

## **National Research Programme NRP 84**

### **"Plant Breeding Innovation"**

Call Document

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### **What are National Research Programmes (NRPs)?**

Research conducted by National Research Programmes consists of research projects that contribute to solving contemporary problems of national importance. Under the provisions of Article 10, paragraph 2 letter c of the Federal Act on Research and Innovation of 14 December 2012 (Status as of 1 July 2023), the Federal Council selects the topics and focus areas for research in NRPs and mandates full responsibility for implementing the programmes to the Swiss National Science Foundation.

Article 3 of the Federal Ordinance on the Federal Act on Research and Innovation of 29 November 2013 (Status as of 1 September 2023) describes the NRP funding scheme as follows:

<sup>1</sup> The National Research Programmes (NRPs) of the Swiss National Science Foundation (SNSF) are a means of generating and conducting coordinated research projects that pursue a common goal.

<sup>2</sup> Topics of research are appropriate for National Research Programmes if:

- a. Swiss research can make a significant contribution to resolving the issue;
- b. research contributions from multiple disciplines are required to resolve the issue;
- c. research on the topic can be expected to produce research results within a five-year period that have practical applications.

<sup>3</sup> In justifiable exceptional cases, an NRP may also be used to create specific additional research potential in Switzerland.

<sup>4</sup> During the selection process, it will be considered whether:

- a. the expected results of the programme can be used as the scientific basis for governmental and administrative decisions;
- b. the programme can be carried out in the context of international cooperation.

## 1 Summary

Applications are invited for research projects to be conducted within the National Research Programme 'Plant Breeding Innovation' (NRP 84). The programme was mandated by the Swiss Federal Council on 2 June 2023 to identify and test new plant breeding technologies (NBTs), which involve targeted mutagenesis, DNA editing and cisgenic insertion of DNA constructs that do not lead to transgenic products, and to evaluate their application from agronomic, social, ethics, economic, and regulatory perspectives in Switzerland. NRP 84 consists of three research modules.

- Projects in Module 1 will evaluate the use of NBTs to generate crop varieties with traits that improve crop productivity and quality and that permit environmentally and economically sustainable agricultural practices in Switzerland.
- Projects in Module 2 will examine ethical issues and factors that influence stakeholders' attitudes and interests as well as the economic viability of the use of NBTs in agriculture.
- Projects in Module 3 will formulate policy recommendations for regulatory frameworks that promote innovation for sustainable applications of NBTs and that serve to reduce biosafety and environmental risks.

NRP 84 will fund interdisciplinary translational research on the agronomic application of NBTs in Switzerland within social, economic, and regulatory contexts. A priority is to examine ways in which NBTs might develop and bring new crop varieties to the market with traits that allow improved social, economic and environmental sustainability and bolster food security in Switzerland and beyond in the face of climate change. To promote interdisciplinarity, funded project teams will be linked in a communication network and will participate in annual research and discussion meetings.

The programme has a total budget of 10 million CHF and will run for 5 years. Project budgets should usually fall between 250'000 CHF and 600'000 CHF, but deviations beyond this range might be considered if justified.

The deadline for pre-proposal submission is 14 March 2024, with decisions to be made in early June 2024. The deadline for full proposals is scheduled for 2 September 2024. Research on funded projects should begin in early 2025.

## 2 Introduction

### 2.1 Background and problem framing

Global warming, environmental degradation and our planet's growing human population pose increasing threats to food security around the world. At the same time, biodiversity is threatened by modern agricultural approaches, which also contribute substantially to global carbon emissions. In Switzerland, as elsewhere, there is increasing pressure to reduce the use of pesticides, herbicides, and fertilizers, to mitigate against the causes of global warming, and to protect biodiversity while maintaining or increasing productivity. A broad spectrum of approaches will be needed to meet these demands, including the development of new plant trait combinations that confer greater resistance to pests and diseases or continued productivity in the face of drought, flooding, or rising temperatures. While traditional plant breeding will continue to contribute to trait development, new plant breeding technologies (NBTs) are now available that promise more specific targeting of relevant genetic variants and, especially, more rapid testing of variants and their eventual translation into crops.

In the context of this NRP, NBTs refer to technologies capable of the targeted alteration of the genetic material of plants, including but not limited to approaches that involve targeted mutagenesis, editing of DNA stretches, and targeted insertion of DNA constructs that do not lead to transgenic products. They are expected to offer considerable time-saving advantages over traditional and other breeding approaches to develop new traits. They may be used to enhance the value of locally preferred crop varieties by introducing targeted mutations that facilitate more sustainable production systems, e.g., involving a reduced use of pesticides, fertilizers, or irrigation.

The potential for NBTs to address future challenges of food security and crop productivity in general will depend on our ability to translate them into the new crop varieties that meet environmental and economic sustainability challenges. Their use will also need to account for ethical and legal aspects of their adoption as well as societal and consumer attitudes that may be influenced by the perceived risks and benefits (including those linked to sustainability and the need to protect biodiversity). Attractiveness of NBTs to applied breeding and translatability will also depend on economic and legal questions related to intellectual property rights and the environmental and food regulatory framework relevant to genetic modification. Because NBTs are also subject to regulatory requirements that may only be readily met by capital-intensive businesses, there is a risk that innovation might be limited to crops that promise high returns on investment rather than a high contribution to agro-ecological sustainability. To enable the collective needs of the future, the regulatory framework may therefore also need to consider financial incentives to invest in improved crops with a high added value for society and the environment.

### 2.2 The national and international research environment

There is no existing research programme in Switzerland that aims to assess the potential application of NBTs in terms that address all the above-mentioned aspects or needs. While several research groups are working on related topics in Switzerland, efforts remain scattered, and their applied and synergistic potential is thus not fully exploited. The previous National Research Programme "Benefits and risks of the deliberate release of genetically modified plants" (NRP 59) examined the acceptability of genetically modified plants to Swiss society and in the context of their coexistence with traditionally bred crops. NRP 59 was an important milestone in the risk assessment, management, and communication of genetically modified plants in Switzerland, yielding a number of conclusions potentially relevant to research on the use of NBTs:

- There may be significant differences between stated and revealed consumer preferences concerning the offer of genetically modified crop products.
- Genetic engineering should serve sustainable agriculture.
- Research has not identified any specific environmental risks associated with NBTs.
- Assessment of risks should be focused on characteristics of the plants produced rather than on the breeding process.
- Field trials are important and thus need to be facilitated.
- Long-term monitoring of health effects makes sense.
- A coexistence of forms of agriculture with and without genetically modified crops is possible in Switzerland.
- The economic benefits of available genetically modified plants could be low in Switzerland.
- The calculation of the Proof of Ecological Performance should not discriminate against genetically modified plants.

Outside Switzerland, the Horizon Europe-funded project ‘GeneBEcon’ (2022–2025) will apply and further develop NBTs to improve potato production, representing an agricultural crop production system, and microalgae, representing a contained production system with micro-organisms. This project will also assess EU regulatory options for their respective economic impact and survey public and stakeholder perceptions of products obtained by new genomic techniques. The new proposal tabled by the European Commission in July 2023 aims at exempting NBTs from being subject to the EU GMO Directive (2001/18/EC) under certain conditions. In return, the EU ‘Farm to Fork’ strategy (2023–2026) supports projects that develop new “traceability strategies and detection methods derived from new genomic techniques”. These and other programmes launched in parallel will likely be relevant to Switzerland, but there is an important need for a synergistic interdisciplinary programme of research to assess the translational scope of NBTs specifically in the Swiss context. Indeed, NRP 84 will provide a chance to engage with these international efforts and advance national research questions. More complex topics, which Switzerland cannot investigate in a solo effort, may be tackled in collaboration with them.

### 2.3 The mandate of the Federal Council

Against the above background, the Swiss Federal Council mandated the Swiss National Science Foundation (SNSF), on 2 June 2023, to set up an NRP aimed at identifying and testing NBTs for plants, to develop guidelines and recommendations to accompany them, and to investigate their ethics, social acceptability and economic viability. The resulting NRP 84 ‘Plant Breeding Innovation’ will operate with an overall funding of CHF 10 million and coordinate research for a period of five years. On 22 August 2023, the Research Council of the SNSF elected members of the Steering Committee for the strategic management of the programme over its duration.

## 3 Overarching goals

NRP 84 ‘Plant Breeding Innovation’ will address three research goals:

1. To evaluate the use of NBTs to generate crop varieties with traits that increase the environmental and economic sustainability of agriculture in Switzerland;
2. To identify and examine ethical issues related to NBTs, the public and stakeholders’ attitudes to them, and the conditions for an economically viable use of their products;
3. To formulate policy recommendations for regulatory frameworks that both promote innovation in the use of NBTs and reduce biosafety and environmental risks.

The NRP aims to explore how existing and newly developed NBTs might help to address food security challenges in Switzerland in an economically viable, ethically and socially acceptable, and ecologically sustainable way. It should be relevant to numerous stakeholders, including those in academia, industry, farmers, food producers, government, and other regulatory bodies across several domains (e.g., food production, economics, communication, environment and biodiversity conservation, non-profit organisations, and advocacy groups). Whereas the previous NRP 59 considered some of these issues in the context of genetic modification of plants using undirected transgenic approaches, NRP 84 is focused on the potential of more recently developed NBTs that involve targeted mutagenesis, editing of DNA stretches, and targeted insertion of DNA constructs. Classical breeding, transgenic approaches and random mutagenesis may be considered if used to demonstrate differences between NBTs and alternative approaches. Previous research should not be repeated but built upon.

NRP 84 will fund projects that make use of NBTs to create innovative new traits to address the challenges identified above, and to assess their potential not only under lab conditions but especially as concrete case studies in the field. Such projects might involve exploration of NBT-generated traits to cope with specific biotic or abiotic stresses, or comparisons of the advantages and risks of trait exploration between NBTs and other breeding approaches. The programme will also fund projects on the ethics of innovation related to NBT, on the socio-economic conditions that could limit or encourage the development and use of NBTs for economically and ecologically sustainable purposes, as well as on the regulatory framework relevant to both the promotion of innovation and dealing with biosafety and environmental risks. Research should address plant breeding innovation in the Swiss context, but its results may also be relevant abroad.

## 4 Research areas

The programme is organised into three modules that correspond to its three overarching goals. Together, these modules will draw on expertise in several disciplines, including molecular, agronomical, environmental, legal, ethical, social, economic, and behavioural sciences. Projects in all three modules should consider opportunities that the implementation of NBTs present for mitigating against threats to biodiversity (such as through a reduced need for pesticides, herbicides, and fertilizers) as well as to real or perceived threats they might pose to biological, agricultural, or cultural values and diversity.

Projects may focus on one of the overarching goals, but research that explicitly addresses more than one goal is strongly encouraged. For example, a project might focus on the biological and technological implementation of NBTs to assess new traits in the field, but such a project would be particularly valuable if it included either interdisciplinary components or an explicit reflection on how links between modules can be envisaged. Similarly, a project with a primary focus on ethical, societal, or economic considerations of the use of NBTs is encouraged to refer to concrete breeding or agronomic case studies and/or to regulatory considerations.

### 4.1 Module 1 – Technical feasibility: evaluating the incorporation of NBT-generated plant traits into crops for economically and environmentally sustainable agriculture

Module 1 will evaluate opportunities offered by NBTs for resilient, resource-efficient, and sustainable agriculture, with evidence drawn from specific case studies. Case studies should examine the incorporation of NBT-generated traits into crops relevant to Switzerland, but research may also be relevant abroad. Practice-oriented cases might be tested in the laboratory, but studies should offer insights into the complexity of implementing NBTs in the field, with due consideration of biosafety, security, and

environmental sustainability. Field studies could be conducted in Switzerland (e.g., at Agroscope's protected site) or abroad (if more appropriate for a particular trait). Projects comparing the viability of the use of NBTs with that of alternative breeding and agronomic approaches are strongly encouraged. Studies might employ high-throughput phenotyping technologies.

Examples of questions that might be addressed by projects in Module 1 include but are not limited to:

- How can NBTs be applied to different crops in Switzerland and beyond, and how can their application be accelerated and rendered more accurate?
- How should plants that have been generated by NBTs be evaluated to measure breeding progress, time savings, gains in precision, efficiency, and environmental sustainability (e.g., compared to plants generated by traditional or transgenic breeding approaches)?
- How can NBTs be used to generate the required genetic diversity for important traits (e.g., quality, disease resistance or climate resilience)?
- What genetic properties will distinguish an NBT crop from traditionally bred or transgenic crops, and how will those properties be determined?
- What infrastructure, methods, and know-how are required to enable the efficient development, testing and deployment of NBT crops in Switzerland?
- To what extent can the use of NBTs be combined with sustainable agroecological practices to achieve more holistic sustainable solutions in agriculture?

#### **4.2 Module 2 - Ethics, society, and economics: evaluating the ethics, societal perceptions, and economic potential of NBTs**

Module 2 seeks to provide insight into the ethics, societal acceptability, and economic viability of the use of NBTs, including ways to measure and interpret these factors. Studies might investigate ethical challenges from different perspectives, ways to promote a critical and informed debate on NBTs (including discussions on risk evaluation and the cost of inaction surrounding the use of NBTs), and the socio-economic factors that could hamper or promote investment into the use of NBTs for crop development. Projects should ideally inform future decisions on policy and modes of implementation. An exploration of the extent to which new NBTs may or may not contribute to achieving the UN Sustainable Development Goals (SDGs) may be particularly relevant.

Projects in Module 2 may be pertinent to any of the actors in the value chain (e.g., agriculture, trade, policy makers, retailers, and citizen and consumer representatives). Research could explore: the state of public knowledge and debate; the baseline assumptions behind the positions taken by stakeholders; reasons for non-acceptance and drivers and conditions for acceptance; farmer, stakeholder, and consumer experience of NBTs; issues related to the precautionary principle of risk management or the risk of inaction; and the assessment of economic potential and constraint. Projects comparing the societal, ethical, and economic considerations of NBT application with those arising from other breeding approaches are encouraged.

Examples of questions that might be addressed by projects in Module 2 include but are not limited to:

- What is the public understanding and acceptance of NBTs in comparison with classical breeding or transgenic approaches, and what is the current state of the public debate on agricultural biotechnology in Switzerland?
- How should the precautionary principle be applied to the use of NBTs?
- What are the potential costs and responsibilities of missed opportunities in not using NBTs, given the pressing threats to the environment and food security?



- How can research, development, and commercial use of crops generated using NBTs be conducted in a responsible way, and what comprehensive and applicable ‘ethics of innovation’ framework could contribute to it?
- What modes of communication, education and public outreach might best promote transparency, fair transmission of information, and productive social debates on the use of NBTs?
- What reasons and external factors might influence the understanding, acceptance, or rejection of NBTs and their implementation by the different stakeholders?
- How might the market potential and competitiveness of products generated using NBTs be influenced by factors such as climate change, food safety, consumer preferences, constraints on farming practices, national and international market developments, supply chain management standards, international trade, and non-tariff barriers?
- How should the potential economic and environmental benefits of crops generated using NBTs be evaluated in comparison with those generated with alternative breeding methods?

#### **4.3 Module 3 – Regulatory considerations: evaluating the adequacy of the current regulatory framework and the need for legal innovation to enable NBT implementation**

Module 3 addresses the need for, and implementation of, regulatory mechanisms that incentivise the use of NBTs to produce crops with economic, societal, and environmental benefits, while minimising potential risks and considering the diverse interests across different stakeholders. Projects might thus evaluate the adequacy of the current or proposed regulatory frameworks in Switzerland for the use of NBTs in a way that ensures environmental sustainability and economic viability at all levels in the value chain, from crop development to consumer choice. Studies might consider regulatory frameworks for the use of NBTs, including agricultural, environmental, food, intellectual property, and international trade law. They might also consider the need for legal innovation to address possible inadequacies in a given framework and to permit adjustments based on evidence and technological advances. It would be valuable to compare current or envisaged regulatory frameworks in Switzerland with relevant examples abroad. Reference to concrete cases of NBT implementation, as considered in Module 1, are encouraged.

Examples of questions that might be addressed by projects in Module 3 include but are not limited to:

- How should crops generated using NBTs be defined in regulatory frameworks, e.g., in comparison to traditionally bred crops or crops bred through transgenesis?
- How can requirements such as product coexistence, separation of the flow of goods, product identification and traceability, and labelling requirements be adequately implemented?
- What innovations are needed in the existing regulatory frameworks to enable innovation in the use of NBTs, addressing biological and environmental risk management, protection of stakeholder rights and interests, and market access?
- How would such innovations promote Swiss research, environmental protection, food security and trade?
- How can a fair balance be struck between protection of the rights of innovators and other interests, such as those of farmers and plants breeders? Should protection be based on patents, plant breeders’ rights or other forms of intellectual property?
- What conditions are needed for stakeholders to trust the regulatory safeguards for the development and distribution of NBT products?
- To what extent does the precautionary principle, as currently applied in the regulation of agricultural biotechnology, account for the basic principles of risk management?
- How do innovative national regulations fit into the supranational legal framework regarding European and international trade law?

- What legal innovations will allow flexible responsiveness to changing realities and perceptions of risk with potential growing experience of the use of NBTs?

## 5 Expected impact, implementation, and measures of success

### 5.1 Expected impact

Given the increasing global and national concerns over food security and threats to biodiversity in the face of climate change, NRP 84 is timely and has the potential to make a substantial impact by providing a firm basis for transformative changes in the agro-environment and its relationship with society. Its potential impacts are multidimensional and include the following:

- Spur plant breeding innovation by clarifying the technological feasibility of using precision NBTs to create adapted plant varieties with desired traits at a rate that is not possible with alternative breeding approaches. Such traits include those that increase crop quality, productivity and resilience while also enabling more sustainable agricultural and cultivation systems. The impact of these new processes and products will be assessed in terms of both Swiss and global application potential.
- Contribute to food security in ways that also mitigate against some of the contributors to climate change and that promote biodiversity in general and agrobiodiversity in particular. Its expected impacts are thus related to several UN SDGs, notably: (2) Zero hunger; (3) Good health and well-being; (11) Sustainable cities and communities; (12) Sustainable production and consumption; (13) Climate action; (14) Life below water; and (15) Life on land.
- Uncover unanticipated ethical dimensions of NBT research and implementation, with potential impact on academic and public debate, policy formulation, and decision making. In particular, it will produce clear and applicable ethical guidelines for the development of NBT products (traits and plants), as well as for their regulation and diffusion, and for overall governance.
- Enrich the public debate with new scientific insights and ethical perspectives.
- Help identify factors that hinder or facilitate the fair transmission and public understanding of scientific information related to NBTs.
- Promote evidence-based public discussion on the potential environmental, societal, and economic risks and benefits of NBT products and thus expedite decision-making and policy formulation.
- Address the future development and use of new plant varieties by guiding legislation towards a novel, enabling, encouraging, fair, and protective regulatory environment; regulation shall ensure coexistence of different cultivation systems, e.g., through innovative risk-based regulatory mechanisms and labelling regimes.
- Establish Switzerland and the Swiss scientific community as a model for other countries, not only in designing NBTs, but also in clarifying the socio-economic and regulatory conditions under which the resulting products can reach markets and consumers, become societally acceptable, environmentally sustainable, and economically viable.

### 5.2 Implementation

Several stakeholder groups in Switzerland and abroad will contribute to NRP 84 and/or benefit from the impacts of its results. These include actors in the agri-food chain, including farmers, food producers and retailers; ethics and socioeconomic experts; international trade partners; policy makers and

regulators; non-governmental organisations (NGOs); and representatives of citizens, consumers, and civil society.

The Steering Committee will ensure that stakeholders are involved or consulted through appropriate means (e.g., workshops, seminars, written consultations and sounding boards) at different stages of NRP 84. Collectively, they will define the fields of action, discuss the relevance of results, and develop pathways to implementation for research in all three modules.

The success of NRP 84 will depend on ensuring timely and effective communication of its results and recommendations to relevant users, stakeholders, and policy makers, and on facilitating their further testing, application, and (where appropriate) uptake. With these points in mind, the Steering Committee will promote the following paths to implementation, although it also expects others to become evident with progress of the programme.

- Research results from all three modules will be published in open-access international journals of fundamental and/or applied sciences, social sciences, economics, and law, as appropriate for dissemination to the academic community.
- Results will also be made available in accessible form to non-science users via press releases and communications to relevant governmental departments at regional and national levels, nature conservation organisations, farmers' associations, agricultural colleges, and NGOs.
- Research achievements and their limits will be clearly identified, as will concrete needs for follow-up research to address unanswered questions.
- To the extent that useful traits generated by NBTs are developed in the programme for Swiss agriculture, avenues will be sought for further trials, as necessary, or implementation for ultimate delivery to consumers. The infrastructure for further protected field trials provided by Agroscope will continue to be available for safe field testing of NBT-generated varieties.
- Results concerning ethics, public perception, and modes of communication on NBTs will be channelled to the media and educators, and the establishment of forums for public debate will be promoted.
- Results concerning the need for innovation in the relevant regulation framework will be communicated to and discussed with legislators, both directly and via forums of public discussion and debate. Switzerland, with its well-established participatory processes in the definition and implementation of policies, is in a unique position to promote regulatory developments, if needed.
- The programme's website will be kept up to date as new knowledge is produced by research within the NRP. Stakeholders will also be invited to subscribe to a programme newsletter with biannual circulation throughout the programme to maintain and promote channels of communication and the exchange of information and ideas. Avenues will be sought to maintain the website beyond the programme's conclusion.
- The Steering Committee will seek to perpetuate the synthesis of knowledge and expertise gained through NRP 84 in a virtual interdisciplinary 'knowledge hub' linking plant breeders, agronomical and social scientists, and stakeholders. The network will involve investigators funded by the programme as well as the various associated stakeholders and researchers connected to the Swiss Plant Breeding Center (which currently promotes technology application in plant breeding programmes in Switzerland more generally).
- Links with outputs from the new National Research Programme 'Biodiversity and Ecosystem Services' (NRP 82) will also be forged during the programme and implementation of its findings.

### 5.3 Measures of success

The following list anticipates several possible measures of success for NRP 84:

- Testing of new plant varieties in the field, with conclusions reached about their viability and about agronomic practices that might improve production and environmental sustainability.
- Generation of new plant varieties, with recommendations for further research to close knowledge gaps.
- A validated protocol that is able to distinguish crops generated using NBTs from those generated by traditional breeding or transgenesis.
- Identification of positive externalities or elements of value creation based on economic analysis of the potential of new plant varieties or traits.
- Measurable improvement in understanding and discussion of plant breeding in general by stakeholders beyond the general public (including farmers, policy makers, civil society, and private food sector processors), and identification of the main narratives and drivers of acceptance of, or resistance to, the use of NBTs in particular.
- Concrete formulation of an 'ethics of innovation framework' and applicable ethical insights and guidelines, covering the domains of new plant varieties and traits.
- Detailed translatability assessment of NBTs, including parameters such as intellectual property, regulatory and ethical considerations, market potential, scalability, and risk assessment.
- Identification of realistically applicable revisions in Swiss law, governance, and regulatory systems.
- Established successful research collaborations and networks across the Swiss science community and relevant stakeholders.

## 6 Requirements for research

### 6.1 Practical significance

Both risk perception and risk communication should be covered by the programme, including consideration of the risk of action and inaction. Since ecosystem research was already covered by NRP 59, this should not be repeated. Instead, NRP 84 should focus on the innovative potential and translatability of NBTs. Further, while basic research is not excluded from the programme, emphasis should be placed on research that has practice-oriented outcomes achievable within the time frame of the programme.

### 6.2 Inter- and transdisciplinary research approach

The success of the programme will depend on the close cooperation of specialists from different disciplines, including but not limited to representatives from: plant and crop sciences (molecular biology, genetics, physiology, pathology, agronomy, breeding, agro-ecology); environmental and global change sciences; philosophy and ethics; history; science communication and public messaging; consumer psychology; socioeconomics, economics and behavioural sciences; and law, regulation and public policy. The programme is particularly keen to attract projects that include more than one of these disciplines (or other, related ones), without excluding monodisciplinary projects. Researchers are encouraged to involve representatives of stakeholders or end-users and to clarify their roles in the respective project. The NRP 84 Steering Committee will identify, in consultation with the grant holders, further avenues for synergy among them.

### 6.3 Data access, data management and open research data

Research funded by the public should be publicly accessible as far as possible and free of charge. The SNSF is committed to this goal ([Open Science \(snf.ch\)](https://www.snf.ch/en/open-science)). Open Science is the umbrella term for all efforts to promote transparency and openness in science, including through open access to publications and data and research funding based on 'DORA' (Declaration on Research Assessment) principles.

A data management plan (DMP) must be submitted for funded projects prior to their commencement. All data generated by SNSF-funded projects must be publicly accessible in 'FAIR' (Findable, Accessible, Interoperable, and Reusable) digital databases, provided there are no legal, ethical, copyright, or other constraints. Researchers must also ensure coherence and interoperability of infrastructures and services connected with their project, as stipulated by the [National Strategy and Action Plan](#).

## 7 Submission and evaluation procedure

### 7.1 General conditions

**Legal basis:** The present call document for NRP 84, the Funding Regulations of the SNSF and the General implementation regulations for the Funding Regulations provide the legal basis for NRP 84 (Link: [Funding and Implementation Regulations \(snf.ch\)](#)).

**Project duration:** Research projects conducted under NRP 84 should run for between a minimum of 36 months and a maximum of 48 months. NRP 84 will not fund the fourth year of PhD students' salaries in projects lasting under 48 months. Thus, projects lasting under 48 months and employing one or more PhD students must ensure their salaries are guaranteed for 48 months at project selection.

**Project budget:** As an indication, the requested budget for a research project should normally range between CHF 250'000 and CHF 600'000, though exceptions may be made if well justified.

**Language of proposals:** pre-and full proposals must be submitted in English.

**Number of calls:** Only one call for proposals is envisaged, but a second call may be launched if significant thematic gaps are identified.

**Project start:** To allow for optimal coordination and conclusion of research work within the programme's timelines (see chapter 8), approved projects must start no later than four months after the approval date, *i.e.* between January and April 2025. If the research project includes field trials with NBT plants, separate authorisation by the FOEN is required. This usually takes several months for preparation and approval and thus has to be applied for as early as possible. Project proposals must include in their project plan how they cover this preparation time and the risks of failure and delay of getting such authorisation. Please address any questions regarding the planning of the authorisation process to [contact.releases@bafu.admin.ch](mailto:contact.releases@bafu.admin.ch). Additional information can be found here: [Experimental releases of genetically modified organisms \(GMOs\)](#).

**Cross-project synergy:** given the nature of NRPs, active participation in NRP-specific activities is expected from research team members throughout the research phase and the initial synthesis phase of NRP 84.

**Cooperation with practice actors** is encouraged, provided it generates added value and the project does not serve a commercial purpose. Within the proposal, practice actors are project partners whose requested funding share may not exceed 20% of the project's total budget. Project partners may contribute additional funding from other sources.

**Cross-border research projects** are encouraged if the competence of researchers from abroad is essential for the project, but researchers abroad may not act as the main applicant or main contact person for the SNSF. The budget for researchers abroad may not exceed 30% of the project's total budget. Norms and salary rates for researchers abroad will be applied *mutatis mutandis*, with the SNSF maximum rates applied as the upper limit. Before submitting a proposal with a cross-border component, please contact the programme managers of NRP 84.

## 7.2 Submission procedure

Submission and selection of proposals will follow a two-stage process. Following the evaluation of pre-proposals, short-listed applicants will be invited to submit a more detailed full proposal.

**Online submission via mySNF:** Pre- and full proposals must be submitted online via the mySNF platform ([www.mysnf.ch](http://www.mysnf.ch)). Applicants need to register as mySNF users before they can submit a proposal. User accounts obtained in the past remain valid and provide access. It is advisable to register new user accounts well before pre-proposal submission.

### 7.2.1 Details for pre-proposals

**Submission deadline:**

The deadline for submitting pre-proposals is 14.03.2024, 17:00 CET.

**Content:**

In addition to the data that is to be entered directly in mySNF, the following documents need to be uploaded:

- **Research plan** (in PDF format): Applicants must use the template provided and conform to instructions provided on the mySNF platform under 'information/documents'. The pre-proposal research plan must not exceed six pages.
- **CV** (one PDF file per applicant): Applicants must compile their CV on the SNSF Portal and subsequently upload a PDF to mySNF in the data container 'CV and major achievements'. Information can be found on the [CV website](#) and on the [SNSF Portal](#).
- Supplementary documents are not allowed at this stage of the evaluation process.

### 7.2.2 Details for full proposals

**Submission deadline:**

The deadline for submitting full proposals is 02.09.2024, 17:00 CET.

**Content:**

In addition to the data that is to be entered directly in mySNF, the following documents need to be uploaded:

- **Research plan** (in PDF format): Applicants must use the template provided and conform to instructions provided on the mySNF platform under 'information/documents'. The research plan must not exceed 20 pages.
- **CV** (one PDF per applicant): Applicants must compile their CV on the SNSF Portal and subsequently upload a PDF to mySNF in the data container 'CV and major achievements'. Information can be found on the [CV website](#) and on the [SNSF Portal](#).
- **Supplementary documents**: Support letters and letters confirming cooperation or co-financing must be uploaded on mySNF. Ethical approval, if needed, must be submitted at the latest before requesting the first funding instalment.

### 7.3 Evaluation procedure

The Secretariat of the SNSF will check whether the formal requirements are met before forwarding the proposal for scientific evaluation (*cf.* chapter 2 of the Funding Regulations of the SNSF). Pre- and full proposals that do not meet the formal requirements will not be considered.

Pre-proposals will be evaluated by the Steering Committee and appointed ad hoc experts. The Steering Committee takes the final decision.

The Steering Committee will invite the applicants of short-listed pre-proposals to submit a full proposal. In the invitation, the Steering Committee may make recommendations or stipulate conditions for the full proposal. Applicants not invited to submit a full proposal will be informed in writing.

Full proposals will be externally reviewed. The Steering Committee may opt to include an additional step in the form of interviews of the applicants at the evaluation meeting. Based on the expert reviews and, if applicable, on the interviews, the Steering Committee will assess the full proposals and propose their approval or rejection to the National Research Council. Overlapping research questions addressed by more than one project can form the basis of the rejection of full proposals.

### 7.4 Evaluation criteria

Eligible pre- and full proposals will be evaluated on the basis of the following criteria:

**Compliance with the aims of NRP 84:** The coherence of the programme is an important aspect to be considered during selection of the proposals. Pre- and full proposals must correspond to the programme's aims specified in this call and must fall within the overall framework of the programme.

**Scientific quality:** Pre- and full proposals must meet high standards in relation to scientific quality, scientific relevance, topicality, originality, and suitability of methods and feasibility. They must exhibit an innovative component, must take account completed or ongoing research projects in the same field, and should be achievable within the timeframe of the programme. Projects in Module 1 will additionally be evaluated in terms of the applicability of the innovations. Projects in Modules 2 and 3 will additionally be evaluated in terms of the applicability of their outputs (*e.g.*, ethical frameworks, teaching and communication insights, and legal guidelines).

**Inter- and transdisciplinarity:** In projects with research questions that involve various disciplines or require approaches that overstep the boundaries between science and practice, team constellations, interactions between the actors, methodology and project management must be set up accordingly.



**Application, implementation, and relevance to practice:** The potential for practical application and the implementation of results is a key element of NRPs. Projects must have clear practical relevance.

**Scientific qualifications of the researchers:** applicants must have a proven scientific track record in the field of the proposal and the ability to carry out the research project. Adequate personnel resources and a suitable infrastructure must be secured for the project.

**Inclusiveness and diversity:** Research should reflect requirements for attention to inclusiveness and diversity (e.g., priorities of all relevant national and international stakeholders) and to vulnerable groups (e.g., low-income groups or underprivileged trading partners or countries).

**Response to comments:** The Steering Committee may address comments, suggestions or recommendations to the research teams when inviting them to submit a full proposal. The account taken of this feedback will be considered in the assessment of full proposals.

## 8 Budget and schedule

### Budget

Module 1 - 'Feasibility'	CHF 6.0 million	ca. 8 projects
Module 2 - 'Ethics, society, and economics'	CHF 1.5 million	ca. 5 projects
Module 3 - 'Regulatory considerations'	CHF 1.5 million	ca. 5 projects
Knowledge and technology transfer, programme synthesis	CHF 0.7 million	
Scientific evaluation and support, administration	CHF 0.3 million	
<b>Total budget</b>	<b>CHF 10.0 million</b>	

### Schedule

Publication of the call for pre-proposals	12 December 2023
Submission pre-proposals	14 March 2024
Decision on pre-proposals	Early June 2024
Submission full proposals	2 September 2024
Final decision on full proposals	December 2024
Start of research	January to April 2025
End of research	June 2030
Programme closure with publication of programme synthesis and final reporting	Early 2031



## 9 Organisation and Actors

### Steering committee

- John Pannell, Professor of Plant Evolution, Department of Ecology and Evolution, University of Lausanne, Switzerland (President)
- Philipp Aerni, Professor of Sustainability and Impact Entrepreneurship, School of Management, University of Applied Sciences and Arts of Western Switzerland
- Christine Clavien, Professor of Ethics, Institute of Ethics, History and the Humanities, University of Geneva, Switzerland
- Simone Dietrich, Professor in Political Science and International Relations, Geneva School of Social Sciences, University of Geneva, Switzerland
- Jane Langdale, Professor of Plant Development, Department of Biology, University of Oxford, United Kingdom
- Laurence Moreau, Research Director, Quantitative Genetics and Evolution, Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE), France
- Roland Norer, Professor of Public and Rural Law, Faculty of Law, University of Lucerne, Switzerland
- Roland Peter, Head of Research Division Plant Breeding, Agroscope, Switzerland
- Wim Verbeke, Professor of Agro-food Marketing and Consumer Behaviour, Department of Agricultural Economics, Ghent University, Belgium
- Bettina Ernst, Biotech entrepreneur (Innovation expert), Preclin Biosystems, Switzerland

### Representatives of the Federal Government

- Bettina Hitzfeld, Head of Division Soil and Biotechnology, Federal Office for the Environment FOEN
- Teresa Koller, Department Sustainable Plant Protection and Varieties, Federal Office for Agriculture FOAG
- Patrizia Le Donne, Division Knowledge Foundation, Federal Food Safety and Veterinary Office FSVO

### SNSF Research Council Delegate

- Mira Burri, Professor of International Economic and Internet Law, Faculty of Law, University of Lucerne, Switzerland

### Head of Knowledge Transfer

- N.N.

### Programme Managers

- Martin Christen, Swiss National Science Foundation, Bern, Switzerland
- Marjory Hunt, Swiss National Science Foundation, Bern, Switzerland

## 10 Contacts

For questions regarding the submission of pre-proposals and full proposals, please contact the programme managers Martin Christen and Marjory Hunt, [nfp84@snf.ch](mailto:nfp84@snf.ch) or +41 31 308 22 22.

For questions concerning salaries and eligible costs, please contact the Head of Finance, Roman Sollberger: [roman.sollberger@snf.ch](mailto:roman.sollberger@snf.ch) or +41 31 308 22 22.

For technical help with mySNF and electronic submissions, please access the SNSF Support Portal: [snf.ch.atlassian.net/servicedesk](https://snf.ch.atlassian.net/servicedesk)

Hotline: Tel. +41 31 308 22 00 (Deutsch/Français/English)

NFP Homepage: [www.nfp84.ch](http://www.nfp84.ch)

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