PhD Program in Sustainability - Research Plan
Name and surname of the doctoral student:
Title of the Research Plan:
Name and surname of thesis supervisor:
Name and surname of the thesis co - director (if applicable):
Tutor or speaker (if applicable):
Degree qualification (University / year):
Master's degree (University / year):

1 Summary of the proposal (1 page)

(Explain and include the main research questions, body of theory and basic research design. Define the proposed problem and delineate the object of study and research direction, clarifying the relevance of the problem and justifying the proposal from a theoretical and/or practical point of view. See the Annex for the corresponding evaluation criteria)

2 State of the art (1 to 3 pages)

(Present the study that is carried out in the initial phase of the research that, through a bibliographic review, allows you to know the history, the contributions, the shortcomings and the main points of controversy within the field of knowledge that is being addressed. See the Annex for the corresponding evaluation criteria)

3 Objectives of the thesis (1 page)

(Summarize the objectives that derive from the problem statement and are formulated based on the main questions/hypotheses that you want to answer/prove. They must be precise, measurable and must express what you want to achieve in the research. First, you must propose a general objective that encompasses the entire scope of the research, comprising all the specific objectives that derive from it, which must also be disaggregated and particularized from the general objective. See the Appendix for the criteria corresponding assessment)

4 Methodology (3 to 5 pages)

(Propose the methodology depending on the objectives to be achieved, the available resources and the problem to be addressed. It can be a basic methodology, when the research is aimed at achieving new knowledge in a systematic and methodical way, or applied, when the research is aimed at achieving new knowledge aimed at finding solutions to practical and concrete problems (see the Annex for the corresponding evaluation criteria).

5 Work plan and Gantt schedule

(Specify the research activities according to the time required to carry them out)

6 References

(Adopt a system of compiling the references, which must be complete and accurate, in accordance with the accepted norms. It is recommended to follow the universal standard ISO 690 or equivalent – APA, Chicago, Harvard or Vancouver – of the articles or books cited in the text of the research project. This part serves to give visibility to the existence of original and own sources, and is a direct indicator of the degree of depth of the research)

7 Expected results

7.1 Published publications and plan for future publications in indexed journals

7.2 Participation in held and planned congresses

7.3 Participation in national and international research projects

8 Data management plan[1]

The Data Management Plan (DMP) is a methodological document that describes the life cycle of the data collected, generated and processed during a research project, a doctoral thesis, etc. This plan must collect at least the types of data that will be processed, their format, origin, storage, and what measures will be taken to ensure that FAIR treatment will be carried out (ie., *Findable*, *Accessible*, *Interoperable* and *Reusable*) of the same. In accordance with what is required in the Academic Regulations of the Doctorate School, [2]the data management plan must be submitted as part of the Research Plan. To prepare it you can:

- Use the Doctoral-specific template from the CORA DMP tool (reproduced below). It contains instructions and examples for each section and is available in Catalan, Spanish and English. Once you have finished it, you can request that the library staff review it.
- Attend the research data management training workshop that libraries regularly offer.
- Go to your library or send a message to info.biblioteques@upc.edu .

8.1 Duration of the research

- Start: DD-MM-YYYY
- End: DD-MM-YYYY

8.2 Linked project

(Is this a thesis linked to a project? Which one?)

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[1] https://bibliotecnica.upc.edu/investigadors/plan-gestio-dades
[2] https://doctorat.upc.edu/ca/repositori-de-documents/normatives-academiques/normativa-academica-doctorat-upc_catala_definitiu.pdf

8.3 financing

(Did you receive funding to do the thesis? From whom?)

8.4 About this data management plan

- Creation date: DD-MM-YYYY
- Last update: DD-MM-YYYY
- Version / date: [3]*** / DD-MM-YYYY
- Sensitive/personal data:[4]
  - I will not work with personal data
  - I will work with personal data [see point 2]

8.5 Data capture

8.5.1 Will you be using existing data during your research? If not, indicate the source of the data you will use

- No
- Your own data or data from the research group in which you participate
- Academic collaborators
- Commercial collaborators
- Publicly available databases/archives
- Commercial data providers
- Others (indicate which ones):

8.5.2 Description of the data

Describe the data you will create or the third-party data you will reuse and indicate:

- If you will use protocols or standards used in your research area.
- What tools, instruments, equipment, hardware or software will you use?

If you reuse data from third parties, make sure you have the appropriate permissions and understand the terms of use for that data.

8.5.3 Data types and formats

Keep in mind:

- The type of data: for example, if you will work with measurements, simulations, observations, text (text, MS Word), images, audiovisuals or samples, statistics (spreadsheets), with computational models, with data from a qualitative survey (questionnaires), recordings (audio, video), software (code), etc.
- Longevity of file formats: Preferably use open standards so that data can be read by various programs making it easy to preserve and share with other users.

8.5.4 Indicates the data volume

- < 10 GB
- 10-30GB
- 30-50 GB
- 50GB-250GB

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[3]Do a new version whenever there are significant changes (i.e., new databases, changes in research, or other factors).

[4]If you work with personal or sensitive data, you have a legal obligation to treat it in accordance with current regulations. Personal data is any information that allows a person to be identified (name, address, location, etc.).

- 250GB-500GB
- 500GB-2TB
- 2 TB

8.6   Data storage and security

8.6.1   Indicate the restrictions (commercial, ethical or confidentiality) that may affect your data and briefly explain the restrictions.

- Contractual obligations
- Legal obligations: protection of personal data (i.e., LOPDGDD, [5]RGPD, [6]etc.)
- Legal obligations: copyright and intellectual property
- Ethical restrictions
- Commercial aspects (i.e., patentability)
- Formal security standards
- No obligations
- Others indicate:

Briefly explain the restrictions.

8.6.2   Main risks in data security

It indicates the main risks, for example: accidental deletion of data, loss or theft of data. Describe the consequences of possible data loss

8.6.3   Measures to be taken to mitigate the risks of possible data loss

- Access restrictions
- encryption
- Data processing
- Pseudo-anonymization
- Anonymization
- Regular backups
- Others indicate:

Also indicate the procedures you will use to ensure the confidentiality of personal data

8.6.4   Where will you store the data?

- In the network of your department or research group
- On the university network
- Physical storage (i.e., USB, external hard drive)
- Cloud Service (i.e., DropBox)
- Others indicate:

Briefly describe the storage and copy conditions.

8.7   Data documentation

8.7.1   Name and structure of files and folders

Describe how you will organize and name your data files and folders

8.7.2   Version control

- No version control (e.g. original files are overwritten)
- Software with version control, indicate it:

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[5] https://www.boe.es/eli/es/lo/2018/12/05/3
[6] https://www.boe.es/doue/2016/119/L00001-00088.pdf

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S T   **Sustainability Science**
       AND TECHNOLOGY

- Software with change tracking option
- Version number and date in the file or folder name
- Making a copy of the script with which the data is processed
- Others indicate:

Briefly describe how you will control versions. Also indicate what you will do if data is deleted.

8.7.3 What metadata standards will you use?

- I will not use any standards (specify the metadata needed to understand the data)
- Generic metadata schema (i.e., Dublin core)
- Windows Automatic Metadata Schema (i.e., Word, Excel)
- Specialized thematic metadata schema, indicates:
- Another metadata schema, states:

It indicates how they will be created (in a *readme* file, a spreadsheet, embedded in the data) and what documentation you will produce to make the data understandable to others.

For more information, see "Disciplinary metadata standards " [7] of the DCC or " Metadata standards " [8] in Wikipedia.

8.8 Access, share and reuse data

8.8.1 You have restrictions on sharing data in relation to the current regulation (General Data Protection Regulation) or others (ethical, commercial, security, intellectual property or copyright)?

Indicate which ones (for more information on the current regulation, see General Data Protection Regulation).[9]

8.8.2 Who are the potential users of your data and how will they discover it?

Briefly describe who might be interested in your research and how you will disseminate it (e.g. data in the repository, website, conference publications, etc.).

8.8.3 Specify which licenses you will apply to the data to allow maximum reuse.

The use of *Creative licenses is recommended Commons* (CC - BY or CC Zero) or GNU.

8.9 Data storage and preservation

8.9.1 What criteria will you use to select the data to preserve in the long term?

- Type of data (i.e, raw, processed) and ease of generation
- Relevance of content to others
- Ease of reuse of the format by others
- Data linked to a publication
- Research verification
- Times available
- Available financial resources
- Others indicate:

8.9.2 How long will you keep the data?

Different international standards recommend a minimum of 10 years.

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[7] https://www.dcc.ac.uk/guidance/standards/metadata
[8] https://en.wikipedia.org/wiki/Metadata_standard
[9] https://www.boe.es/doue/2016/119/L00001-00088.pdf

8.9.3 In which repository will you deposit your data?

- Institutional repository
- repository (international), indicates:
- repository multidisciplinary (i.e., Zenodo, Figshare, Dryad, etc.)
- Others indicate:

Consider the specific requirements (in terms of format, metadata, size, cost, etc.) they may have for depositing data.

9 Signatures and evaluation

The doctoral student Signature and date:	Approved by the director Signature and date:	Seen and approved by the co - director Signature and date:	Approved by the tutor Signature and date:

The Academic Committee of the PhD program in Sustainability, considering the rubric of evaluation, presentation and defense of the Research Plan (see Annex) qualifies this as:

☐ satisfactory

☐ Unsatisfactory with character corrections:

☐ Formal (i.e., they involve only the presentation of the written documentation of the PR again).

☐ Formal and content (i.e., involve the presentation of written documentation and the public defense of the PR again).

Signed by the president of the academic committee (place and date):[10]

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[10]The comments regarding the qualification can be found in the corresponding minutes.

10 Appendix Research Plan evaluation rubric

The Research Plan is evaluated considering five areas (of equal weight) in the final evaluation grade:

1. Research object (20%)
2. Research methodology (20%)
3. Formal aspects of memory (20%)
4. Exhibition and public defense (20%)
5. Scientific and social impact (20%)

The criteria for the evaluation of each of these areas are as follows:

10.1 Object of the research

- Clarity
  - Hypotheses and objectives are clearly and appropriately formulated.
  - It has a good theoretical foundation and the necessary qualities to be the subject of scientific research.
- Originality and belonging
  - The research object is original and links with the knowledge available so far.
  - The bibliographic research, sources of information and documentation used are appropriate and current.
  - It is relevant to carry out this type of research at this time given that it responds to the demands of the scientific community and the needs of the social, economic and cultural context.
  - Enrolls within the lines of the doctoral program and/or the research group.
  - It is expected to provide useful knowledge.

10.2 Research methodology

- Methodological adequacy
  - The research methodology is explicit, appropriate and consistent with the theoretical framework.
  - It uses current analysis methods and is adequately justified.
  - Introduce some innovative methodological contribution.
- Design consistency
  - Variable design, samples, data collection procedures, and data analysis techniques are detailed and adequately presented.
  - The instruments that are used (if applicable) have reasonable levels of reliability and validity.

10.3 Formal aspects of memory

- Clarity
  - The contents are written in a clear manner, using logical discourse, scientific language and without spelling mistakes correctly and appropriately.
  - All data, charts, tables and figures are correctly understood.
- Quality of the documentation
  - Bibliographic references and sources of information and documentation used are cited following universal citation standards (i.e., APA, Chicago, etc.).

10.4 Exhibition and public defense

- Clarity in the exhibition
  - The content of the work has been presented in a clear and comprehensible way to the public.
  - The fundamental aspects of it have been insisted upon.

- Adequacy of the defense
  - The doctoral student has shown receptivity to the relevant criticisms and observations made by the court.
  - The doctoral student has answered all the theoretical and methodological questions posed in an appropriate and correct manner.

10.5 Scientific and social impact

- projection
  - The PR reveals potential new lines of research related to the problem under study, which can provide new knowledge for the scientific community and/or new solutions to social, economic and environmental problems.
- Scientific and social impact
  - Type of dissemination of the work carried out and/or carried out at a scientific level (ie ., publications, seminars, communications, posters, etc.) and expected impact of the contributions of the thesis (ie ., generation of utility models, patents, etc.).
  - A positive effect on society derived from actions, policies or other projects deriving from this PR is estimated (ie , job creation, improved access to education and health care, improvements in environmental conservation and/or cultural preservation initiatives, etc.).