

List of releases:

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Good Scientific Practice guidelines

1. Preamble

This document consists of a set of guidelines for Good Scientific Practice (GSP) that together with the [Scientific Dispute Resolution Policy](#) in combination with the [Scientific Dispute Resolution Procedures](#) and the Committee on Ethics and Research Integrity ([Terms of Reference](#)) provides a framework for promoting and GSP and safeguarding against scientific misconduct at IIASA.

A framework for GSP has by now become an established norm of good institutional practice in science, a fact that is reflected in the recent emergence of a number of such frameworks, such as inter alia the

- [ALLEA European Code of Conduct for Research Integrity 2017](#) (ALLEA 2017),
- [Best Practice Guide for Research Integrity and Ethics](#) (Austrian Ministry of Education, Science and Research: BMBWF 2020),
- [Code of conduct for scientific integrity](#) (Swiss Academies of Arts and Sciences 2021),
- [UK Concordat to support research integrity](#) (Universities UK 2019),
- [Austrian Academy for Scientific Integrity](#) (OeAWI) guidelines,
- [Hong Kong Principles](#) established by the World Conferences on Research Integrity WCRI.

The establishment of a set of guidelines and policies is also a prerequisite for achieving the objectives of « providing an environment for research excellence » and « implementing best practice » as stated in Pillar 3 of the [IIASA Strategy 2021-2030](#).

As such, the guidelines build on and are closely related to established best practice frameworks on GSP (such as the above). But, in addition, it is tailored to the specific nature of IIASA's research, i.e. advancing cutting-edge systems-based analysis to understand and generate policy options for transformations towards sustainability in an increasingly complex, interconnected and uncertain world; acting as a platform for inter- and transdisciplinary collaborations, capacity building, and partnerships that respond flexibly to emerging challenges; and serving as a trusted neutral platform for science, policy, and societal exchange (condensed from the IIASA Strategy 2021-2030). The guidelines also take account of IIASA's specific institutional structure as a non-profit research institute established and sustained by IIASA Member Organizations.

Recognizing that research excellence and best scientific practice at institutional level are a joint product of the concerted efforts of individual researchers, the framework addresses both individual researchers in their responsibility to adhere to GSP and strive for best practice and the institution in its responsibility to co-ordinate, enable, support and foster such individual efforts.

2. Scientific core values

The guidelines for GSP are firmly grounded in the IIASA [core values](#) and internationally accepted scientific values, as specified in the frameworks referred to above. They summarize how these should be reflected in good scientific practice and how they can be fostered at individual and institutional level to provide best practice and deal with violations.

The specific scientific core values underlying this framework are:

- Accountability and transparency
- Integrity and honesty
- Ethical conduct
- Respect, fairness and diversity
- Scientific excellence, policy relevance and impact.

These general scientific values translate into the following concrete set of principles of research integrity which research carried out at IIASA should adhere to.

3. IIASA principles of good scientific practice

This section sets out a set of specific principles that in their totality constitute GSP. They govern and guide the day-to-day research activity by individual researchers and teams of researchers as well as institutional structures and processes aimed at providing an environment that best enables GSP.

The principles relate to the five domains of research excellence (Section 3.1), ethical conduct (Section 3.2), good practice in authorship (Section 3.3), open science (Section 3.4), and science stewardship (Section 3.5). Links to relevant IIASA guidelines and policies are provided where relevant.

3.1. Research excellence

3.1.1. Meeting the state-of-the-art and policy impact

The research questions and the research design should ensure that: 1) the state-of-the-art is taken into account; 2) the project is scientifically relevant and technically feasible; 3) the methods match the research question; 4) the design is such that the underlying methods and (non-proprietary) data allow the reproduction of results; 5) the project produces a novel contribution to the scientific state-of-the-art and/or 6) leaves an impact on policy-making.

3.1.2. Professional execution

Professional execution is characterized by the following steps:

- Careful planning of the research design, collaborators, timeline, data management, and dissemination, as well as foresight on possible contingencies and possible conflicts of interest (see Section 6).
- Careful composition of the team, taking account of excellence, relevant skillsets and diversity.
- Diligent execution of the research and transparent documentation.
- Transparent communication of intermediate and final results that is respectful of the timeline of the research and the audience (see also 3.1.3 below).
- Openness to critical discussion by other researchers, internal and external, during the execution of the research and in its aftermath. This includes adequate, transparent and timely response to criticisms.

A more comprehensive statement can be found in the IIASA <Project Management Guidelines> (in drafting).

3.1.3. Dissemination and communication

Generally, scientific publications should adhere to IIASA's [Scientific Publications Policy](#). More specifically, no presentation of results should attempt to claim an opinion on behalf of IIASA or its Member Organizations.

While independent peer review continues to be the gold standard for quality assurance before the communication of final research findings, the stepwise process of research, especially of larger scale projects, makes it opportune and often necessary to communicate intermediate results through preprints, conferences, websites, etc. Due diligence should be undertaken that these findings are understood by the audience as preliminary and not yet peer-reviewed. IIASA guidelines for pre-print are stated in the [Practical Guide to Preprints](#).

In line with Pillar 2 “Enhancing Impact” of the IIASA strategy, researchers are strongly encouraged to also disseminate their results by way of appropriate means (workshops, policy briefs, dedicated websites, etc.) to relevant policy and stakeholder communities as well as to the broader public (see also Section 3.4 on Open Science).

3.1.4. Documentation and archiving

The exact documentation of scientific procedure and results is mandatory for experimental work since the reproducibility of results is a fundamental feature of such research. Primary data must therefore be secured and stored for the duration of ten years.

Less sensitive project results, including intermediate results that are key for replication, should be stored and documented to the extent this is physically possible in a way that makes them easily accessible throughout the execution of the work as well as retrospectively.

Researchers should consult with [IIASA Data Stewards](#) on matters of data management.

See also Sections 3.2.2 and Section 3.4 on the handling of sensitive personal information and Open Science, respectively.

3.1.5. Adherence to IIASA GSP

Research carried out that is led by IIASA scientists should adhere to the IIASA guidelines and regulations of GSP as a rule. IIASA researchers who are involved in joint research led by other institutions should seek to adhere to the IIASA GSP principles in their personal capacity and covering those aspects of research they are responsible for. Possible conflicts should be raised with the Scientific Ombudsperson (see Section 4.2.3).

3.2. Ethical conduct

3.2.1. Awareness of ethical, social and environmental issues in the design of research

GSP calls for an awareness and, where necessary, for an explicit assessment of ethical issues that may arise in the planned research, relating to methodologies and implications of possible results. Researchers should reflect on the potential social and environmental hazards associated with their research. In line with the IIASA [Race to Zero Commitment and Policy](#) researchers should seek to minimize the carbon footprint of their research activities.

3.2.2. Research with human beings

For research involving experimental or empirical work with human beings, the researchers need to ensure free, informed consent of participants and be committed to do no harm (with particular attention to vulnerable individuals, such as children, patients, discriminated people, minorities, persons unable to give consent, etc.). Any personal information needs to be handled and stored under conditions of the highest possible confidentiality. The information is used exclusively for the purpose of research.

3.2.3. Non-discrimination, inclusiveness and respectfulness

GSP rules out discrimination in the design of research, in its process and in the communication of outcomes. GSP emphasizes that diversity and inclusiveness foster creativity and innovation, as well as the representativeness and relevance of research. Principles are laid down in the IIASA [Diversity Policy](#) and the IIASA [Gender Equality Plan](#). Interactions in the pursuit of research and the communication of research results should be governed by respectfulness vis-à-vis the concerned parties.

3.2.4. Ethical publishing and instruction

To make research finding accessible to disadvantaged parties, IIASA will pursue a policy of making research findings available at zero costs. This includes the encouragement for open access journal publications and, otherwise, the use of open access repositories.

IIASA also encourages researchers in international collaborations to engage in ethical instruction, i.e. the capacity building especially of researchers from disadvantaged backgrounds.

3.2.5. Committee on Ethics and Research Integrity

Researchers can address queries in respect to research ethics and requests for review of research proposals in regard to their compliance with best ethical standards to the Committee on Ethics and Research Integrity. This includes the formal approval or clearance of projects as required by some funding institutions.

3.3. Authorship good practice and employment of large language model (LLM) writing tools

3.3.1. Authorship good practice

GSP involves adherence to authorship good practice as specified in the IIASA [Authorship Guidelines](#).

3.3.2. Use of large language model (LLM) writing tools

Generally, GSP discourages the use of LLM tools, as it produces work that is not based on the researcher's own effort, learning and insight. Researchers are strongly encouraged to weigh very carefully the usefulness of applying LLM tools in their research against the risk of violating norms of GSP by producing e.g. flawed, incomplete, intransparent or plagiarized work.

Where IIASA researchers are employing LLM tools, they have to adhere to the

following principles:¹

(1) Authorship must not be attributed to LLM for their lack of accountability.

(2) The employment of LLM tools must be duly documented in the methods, acknowledgments, introduction or other appropriate sections.

3.4. Open Science

3.4.1. FAIR data

GSP stipulates that open access is granted to research data wherever this is possible without violating proprietary rights elsewhere. IIASA is strongly encouraging the opening of data according to FAIR principles and in line with the IIASA [Open Access to Data Policy](#) from which further guidance can be taken.

3.4.2. Open access models and tools

GSP stipulates that open access is granted to models, tools and programming code wherever this is possible without violating the proprietary rights of others. IIASA is strongly encouraging the opening of models and tools in line with the IIASA [Open Access to Models and Tools Policy](#) from which further guidance can be taken.

3.4.3. Open access to publication

GSP stipulates that research results are provided in an unrestricted and cost-free way. According to the IIASA [Open Access Policy](#) IIASA requires all researchers to deposit their output in the IIASA institutional repository [PURE](#).

3.5. Science stewardship

3.5.1. Collegiality and collaboration

Research activities should be carried out in a spirit of collegiality, honesty, respect and trust towards both collaborating and non-collaborating colleagues. This applies in particular to situations of conflicting views on methods or findings.

Collaboration within and across disciplines, research groups and programs as well as with non-IIASA researchers is encouraged wherever this is conducive to

¹ This follows the principles stated in the [Nature editorial](#) (Nature, Vol. 613, January 2023, p. 612).

the creation of scientific and policy insight and impact. Collaboration should be based on implicit or, in case of more complex projects, explicit agreements that are clear, sound and mutually accepted.

3.5.2. Mentoring and knowledge transfer

GSP entails the training and enabling of junior scientists towards carrying out independent research. This includes that research activities are aligned with junior colleagues' skills and careers; that early-stage researchers receive guidance, encouragement and honest and respectful feedback; and that junior colleagues have access to relevant training and mentoring.

3.5.3. Peer-reviewing contribution and other scientific community services

Researchers provide careful, impartial and unprejudiced expertise in reviewing the work of colleagues, including papers submitted for publication and research proposals. They strictly adhere to confidentiality and refuse to provide such expertise in case of conflicts of interest or in case of justified concerns about the submitted work meeting the principles of GSP.

3.6. Dealing with scientific conflict of interest

3.6.1. Scientific conflicts of interest arise inter alia when an individual might influence IIASA's scientific activities in improper ways or compromise GSP in response to external interests, when personal gains from external activities may unduly influence research-related decisions, or when improper advantage might be given to personal or professional associates.

3.6.2. To avoid or resolve scientific conflict of interest, scientists are obliged to adhere to the following rules (as set out under 5.4 of the [Scientific Dispute Resolution Policy](#)).

- They shall neither seek nor receive instructions from private or public parties that are external to the Institute.
- They shall not pursue research commitments that would violate the principles of good scientific practice. This includes research carried out for external parties for which there is no ex-ante agreement that the results can be freely, accurately and fully disseminated subject only to the caveats on confidential and proprietary data as are included in open science policies².
- Research and consultancy activities that yield personal gains to the scientist that go beyond the career gains through increases in scientific standing or yield financial remuneration, must be reported to and approved by the IIASA Executive.

² See the relevant article in the <Guidelines on Good Scientific Practice>.

- It is the responsibility of researchers to identify and declare real, potential or perceived scientific conflicts of interest to the Committee on Ethics and Research Integrity.

4. Implementing good research practices in IIASA research

While independence of research implies that adherence to the IIASA principles of GSP is the responsibility of the individual researcher (see Section 4.1), highest standards of scientific practice are best enhanced when the individual researchers' efforts at good scientific practice are embedded within an institutional environment that enables and leverages them (see Section 4.2).

4.1. Individual responsibilities

Upon being informed about the IIASA principles of GSP, individual researchers are responsible for undertaking all due effort towards meeting them.

More detailed guidance on GSP can be found in the respective policies. IIASA is also planning to produce a Handbook on GSP that includes practical guidance and references to literature and websites from which to learn more about GSP.

In pursuing GSP, individual researchers are encouraged to seek clarification about whether their work meets the principles with principal investigators and supervisors in the first instance, and with a Scientific Ombudsperson on GSP and SCOI, in the second instance. The Scientific Ombudsperson can be directly contacted if issues of SCOI or confidentiality require so. See Section 4.2.3 for further detail.

Researchers must be aware that instances of scientific misconduct, including unresolved or undeclared scientific conflicts of interest as defined in the [Scientific Dispute Resolution Policy](#) will be investigated by the Committee on Ethics and Research Integrity according to the [Scientific Dispute Resolution Policy](#) and [Scientific Dispute Resolution Procedures](#) and sanctioned appropriately. Researchers have a contractual obligation to be vigilant about instances of scientific misconduct and a duty to declare scientific conflicts of interest. Further details of individual obligations in that respect are stated in Section 5 of the [Scientific Dispute Resolution Policy](#).

4.2. Institutional responsibilities

At the institutional level, IIASA aspires to implement, safeguard and enhance GSP through the [Scientific Dispute Resolution Policy](#) in combination with the [Scientific Dispute Resolution Procedures](#) together with the [Committee on Ethics and Research Integrity](#) and a set of institutional provisions that enable researchers and teams to engage in good scientific practice and leverage efforts aimed at best practice (Section

4.2.1); those that aim at including GSP in training and mentoring activities (Section 4.2.2); and those that aim at safeguarding minimum standards of scientific practice, mediating possible conflicts as early as possible, and initiating and leading investigations into scientific misconduct where necessary (Section 4.2.3).

4.2.1. Enhancing efforts at best scientific practice

Highest standards of scientific practice are best enhanced when the individual researchers' efforts at advancing scientific practice to best (rather than good) levels are embedded within an institutional environment that enables and leverages such efforts. Such a research culture is a common good and can only be established by a collective effort between researchers and the institution: while under the principle of "freedom of research" individual researchers bear ultimate responsibility for their conduct and actions the institution plays a crucial role in providing a governing framework that besides providing appropriate guidance and incentives, facilitates mutual learning through open interactions and trust. IIASA's [People Strategy](#) lays down principles of this.

Research Groups and Research Programs: With individual researchers being affiliated to Research Groups and Research Programs, these are responsible for enabling and enhancing GSP on a day-to-day basis. The provision of a conducive research environment thus constitutes one of six axes of performance of the IIASA [Metrics for Performance and Impact](#).

Committee on Ethics and Research Integrity: As expressed in its [Terms of Reference](#), IASA's Committee on Ethics and Research Integrity is mandated inter alia to ensure that research integrity and ethics are maintained at the Institute, and to define and review processes/activities for ensuring scientific excellence across the Institute. As such, it plays a general role in the oversight, review and revision of GSP practices across the Institute.

4.2.2. Induction, mentoring and training

All junior and new staff are induced into GSP and the potential for conflicts of interest as well as the relevant policies and infrastructure at IIASA.

On a day-to-day basis, mentoring responsibility lies with supervisors, where GSP should be part of the individual performance review and possibly inform the setting of [SMART Goals](#) and where supervisors should be available as first ports of call for researchers to raise conflicts of interest in a confidential way.

Additionally, CDAT training includes aspects of GSP and means for dealing with SCOI as part of its curriculum for Inhouse capacity development in regard to "broader research skills", as specified in the [CDAT Strategy](#).

Finally, IIASA offers occasionally, or on demand, training in matters of GSP as part of its [Professional Training and Development](#) Policy.

4.2.3. Safeguarding against scientific misconduct and conflicts of interest

IIASA initiatives towards safeguarding against scientific misconduct and conflicts of interest embrace three levels.

Prevention through ensuring a research environment that is conducive to GSP and raises awareness about SCOI as outlined in Sections 4.2.1 and 4.2.2.

Resolution of situations of misconduct and conflicts of interest through robust, effective, transparent, consistent and fair policies and processes, as detailed in the <Scientific Dispute Resolution Policy> and < Scientific Dispute Resolution Procedures>.

Committee on Ethics and Research Integrity: A dedicated Committee on Ethics and Research Integrity (see [Terms of Reference](#)) acts as a point of contact and mediator with a view to preventing or otherwise dealing as soon as possible with emergent cases of scientific misconduct and (unresolved) scientific conflict of interest.

5. Review of the guidelines

The guidelines shall be reviewed by the Ethics Committee who reports to the Science Leadership Committee at regular intervals.