Sustainability Guide for Research Processes

This Sustainability Guide for Research Processes is a catalogue of guiding questions that provides a framework on how to consider sustainability goals during a project's conceptual phase. The guidance prioritises limiting conditions that contribute to increased emissions and wasteful management of resources.

Striving for high quality research remains the top priority when planning and designing a project. Meeting sustainability standards throughout a project should not negatively affect knowledge production. To support research that is both excellent and held to high sustainability standards, it is possible to apply for increased funding for lower-emission and resource-saving research designs.

The questions listed below are intended as a source of inspiration and are offered as suggestions and examples; they are not exhaustive and applicants are not required to respond to them fully. Rather, the catalogue of guiding questions aims to support a differentiated and to some extent subject-specific process of weighing different approaches to working in a more resource-efficient and climate-friendly way, considering advantages and disadvantages as well as potentially conflicting objectives. Individuals are called upon to demonstrate creativity and develop new solutions in order to enable the community as a whole to arrive at new standards in research activity that take environmental sustainability into account.

1. Travel Considerations

- Can the objective of a trip be achieved in another way, for example through digital communication, and still accomplish a comparable result when it comes to knowledge transfer or building networks? Extra considerations here might include the situations of people in early career phases as well as actual networking needs for people in a given field or international environment.
- Can emissions be reduced by adapting the means of travel or routes? Can air travel be replaced or linked to other stages of the project? Are direct flights available even if they are more expensive?
- Can a quantitative estimate of the environmental impact (especially CO2 emissions) caused by the project's travel be made?
- When organising conferences: could hybrid or digital formats offer a useful alternative to face-to-face meetings?

2. Methodology and Design Considerations

General

- Which methodological approaches offer the most potential in limiting resources used and reducing emissions that are harmful to the climate and the environment?
- Can the design and scaling of the experiment or field trial be better adjusted to the scope required to answer the question, or could a simulation be (partially) used instead?
- Taking into consideration the uniqueness of the planned research, could available existing data be used to progress the project under more sustainable conditions?
- Could the complete use of data and/or (if possible) making available of data and/or re-use of available data make new trials and experiments redundant?

Laboratory equipment and non-renewable materials

- Is it possible to reasonably reduce non-renewables, re-use items or use items made of recycled material?
- Can providers be found that sell more energy-efficient products?
- Could purchasing smaller quantities reduce storage costs? Emissions and resource consumption caused by transport must also be taken into account.

Samples

- Is it possible to draw on existing samples?
- Is it possible to reasonably reduce the amount of material, re-use the material or make it available to others?
- Is it possible to store objects in a more climate-friendly and energy-efficient way? For example, can samples be stored at a lower or higher temperature?

3. Computing Considerations

- Can the computing power for modelling, simulation, evaluation and visualisation be reduced? Are cloud-based solutions an option? Is it possible to use suppliers who provide green electricity?
- Can the energy consumption be reduced by planning the simulations to be carried out even more efficiently?
- When selecting the parameters for a simulation, can you use less energy while maintaining a similar quality of results?
- Could the complete use of data and/or (if possible) making available of data and/or re-use of simulation data be used to reduce energy consumption?
- Can specific statements be made on the environmental impact caused by time-intensive computing simulations (specifically on the level of CO2 emissions)?

4. Equipment Procurement and Operational Considerations

- Is it necessary to purchase new equipment if existing or repairable equipment is available (e.g. in a neighbouring working group)? Would the new equipment be more energy-efficient than any existing equipment?
- Before purchasing new equipment, what information is available on its environmental impact and ability to reduce the use of resources and emissions during its production and operation?
- Are there ways to more efficiently use resources and achieve a reduction in emissions by taking into account the service life, repairability and capacity of the new equipment?
- What are the considerations in regard to recycling equipment (old or planned procurement?)