Guide on Good Practices within Research Activity

National Research and Development Institute for Industrial Ecology – ECOIND

NATIONAL RESEARCH AND DEVELOPMENT INSTITUTE FOR INDUSTRIAL ECOLOGY

ECOIND

EXCELLENCE IN RESEARCH AND ENVIRONMENTAL SERVICES

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Contents

Introduction

Present guide was developed within the implementation phase of initial action plan of HR Excellence in Research process and is aiming to help to ensure integrity, rigour, quality and excellence in research carried out at and in partnership with National Research and Development Institute for Industrial Ecology - ECOIND.

The guide has an informative rather than prescriptive character and offer assistance to researchers in supporting them to apply internal regulations as well as wider legal and contractual requirements and ethical norms in concrete situations, which may occur in everyday practice of research.

The practice of research will require adherence to principles of ethics and integrity that may vary in their details according to the type of research undertaken. Thus, these general guidelines need to be supplemented by other research-related policies, guidelines and principles.

This guide will be reviewed every two years unless earlier revision is required due to a major change in the legislation, regulations and guidance that govern good research practice.

The National Research and Development Institute for Industrial Ecology – ECOIND is committed to conduct research in accordance with the following principles:

- Integrity
- Objectivity
- Accountability
- Openness
- Honesty
- Leadership and cooperation

Integrity

ECOIND expects all those engaged in research to respect the principle of integrity, whether they are employees or partners. Researchers should make efforts to understand and meet the expected standards of integrity and good practice relevant to their work. To facilitate such efforts, this document provides guidelines on good practice in research.

The main responsibilities of researchers are to:

- Apply and maintain expected standards of rigour and integrity relevant to their research
- Apply ethical, legal and professional obligations and standards
- Design, conduct and report research taking into consideration integrity and ethical practice
- Maintain a research environment that encourages research integrity
- Declare conflicts of interests and act to manage them

Maintaining high standards of integrity applies to whole range of research practice such as:

- Conducting research studies and experiments
- Generating, recording, analysing, processing and sharing research data
- Applying for research funding
- Presenting and publishing research results
- Training other researches and staff
- Peer reviewing research works of other researchers

Objectivity

Objectivity in research is the practice of conducting, analysing, and reporting research studies without bias, personal prejudice, or emotional influence, ensuring that research results are based on facts.

It is crucial for scientific integrity, reproducibility, and credibility, requiring researchers to minimize subjective interpretations throughout the research process.

Key aspects of objectivity in research include:

- Actively trying to prevent personal beliefs, opinions or social pressures to affect the research process
- Using standardised tools, techniques and procedures to ensure that research results are independent of the researcher
- Clearly documenting and sharing research methods and data that allows peer review and independent replication
- Research results / findings must be based solely on observed data rather than on preconceived notions
- Acknowledging individual researcher role and potential biases

Maintaining objectivity is not just about elimination of personal views, but also about ensuring that any personal judgement is applied transparently and responsibly.

Accountability

Accountability in good research practice refers to the responsibility of researchers, research teams and institutions to ensure that research is conducted, recorded and reported in an ethical, transparent, accurate manner, being answerable for their actions and decisions throughout the entire research process. It extends beyond mere compliance with rules to include personal, interpersonal, and institutional obligations to maintain public trust, ensure reproducibility, and address errors.

Key aspects of accountability:

- Researchers must take personal responsibility for their research work, ensuring integrity in the process of data generation, analysis and reporting
- Institutions are responsible for fostering a positive research culture, providing training, managing conflicts of interest, and investigating misconduct
- Making data available for verification and reporting findings in a clear, honest manner, avoiding overstatement
- Responsible management of research funds and resources
- Involving participants in the process, and encouraging open communication about results and methods

Core components of accountable research:

- Data management and recording: keeping clear, detailed records that allow future verification
- Authorship and credit: adhering to standards where all authors are familiar with the content, contribute significantly, and are accountable for the work, avoiding honorary or ghost authorship
- Conflict of interest management: Declaring and managing any financial or professional interests that could compromise the integrity of the research
- Ethical approval: Ensuring all necessary permits and approvals are in place before research begins

Openness

Openness in good research practice means making the entire research lifecycle—data, methods, and publications—transparent, accessible, and reusable to enhance reproducibility, efficiency, and public trust. It promotes rigor by allowing scrutiny of research results and encouraging collaboration. Core practices include sharing data via repositories, using open-access publishing, and open methods, though this must be balanced with ethical, privacy, and security constraints.

Key aspects of openness in research:

- Transparency and reproducibility: Sharing research data, and materials allows others to verify and replicate results
- Accessible outputs: Utilizing open access for publications to ensure research is available to everyone, not just those with institutional subscriptions
    - Whilst recognising the need for researchers to protect their own intellectual property rights ECOIND encourages researchers to be as open as possible in discussing their work with other researchers and with the public. Researchers should be especially careful when discussing work that is not complete or not been published, particularly if it has not undergone peer review.
    - ECOIND is committed to disseminating research as widely as possible, whilst affirming academic freedom to choose the location and nature of publication
- Data sharing and reusability: Making raw data available (following FAIR principles—Findable, Accessible, Interoperable, Reusable) for secondary analysis
- Pre-registration: Documenting research plans and hypotheses before data collection to reduce bias.

Honesty

Honesty in research entails truthfulness in proposing, performing, and reporting studies, ensuring integrity through accurate data collection, analysis, and interpretation. It requires avoiding fabrication, falsification, and plagiarism, while transparently declaring conflicts of interest, adhering to ethical standards, and acknowledging the contributions of others.

Key aspects of honesty in research:

- Data integrity: Maintaining accurate, honest, and transparent records of data collection, analysis, and results
- Reporting results: Honestly communicating research findings, including negative results or limitations, without manipulation or deception
- Methodology: Being truthful about the research methods and procedures used
- Intellectual property: Properly crediting and acknowledging the work, ideas, and contributions of others (avoiding plagiarism)
- Transparency: Declaring conflicts of interest, funding sources, and potential bias in research design or interpretation

Leadership and cooperation

Top management, heads of departments and their senior colleagues should ensure that a research climate of mutual co-operation is created in which all members of a research team are encouraged to develop their skills and in which the open exchange of ideas is fostered.

Efforts should also be made to foster an environment where research is conducted in accordance with good research practice. Senior researchers should make particular efforts to help new members of the ECOIND scientific community understand and adopt best practice.

Supervisors should supervise all stages of the research process, including outlining or drawing up a hypothesis, preparing applications for funding, the design of experimental or research protocols, data recording and data analysis, and writing the research reports.

ECOIND offers courses to enable researchers to understand and adopt best practice in research as quickly as possible. Supervisors should encourage colleagues to attend relevant courses as part of their overall career development.

The process of leading, supervising and mentoring is preferable to be carried out by organizing regular meetings with the members of the guided group/researchers, to discuss progress of their own research, interpretation of the data, problems that may arise and any other issues that the two parties consider necessary to be addressed.