

Data management protocol

Forest and Nature Conservation Policy Group

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For questions about this document: contact FNP Data Steward

1. Purpose

The purpose of this data management protocol is to set general data management practices within the Forest and Nature Conservation Policy group at Wageningen University. It describes the guidelines on the storage and traceability of data in research carried out at the FNP group with the ultimate goal: to be able to trace the 'data journey' from raw data to the published forms, to store data securely and consciously handle privacy sensitive data. That means that each step of the research process, from data collection, data processing, final analyses and reporting, needs to be documented and stored in a secure centralized location. By following these guidelines, we comply with the [Dutch Association of Universities \(VSNU\) Code of Conduct](#) and WUR data policy. The Netherlands Code of Scientific Practice (VSNU 2018) requests that research data must be managed and stored securely, to allow verification and reuse, for the period appropriate to the discipline. Wageningen University & Research acknowledges this VSNU code, which means also FNP researchers are required to keep their data available for this period, i.e. 10 years.

The WUR data policy is guided by, amongst others, the [FAIR principles](#) (Findable, Accessible, Interoperable, Reusable) and the motto to share data 'as open as possible, as closed as necessary'. The WUR data policy requires:

- Chair groups to write and update a data management protocol (for FNP, this document),
- PhD candidates to have a data management plan (project-level), based on the chair groups' DMP,
- Secure, safe and shareable storage of the research data during research, including privacy sensitive data,
- Preserving of data underlying publications (articles/reports/theses) for at least 10 years after research,
- Registration of preserved data in Pure.

The data management practices outlined in this data management protocol apply to all data produced within research (sub)projects performed at FNP. (Sub)Project is here defined as a publication (in any form, i.e. (thesis) report, article, book chapter, ...), or contribution to a publication (in any form, i.e. article, book chapter, ...). A (sub)project can be part of a larger project (e.g. an EU project covering several publications) or an independent project. This includes data derived within BSc and MSc thesis¹ projects, PhD thesis projects, postdoc projects and staff projects as well as other research projects that involves FNP researchers.

2. Planning & preparing research

2.1. Existing data for reuse

When others publish data, this gives you the opportunity to search for and find data to reuse within your research. Reusing data can:

1. Avoid duplication in generating data,
2. Save time and money,
3. Help in improving and/or validating research methods,

¹ A different Data Management Protocol exists for BSc and MSc students at the FNP group

4. Allow integration (e.g. meta-analysis) of data from different studies,
5. Open up new avenues of research.

And at the start of a project, it is always important to check existing data. Sources to look for existing data include:

- Institutional repositories (e.g. Research@WUR)
- Online registries for research output (e.g. DataCite Commons, Mendeley Data, OpenAIRE, WorldWideScience, BASE)
- Online registries for repositories (e.g. Re3Data)
- Reference to the data in an article
- Supplementary files
- Data journals
- Colleagues with (un)published data
- Personal or institutional websites

2.2. Ownership of research data

In accordance with the [WUR IP Policy & Value Creation](#), WUR is entitled to the research data and databases created by any WUR staff member within the scope of their employment, PhD candidates², students and WUR-users of WUR research facilities, unless otherwise defined. In case a researcher leaves WUR, data should remain under guardianship of the WUR (research group; data steward; data librarian). As an acknowledgement of the scientific effort, the creator of the data is granted access to the data, provided that the data is properly archived and licensed in a data repository. You can find more info on the legal aspects of research data ownership ([here](#)) and 'What is copyright and what is protected' ([here](#)). For specific questions on transfer of personal data outside WUR, please contact the privacy officer of our science group.

However, a contractual agreement with a third party defining data ownership, sharing, access and use of the data supersedes WUR ownership and the data policy. If none is available, an agreement has to be made with the third party, in which ownership, sharing and accessibility to the data are arranged.

When research data is created with others, it is necessary before or at the latest at the start of your project to make an agreement with the third party, in which ownership, sharing and accessibility to the data are arranged. For help creating a Data Sharing Agreement, the legal department of our science group can be contacted. In addition, contractual or subsidy requirements could demand that the research data should be made publicly available and freely accessible to everyone.

2.3. Privacy sensitive data

In this phase, it is important that you are aware of the handling of personal data that you may process for your research. Personal data are all data that can be traced directly or indirectly to a natural person.

Directly identifiable are personal data that lead directly, or without too much effort, to an individual, for example: Name, e-mail address, address, telephone number.

Indirectly identifiable are personal data that cannot directly be to an individual but can be linked to an individual such as: Data about origin, profession, orientation, date of birth, health.

The aim is to respect the privacy of every natural person as much as possible as the GDPR obliges us to do (see for more info this video: [GDPR Guidelines](#)). On the basis of the fundamental right to the protection of personal data, all personal data concerned must be protected against unlawful and unauthorized use or misuse. This means that everyone who is going to process personal data is obliged to do so in accordance with the guidelines of the GDPR. A number of relevant documents (including information statements, consents forms, personal data exchange agreements) can be found [here](#).

In order to ensure that projects comply with the GDPR, every project needs to be registered [here](#). This includes a register questionnaire that automatically makes a risk assessment based on the answers provided. If there is an increased risk, an additional PIA questionnaire must also be filled out. This will be indicated in the register questionnaire.

² In agreements with non-contractual PhDs and sandwich PhDs, it is stipulated that the data belongs to the PhD, with WUR given access to such data.

It is important that in case of projects involving human subjects, ethical approval must be obtained prior to the start of the research. The WUR Research Ethics Committee for non-medical studies involving human subjects (WUR-REC) is responsible for conducting ethical reviews on research involving human participants that is conducted by WUR-researchers and for which WUR bears (co-)responsibility. You can find the form for this request [here](#), including information about where to send the form to.

2.4. Data management plans

In each project (e.g., a PhD project, an EU project), data management practices should be outlined in a data management plan. This is a document, written before the start of or at the beginning of a research project, in which various aspects of data management during and after the project are outlined (including some of the aspects described above). It makes you think carefully about the processes of collecting, storing, describing and preserving your research data. In case of PhD students, the data management plan needs to be submitted with the project proposal to the graduate school. In general, the data management plan should be updated and maintained throughout the research project when changes in data management practices are made.

The data management plan can be written by using:

- If applicable, the **funder data management plan template** or
- The **WUR data management plan template** which is available in [DMPonline](#) or can be downloaded via DOI: [10.5281/zenodo.7233370](https://doi.org/10.5281/zenodo.7233370)

The DMPonline tool offers a range of funder Data Management Plan templates (e.g. from NWO, ERC and ZonMw). DMPonline is available to WUR researchers and enables you to easily:

- write your plan and update it throughout the lifecycle of your project,
- share your plan with internal and external collaborators,
- share your plan with the Data Desk to request feedback,
- and download your plan in a variety of formats.

The DMPlan of an FNP project should follow the guidelines as described in this FNP Data Management Protocol (DMPro), unless funders request differently.

3. Doing research

Often the rule of thumb is used, that data underlying a publication AND any data that you may reuse in the future, is to be stored. Not to be stored are, a.o., data from failed experiments, easy to reproduce data, and data that will not be used in the future.

The following data has to be stored for every publication:

- a) The raw data,
- b) The processed data,
- c) The publication.

3.1. Where to store your data?

WUR policy requires secure and shared storage. As such, it is strongly advised NOT to store your data on a location that does not get automatically backed up (e.g. the hard disk of your computer/laptop, an external hard drive, a USB stick) and/or cannot be accessed by the FNP group if necessary (e.g. during illness or departure from WUR). Secure and shared storage is provided by WUR via several ways.

Short term storage

Short-term storage of data refers to the storage of files when the publication is not yet finalized (e.g. raw data files are already available). For the short-term storage, there are the following options:

- **Personal folder (M:-drive)**
Every account has a personal folder (default size: 50 GB) which is only accessible to the accountholder. You can access your personal folder outside of the WUR network via MyWorkspace or VPN.

- **Department or project folder (W:-drive)**

This is a group folder. The data on it is compartmentalized and is accessible to certain groups of users on a pre-defined accessibility scale. The contact person for the W:-drive is the secretary of the group. She will be able to allocate you a folder where your data is accessible to only you, other persons you want to provide access (and the contact person).

- **Microsoft Teams**

Teams is a unified communication and collaboration platform that combines chat, video meetings and file storage (including collaboration on files). You can easily invite other users (internal or external) to participate on your Team.

There are two ways to access and use Teams:

1. Access Teams from the web browser on any device via <https://portal.office.com>;
2. Use Teams locally and download it from the WUR Software Center.

- **Team sites**

Team sites are online-based platforms where you can share and edit data files for internal and external collaboration. The standard size is 10 GB. A team site is accessible from any location and includes an array of advanced features, including version management, discussion fora, a central agenda etc. You can easily invite other users to participate on your team site. Wageningen University & Research employees can request access for those without a WUR account by requesting an external guest-account.

- **OneDrive for Business**

OneDrive for Business is a personal cloud service, with a storage capacity of 1000 GB for each WUR account holder. With OneDrive for Business you can access your files from anywhere and from multiple devices. It is also possible to give others access to files.

What storage solutions tick the boxes?

	W: drive	M: drive	Teams	OneDrive for Business	External hard drive, USB, Laptop C:
1	X	X	X	X	X
2	X		X	X	
3			X	X	
4	X	X	X	X	
5			X	X	X
6	X	X	X	X	
7	X		X		
8	X				X

- | | |
|--|---|
| 1. relatively cheap | 5. work offline possible (sync to local disk) |
| 2. sharing within WUR | 6. any device, anywhere, anytime |
| 3. sharing with external parties | 7. durable; long life span |
| 4. no risk of breaking or theft, files can be restored | 8. suitable for Bulk storage (TB) |



All storage solutions are extendable (in case you need more storage capacity), fully supported by our IT department, and reliable and secure (with automatic back-up).

Upon termination of your WUR account, all files on the M:-drive and/or OneDrive are automatically deleted. Therefore, WUR policy on data storage stipulates that research data in a personal folder should also be stored in a department or project folder, in our case, the W:-drive. Therefore, all data needs to be stored on the W:-drive on a regular basis (i.e. for different stages of the project). Every research project will have a folder on the W:-drive, which is accessible only to the researcher(s) and the secretariat. No other person has access to the folder, unless a request is made to the secretariat.

Long term storage

FNP policy is that, as soon as a (sub)project has been finalized, this is to be stored. The data will be stored for at least 10 years in two locations:

1. Internal: the FNP archive.
This archive guarantees continuity of access to research data in the event that your personal folder is deleted (due to change of job, etc.), complying with WUR policy for storage of research data. Access to the data is restricted to the secretariat and the data steward of FNP.
2. External:
In one of the following archives in case of open/public data:
 - a. DANS, one of the Dutch national data archives.
 - b. A discipline-specific archive (WUR approved, to be discussed with the FNP data steward)
 - c. A journal-associated archiveIn case of confidential/secret data:
 - d. As a data archive for secret data is in development, there is at this moment not yet an external archive available; therefore, storage on W:-drive will be continued.

By depositing a dataset in an open data repository, it is not only protected against corruption and loss, but also becomes findable and citable via a DOI. Therefore, it is advisable to use open data repositories when applicable.

Storage of the publication data in the two locations has to be done in close cooperation with the FNP data manager and FNP secretariat. Wageningen Data Competence Center will also support in the file preparation and storage at external archives. In this process, your data set will also be registered in PURE, and will become visible as research output.

Hence, as soon as the (sub)project is finalized, you have to provide your data, following the prescribed format (see in the following section how to do this) to the secretariat. As soon as the data is correctly and securely stored, you can clean this part of your own W:-drive folder.

3.2. How to store your data

Designing a logical folder structure and consistently applying descriptive file names over time makes your research process more efficient. Some best practices are provided below.

3.2.1. File names and versions

Giving your data files a descriptive name - and consistently applying your naming strategy over time - will help you locate specific data later on. You might consider using some of the following information in your file names:

- Author/creator/research
- Project title
- Content
- Date
- Kind of data (preferably: YYYYMMDD, for chronological organization)
- Version

Try to keep names short. You shouldn't try to use all the above aspects in the file name. Moreover, if you want to separate the different elements of your file name, do not use spaces or characters like ?\!@*%{[<> in the file name because some software programs don't recognize file names with these characters. Instead, use underscore (file_name), dashes (file-name) or camel case (FileName).

Start your file name with the element you want to sort by, and go from generic to more specific. In case you use numbering, make use of leading zeros (e.g. 01, 02, ... and not 1, 2, 3).

For version control, it is practical to indicate this with the "v" before the number of the version. An example could be that you work on your proposal: Proposal_v01.docx (indicating the first version of your proposal).

Be aware that storing files with the same name at different locations can lead to confusion. Therefore, develop a file naming practice that allows you to distinguish between files. Always make sure you clearly indicate versions.

3.2.2. File formats

When you collect data, you will choose software to store and analyse your data. If you want to exchange data with others or if you want to use data at a later stage these proprietary formats may cause problems. Software versions also change, and if your colleagues don't have a license for your chosen software, the files are useless to them.

Therefore, when choosing a file format consider the following:

- Consider whether you could use an **open standard**. For open formats all format details are public, everyone can read them. Open file formats can be easily exchanged, but they will lack some of the specific functionality that is proprietary to a software product.
- Some proprietary formats have become ad-hoc standards in certain files like PDF or ESRI Shapefiles. For example, the ESRI shapefile is a vector data format for geospatial data. It is a (mostly) open specification for data interoperability among ESRI and other GIS software products (ArcGis). Even though some ad-hoc standards are too big to fail, other ad-hoc standards have changed. For example Adobe Flash has been widely used for moving image, but it is now becoming obsolete and Adobe is not developing further. When choosing an ad-hoc standard be aware that it may change.
- Data repositories give lists of recommended file formats that you should use when you want to publish data through them. These lists can help select the format for data exchange during your work. A list of preferred formats as used by DANS can be found [here](#).

3.2.3. Organizing files and folders

It is important to have a logical folder hierarchy that allows you to understand where to find your files and avoid duplication. For the short-term storage, every researcher is free to choose their own folder hierarchy, but is strongly advised to have a look at the FNP group level procedures on storing data on the long term. These procedures will be described below.

For every (sub)project at the FNP-group (not being a PhD project)

Every publication in a (sub)project should have a separate folder in the main (sub)project folder, which you could label as "[type of publication]_name". The following files are to be stored for this publication:

- a. Raw data files (such as transcripts of interviews, excel/SPSS raw data from web-surveys, GIS-files, etc.), in a folder "RawData".
In case you have more than one file linked to the same type of raw data, you have three options:
 1. Label all files differently (e.g. you have 3 interviews, you can label them as "interview1", "interview2", etc.)
 2. Include all the files in one main file (e.g. you have 10 interviews, combine all these interviews in one file, name "interviews")
 3. Make a separate folder (e.g. named "interviews") in which you store all the separate interviews; these separate interviews you could store under the label "interview1", "interview2", but could also be any other name
- b. Data files after analyses (such as SPSS data after variable transformations, removal of outliers, etc.) and a description or computer code (e.g., SPSS syntax file) containing the steps to go from raw data file to the analyzed data file, including a short clarification of the steps of the analyses in English, in a folder "ProcessedData".
In case you have more than one file linked to the same type of raw data, you have three options:
 1. Label all files differently (e.g. you have 3 interviews coded, you can label them as "Coding1", "Coding2", etc.)
 2. Include all the files in one main file (e.g. you have 10 interviews, combine all these interviews in one file, name "Codings")

3. Make a separate folder (e.g. named "Codings") in which you store all the separate interviews; these separate interviews you could store under the label "interview1", "interview2", but could also be any other name
- c. Final product(s) (e.g. article or report), in a folder "Publication"
2. A "Metafile" explaining the different files and how to interpret the uploaded files. The format of this file is found in Appendix 1. This file should also contain information on the confidentiality of the raw data or if there are situations of joint copyrights.

The folder structure of the overall data management is as follows.

For an individual publication (not being part of a larger project or PhD project):

[typeofpublication]_name		
	Metafile.pdf	
	RawData	<name file>.ext
	ProcessedData	<name file>.ext
	Publication	<name file>.ext

For publications, part of a larger project, but not being a PhD report:

PROJECT NAME		
	[typeofpublication]_name	
	Metafile	
	RawData	<name file>.ext
	ProcessedData	<name file>.ext
	Publication	<name file>.ext
	[typeofpublication]_name	
	Metafile	
	RawData	<name file>.ext
	ProcessedData	<name file>.ext
	Publication	<name file>.ext

For an example, see Appendix 2. In Appendix 3, you can find an example of a Metafile.

To be stored for every PhD research projects at the FNP-group

1. The Data Management Plan, in a folder "DM plan"
2. The project proposal(s) and the evaluation form(s) of the project proposal, as communicated to the Graduate School the PhD student is part of, in a folder "Project proposal".
3. Every article has a separate folder, which is called "Article#_name". For every article, the following files are stored:
 - a. Raw data files (such as transcripts of interviews, excel/SPSS raw data from web-surveys, GIS-files, etc.), in a folder "RawData".
In case you have more than one file linked to the same type of raw data, you have three options:
 1. Label all files differently (e.g. you have 3 interviews, you can label them as "interview1", "interview2", etc.)
 2. Include all the files in one main file (e.g. you have 10 interviews, combine all these interviews in one file, name "interviews")

3. Make a separate folder (e.g. named "interviews") in which you store all the separate interviews; these separate interviews you could store under the label "interview1", "interview2", but could also be any other name
- b. Data files after analyses (such as SPSS data after variable transformations, removal of outliers, etc.) and a description or computer code (e.g., SPSS syntax file) containing the steps to go from raw data file to the analyzed data file, including a short clarification of the steps of the analyses in English, in a folder "ProcessedData".
In case you have more than one file linked to the same type of raw data, you have three options:
 1. Label all files differently (e.g. you have 3 interviews coded, you can label them as "Coding1", "Coding2", etc.)
 2. Include all the files in one main file (e.g. you have 10 interviews, combine all these interviews in one file, name "Codings")
 3. Make a separate folder (e.g. named "Codings") in which you store all the separate interviews; these separate interviews you could store under the label "interview1", "interview2", but could also be any other name
- c. Final product (article) with journal(s), in a folder "Article"
4. Final thesis report, in a folder "Thesis report", and decision on thesis report
5. A "Metafile" explaining the different files and how to interpret the uploaded files. The format of this file is found in Appendix 1. This file should also contain information on the confidentiality of the raw data or if there are situations of joint copyrights.

The folder structure of the overall data management is as follows:

PhD_UNA		
	Metafile.pdf	
	DMPlan	
	ProjectProposal	<name file>.ext
	Article#_name	
	RawData	<name file>.ext
	ProcessedData	<name file>.ext
	Article	<name file>.ext
	ThesisReport	<name file>.ext

For an example, see Appendix 4. In Appendix 5, you can find an example of a Metafile.

3.3. Registration of data

The WUR data policy stipulates that all archived data underlying publications must be registered in Pure. Pure is the research information system behind Research@WUR. Pure contains information on all WUR employees and references to their research output, such as articles, reports, presentations, and data. What is registered in Pure becomes visible to everyone in Research@WUR.

To have data registered in Pure, an email has to be sent to the [Data Desk](#) with the persistent identifier (e.g. DOI, accession number) or link to the data. To link data to the accompanying publication(s) (e.g. journal publications, report publications, other data publications, etc.), we also need you to specify the publications involved and their links/DOIs. It is not required to register data that do not underlie publications, but it is recommended, because registering all preserved data improves the findability and visibility of your research. If you wish to register unpublished data (for example archived on the W-drive or Yoda) send the pathway to the data and links/DOIs of accompanying publication(s) to the Data Desk. Data librarians will then ensure that references to your research output is properly linked and visible in Research@WUR.

4. Roles and roadmap

The following overview summarizes the steps to be taken and the division of tasks as regards data management.

4.1. Staff project (not being a PhD project)

1. Start of a new staff project (not being a PhD project) (FNP):
 - a. Check ownership of data and in case of third party involvement, set up an ownership agreement with this party
Main researcher/project coordinator
 - b. Register project for assessment of information security and protection of personal data
Main researcher/project coordinator
 - c. Create a data management plan on dmp.wur.nl in case required by the funder
Main researcher/project coordinator (data steward is available for a check)
 - d. Request to secretariat for new project folder on W:-drive, including access rights
Main researcher/project coordinator
 - e. Create project folder on W:-drive
Secretariat
 - f. Select short-term/local data storage
Main researcher/project coordinator
 - g. Discuss data storage with FNP project team
Main researcher/project coordinator/all team members
2. During project:
 - a. Store all data on selected short-term/local data storage
All team members
 - b. Store separate phases of project in project folder on W:-drive
Main researcher/project coordinator
3. Finished project:
 - a. Request to secretariat to archive project folder on the W:-drive (massive storage)
Main researcher/project coordinator
 - b. Store project folder on the W:-drive (massive storage)
Secretariat
 - c. Discuss external data storage with FNP data steward
Main researcher/project coordinator
Data steward
 - d. Store data on external archive
Main researcher/project coordinator
Data steward
 - e. Registration of data
Secretariat/ Main researcher/project coordinator

4.2. PhD project

1. Start of a new PhD project (FNP)
 - a. Check ownership of data and in case of third party involvement, set up an ownership agreement with this party
PhD student with supervisor
 - b. Register project for assessment of information security and protection of personal data
PhD student with supervisor
 - c. Create a data management plan on dmp.wur.nl
PhD student with supervisor (data steward available for check)
 - d. Request to secretariat for new folder on W:\-drive, including access rights
PhD student
 - e. Create project folder on W:\-drive
Secretariat
 - f. Select short-term/local data storage
PhD student
 - g. Discuss data storage with FNP supervisor
PhD student with supervisor
2. During project:
 - a. Store all data on selected short-term/local data storage
PhD student
 - b. Store separate phases of project in project folder on W:\-drive
PhD student
 - c. Regular evaluation of data storage
Supervisor with PhD student
3. Finished (sub)project:
 - a. Request to secretariat to archive project folder on the W:\-drive (massive storage)
PhD student
Secretariat

- b. Store project folder on the W:\-drive (massive storage) PhD student
- d. Discuss external data storage with FNP data steward and supervisor Data steward Supervisor
- e. Store data on external archive PhD student
Data steward Supervisor
- f. Registration of data Secretariat Supervisor

5. Data management courses

For PhD candidates and postdocs, the Graduate Schools offer a [Research Data Management course](#), which is organised by WUR Library and given four times a year. This course covers various aspects of data management.

Appendix: additional information

Appendix 1: Metafile publication

1. Organizational context

Name of FNP researcher(s):
Graduate school:

2. Publication

Title of publication:
Type of publication:
Part of a larger project: no/yes, i.e.
Key words:

3. Data management information

First author:
Co-authors:
Short description (2-3 sentences) of the publication:
Country/countries of research:
Region(s)/location(s) of research:
Dates/period of research:
Dates/period of data collection:
Models/software used:
Ownership data:
Confidentiality:
Copyright article:
Other data storage locations:

4. Data management structure

Metafile	
<i>Name of file:</i>	<i>Short description:</i>
[type of publication]_name	
RawData	
<i>Name of file:</i>	<i>Short description:</i>
ProcessedData	
<i>Name of file:</i>	<i>Short description:</i>
Publication	
<i>Name of file:</i>	<i>Short description:</i>

Appendix 2: Example folder structure publication

In this format description, we will make use of an example, i.e. the fictional FNP researcher S. Cooper.

Main folder

S. Cooper started in 2018 an EU project on Dutch climate change policy and forest management at the FNP group. His main folder on the W:\drive is Coope001. He set up a main folder for the project, which he called EU_ClimateChange. He has two publications for this project. One article and one book chapter. The paper is on forest policy and climate in the Netherlands, the book chapter focuses on describing adaptive strategies of Dutch forest managers. He makes two subfolders in the Eu_Climate Change folder, labelled Article_PolicyClimate and Bookchapter_AdaptiveStrategies. The folder structure now consists of:

```
Coope1
  EU_ClimateChange
    Article_PolicyClimate
    Bookchapter_AdaptiveStrategies
```

NOTE: the following only provides an example for the article

Article_PolicyClimate

a. Raw data:

S. Cooper sets up a folder "RawData" in the Article_PolicyClimate folder:

```
Coope1
  EU_ClimateChange
    Article_PolicyClimate
      RawData
    Bookchapter_AdaptiveStrategies
```

For his article, S. Cooper has carried out several interviews in 2019 to explore opinions on climate change policy. Next to the interviews, S. Cooper has also carried out a web-survey. Part of the interviews was with experts and part with forest managers. All interviews were transcribed. The transcribed expert interviews are stored in one pdf-file, and the transcribed interviews with the managers are stored in one pdf-file:

Storage name expert interviews: ExpertInterviews_2019.pdf

Storage name managers interviews: ManagersInterviews_2019.pdf

All data from the survey was transported to SPSS. This SPSS file (with a complete description of all variables, the labels, and the values) is also stored.

Storage name SPSS file: SurveySPSS_2019.sav

All files are stored under RawData

Processed data:

S. Cooper sets up a folder "ProcessedData" in the Article_PolicyClimate folder:

Coope1
EU_ClimateChange
Article_PolicyClimate
RawData
ProcessedData
Bookchapter_AdaptiveStrategies

S. Cooper analysed and coded the interviews (both those of the experts and the managers) using Atlas.ti 7. All codings of the 100 interviews were stored as individual files. S. Cooper, therefore, made two folders in the processed data folder:

Coope1
EU_ClimateChange
Article_PolicyClimate
RawData
ProcessedData
Experts
Managers
Bookchapter_AdaptiveStrategies

Storage name expert interviews: Expert#³_YYYYMMDD.hpr7

Storage name managers interviews: Manager#⁴_YYYYMMDD.hpr7

All data from the survey was analysed in SPSS. This SPSS file (including all steps of the analysis) is stored. As this is only one file, no separate folder was made for this file

Storage name SPSS file: SPSSanalyses_2019.spv

c. Publication:

S. Cooper sets up a folder "Publication" in the Article_PolicyClimate folder:

Coope1
EU_ClimateChange
Article_PolicyClimate
RawData
ProcessedData
Experts
Managers
Publication
Bookchapter_AdaptiveStrategies

³ # = number of interviews

⁴ # = number of interviews

S. Cooper sends in his article to the journal Forest Policy and Economics in 2019. His first article is rated as "major revisions". Cooper rewrites the article and sends a new version at the end of 2019, which is accepted by the editor.

Storage name final article (incl. right layout): Articlefinal_20191231.pdf

d. Metafile

S. Cooper finishes the metafile with the final report and stores this.

Storage name metafile: MetaFile.pdf

S. Cooper's final folder structure is as follows:

Coope001			
Article_PolicyClimate			
Metafile			
		Raw data	ExpertInterviews_2019.pdf ManagersInterviews_2019.pdf SurveySPSS_2019.sav
		Processed data	
		Experts	Expert1_20190512.hpr7 Expert2_20190514.hpr7 Expert50_20190714.hpr7
		Managers	Manager1_20190513.hpr7 Manager2_20190515.hpr7 ... Manager50_20190715.hpr7
			SPSSanalyses_2019.spv
		Publication	Articlefinal_20191231.pdf
Bookchapter_AdaptiveStrategies			
		RawData	...
		ProcessedData	...
		Publication	...

Appendix 3: Example Metafile Publication

Based on the data collected by S. Cooper, he should set up the following metafile for his article:

1. Organizational context	
Name of FNP researcher(s): S.L. Cooper Graduate school: WASS	
2. Research project	
Title of publication: Perceptions on forest policy and climate change in the Netherlands Type of publication: article Part of a larger project: yes, EU CLIC (Climate Change in the Netherlands) Keywords: climate change, forest management, owner's behaviour	
3. Data management information	
First author: S.L. Cooper Co-authors: prof. Bas Arts (FNP) Short description (2-3 sentences) of the article:	
<p>The article describes the outcome of 100 semi-structured interviews on climate change policy with experts and forest managers from the Dutch National Forest Service. It shows that climate change policy is experienced as rather limited, only providing support for a few types of owners.</p>	
Country/countries of research: Netherlands Region(s)/location(s) of research: Netherlands Dates/period of research: 2018-2019 Dates/period of data collection: 2019 Models/software used: IBM SPSS Statistics 25 Ownership data: FNP Confidentiality: no Copyright article: journal Other data storage locations: none	
4. Data management structure	
Files:	
Metafile	
<i>Name of file:</i>	<i>Short description:</i>
MetaFile.pdf	Metafile of this article
Article_PolicyClimate	
RawData	
<i>Name of file:</i>	<i>Short description:</i>
ExpertInterviews_2019.pdf	Data file transcribed interviews experts (per expert)
ManagersInterviews_2019.pdf	Data file transcribed interviews managers (per manager)
SurveySPSS_2019.sav	SPSS data file containing data web-survey
ProcessedData	
<i>Name of file:</i>	<i>Short description:</i>
Expert#_YYYYMMDD.hpr7	Atlas.ti 7 file with coded interviews experts (per expert, date of interview included)
Manager#_YYYYMMDD.hpr7	Atlas.ti 7 file with coded interviews managers (per manager, date of interview included)
SPSSAnalyses_2019.spv	SPSS output file with statistical analysis
Publication	
<i>Name of file:</i>	<i>Short description:</i>
Articlefinal_20191231.pdf	Final publication

Appendix 4: Metafile PhD

1. Organizational context

Name of PhD-student:

Chairgroup:

Graduate school:

Starting date:

FNP daily supervisor(s):

FNP co-promotor(s):

FNP promotor(s):

Other supervisor(s)/(co)promotors, including affiliation:

2. Research project

Title of PhD-thesis:

Short description (2-3 sentences) of the PhD thesis:

Keywords:

3. Data management information

Article #:

Co-authors:

Short description (2-3 sentences) of the article:

Country of research:

Region/location of research:

Dates/period of PhD research:

Dates/period of data collection:

Models/software used:

Ownership data:

Data confidentiality:

Copyright article:

Citation:

4. Data management structure

Files:

Metafile	
<i>Name of file:</i>	<i>Short description:</i>
DMPlan	
<i>Name of file:</i>	<i>Short description:</i>
ProjectProposal	
<i>Name of file:</i>	<i>Short description:</i>
Article#1	
RawData	
<i>Name of file:</i>	<i>Short description:</i>
ProcessedData	
<i>Name of file:</i>	<i>Short description:</i>
Article	
<i>Name of file:</i>	<i>Short description:</i>
Article#_.....	
ThesisReport	
<i>Name of file:</i>	<i>Short description:</i>

--	--

Appendix 5: Example folder structure PhD

In this format description, we will make use of an example, i.e. the fictional Ph.D. student S. Cooper.

Main folder

S. Cooper started in 2018 a thesis on Dutch climate change policy and forest management at the FNP group, supervised by prof. Arts. His main folder is PhD_Coope001.

1. Project proposal and DMplan

He sends his project proposal and DM plan to WASS in 2018. The DM plan is accepted and a first evaluation from WASS is received in 2018. Based on this evaluation Cooper changes his project proposal, which he sends to WASS in 2019. The WASS accepts this second proposal.

His folder structure is:

```
PhD_Coope1
  DMPlan
  ProjectProposal
```

The names S. Cooper selected for his documents:

```
Storage name 1st project proposal: Proposal1_20180703.pdf
Storage name first proposal evaluation: ProposalEvaluation1_20180920.pdf
Storage names 2nd version project proposal: Proposal2_20181010.pdf
Storage name 2nd proposal evaluation: ProposalEvaluation2_20181231.pdf
Storage name final version: ProposalFinal_20190105.pdf
```

These are stored in the ProjectProposal folder.

```
Storage name DMPlan: DMPlan1_20180703.pdf
Storage name DMPlan letter of acceptance: DMPlan_accept.pdf
```

2. Article 1

S. Cooper sets up a folder "Article1_Opinions" in the main folder. The folder structure now consists of:

```
PhD_Coope1
  DMPlan
  ProjectProposal
  Article1_Opinions
```

a. Raw data:

S. Cooper sets up a folder "RawData" in the Article 1 folder:

```
PhD_Coope1
  DMPlan
  ProjectProposal
  Article1_Opinions
    RawData
```

For his first article, S. Cooper has carried out several interviews in 2019 to explore opinions on climate change. Next to the interviews, S. Cooper has also carried out a web-survey. Part of the interviews was

with experts and part with forest managers. All interviews were transcribed. The transcribed expert interviews are stored in one pdf-file, and the transcribed interviews with the managers are stored in one pdf-file:

Storage name expert interviews: ExpertInterviews_2019.pdf

Storage name managers interviews: ManagersInterviews_2019.pdf

All data from the survey was transported to SPSS. This SPSS file (with a complete description of all variables, the labels, and the values) is also stored.

Storage name SPSS file: SurveySPSS_2019.sav

Processed data:

S. Cooper sets up a folder "ProcessedData" in the Article 1 folder:

```
PhD_Coope1
    DMPlan
    ProjectProposal
    Article1_Opinions
        RawData
        ProcessedData
```

S. Cooper analysed and coded the interviews (both those of the experts and the managers) using Atlas.ti 7. All codings of the 100 interviews were stored as individual files. S. Cooper, therefore, made two folders in the processed data folder:

```
PhD_Coope1
    DMPlan
    ProjectProposal
    Article1_Opinions
        RawData
        ProcessedData
            Experts
            Managers
```

Storage name expert interviews: Expert#⁵_YYYYMMDD.hpr7

Storage name managers interviews: Manager#⁶_YYYYMMDD.hpr7

All data from the survey was analysed in SPSS. This SPSS file (including all steps of the analysis) is stored. As this is only one file, no separate folder was made for this file

Storage name SPSS file: SPSSanalyses_2019.spv

Article:

S. Cooper sets up a folder "Article" in the Article 1 folder:

```
PhD_Coope1
    DMPlan
    ProjectProposal
    Article1_Opinions
```

⁵ # = number of interview

⁶ # = number of interview

```

RawData
ProcessedData
    Experts
    Managers
Article

```

S. Cooper sends in his first article to the journal Forest Policy and Economics in 2019. His first article is rated as "major revisions". Cooper rewrites the article and sends a new version at the end of 2019, which is accepted by the editor.

Storage name final article (incl. right layout): Articlefinal_20191231.pdf

Final report

S. Cooper sets up a folder "ThesisReport" in the Article 1 folder:

```

PhD_Coope1
    ProjectProposal
Article1_Opinions
    RawData
    ProcessedData
        Experts
        Managers
    Article
ThesisReport

```

Unfortunately S. Cooper's first thesis report that he finishes in 2020, has been considered not good enough. Both the final report as the decision letter are stored. Cooper finishes his report at the beginning of 2021, the committee agrees with the thesis in the middle of 2021. The thesis is published before the end of 2021

Storage name thesis report: Thesis1_20200509.pdf
Storage name decision letter: ThesisDecision1_20200606.pdf
Storage name thesis report: Thesis2_20210209.pdf
Storage name decision: ThesisDecision2_20210625.pdf
Storage name published thesis: ThesisPhDfinal_20211030.pdf

4. Metafile

S. Cooper finishes the metafile with the final report and stores this.

Storage name metafile: MetaFile.pdf

S. Cooper's final folder structure is as follows:

PhD_Coope001		
	MetaFile.pdf	
	DMPlan	DMPlan1_20180703.pdf DMPlan_accept.pdf
	ProjectProposal	Proposal1_20180703.pdf ProposalEvaluation1_20180920.pdf Proposal2_20181010.pdf ProposalEvaluation2_20181231.pdf ProposalFinal_20190105.pdf
	Article1_Opinions	
	RawData	ExpertInterviews_2019.pdf ManagersInterviews_2019.pdf

			SurveySPSS_2019.sav
		ProcessedData	
		Experts	Expert1_20190512.hpr7 Expert2_20190514.hpr7 Expert50_20190714.hpr7
		Managers	Manager1_20190513.hpr7 Manager2_20190515.hpr7 ... Manager50_20190715.hpr7
			SPSSanalyses_2019.spv
		Article	Articlefinal_20191231.pdf
		Article#_.....	
		RawData
		ProcessedData
		Article
		ThesisReport	Thesis1_20200509.pdf ThesisDecision1_20200606.pdf Thesis2_20210209.pdf ThesisDecision2_20210625.pdf ThesisPhDfinal_20211030.pdf

Appendix 6: Example Metafile PhD

Based on the data collected by S. Cooper, he should set up the following metafile:

<p>1. Organizational context Name of PhD-student: S.L. Cooper Chairgroup: Forest and Nature Conservation Policy group (FNP), Wageningen University Graduate school: WASS Starting date: 2018-01-01</p> <p>FNP daily supervisor(s): Prof. dr. B.J.M. Arts FNP co-promotor(s): none FNP promotor(s): Prof. dr. B.J.M. Arts</p> <p>Other supervisor(s)/(co)promotors, including affiliation: none</p>					
<p>2. Research project Title of PhD-thesis: Climate change policy and forest management: current state-of-art Short description (2-3 sentences) of the PhD thesis:</p> <p style="padding-left: 40px;">Today, our climate is changing at an unprecedented rate, and this changing climate might dramatically influence our forests. This thesis investigated the effect of the Dutch climate change policy on forest management in the Netherlands. Results show that forest managers have limited knowledge on climate change policy.</p> <p>Keywords: climate change, forest management, forest policy</p>					
<p>3. Data management information Article 1: Opinions on climate change – exploratory research in the Netherlands Co-authors: Prof. dr. B. Arts (FNP group, Wageningen University) Short description (2-3 sentences) of the article:</p> <p style="padding-left: 40px;">The article describes the outcome of 100 semi-structured interviews on climate change with experts and forest managers from the Dutch National Forest Service. It shows that climate change is experienced as very uncertain and is by the majority of managers simply ignored.</p> <p>Country of research: Netherlands Region/location of research: Netherlands Dates/period of PhD research: September 2018 – March 2019 Dates/period of data collection: November 2018 – January 2019 Models/software used: IBM SPSS Statistics 25 Ownership data: FNP Data confidentiality: no Copyright article: journal Citation: Cooper, S.L. and B.J.M. Arts (2019). Simply ignoring the facts? Experiencing climate change in forestry in the Netherlands. Forest Policy and Economics, vol. x, p. y-z.</p> <p>Article #: Co-authors: Short description (2-3 sentences) of the article: Country of research: Region/location of research: Dates/period of PhD research: Dates/period of data collection: Models/software used: Ownership data: Data confidentiality: Copyright article: Citation:</p>					
<p>4. Data management structure Files:</p>					
<p>Metafile</p> <table border="1"> <tr> <td><i>Name of file:</i></td> <td><i>Short description:</i></td> </tr> <tr> <td>MetaFile.pdf</td> <td>Metafile of this FNP Ph.D. thesis</td> </tr> </table>		<i>Name of file:</i>	<i>Short description:</i>	MetaFile.pdf	Metafile of this FNP Ph.D. thesis
<i>Name of file:</i>	<i>Short description:</i>				
MetaFile.pdf	Metafile of this FNP Ph.D. thesis				
<p>ProjectProposal</p> <table border="1"> <tr> <td><i>Name of file:</i></td> <td><i>Short description:</i></td> </tr> </table>		<i>Name of file:</i>	<i>Short description:</i>		
<i>Name of file:</i>	<i>Short description:</i>				

Proposal1_20180703.pdf	Project proposal to WASS (first version)
ProposalEvaluation1_20180920.pdf	Evaluation & decision first version by WASS
Proposal2_20181010.pdf	Project proposal to WASS (second, revised version)
ProposalEvaluation2_20181231.pdf	Evaluation & final decision second version by WASS
ProposalFinal_20190105.pdf	Final version project proposal
Article1_Opinions	
RawData	
<i>Name of file:</i>	<i>Short description:</i>
ExpertInterviews_2019.pdf	Data file transcribed interviews experts (per expert)
ManagersInterviews_2019.pdf	Data file transcribed interviews managers (per manager_
SurveySPSS_2019.sav	SPSS data file containing data web-survey
ProcessedData	
<i>Name of file:</i>	<i>Short description:</i>
Expert#_YYYYMMDD.hpr7	Atlas.ti 7 file with coded interviews experts (per expert, date of interview included)
Manager#_YYYYMMDD.hpr7	Atlas.ti 7 file with coded interviews managers (per manager, date of interview included)
SPSSanalyses_2019.spv	SPSS output file with statistical analysis
Article	
<i>Name of file:</i>	<i>Short description:</i>
Articlefinal_20191231.pdf	Final publication
Article#_.....	
ThesisReport	
<i>Name of file:</i>	<i>Short description:</i>
Thesis1_20200509.pdf	First version PhD thesis report sent in to committee
ThesisDecision1_20200606.pdf	Rejection letter of committee
Thesis2_20210209.pdf	Second version of PhD thesis
ThesisDecision2_20210625.pdf	Letter of acceptance
ThesisPhDfinal_20211030.pdf	Final PhD thesis