Using scenario-guided stakeholder-generated policy recommendations to improve the draft National Water Policy for Uganda (NWPU)

Policy formulation workshop report

28th April 2017

Royal Suites Hotel, Kampala, Uganda

CONTENTS

1. INTRODUCTION TO THE PROJECT

This report presents the proceedings from the Uganda national policy formulation workshop for the project "*Engaging stakeholders in using future scenarios to analyse the potential impacts of agricultural development in the Lake Victoria Basin*". This two-year project (2015-2017) aims to support land-use related decision-making in the Lake Victoria Basin (LVB) in relation to the current and potential future implications for biodiversity and ecosystem services of agriculture development.

This is a joint project between the UN Environment World Conservation Monitoring Centre (UNEP-WCMC), the Albertine Rift Conservation Society (ARCOS) and the CGIAR programme on Climate Change, Agriculture and Food Security (CCAFS), funded by the John D. and Catherine T. MacArthur Foundation.

The project builds on previous region-wide work (2013-2015), which used innovative methods to develop knowledge and tools to support decision making in relation to the current and potential future impacts of agricultural development on the African Great Lakes ecosystems, under an uncertain future climate and changing socio-economic conditions[1,2]. This work mapped the potential impacts of future commodity developments on biodiversity and ecosystem services in the wider region's watersheds based on future socio-economic scenarios developed by CCAFS. The project builds on these results and, with stakeholder input, it seeks to further develop the analysis, and assess how this can benefit existing policy and planning processes in the region in practice.

To this effect, the project applied these previously developed methods specifically to the LVB, refined the analyses with stakeholder inputs and used them in policy review workshops for Burundi, Kenya, Rwanda, Tanzania and Uganda. These workshops brought together stakeholders from multiple sectors to review national agricultural development policies or plans in light of the future scenarios. Participants formulated recommendations to make the plans more robust and flexible in the face of future uncertainty, and take into account potential biodiversity and ecosystem service implications as well as their transboundary character. These recommendations were then integrated into the targeted policies in national policy formulation workshops

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[1] van Soesbergen, A. and Arnell, A. (2015) Commodities and Biodiversity: spatial analysis framework. Scientific Report. UNEP-WCMC, Cambridge. 116pp. Available at: http://www.unep-wcmc.org/system/comfy/cms/files/files/000/000/640/original/Spatial_Analysis_Framework_Report-red.pdf

[2] Mapendembe, A. & Sassen, M. (2014) Commodities and Biodiversity in the Great Lakes Region of East and Central Africa: Impacts of commodity development on biodiversity and ecosystem services. UNEP-WCMC, Cambridge. Available at: www.unep-wcmc.org/system/comfy/cms/files/files/000/000/642/original/GLR_S_T_Report_WEB_PAGES.pdf

2. INTRODUCTION TO THE WORKSHOP

This workshop followed a scenario guided policy review and regional harmonization workshop which took place in Kigali, Rwanda in August 2016 and where participants from all five LVB countries (Rwanda, Uganda, Kenya, Tanzania and Burundi) reviewed national policies and plans on different land use related policy themes (agriculture, livestock, food and nutrition security, and water) using a set of four scenarios representing different plausible futures for the region. These future scenarios were developed by CCAFS and regional stakeholders from East-Africa. Each scenario has its own specific implications for the East-African economy, agriculture, livelihoods, socio-economic developments, biodiversity and ecosystem services, and as such, poses specific challenges and possibilities. Using a scenario-guided approach, one is able to consider multiple plausible futures and thereby take into account future uncertainty into policy and planning. In addition, specific attention was paid to regional harmonization of policies. For each policy or plan that was reviewed, policies and plans from the other LVB countries on the same theme were provided. Workshop participants examined what could be learned from the other countries' policies and plans. In the case of Uganda, the draft National Water Policy for Uganda (NWPU, Nov 2015) was reviewed and recommendations formulated for additions or improvements to the revised version of the Policy. The recommendations aimed to help make the National Water Policy more robust in the face of future uncertainty, in terms of climate change, global dynamics, socio-economic developments, changing norms and values, and other aspects.

The policy formulation workshop reported on here follows on this process and aimed to support the development of a proposal on how to include these recommendations into the revised Policy for the Ministry of Water and Environment's consideration. The process also provided an opportunity for participants to experience how scenario-guided review can contribute to policy and planning in practice. The agenda can be found in Appendix 1.

Workshop objectives
1. Give an overview of the project, focusing on the scenario-guided review process
2. Present the scenario-guided review methodology and resulting prioritized policy recommendations for the draft NWPU
3. Translate recommendations into concrete NWPU policy objectives
4. Formulate a draft water data management strategy for the NWPU

Expected outputs
1. A draft outline for a data management, monitoring and evaluation strategy as an annex for the NWPU
2. Proposed changes to improve the NWPU on basis of the scenario-guided recommendations.

The workshop was attended by key Ministry of Water and Environment representatives, the UNEP-WCMC team and other participants from the scenario-guided review workshop in Kigali, as well as experts on specific topics such as on water data management and economics (see Appendix 2 for a list of participants).

3. THE WORKSHOP

The workshop was opened by Dr Callist Tindimugaya, the Commissioner for Water Resources Planning and Regulation in the Ministry of Water and Environment. After introductions of all participants, the workshop proceeded as follows.

Introduction

As an introduction to the workshop, Marieke Sassen from UNEP-WCMC gave an overview of the project, followed by Lucas Rutting from CCAFS with a summary of the scenario-guided review methodology and process. Then Gwendolyn Zaake from the Ministry of Water and Environment presented the prioritized recommendations and proposed next steps that were generated during the scenario-guided policy review workshop (detail in Appendix 3).

At this point, Dr Callist Tindimugaya had to leave the meeting. On behalf of the Ministry of Water and Environment, he expressed gratitude to the organizers; UNEP-WCMC, ARCOS and CCFAS and encouraged the participants to use this opportunity to provide input and express their views into the new water policy. He added that the review of the draft policy was timely and that he will be organizing a final consultation workshop by end of June 2017, where the recommendations will be presented for consideration.

Working session 1

In this session, the participants, split into two groups, went through the recommendations with the aim to explore how these can be translated into elements to be included in the revised Policy. In this session, the main focus was the formulation of a *data, monitoring and evaluation annex* for implementation planning. Dr Tindimugaya advised that it might not be possible for the new NWPU to include an annex. However, all participants felt that it was important to use the meeting as an opportunity to discuss the potential for a national water data management policy in the future. Particularly given the wide range of stakeholders that were present from different water departments which collect and use water-related data to inform policy and policy implementation.

The groups discussed the different water data requirements that can form part of a data management strategy structure. They highlighted the type of data collected and needed by different water departments, the actors involved, data management and storage, ownership, challenges etc. in managing data within the water sector in Uganda.

One of the groups incorporated text referring to the need for a national water data management strategy and strengthening references to the need for proper data for monitoring and evaluation in relevant sections of the draft water policy text.

Working session 2

The group was again split in two, with each subgroup focusing on a different set of recommendations:

- Group 1 worked on the introduction and framing text of the NWPU, to incorporate recommendations there.
- Group 2 worked on integrating the need for the economic case to be made for the NWPU. This included recommendations to identify the economic benefits attached to different water uses, the different players, the role of Public Private Partnerships, a regulation framework for sustainable use of water resources and establish linkages between sectors.

Both groups edited the text of the draft National Water Policy for Uganda (Nov 2015). The list of prioritised recommendations originating from the scenario-guided review process (see Appendix 3) served as a starting point for the incorporation of these results into the new policy. The groups discussed the recommendations, the best way to turn them into text and the best location for that within the draft policy. They also added explanatory comments with further recommendations for additions or improvements.

Next steps and closure

The groups reported back in plenary on how they incorporated changes into the Policy. Then the group discussed, in plenary, the next steps for ensuring that these changes are considered. It was agreed that the facilitators would combine the edits from both groups and would collate the inputs on water data management. Both the consolidated draft policy with all edits and the elements to inform a water data management system would then be sent for consideration by the Commissioner for Water Resources Planning and Regulation, Dr Callist Tindimugaya, and input into the ongoing NWPU policy review process.

The facilitators from UNEP-WCMC and CCFAS thanked the participants for their enthusiastic engagement throughout the sessions and urged them to remain engaged within the policy review process as encouraged by the Commissioner.

Outputs:

Main edits of the draft (Appendix 4)

Elements for a Uganda water data management strategy (Appendix 5)

4. CONTRIBUTING ORGANISATIONS

The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) is the specialist biodiversity assessment centre of the United Nations Environment Programme (UN Environment), the world's foremost intergovernmental environmental organisation. The Centre has been in operation for over 30 years, combining scientific research with practical policy advice.

ARCOS is the only regional conservation organization with a focus on biodiversity conservation in the Albertine Rift. Throughout 20 years of existence, ARCOS expended its area of intervention from Albertine Rift to Africa Great Lakes and African mountain ecosystems. Its overall goal is to enhance biodiversity conservation and sustainable management of natural resources through the promotion of collaborative conservation action for nature and people.

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) seeks solutions to help the world's poorest farmers become climate resilient. CCAFS is a strategic collaboration between CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT).

5. ACKNOWLEDGEMENTS

6. Appendix 1: AGENDA

Time	Activity
08:30-09:00	Registration
09:00-10:00	- Opening speech & introduction participants (Dr. Callist Tindimugaya) - Introduction to the policy formulation workshop, objectives and agenda (Marieke Sassen) - Summary of the scenario-guided policy review and harmonisation process (Sarah Darrah)
10:00-10:45	- Short explanation of the scenario-guided review methodology (Lucas Rutting) - Presentation of prioritized recommendations and proposed next steps (Gwendolyn Zaake)
10:45-11:00 Coffee break	
11:00-13:00	Session 1: Writing a *Data, monitoring and evaluation annex* for the NWPU
13:00-14:00 Lunch break	
14:00-16:00	Session 2: (1) Work on the economic case to be made for the NWPU and (2) Reframing the introduction and framing text focusing on the other recommendations
16:00-16:30 Coffee break	
16:30-17:30	Reporting back in plenary on how changes have been applied into the NWPU Next steps and closure

7. APPENDIX 2: LIST OF PARTICIPANTS

NAME	INSTITUTION
Participants	
Callist Tindimugaya	Ministry of Water and Environment
Gwendolyn Kyoburungi	Ministry of Water and Environment
George Aporu	Ministry of Water and Environment
Atuhaire Roderick	Ministry of Water and Environment
Ssekanyo Ahammed	Ministry of Water and Environment
Leo Mwebembezi	Ministry of Water and Environment
Babu Muhammed	National Water and Sewerage Corporation
Edwina Ahamize	National Water and Sewerage Corporation
Carol Kagaba Kairumba	RAMCEA Uganda
Prossie Nakawuka	International water management institute (IWMI)
Nelson Turyahabwe	Makerere University
Project team	
Marieke Sassen	UNEP-WCMC
Sarah Darrah	UNEP-WCMC
Lucas Rutting	University of Utrecht/ CCAFS
Martin Tumuhereze	IITA/CCAFS
Josephine Bbbaale	ARCOS

8. APPENDIX 3: PRIORITISED RECOMMENDATIONS

These prioritized scenario-guided policy recommendations were developed by workshop participants through a review of the draft National Water Policy in Kigali, in August 2016 against four regional future scenarios and comparative regional policies. They will be further defined in consultation with participant during the national workshop. Recommendations for the way forward are also listed below.

1. Guidelines for water data management and coordination in the NWPU annex:

- Develop a water resource data management strategy based on sound scientific and technical information which is absent in the draft policy. Currently water resources data collection methods and tools are not harmonized across the LVB states bringing about discrepancies in information generated and the way water resources are managed in the region. In the policies reviewed, harmonized data management was not emphasised. This data management strategy could be included as an annex to the Policy with actions to:
  - ✓ Harmonize data collection methods and tools and one-stop data centre that is networked across the region
  - ✓ Support enforcement and monitoring, of real time data collection, knowledge generation, awareness creation and good governance systems
  - ✓ Increase understanding of water resources for economic proofing and sustainable development
  - ✓ Emphasise real time economic data on water resources to guide economically viable use of water for development

- Develop a roadmap and coordination strategy to coordinate the roles and mandates of the different actors concerned with water resources (government, CSOs, private sector). Such a roadmap could also be integrated into the policy.

2. Additions to introduction/framing section of the policy:

- The importance of transparency and strong monitoring and evaluation should also be highlighted in the introduction of the NWPU.

- Water governance in the LVB region is a strong example of how cross-boundary resource governance can lead to better cooperation – and the guiding role of water governance should be explicitly recognized and encouraged in the introductory/framing text of the NWPU.

3. Building the economic case for the NWPU:

- The economic dimension of the NWPU should be developed more – how can the priorities and proposed policy directions of the NWPU be seen as economically beneficial and feasible.

Way forward proposed

- Identify a Champion of the process for the National Water Policy
- Build the scenarios capacity at national level to adopt the approach for all strategies for development.
- Imbedding the approach into institutions like Universities (trickle down) and Ministry departments responsible for planning and development of policies
- Design capacity building strategy for organizations to achieve sustainable results
- Draft a policy brief to create awareness

For regional engagement and harmonisation:

- Engage members of the EAC, LVBC, NBI on how the scenario approach can be integrated in the regional plans/policies.
- Map relevant regional projects and other stakeholders to harmonize approaches.

9. APPENDIX 4: EDITS TO THE DRAFT

Below is an overview of the edits and comments that were added to the draft policy text in different sections. Original section numbers are shown as well as some of the non-amended text for context. Added text is in blue and underlined. Comments are highlighted. No text was deleted from the draft policy.

1.1 Scope and Purpose of the Policy

Water is a key resource in the socio-economic fabric of our society and an important factor in the development potential of the nation. It is therefore imperative that proper water resources development and management procedures and structures are well established. Through appropriately instituted mechanisms and strategies for water resources development and management, priorities can be established and optimal use of the nation's water resources planned.

The importance of water resource management based on transboundary resource governance should be emphasized because it leads to better cooperation and integrated resource management within the riparian countries.

The revised national water policy promotes a new integrated approach to the development and management of water resources in ways that are sustainable and most beneficial to the people of Uganda. This new approach is based on the continuing recognition of the social value of water, while at the same time giving much more attention to its economic value. For the revised policy to succeed, the implementation should be based on transparency; the mechanisms for monitoring and evaluation should be strongly implemented to ensure impacts are evaluated and corrective actions taken in a timely manner.

[Comment: Rest of text not shown]

The purpose of the policy document is to:

(i)   Provide the background and explain the approach which guided the policy formulation,

(ii)   Put forward the basic policy principles and strategies,

(iii)   Outline the management structure, including roles and functions at the various management levels, i.e. at central, district and local levels,

(iv)   Outline the major issues to be addressed, and ways and means by which they will be addressed,

(v)   Outline the strategies for provision and management of domestic water supply and sanitation services, urban water supply and sewerage services, water for production and water resources management,

(vi)   Outline strategies for policy implementation that should be transparent, equitable and based on strong mechanisms of monitoring and evaluation.

(vii)   Outline strategies for transboundary water governance to strengthen cooperation between riparian countries.

1.5.3. Water and Socio-Economic Development

Water is a basic infrastructure and natural resource for socio-economic development and therefore it plays an important role in Uganda's overall development efforts. It is fundamental for various socio-economic activities such as domestic water supply, irrigation, livestock watering, hydropower development, navigation, fisheries and aquaculture, wildlife and tourism, oil and gas exploration and production, mining and environmental conservation. As such water resources are key in achieving the national vision 2040.

The ministry responsible shall support mechanisms for sustainable water use and resource management through identification of economic benefits attached to different water uses, the resources that support those uses and the players responsible. These among others, shall inform the policy framework for sustainable use and management of the water resources.

Comment: For example an 100% safe water coverage is likely to lead to less importation drugs for water borne diseases leading to saving by the health sector hence economic development

2.2.3. Privatization

Comment: Highlight the role of the private sector in all aspects of the sector from planning, development and management rather than limiting to only management. Refer to Chapter 5 also for more information

3.4 Water sector data management strategy

In support of the government's responsibility for the collection, storage, analysis and dissemination of information and data on all water aspects for public use and management of water resources (Comment: as stated in 3.3.2., text highlighted in the draft) a national water data management strategy shall be developed to allow coordination and sharing of data across sectors. This strategy shall:

1. Set out mechanisms to support the harmonization and coordination of water data management plans across water sectors.
2. Set out policies and plans to use water data for monitoring and to support enforcement and good governance
3. Set out a strategy for new knowledge and awareness creation, including on economic values of water resources and their contribution to sustainable development.

All institutions directly or indirectly involved in providing inputs in water resources management should have data management systems. This should be based on scientific and standardized forms of data collection and management to; facilitate data sharing, timely decision making planning, better policy making, and sustainable development and use.

Appropriate water data (temporal and spatial) shall be collected, stored and made readily available in a central data bank managed and coordinated by the responsible ministry.

Comment: Below is amended/added text to the Strategies sections for the different water sectors:

4.4. Strategies

a) **Monitoring of water resources data, coordination accros sectors/institutions and disemination** to ensure that accurate and reliable data is collected and maintained so as to support effective decision making. In view of the increasing impacts on water resources resulting from anthropogenic and climate change factors, monitoring of the quality and quantity of the water resources of the country will be up-scaled through continuous data collection on groundwater and surface water. In addition, water resources potential and quality will be assessed and presented on GIS maps to facilitate effective planning of water resources development activities. Government shall promote public information and awareness by disemination of relevant information for planning, development and use of water resources.

Comment: See also related text in new section 3.4. and 5.4, 6.4, 7.3

Comment: For "monitoring of the quality and quantity of the water resources", a system of natural capital accounting could be used?

==Natural capital accounting is the process of calculating the total stocks and flows of natural resources and services in a given ecosystem or region. Accounting for such goods may occur in physical or monetary terms.==

5.4. Strategies

a) **Strategy on the collection and monitoring of domestic water use data, and disemination** to ensure that accurate and reliable data is collected and maintained so as to support effective decision making.

b) Strategies for provision of domestic water supply, sanitation and sewerage services include the following:

6.4. Strategies

a) **Strategy on the collection and monitoring of agricultural water use data, and disemination** to ensure that accurate and reliable data is collected and maintained so as to support effective decision making

b) In implementing the water for Agricultural development the following strategies will be used:

7.3   Strategies

In order to meet the various other water demands, the following strategy considerations outlined below should be taken into account. Guidelines for provision of water for these water consuming sectors must be developed by the responsible sector agencies in harmony with the principles stipulated in this Policy. Like for any other water development, the necessary water resources assessments and hydrological studies must be performed to ascertain the long-term effect of water abstraction to the water resources before such development can be implemented. This means the government agency responsible for water resources assessments will play a key role in project identification.

Therefore a strategy for the collection, monitoring and dissemination of data on water use in these sectors in coordination with data on water resources (see Section 4.4.) will ensure that accurate and reliable data is collected and maintained so as to support effective and coordinated decision making.

8.1   Objective

==Comment: Suggested text to add to the end of Section 8.1.==

Innovative financing mechanisms to support sustainable water management and use will be explored and considered. This includes identifying key public and private sector partners (including businesses and banks) to mobilize credit.

==See for example: "Innovative financing tools used to attract private capital to finance water and sanitation infrastructure include financial guarantees, insurance, subsidies, equity grants, tenor extensions, pooled finance Project Preparation Funds, hedging instruments, benchmarking, microfinance, and credit ratings" see== http://blogs.worldbank.org/water/innovative-finance-water-and-sanitation-sector

==For some more practical guidance see:==
https://www.traidwheel.nl/media/files/Toolbox%20appropriate%20finance%20TRAID%202015%20Wheel.pdf

10. APPENDIX 5: ELEMENTS FOR A UGANDA WATER DATA MANAGEMENT STRATEGY

This document sets out the elements that need to be considered when developing a harmonised national water data management strategy and the results of a quick scan of water management planning elements that need to be considered and coordinated under such a strategy.

Elements of a national water data management strategy

A national water data management strategy needs to:

1. ***Set out mechanisms to support the harmonisation and coordination of water data management plans across water sectors.***

   Water data management plans across sectors need to consider at least the following:
   - Types and sources of data
   - Data management roles: collecting, curating, storing, analysing
   - Documentation and metadata
   - Structuring data and information
   - Data ownership, IP
   - Access and sharing modalities
   - Short and long term storage/archiving

   For each of the national water sectors and the elements above, there is a need to:
   - Review the current situation
   - Assess the needs for:
     - o Additional data
     - o Additional coordination and mechanisms for data collecting, sharing and storage
     - o Additional capacity (resources, skills etc.)

2. ***Set out policies and plans to use water data for monitoring and to support enforcement and good governance***

3. ***Set out a strategy for new knowledge and awareness creation, including on economic values of water resources and their contribution to sustainable development.***

Quick scan of water management planning elements

1. Description of the data and data management roles

	Types of data	Data sources	Data collection, storage and analysis	Issues
Urban and Rural water supplies	*Collected:* • Water service provision (quantity and quality), Demographic data(projection in population growth) • Commercial data (billings, financial data • Infrastructure (road networks, water points) Water production data • Energy data • Customer surveys/consumption • Employee related data • Technology choice – external sources using consultancies & Engineering services • GIS data – spatial data • Data on sanitation infrastructure • Industrial development data (projected development) *Needed:* • Need for data on Land use (purposely for water catchment protection) • Reliable Meteorological data • Knowledge and information on economic data (specifically to guide setting tariffs)		NWSC and MWE UBOS LGs Research M	• Standardization - Researchers, NGOs, variable • Data completeness • Data reliability – different laboratories without accreditation and approved methodology • Data sharing challenges, data protection • Harmonization of institutional data management policies
Water for Agricultural Purposes	*Collected:* • Quality and quantity, agricultural land use (crops and water needs, planned and projected). • Data agro-chemical use for water quality *Needed:*			

	• Data on water ecosystems especially for the fisheries development		
Water resources	Data required (quantity, quality and on water related ecosystems) **Quantity:** Surface water (water levels, flows, lake storage), ground water (water level and yield) and rainfall (intensity, distribution and depth) **Quality:** Physical, chemical, biological content, sedimentations loads **Wetlands and forests:** Area coverage, water levels, seasonality, biodiversity	• Observations • Measurements • Satellite image analysis • Interviewing	Government institutions- UBOS, DWRM, Forest and wetlands-FSSD, WMD, Local governments Research and academic institutions Private sector/ CSOs, NGOs, Abstractors, NWSC Regional Centres-RCMD, IGAD, Nile Basin, LVBC	

2. Documentation and metadata

Not assessed

3. Structuring data and information

Not assessed

4. Data ownership, IP

Proposed: whoever collects the data owns it and the other parties have to pay some amount of money to access it

5. Access and sharing modalities

Options:

• Charging a (minimal) fee by the data collector
• Data being made public law should be enforced for researchers and all other people in the country that collect the data

Forms in which the data is shared: reports, online, soft copies, hard copies etc.

6. Short and long term storage/archiving

There is ongoing work to develop a national data infrastructure (for water?)

It is an institutional responsibility to collect and store data

Storage period recommended is permanent though has limitations. The following forms are considered:

- Websites
- Metadata
- National data banks and archives (central data place) (server, capacity building)
- Back up for servers (regional and international servers)

How data can be maintained long term?

- In all forms and saved on various platforms for the sake of soft copies e.g. soft copies, hard copies, websites, the cloud etc

Data management planning guidelines

Data management roles

Roles	
Who is **collecting** the data?	
Who is **storing** the data	
Who is **analysing** the data?	
Who is **curating** the data?	
Other?	

Description of the data
- What types of data will be produced?
- How will the data be collected?
- Are there tools or software needed to create and/or process the data?
- How much data will there be? What is its growth rate? How often will it change?

Data stage	Specification of type of data	Software/ tools	Data size/growth
Raw data			
Derived/ processed data			
Models/code			
Other?			

Software:
What software will you use to create, analyse and visualize your data? Are these choices common practice in your field? Software choices affect whether current and future users can actually view and use the data you collected. If you use proprietary software, for example, it may not be possible for people outside your field to do anything with your data except getting an error trying to read them. Also, some software produces data in specific file formats, and may come with its own systems for folders and file names. Think software choices through with future users in mind.

Data size:
Give an estimate in (Mega – Giga – Tera) Bytes. Giving an educated guess on the size of your research data output, gives you an indication about where you should store your data. If you will produce terabytes of data, for example, a simple hard drive won't do. So, data size influences data storage solutions.

Documentation and metadata
- Have you put in place thorough practices to make sure your data are well described?
- What file naming conventions will be used for subsets and different versions of the data?
- Are there any standards used in your discipline for describing your data?

Describe how you are going to document your data collection process, what the resulting data files comprise and how they will be processed further. Think about documenting the:
1. *Content (what does your dataset contain?)*
2. *Context (who, what, why, where and how will the data be collected and analysed)*
3. *Process (are there specific processes and does it make sense to organise notes by process?)*

Good documentation ensures your data can be:

- *Searched for and retrieved*
- *Understood now and in the future*
- *Properly interpreted, as relevant context is available.*

Information on how the research was performed may come in different forms: standardized protocols, manuals of equipment or software, field notes on paper, e-mails from colleagues etc.

Below you find two types of data documentation:
Readme.txt gives a description of all data files and of all documents describing the content, context as well as the process of data collection
Methodology.txt describes the data collection process

Structuring data and information

What system for directory- and file names you intend to use?
What system for version control in your workflows?

Some basic tips for file-naming and version control:
- Use descriptive names for files (not: dataset1 but pathogenmeasurement021213_v01.xls)
- Indicate versions, e.g. _v01 (master files/milestone files)

Describing your folder structure is meant as an exercise in logic. It can also help you structure your data collection process.

Data ownership, IP
- Clarify who owns and /or controls the data
- Include any special privacy or security requirements and how you will address them (e.g. encryption)

Access and sharing modalities
- Address the intended audience of your dataset. Who will use it now? Who will use it later?
- Describe when and where you will share your data
- Include details about any tools/software that will be needed to work with the data

Sharing and ownership	(With) who(m), what and how?
Data **sharing**	
Data **ownership** E.g . Any funder's requirements or are there agreements on how the data will be used and shared with others?	
Privacy - Are there privacy or security issues, and if there are, how are you dealing with them?	

Short and long term storage/archiving
- Do you have a storage and backup strategy for the data? (size of storage?)

Data stage	Storage location	Backup procedures (storage type and location/ how often?)
Raw data		
Processed data		
Models/code		
Other?		

- How long should your data be retained (e.g. 3-5 years, 10-20 years, permanently)?
- Make sure you are using long-lived non-proprietary formats whenever possible (e.g. CSV, PDF/A)

- Identify appropriate data archives and describe where you will store the dataset
- Describe how the data will be maintained long-term

Which part of your research data has value for long term storage? Do you intend to preserve these data for the long term?

Storage types: e.g. Personal computer & Laptops, Networked drives, File servers managed by your organisations, External storage devices, USB flash drive, DVD/CD, external hard drive, Cloud services like Dropbox, SkyDrive, etc.