Plan Overview

A Data Management Plan created using DMPonline

Title: PhD Carolin Ellerkamp

Creator:Carolin Ellerkamp

Principal Investigator: Carolin Ellerkamp

Data Manager: Carolin Ellerkamp

Project Administrator: Carolin Ellerkamp

Affiliation: Wageningen University and Research (Netherlands)

Funder: European Commission

Template: Data Management Plan | Wageningen University and Research

Project abstract:

Across the EU/EEA, waters are polluted by excess nutrients and antibiotics from agriculture and wastewater. This pollution threatens biodiversity and increases health risks. To protect people and nature, we need smarter, region-specific solutions for nutrient and antibiotic pollution. As part of the EU Horizon Greenhood project, my research aims to develop and apply a model to track nutrient and antibiotic flows. With this, I will assess the effectiveness of management strategies such as nature-based solutions to reduce water pollution. Starting from the Rhine, Meuse, and Scheldt, I will scale up my insights to guide action across the EU/EEA.

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PhD Carolin Ellerkamp

A. Describe the research project

1. Name researcher (please, add your full name):

Carolin Maria Ellerkamp

2. What is the name of your department(s)?

- Environmental Sciences

3. What is the name of your chair group(s) or business unit(s)? English name and abbreviation for chair groups from this page; business units from this page (expand to Wageningen Research and keep expanding to find your specific division / group). Examples: Bioprocess Engineering (BPE) or Contract Research Organization (CRO).

Earth Systems and Global Change (ESC)

4. Describe the organisational context of your research project.

DMP version (or date last modified)	07.07.2025
Supervisor / (co-)promotors	Dr. Maryna Strokal, Prof. Dr. Erik Meers, Dr. Mengru Wang, Dr. Ivona Sigurnjak
Graduate School (WU only)	WIMEK
Start date of project	01.04.2025
End date of project	01.04.2029
Project number	5160959189
Funding body	European Union European Union HORIZON-CL6-2024-Zeropollution-01-1 Grant Agreement Number 101181712 (GREENHOOD)

5. Give a short description of your research project.

Title	Co-benefits of solutions for reducing nutrient and antibiotic water pollution: an integrated modelling approach for the EU/EEA
Summary	Across the EU/EEA, waters are polluted by excess nutrients and antibiotics from agriculture and wastewater. This pollution threatens biodiversity and increases health risks. To protect people and nature, we need smarter, region-specific solutions for nutrient and antibiotic pollution. As part of the EU Horizon Greenhood project, my research aims to develop and apply a model to track nutrient and antibiotic flows. With this, I will assess the effectiveness of management strategies such as nature-based solutions to reduce water pollution. Starting from the Rhine, Meuse, and Scheldt, I will scale up my insights to guide action across the EU/EEA.

6. List the individuals responsible for the following data management tasks.

Data collection	Carolin Ellerkamp
Data quality	Carolin Ellerkamp
Storage and backup	Carolin Ellerkamp
Data archiving / publishing	Carolin Ellerkamp
Data stewardship / support	Ronald Hutjes

7. I have requested a review of this data management plan from:

- No review requested.

8. Name of the data management support staff and / or data steward consulted during the preparation of this plan and date of consultation.

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B. Describe the data to be collected, software used, file formats and data size.

9. Will you use existing data for this project?

- Yes. Please specify below which data (e.g. DOI, URL, or storage location) and the terms of use (e.g. licence).

- data from the MARINA-Antibiotics model Zhang et al. 2023 (https://doi.org/10.1016/j.ese.2024.100513)
  - model inputs: livestock-specific antibiotic consumption, degradation of antibiotics in soils, adsorption of antibiotics to organic matter (soils/sediment)
- data from the MARINA-Nutrients model Ural-Janssen et al. 2023 (https://doi.org/10.15302/J-FASE-2023526)
  - model outputs: nutrient inputs to land, river and seas per nutrient form (DIN, DON, DIP, DOP)
- data from the antibiotic-retention approach in river systems by Ellerkamp 2024 (https://edepot.wur.nl/657352)
  - processes and properties important to consider for antibiotic retention in river systems, modelling approach for antibiotic-retention

10. Will new data be produced?

- Yes.

11. Please describe the data you expect to generate and / or use in the table below. Include reused existing data as well (as these are files that you manage and store).

Data stage	File contents	Data type	Software	(Open) file format	Estimated size of each file (range)	Estimated number of files (range)
Raw data	Historical, current and future nutrient export to land, river and sea data	MARINA-Nutrients model output files	R, Excel	.csv, .xlxs, .txt	10-30 GB	20-100
Processed data	Livestock numbers, population numbers, livestock-specific antibiotic consumption & excretion rates, crop production, land use, hydrology, ...	Model input, scenarios	R	.csv, .txt	10-30 GB	25-100
Code	Model development and analysis scripts	R scripts	R	.R	5-50 MB	50-100
Documentation	Metadata, model descriptions, user manuals	Text documents	Word, PDF, RMarkdown	.docx, .pdf, .html	1-5 MB	10-20

12. Estimate how much data storage you require in total (e.g. by using the information in the table at question 11).

- 100-1000 GB

C. Storage of data and data documentation / metadata during research

13. Where will the data,code and accompanying documentation / metadata be stored and backed up during the research project (see the WUR Data Storage Finder)? Include platforms you use to share data, collect data on, or send data to for processing or analysis.

- Git@WUR (GitLab locally hosted at WUR)
- WUR SharePoint / Teams - only when an up to date version of the research data is also safely stored on the W:drive or Yoda.
- WUR OneDrive for Business - only when an up to date version of the research data is also safely stored on the W:drive or Yoda.

Personal OneDrive, weekly backup

D. Structuring your data and information

14. Give a (visual) representation of the folder structure you intend to use.

15. Describe the file naming conventions you intend to use. Please give one or multiple example(s).

[RQ_specific]_[date]_[version].[extension]
The date will be supplied in the format yyyymmdd to ensure proper sorting on date (i.e., 20250711) and conform to the international standard for using dates. The version numbering will be supplied in a 'v' followed by 2 numbers (even below version 10), the first a so-called 'leading zero', to ensure proper sorting on version (i.e. v01, v02, v09, v10, v11). For example: 20250711_RQ1_Antibiotics_V01.csv When more elements are required in file names, abbreviations will be used to keep the file name at a suggested length of 30-35 characters to limit the length. When abbreviations are applied, these will be explained in

the documentation.

16. How will you distinguish between versions of files (multiple answers possible)?

- Dates within file names are updated when files are modified.
- The designation 'vRAW' is added to file names that contain raw unaltered data (before any processing and cleaning). Any alteration of RAW data is done on a copy of the RAW data and appended with a version number which increases with each file modification (e.g. v01, v02, v03 etc.).

E. Data documentation and data quality

17. Describe below what data documentation and metadata will accompany the data to help make the data findable, understandable, and reproducible.

- Other, please specify below.

Documentation and metadata will be organised in the following way:

1. Files will be sorted in corresponding folders according to RQs. Readme files will be provided to explain data files and documents in the folder
2. Files in Excel will have an explanation of what is being calculated or shown; similar will be done for R scripts.

18. Describe what data and analysis quality controls will be used?

- Supervisors or peers will review the data and results for any anomalies (e.g. unexpected inconsistencies, outliers, correct labeling of data and / or treatments, correct and consistent coding applied, etc.).

I am following the chair group data management plan, which adheres to the FAIR (Findable, Accessible, Interoperable, and Reusable) principles. The plan is based on the library services provided by the university, ensuring that data management aligns with the institutional guidelines for proper data handling, storage, and sharing.

F. Working with sensitive data (personal data, ethics), data ownership, sharing and access

19. Who is the (rights)holder of the data (commonly known as the owner of the data)?

- Other, please specify below.

We do not expect sensitive data in our project. All data produced in this research is planned to be published with open access.

20. What is the data classification for your project (for example as specified in SmartPIA) taking into account the (privacy) sensitivity of the data?

- Negligible.

21. Is this project registered in SmartPIA?

- No. Please register in SmartPIA in the case (privacy) sensitive data is collected (when applicable: via your supervisor, the project manager, see guidance).

22. Please specify the (sensitive) data and privacy protection measures. Note that any measures undertaken should be consulted with the Information Security Officer (ISO) and Privacy Officer (PO).

- Other, please specify below.

Not applicable, because the data used in the study is publicly available. Newly produced data will be published along with papers in open access journals.

23. Are there other ethical issues that need to be taken into account which may include approval from ethical committees?

- No.

24. Will there be any intellectual property (IP) rights or alternative applications or routes to impact (such as commercial interests) associated with the data?

- No.

G. Data archiving and publishing

25. Are there reasons to restrict access to the data or limit which data will be made publicly available?

- No.

26. Describe what data from question 11 will be archived internally (e.g. WUR network drive / Yoda@WUR) and not published, for a minimum of 10 years? Include the exact name for the storage medium chosen (see the WUR Data Storage Finder).

- Other, please specify below.

All produced data will be published in open access journal together with peer-reviewed articles from this PhD research.

27. What data will be published and made available for reuse via a data repository?

- Data underlying publications or reports. Please specify below which data listed in question 11.

Raw & processed data.

28. When will the data be available for reuse, and for how long will the data be available?

- Data will be available for at least 10 years as soon as the article or report is published and not required for any other article publication.

29. Which data repository do you intend to use to make the data findable and accessible (see the WUR Repository Finder)?

- DANS Data Stations

30. Which metadata standard will be used to describe the data during internal archiving and / or depositing in a data repository?

- Metadata standard from DANS Data Stations, 4TU.ResearchData and / or Zenodo (which often are the DublinCore or DataCite standard).

31. Which licence/terms of use will be applied to the data?

- Open access (Creative Commons Attribution licence (CC BY); anyone can access and reuse with attribution).

H. Data management costs

33. What resources (in time and / or money) will be dedicated to data management, data archiving or publication, and ensuring that data is reusable? Indicate as well how these costs will be covered.

- Other, please specify below.

The chosen data repository does not involve extra costs.
For each RQ, I will contact the WUR library for support with establishing a detailed data management plan, checking the data management plan, and publishing my data on DANS-EASY at different stages of my project. This support from the WUR library is for free (www.wur.eu/datamanagement).