas, respectively 70% in Donana (ES); 77% in Koiliaris (GR), 66% in Pinios (GR), 48% in Galilee (IL), 72% in Tarquinia (IT), and 56% in Gediz (TR).

Table 3: Data availability in LENSES Pilot areas.

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Category of data availability	ES-Donana	GR-Koiliaris	IL-Galilee	IT-Tarquinia	GR-Pinios	TR-Gediz
Can be available	53	66	35	32	35	38
Currently available	39	28	22	59	51	41
Total "almost available" (count)	**92**	**94**	**57**	**91**	**86**	**79**
Total "almost available" (%)	**70**	**77**	**48**	**72**	**66**	**56**

5 Conclusions

Over 140 datasets were requested by WP leaders to be generated by each pilot area to successfully conduct the activities foreseen in all project WPs. Requested datasets were made available by each pilot area, in percentages varying from 48 to 77%.

In Jordan, only small scale experiments are planned by project design to be performed, and thus no larger scales will be addressed to require data in the context of the current task. For this reason, Jordan pilot area was not included in the activities of Task 8.2.

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6 Annexes

6.1 Common spreadsheet used to finalize Task 8.2 methodology

Annex 1 reports a typical filled-in sample of the template developed and distributed amongst WP leaders and pilot partners.

ID	Task	Partner who needs the data	What you need	Specifications	Partner who provides the data	Name and Surname	Data availability (to be filled in by Providing partner)	Comments	Data source	File name
	TX.X	Requesting Partner	Data requirements:	e.g. Timescale, location/area, spatially distributed etc.	Provided by:	Provided by:	Select one of 4 options	Anything you need to mention		
1	T7.2	DRAXIS	Study area	Spatial Data	TUC		currently available	TUC: Shapefile of the boundaries has already provided το DRAXIS		
2	T7.2	DRAXIS	Main challenges	Reports	TUC		currently available	TUC: Please refer to the Baseline description of Koiliaris CZO		

6.2 List of all data requested so far in all the pilots

Annex 2 reports the full list of 141 datasets requested by WP leaders to pilot area leaders. In some case, the same dataset was requested by more than 1 WP leader, because it serves as input for different project Tasks.

Data requested by WP leader	Count
Above-Ground Biodiversity (key/sensitive/protected-species) (list, suitability maps, etc.)	1
Agricultural area under productive and sustainable agriculture in the pilot (ha)	1
Agriculture Share of GDP (in local currency)	1
Agriculture Share of Government Expenditure (in local currency)	1
Amount of treated water used for drinking and domestic purposes (m^3/year)	1
Amount of treated water used for recreational purposes (m^3/year)	1
Amount of treated water used in agriculture (m^3/year)	1
Amount of treated water used in industry (m^3/year)	1
Amount of water distributed via agricultural irrigation network (m^3/year)	1
Amount of water distributed via drinking water supply network (m^3/year)	1
Annual mean concentrations of nitrate in groundwater in pilot	1
Annual mean concentrations of nitrate in rivers in pilot	1
Annual mean concentrations of phosphate in rivers in pilot	1
Annual mean concentrations of phosphorus in lakes in pilot	1
Area of the plot to be evaluated	1
Area of transboundary aquifer basins in pilot (km^2)	1
Area of transboundary aquifer basins with operational water cooperation in pilot (km^2)	1
Area of transboundary lake basins in pilot (km^2)	1
Area of transboundary lake basins with operational water cooperation in pilot (km^2)	1
Area of transboundary river basins in pilot (km^2)	1
Area of transboundary river basins with operational water cooperation in pilot (km^2)	1
Area of water-related ecosystems and inland open waters	1
Available modelling (hydrology, water quality, water allocation, etc.) outputs (officially accepted)	1
Average amount of water abstracted per capita per day (liter/capita-day)	1
Basic relevant economic info (e.g. cost of water, energy, agricultural productivity, etc.)	1
Census data (population, farmers, etc., and its future projections)	3
Climate change output and data (regionally downscaled)	1
Conveyance, irrigation, evaporation losses, etc.	1
Crop and vegetation phenology data	1
Crop harvest date	1
Crop Management (tillage, herbicide application, sunscreens ...)	1
Crop pattern distribution (%)	1
Crop price	2
Crop types (+ features & practices)	2
Crop types (+ features & practices) and yield	1
Current, new or under consultation action plans/strategies	2

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Data requested by WP leader	Count
Current, new or under consultation action plans/strategies for WEFC management	1
Daily max min temperature data	1
Daily precipitation data	1
Date of sowing of crops	1
Demand data (municipal, domestic, industrial, irrigation, livestock, etc.)	1
Demand for water and land (current-future)	2
Economic losses from water-related natural disasters	1
Energy generating infrastructures & energy supply	1
Energy price	1
Environmental Flow Requirement (m3/year)	1
Eto (Daily, Monthly or Yearly if data is available) - Precipitation and others meteorological data	1
Fertilizer input data in agriculture (kg/ha)	1
Final energy cost	1
Groundwater data (Storage capacity, natural recharge, withdrawal, etc.)	1
High-resolution topography data (e.g., 1:5000 scale or smaller)	1
Hydrography/hydrogeomorphology data (e.g., stream network, lakes, reservoirs)	1
Hydrometeorologic observation network data (meteorological, water flow, water quality gauges)	1
Hydrometric data (meteorology, flow, water quality)	1
In the case of a protected area, provide a general characterization and the scope will be evaluated.	1
Industrial wastewater discharges	1
Infrastructures (roads and settlements)	1
Irrigated area.	1
Kilograms per hectare of arable land in pilot	1
Land Use/Cover data (past-current-future)	4
Legislative/released environmental flow rates (%)	1
Life losses from water-related natural disasters	1
List of key stakeholders	1
Main challenges	2
Main WEFC challenges	1
Medium-resolution topography data (e.g., Aster, SRTM, etc.)	1
Natural disaster records	1
NBS solutions susceptible of implementation in the territory	2
Nitrogen % of each of the fertilizers	1
Number and condition of endemic species	1
Number of food-borne disease cases	1
Number of water-borne disease cases	1
Number of water-related natural disasters (floods and droughts)	1
Point (wastewater treatment plant data), non-point (runoff) pollution source data	1
Policy instruments affecting WEFC in the territory (legal frameworks, watershed management plans, ordinances)	1
Population fish species (near threatened, vulnerable, endangered, critically endangered)	1

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Data requested by WP leader	Count
Population mammal species (near threatened, vulnerable, endangered, critically endangered)	1
Population of bird species (near threatened, vulnerable, endangered, critically endangered)	1
Population plant species (near threatened, vulnerable, endangered, critically endangered)	1
Potential crop production	1
Potential funding sources for NEXUS relevant solutions (green deal, Interreg, etc.)	1
precipitation (incl. variability and extremes)	1
Previous work on water accounting/footprint, hydrological models	1
Price of different fertilizer types	1
Proportion of bodies of water with good ambient water quality	1
Proportion of land that is degraded over total land area in pilot (km^2)	1
Quality of water in water-related ecosystems and inland open waters (m^3/year)	1
Quantity of water in water-related ecosystems and inland open waters (m^3/year)	1
Quantity/types of fertilizers	1
Rate of population served by water supply network in total pilot population (%)	1
Relevant local/regional/national planning documents	1
Relevant scenarios for the area	1
Rivers and lake bodies, ground water and stocks	2
Sectoral water allocation priorities/plans	1
Size of special protection and designated areas for terrestrial and freshwater biodiversity (km^2)	1
Social characterization of the pilot area	2
Soil Moisture Data	1
Soil texture (clay, sand, silt contents at available soil depths)	1
Soil types map	1
Spatial protection areas and wetlands	1
Strategies of Fertilization per crop/ plot: Variable Rate Fertilization? Homogeneous dose? Or both? Scheduling fertilization, machinery, cost of application.	1
Study area	3
Territorial economic data	1
The number of local administrative units on water and sanitation management	1
Total agricultural area (ha in pilot)	1
Total amount of water abstracted from dams to agricultural irrigation networks (m^3/year)	1
Total amount of water abstracted from dams to drinking water supply networks (m^3/year)	1
Total amount of water abstracted from lakes to agricultural irrigation networks (m^3/year)	1
Total amount of water abstracted from lakes to drinking water supply networks (m^3/year)	1
Total amount of water abstracted from rivers to agricultural irrigation networks (m^3/year)	1
Total amount of water abstracted from rivers to drinking water supply networks (m^3/year)	1
Total amount of water abstracted from springs to agricultural irrigation networks (m^3/year)	1
Total amount of water abstracted from springs to drinking water supply networks (m^3/year)	1
Total amount of water abstracted from wells to agricultural irrigation networks (m^3/year)	1

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Data requested by WP leader	Count
Total amount of water abstracted from wells to drinking water supply networks (m^3/year)	1
Total area of the farm (at plot level).	1
Total crop production in pilot (in kg per crop type)	1
Total Freshwater Withdrawn (m^3/year)	1
Total irrigated agriculture area (ha in pilot)	1
Total Renewable Freshwater Resources (m^3/year)	1
Water demand	1
Water distribution for different purposes (agriculture, domestic (drinking), ecosystems, ...) and related demand/limits/availability	1
Water management (scheduling, water applied, etc...)	1
Water temperature data (river and lakes)	1
Total requested datasets	**141**

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