

6 October 2020

Invitation to Submit Study Drafts: Analyzing the “Value of SNSF-funded research”

1. Context

The Swiss National Science Foundation (SNSF) supports scientific research in all academic disciplines. At the end of 2019, the SNSF was funding 5,750 projects involving 18,900 researchers, which makes it the leading Swiss institution for promoting scientific research.

Next to enabling researchers through funding, the SNSF strives to support the spread of knowledge in society and demonstrate the value of research. Thus, an understanding of how research generates effects within and beyond the academy is key to the SNSF’s activities.

2. Background

Previous analyses at SNSF primarily focused on individual funding schemes, for example by evaluating the impact of specific National Research Programmes. Yet, a general view on the value the SNSF adds through its funding is needed. To the SNSF, the concept of value is broad. It encompasses the effects of knowledge creation in academia as well as business, society, environment and culture. The SNSF decided to empirically analyse the effects its activities have on research, economy and society in all of Switzerland and beyond. To do so, the SNSF considers it most useful to undertake several small-scale studies capturing different aspects of the concept of value and value creation through its research funding, rather than one large study.

SNSF defined a set of principles guiding its analysis of the value of research:

- Activities regarding the value of research support the SNSF in achieving its strategic goals and improve the quality of SNSF’s services.
- SNSF considers the diversity of research when conducting analyses and developing concepts to measure the value of research.
- SNSF supports the development of methods to improve the understanding of how research and public research funding create value. These insights are incorporated into its internal processes.
- SNSF supports and acknowledges the activities of researchers devoted to increase the value of their research, especially beyond academia.
- SNSF promotes the development of a comprehensive understanding of the value of research.

Recently the SNSF launched different projects that primarily focus on a quantitative assessment of value and look at career effects and scientific productivity:

- **Career tracker cohorts:** A longitudinal panel study with yearly cohorts of applicants to the SNSF’s career funding schemes. The main goal is to gain a better understanding of the career paths of applicants to post-doctoral SNSF career funding schemes as well as of the medium and long-term impact of the career funding schemes of the SNSF.

- **Quantitative analysis:** Assessing effects of SNSF funding on researchers' productivity via various metrics (e.g. publication and citation counts, patents, referencing in policy documents, altmetrics). Groups of researchers who successfully applied for SNSF funding are compared to groups who applied but did not receive a grant (propensity score matching).

To complement these projects, the SNSF wants to conduct additional studies that emphasize the following aspects:

- Effects of research and research funding beyond the scientific community, in business, society, the environment and culture.
- Mechanisms and processes of value creation through research and research funding

As these aspects touch on the dynamics and interactions of research with society, business and other dimensions, we see qualitative or mixed-methods approaches as promising methods.

3. Key objectives

Value assessment has different dimensions that relate to different goals. They can be described as the “4 A” of value assessment: Advocacy (make the case for research investments and funding), analysis (understand how science works and how to shape it), accountability (ensure accountability to taxpayers, donors and society) and allocation (allocate funds based on value of research).¹

The studies conducted within this invitation should primarily focus on the dimension of accountability. They should provide empirical evidence on different pathways of value creation through research and research funding as provided by SNSF. A secondary objective is to use obtained results for advocacy activities for research and public research funding.

4. Topics for 2021

Through internal discussions and a workshop with experts, the SNSF defined two broad topics for analysis, which are described below and demarcated by exemplary research questions.

Since the impact of the SNSF's activities is closely linked to the value of the research it funds, both topics require a critical engagement with the notion of “value of research”. The SNSF is particularly interested in approaches that have the potential to provide detailed insights into processes of knowledge creation and valuation. In this context, the SNSF welcomes research designs that include the perspectives of researchers and other stakeholders. Studies must build on a broad concept of value, considering value creation within academia and beyond, in business, society, the environment or culture.

The SNSF also welcomes research designs that have the potential to provide starting points for the future development of SNSF activities to foster the value of funded research.

Question 1: Minimal constraints on researchers

A majority of the SNSF's funding is devoted to responsive-mode (or bottom-up) funding formats.

Within this funding, we aim at a careful balance between freedom for researchers and a need for monitoring and accountability. Applications are not limited to predefined topics or goals and

¹ Adapted from: Guthrie, Susan, Watu Wamae, Stephanie Diepeveen, Steven Wooding, and Jonathan Grant, *Measuring research: A guide to research evaluation frameworks and tools*. Santa Monica, CA: RAND Corporation, 2013. <https://www.rand.org/pubs/monographs/MG1217.html>

researchers face limited, primarily organisational requirements during their projects. This allows researchers to adapt research projects if they see a potential or need for it.

- How does the balance between constraints and freedom struck by the SNSF affect researchers and research in Switzerland?
 - During the whole research process, e.g. from drafting applications to research group composition to publication of results and outreach activities
 - As regarding the dynamic process of value creation within academia and beyond, in business, society, environment and culture
 - As perceived by funded researchers and in light of the fact that they generally rely on different sources of funding at the same time

Question 2: National and international exchange of knowledge

Knowledge gain, resulting from research and especially basic research, is a product of constant and dynamic exchange between researchers and other stakeholders. It is also iterative and incremental, building on previous or parallel contributions. To access, utilize and further develop this knowledge and to create benefits from it, a vast array of formal and informal relationships is needed: Between researchers locally, in all of Switzerland and internationally. But also towards and between actors in business, society, environment and culture.

- To what extent and how do SNSF funded researchers facilitate access to and development of new knowledge through knowledge exchange?
 - Between researchers of different institutions and/or countries
 - Between the domain of research and the domains of business, society, environment and culture
- To what extent and how is knowledge obtained by exchange and encouraged through SNSF funding taken up, utilized and further developed in Swiss academia, business, society, environment or culture? Which kinds of benefits can be observed?

These questions are broad. Studies should deliver insights into one or both of the questions, but may further specify or develop these framing questions. Proposed studies are expected to draw on state of the art methodology, addressing issues such as time-lag and attribution, building on a broad concept of value and avoiding one-size-fits-all measurements.

5. Requirements, resources and budget

The invitation to submit a proposal to answer the research questions outlined in this document is directed at the experts participating in the workshop “Value of Research” at the SNSF on March 20, 2020. The experts are invited to share the invitation with researchers within their institutions and personal networks that might be interested to submit a proposal with them. The SNSF supports collaboration of researchers and joint proposals – also between workshop participants – are encouraged, but not a requirement.

Conflicts of interest

In order to avoid conflicts of interests, applicants must not be members of an SNSF body (e.g. research council, foundation council, equality commission...). Contractors will be asked to sign a declaration regarding COI.

Formal requirements of proposal

Proposals must be submitted in English and must contain the following information and documents:

- Specific research question(s) the study aims at answering;
- Approaches and methods;
- Practicalities of study execution and data collection to be considered;
- Data and resources required from SNSF;
- A timeline and budget;
- Description of project team, references and past experience with similar projects and/or research questions.

Expected results

The SNSF expects detailed reports of the results and the data in English and/or German/French.

Use of SNSF resources and data

The SNSF will provide access to internal and external networks and contacts (e.g. contacts at universities, to researchers funded by SNSF). In addition, the SNSF can provide internal data for analysis, in accordance with data protection regulations. Contractors will be asked to sign a confidentiality agreement before getting access to internal data.

Applicants are asked to specify support and/or data requirements in their proposals. Data generated during the studies should be shared as openly as possible and in line with SNF ORD requirements².

Intellectual property

The rights to the research results and final reports delivered in the course of the mandates are owned by the SNSF.

Budget and number of projects

Total budget for projects is CHF 100'000 (incl. VAT). The SNSF aims at funding up to two different projects that cover a wide range of the questions outlined above.

Evaluation criteria and decision process

The SNSF will evaluate the submitted proposals based on the principles outlined on page 1 and the following criteria:

- Alignment with research questions outlined above
- Focus and plausibility of proposed methodology
- Ability to complement other SNSF studies on the topic of value of research
- Expected usefulness of results for internal and external communication
- Experience of the team with comparable projects and research questions
- Requested budget and cost efficiency

A team of SNSF staff will evaluate the proposals, a final decision is made by the SNSF's directorate and president of the research council.

Timetable

Submission of study drafts:	30 November 2020
Selection of studies to conduct:	January 2021

² For details, please visit the SNSF website: www.snf.ch > Research in Focus > Open Science

Finalization and contract:	31 January of 2021
Submission of final report and results:	1 December 2021

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Annex: SNSF working paper “Approaching and analysing the value of research”

Annex

Approaching and analysing the value of research. Recommendations from the Division 1 of the SNSF Research Council

Context

To 'better communicate the value of research' is part of the SNSF multi-annual year plan 2021-2024. In this context the SNSF has decided to be 'active in three interconnecting areas: funding, analysis and communication' (SNSF Strategy Group, March 2020). It has decided on three specific measures:

1. An analysis of the effects of funding on researchers' productivity (in collaboration with Prof. Hanna Hottenrott, TU Munich)
2. A cohort study to track the career trajectory of SNSF grantees (in collaboration with Prof. Ben Jann, University of Bern)
3. A qualitative or mixed-methods approach to understand innovation processes and impacts of research in their diversity.

This document is related to the third measure.

It is based on two workshops. The first was organised by the SNSF Strategy Group on March the 20th 2020. The aim of this workshop was to discuss possible theoretical and methodological frameworks, identify research questions relevant for the SNSF and explore options to answer them empirically. Five external experts were invited to the workshop.

A second workshop, which had been planned before the Strategy Group workshop, was organised by Division 1 on the 5th of May 2020. It took place as part of a regular Division 1 meeting. The aim of this workshop was to gain inputs from SSH specialists in the field, to discuss these inputs with members of the Division 1 of the Research Council and to elaborate recommendations for the SNSF Presiding Board. Three external experts were invited to contribute.

The two workshops were coordinated and the lessons learned from them are quite converging and complementary.

Prior to this workshop, the issue of the value or impact of research had been discussed twice in meetings of our Division. The first time in May 2018.

Value of research: a definition

Based on previous discussions, notably with the SNSF Advisory Board in September 2019, the Strategy Group has opted for the term 'value of research', rather than 'impact of research'.

Drawing on international standards, it defines the value of research broadly as follows (SNSF Strategy Group, March 2020):

"The value of research and public research funding encompasses all the effects that it has on business, society, the environment and culture, even beyond the scientific community."

Why these recommendations from Division 1?

Division 1 considers measures for analysing and communicating the value of research as an opportunity to do justice to the diversity of scientific research in Switzerland, beyond standard

bibliometric assessments and understandings. Many research-related activities in the SSH, but also in other groups of disciplines, bring value to scientific research through engagements with society at large. However, this value is not captured by bibliometric assessments and rarely honoured by scientific prizes and awards. This is why Science Europe recommends in a recent report to look beyond these indicators to assess ‘societal impact’ (see: <https://www.nature.com/articles/d41586-020-02294-5> and <https://www.scienceeurope.org/our-priorities/research-assessment/research-assessment-processes>).

The two SNSF workshops and the discussions within Division 1 also show that there is a series of possible pitfalls. Most of them are well-known. Impact-centred funding strategies and evaluation procedures:

- may foster an instrumental understanding of research determined by political steering and by strictly economic objectives;
- work as disincentives for basic research;
- increase the administrative workload to the detriment of actual research activities;
- submit scholars to a constant communication imperative conducive to hyperbolic narratives of their achievements.

There are good reasons to think that the SNSF is well equipped to avoid these pitfalls: the Presiding Board has clearly supported in its 2021-2024 plan the continuation of a funding strategy giving priority to bottom-up research funding; the Strategy Group proposes to work with a broad definition of the **value of research** (see above), rather than use the rhetoric of impact which in the past twenty years has tended to focus mostly on patents and economic impact. The economic impact of research is of course important and must be made visible, but it is only one aspect of the value of research.

In this context, the Division 1 of the research council considered it important to be pro-active rather than reactive and to provide a few recommendations for future action regarding the value of research for society at the SNSF. To avoid a lengthy document rehearsing the literature in the domain and the lessons learnt from the workshops, we have grouped these recommendations in two simple categories: ‘what we should avoid’, ‘what we should develop’, inserting references only where it seemed necessary. As the aims of the SNSF still need to be clarified (see ‘what we should develop’), this document does not differentiate between *ex ante* and *ex post* evaluations and sets out principles, rather than going into detailed assessment methods.

What we should avoid

1. *Framing our action at SNSF on this topic in terms of impact.* ‘Impact’, for which there is no consensual definition, has become the shorthand term to describe the impact of research on society (including here the economy, culture, politics and social practices), i.e. beyond academia. ‘Impact’ supposes a change of society or an influence on society (Penfield, Baker, Scoble, & Wykes, 2014; Reale et al., 2018). Three main problems are associated with the ‘impact approach’: attribution, temporality and effects on reporting and communication. Attributing change to a specific study is very rarely possible, changes may come many years or even decades after the study was published, and the reporting of impact leads to the above-mentioned communication pressure and problematic ‘heroic narratives’. There was a large consensus on these points in the interventions during both SNSF workshops where ‘value’, ‘outcome’ or ‘merit’ were proposed as better alternatives.

2. *Requiring all scholars to produce research which has value beyond academia and report on it.* There are different types of research and researcher profiles (see for instance Tinkler, 2015, p. 48). Therefore, the aim should not be to require all SNSF applicants to demonstrate the value of their research beyond academia but to suggest procedures for scholars for whom this extra-academic value is a relevant part of their research. This point was also shared by experts in both workshops.
3. *Framing the evaluation and reporting of value as concerning single projects and individual researchers.* Focusing on *single projects* and their ‘pathways to impact’ maintains an unrealistic vision of how research may bring change in society. This happens only in exceptional cases, the rule being that this change happens in the long term as the result of a series of studies. As speakers pointed out in the workshops: research is a collective activity. This is obvious in research conducted by teams but also by single scholars, as research is always incremental, building on previous or parallel scientific contributions. Asking researchers to report on the value of their research for society as *single scholars* tends to erase this collaborative, incremental dimension of research and encourage self-promotion instead of more modest and realistic reporting. As Sarah Morton (in workshop 1) insisted this reporting should not be done by researchers themselves but mostly by the HEI administrations (such as ‘mobilisation officers’).
4. *Using one-size-fits-all measurements of the social value of research.* Given the diversity of disciplinary research practices and the diversity of values created by research (from economic to cultural), it is impossible to reduce the value of research to single indicators or sets of indicators. As Paul Benneworth noted in workshop 2, Sweden and the Netherlands tried to identify such indicators but did not find satisfactory solutions. This does not mean that no quantitative indicator can be used (see ‘what we should develop’).

What we should develop

1. *A clarification of our aims.* As Steven Wooding pointed out (in workshop 1), there can be four different targets for an evaluation of the value of research at the SNSF: Analysis, Advocacy, Accountability, Allocation. Analysis for the sake of accountability and advocacy seems to be the main aim of the SNSF, while allocation, for instance in a UK and REF logic, doesn’t seem to be relevant for us. However a clearer prioritization and communication of our aims regarding the value of research is necessary for future action. In this respect, Division 1 recommends that SNSF develops innovative methods related to accountability and following the principles set out in the points 2-4 below.
2. *A focus on processes of research valorisation.* Jordi Molas Gallart (expert in workshop 1) and Michael Ochsner (expert in workshop 2) have argued in their publications for a focus on the research *process* (Molas-Gallart & Tang, 2011) and for initiatives to valorise the research (Galleron, Ochsner, Spaapen, & Williams, 2017) rather than the measurement of ‘impact’. In concrete terms, as Paul Benneworth put it (workshop 2): evaluation of the value of research should be based on an “effort obligation” not “outcome obligation” – did researchers try hard enough? These efforts can be narrated by grantees in reporting forms but to some extent also measured by the number of knowledge transfer activities as reported in the SNSF P3 database. The SNSF can also build here on the study of Productive Interactions developed within the Dutch project *Evaluating Research in Context* (Spaapen & Van Drooge, 2011), which has notably been used by Canada’s SSH Research Council, to capture exchanges between researchers and stakeholders within projects or programmes. The SNSF can also draw on related tools such as the actor network analysis developed within the swissuniversities programme on ‘the performance

of research in the SSH' (swissuniversities, 2018), and other methods of network analysis (Oancea, Florez Petour, & Atkinson, 2017), including work in science studies for a better understanding of how academic disciplines have changed.

3. *A bottom-up approach.* The stakeholders, target audiences and types of value creation (social change, political decision-making, cultural understanding, economic benefits) vary from researcher to researcher and project to project. Therefore, researchers should be empowered to explain the value they seek to create (or managed to create) in their own terms. This requires a balance between a necessary standardisation and a necessary flexibility in reporting procedures. The SNSF can draw here on the toolkit developed by Joanna Sofaer (expert in workshop 2) together with Tony Whyton for the Humanities in the European Research Area (HERA) network (http://heranet.info/assets/uploads/2019/09/Toolkits_13Dec2019.html). In that perspective, asking researchers to keep simple 'impact files' (Tinkler, 2015, pp. 248-252) can be a useful and not overly bureaucratic reporting tool. Important here is to make different tools available to account for different value creation aims and to encourage the description of collaboration and efforts for value-creation beyond single projects.
4. *Possibilities to involve stakeholders in research projects.* Experts in both workshops argued that the valorisation of research is facilitated in projects involving non-academic partners. The collaborative design of research projects and the involvement of stakeholders at various stages of the research process is of course a means to facilitate the communication and influence of research results. The development of this aspect of 'collaborative research' is part of SNSF's 2021-2024 plan. Simple measures regarding SNSF grant regulations, changes in the 'use-oriented basic research' category and a communication strategy could be means to better foster these value-creating collaborations. This point will be further discussed in a workshop organised by Division 1 in its October 2020 meeting.

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