

## **National Research Programme**

### **“Baukultur. For an ecological and social transition of the built environment” (NRP 81)**

Call document

### **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.

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## Summary

Common practices for dealing with the built and unbuilt environment are currently facing crucial challenges. Especially when considered in the frame of the Swiss Landscape Concept, the need for a social and ecological transition requires a radical change in the current approach to urbanisation and the building system. Both are closely linked not only to construction, mobility and energy infrastructures, but also to the consumption of environmental resources and landscape. The major challenges of our time are how to conserve the remaining unbuilt land resources and how to adapt the existing building stock to energy and resource scarcity, further environmental crises, new and changing lifestyles and social relations. This raises the question of how we can and should maintain and transform the built environment in a way that ensures a high quality of life for future generations, while halting overuse and environmental degradation. The concept of "*Baukultur*", as defined in the Davos Declaration and *Baukultur* Policy since 2018, is key to successful future adaptive development.

NRP 81 "Baukultur. For a Social and Ecological Transition of the Built Environment" aims to improve our understanding of processes in the built environment and their evolution through interdisciplinary and transdisciplinary collaboration. More specifically, the programme aims (i) to link *Baukultur* to social and ecological transition; (ii) to promote the use of materials and resources and standards, taking into account sufficiency, traceability and responsibility; (iii) to reconnect *Baukultur* with society; (iv) to reaffirm the specificity of each place (built environment, site); (v) to address traditional and new aesthetics, cultural techniques and values of the built environment; (vi) to adapt and define the necessary legal framework and certification processes; (vii) to promote research on responsible investment methods; (viii) to establish new and strengthen existing collaborations with institutions and civil society.

NRP 81 has a total budget of CHF 10.6 million and will conduct research for a duration of 5 years.

# 1 Introduction

## 1.1 Towards an ecological and social transition

Our current approach to maintaining and developing our built environment (buildings, open spaces and infrastructure) - in Switzerland as well as in other parts of Europe and the world - appears inadequate in the face of critical challenges. The building sector is a major emitter of CO<sub>2</sub>, and in view of international climate agreements, CO<sub>2</sub> emissions must be drastically reduced by 2030 and 2050 (according to the Swiss Federal Climate Strategy 2050). At the same time, megatrends such as urbanisation, demographic change, changes in working and living patterns, digitalisation and (de)globalisation are accelerating the transformation of social and economic structures. In the coming decades, construction, urban development and infrastructure renewal will require huge investments amounting to 15-20% of global output. In the face of simultaneous ecological constraints, these investments are bound to stimulate, but also to transform, construction trades and sectors. This means that expectations of the built environment are constantly rising, while resources and space are becoming increasingly scarce. This calls for ecologically sustainable adaptation, i.e. the protection of our environment, landscapes, and resources.

The social and ecological transition requires a radical change in the current approach to urbanisation and construction. Both are closely linked not only to infrastructure issues such as construction, mobility and energy infrastructure, but also to the consumption of environmental resources (water, subsoil, soil, biological resources and land) and on the quality of landscapes as defined in the [Swiss Landscape Concept](#). Agricultural, rural and urban landscapes are undergoing profound changes, with relevant impacts on the environment, on physical and mental health, and on the social status and well-being of affected populations (social, spatial and environmental justice). The major challenges of our time are how to conserve the remaining undeveloped land resources and how to adapt the existing building stock to energy and resource scarcity, to further environmental crises (climate, biodiversity, waste, health), to new and changing lifestyles and social relations.

At the same time, the built environment is an asset of immense value that must be cherished and preserved as a collective heritage. It is vital that action is taken to drastically reduce greenhouse gas emissions and bring resource consumption to sustainable levels. This raises the question of how we can and should transform the built environment to ensure a high quality of life for future generations, while halting the overuse and degradation of the environment. The concept of "*Baukultur*", as defined in the Davos Declaration and *Baukultur* Policy since 2018 and 2020, is key to successful future adaptive development.

## 1.2 The mandate of the Federal Council

The urgent need to address the built environment as a social, cultural, economic and environmental asset has recently been recognised and has led to action plans by Switzerland and its European neighbours. The basis of the proposal for a National Research Programme on "*Baukultur* as added value" was Switzerland's "[Baukultur policy](#)", approved in 2020 by the Federal Council, which calls for inventive approaches to the transformation of living environments and building stock, as well as to new construction.

In June 2022, the Secretariat for Education, Research and Innovation (SERI) mandated the Swiss National Science Foundation (SNSF) to assess the feasibility of the above proposal and, on 29 November 2022, instructed the SNSF to develop a programme concept on the topic of "*Baukultur* as added value" that would define the objectives and the main research questions to be addressed.

Based on this programme concept, the Federal Council decided on 2 June 2023 to launch NRP 81 "Future *Baukultur*". The members of the Steering Committee were elected by the National Research Council of the SNSF between May and September 2023. The Steering Committee developed this call for proposals and is responsible for the strategic management of the programme. The call was approved by the National Research Council on 31 October and by the SERI on 28 November 2023. NRP 81 has a budget of CHF 10.6 million and will conduct research for a period of five years.

The stated objective of this programme is to understand and identify the processes required to plan, establish, and maintain a high-quality built environment in a changing climate and to investigate the processes required for such an environment and landscapes to contribute to the creation of a sustainable society, promote social equity and cohesion and improve quality of life.

### 1.3 National and international research and policy environment

The term "*Baukultur*" has become widely used in recent years to describe the diverse interests and concerns related to the built environment, including the achievement of the United Nations Sustainable Development Goals (SDGs). However, it has its roots in a long-standing discourse on the built environment and its integration with social, ecological and cultural values. *Baukultur* is about the culture of the builder, the owner or sponsor and, ultimately, the whole "building system", which includes the countless and diverse actors destined to be involved in the building process at one stage or another. Even more importantly, *Baukultur* concerns the relationship that society as a whole has with its built environment, the way in which it is used and inhabited, which implies a moral, aesthetic and psychological dimension, and which also refers, in an even more fundamental way, to human relationships with space and time. In this respect, *Baukultur* is at the heart of our relationship with the world and, as such, one of the essential conditions for its transformation towards sustainability.

On the initiative of Switzerland, the concept of *Baukultur* was politically and strategically anchored internationally in the Davos Declaration, which was ratified by European culture ministers in January 2018. At the follow-up conference hosted by Switzerland in Davos in January 2023, the [Davos Baukultur Alliance](#) was founded as a permanent platform for exchange between ministries, business and civil society in Europe and beyond. Members commit to the goals and principles of the Davos Declaration and the "Davos *Baukultur* Quality System" and seek to implement them in their policies and activities. It is chaired by Switzerland for the first five years. The "[Davos Baukultur Quality System](#)" comprises eight criteria for defining and assessing the *Baukultur* quality: "governance", "functionality", "environment", "economy", "diversity", "context", "sense of place" and "beauty".

NRP 81 uses the term "*Baukultur*" in accordance with the definition of High-Quality *Baukultur* provided by the Davos Declaration and specified in the "[Davos Baukultur Quality System](#)". In line with this, the programme design of this NRP will take appropriate account of horizontal issues and challenges such as the loss of quality in the built environment and cultural and morphological specificity, climate change, loss of biodiversity and landscape quality, distraction of heritage, depletion of resources, digitalisation, economic, social and societal processes as drivers of change in *Baukultur*. In order to cover these different aspects in a coherent way, the term "*Baukultur*" remains unchanged in the English version of the programme title and the call document.

At the international level, the [New European Bauhaus \(NEB\)](#) is another initiative that links the set of policies included in the [European Green Deal](#) to our built spaces and experiences. Recently, the European Commission has proposed a new Horizon Mission to strengthen research on NEB themes. However, academic research on *Baukultur* remains a relatively young field.

In parallel, the SNSF is launching a National Research Programme on "Promoting Biodiversity and Sustainable Ecosystem Services for Switzerland" (NRP 82). The two programmes complement each other in addressing open space in the built environment. The Steering Committee monitors relevant, thematically related research projects and ensures appropriate thematic coordination.

#### 1.4 Knowledge gaps and identified challenges

According to the Davos Declaration, "High-quality *Baukultur* refers first to a place of any scale or configuration with superior quality, second to the high quality of the processes creating *Baukultur* and third to the excellent capabilities and competencies of all those involved in any transformation of the place" (p. 4, [Eight criteria for a high-quality \*Baukultur\*](#)). In this sense, *Baukultur* requires knowledge and research into the conditions of specific places and economic systems, the crafts and techniques involved, and the underlying artistic intentions. *Baukultur* implies the mutual authorship of academics, stakeholders and civic societies. It is therefore an inherently inter- and transdisciplinary endeavour. The urgent and complex societal challenges of our time require fundamentally innovative forms of collaboration across institutional, disciplinary and civil society boundaries in order to accelerate collaborative knowledge production, help identify priorities, foster the emergence of new skills and jobs, shared/unshared challenges, responses, learning potentials, and build a knowledge base and network where practitioners and communities can become aware of alternative pathways and perspectives.

Such an approach brings a new cultural and value-based perspective to human action on the built environment, and requires that research be directed towards a comprehensive and holistic study, development and discussion of *Baukultur*. In establishing a framework for determining the quality of the built environment, it is important to identify the relevant factors and relevant actors, as well as possible conflicting objectives. By assessing these conflicts and offering new solutions, this NRP - through a plurality of approaches (scientific, design-oriented, artistic and craft) - can make a relevant contribution to making Swiss building practices compatible with the UN Sustainable Development Goals (SDG) and the objectives formulated in the Swiss *Baukultur* Policy.

There are still gaps between professionals and non-professionals, between understanding and acting with the *Baukultur* concept, between the ideas of experts and lay people, considering the significant correlation with social background, education etc. Furthermore, policymaking practice is often unaware of the more nuanced conceptions, objectives, interpretations and explorations of the topic *Baukultur* in academic discourse. Thus, in line with the Davos Alliance, defining *Baukultur* as a common good needs to be shared by the public sector and society at large (including the private sector). This can lay the foundation for a set of values from which many can benefit. Between political authorities, civil society, professionals and academic institutions, there is a great need for information on all sides. Higher education tends to focus on design, while political conditions and development processes (participation, collective processes, etc.) are rarely the subject of academic education. Proposals and projects that address these shortcomings would be welcome, in order to promote exchanges between all the above-mentioned parties.

Too little attention has been paid to the interconnectedness of individual challenges in the shared space of a common cultural landscape, and to the fact that the way we live together and develop as a society is fundamentally culturally determined. **The primary task of this NRP is to bring together divergent perspectives, scattered disciplines and separate professions with a clear and pertinent objective: to improve the quality of the built environment with a view to sustainability.**

By defining a common principle for all disciplines and fields involved, the programme can ensure that the relevant actors remain in dialogue.

Due to the lack of mutual cooperation, the overall potential for a common understanding of the value of the appreciation of *Baukultur* is insufficiently understood, recognised and applied in Switzerland and elsewhere. Therefore, research into the criteria for *Baukultur* and its added value is essential, as is an analysis of how the actions of those involved can be systematically directed towards *Baukultur* as a common goal and common ground. While these are overarching issues, it is important to keep in mind that results must be achieved within the time and budget allocated to this NRP programme.

## 2 Objectives of the National Research Programme

The programme has the following objectives:

1. Linking *Baukultur* to social and ecological transition;
2. Promoting material and resource use, and standards by considering sufficiency, traceability and stewardship;
3. Addressing the effects of a qualitative *Baukultur* on well-being, users' mental and physical health;
4. Reconnecting *Baukultur* to society (re-establishing the link between the built system and its users), including through the appropriate design of early, vocational and professional education;
5. Reaffirming the specificity of each local built environment, place, and site during different times of the day and year;
6. Addressing traditional and new aesthetics, cultural techniques and values;
7. Adapting and defining the necessary legal framework and certification processes;
8. Promoting research into responsible investment methods, i.e. those means and processes that can enhance the ecological and social transition through *Baukultur*;
9. Establishing new and strengthening existing collaborations with planning departments of local administrations and governments, as well as with legal and economic sciences. The programme aims to recruit disciplines that are completely new to the problem areas and that will help the scientific community and all the actors involved to think "out of the box".

In order to achieve these objectives, the National Research Programme "*Baukultur*" (NRP 81) asks applicants to define strategies to achieve these objectives and sets out four main commitments to be included in their project proposals:

- a) Developing visions and future scenarios
- b) Creating tools for dialogue and knowledge exchange, combining perspectives and building common understanding
- c) Innovating and defining parameters and measurement tools for *Baukultur* and the eight criteria of the Davos *Baukultur* Quality System
- d) Evaluating the impact of actions taken



## 2.1 Developing visions and future scenarios

It often takes decades for planning measures to take effect, and even longer to observe the consequences of these measures. A forward-looking planning process that attempts to project scenarios into the future and through the life cycle of a construction project is therefore essential to ensure the quality of the built environment in Switzerland and elsewhere for future generations.

One of the commitments of this NRP is to develop scenarios that take *Baukultur* into account in the many fields and disciplines involved. Participants are encouraged to adopt novel approaches to research that incorporate elements of analysis, co-creation and innovation. Research questions will need to take this into account and overcome the trap of narrow methodologies with no room for manoeuvre. Innovative research, including methods such as research by design, can enable a more inter- and transdisciplinary, multi-perspective understanding of the issues at stake.

Disciplinary gaps and lack of exchange between fields with different perspectives need to be overcome. Appropriate means and methods need to be explored, including experimental techniques that can anticipate and virtualise multiple possible scenarios and new functions in building practice in the short and medium term, as well as more visionary elements for the more distant future. Questions related to the built environment should be linked to issues relevant to ecological sustainability, social cohesion, quality of life and aesthetics; inter- and transdisciplinary methods in planning and building will anchor the research discourse in a long-term and sustainable way. The focus must not only be on the urban areas of larger cities but must also reflect the polycentric urbanised and built landscapes that have emerged throughout Switzerland in recent decades. On the built landscape front, such a focus could also be on buildings or infrastructure in relation to open/public spaces, or both.

## 2.2 Creating tools for dialogue and knowledge exchange, combining perspectives and building common understanding

The NRP will encourage, support and maintain exchange, cooperation and collaboration between the various disciplines and between research and practice - at the programme level as well as in the individual projects. *Baukultur* reflects a general umbrella term that must be taken up by each of the disciplines involved individually in order to arrive at a common understanding. Collaboration is therefore at the heart of the programme, and each applicant must demonstrate a willingness and a clear approach to achieving this goal.

Understanding *Baukultur* as a shared responsibility requires, first and foremost, a common understanding of the built and unbuilt environment at all scales. The aim is therefore also to show how interdisciplinary cooperation can be successful at these different scales, from the maintenance, renewal, planning and construction of structures of any size, from a path through the forest to a tunnel through the Alps or a residential area with a variety of residents and owners.

The built environment is the result of a series of processes, all of which must be taken into account when considering *Baukultur*. The interaction of the multitude of actors thus stimulates or, in the worst case, hinders the emergence of excellence and the cultivation of *Baukultur*. This dynamic requires new definitions of the processes and conditions necessary for a sustainable *Baukultur*. Innovative research, including methods such as living labs and demonstrators, can enable a more inter- and transdisciplinary, multi-perspective understanding of the issues at stake.

The ambition to take the new knowledge generated by this research programme beyond academic discourse raises further questions: how can this knowledge be introduced, transferred and

implemented in policy and planning processes? Strategies are therefore sought for the development of long-term research and implementation networks related to *Baukultur*.

### **2.3 Research on parameters and measurement of *Baukultur***

Improving and adapting the quality of building cultures is at the heart of the *Baukultur* initiative. Measurability in the context of *Baukultur* requires a clear definition of a process that is generally not measurable in its entirety but has quantifiable components. For example, aspects related to a sustainable energy transition should be quantified using existing appropriate metrics. However, issues such as mobility patterns, the evaluation of building materials or the value of heritage conservation are less easily measurable. It is therefore important that measurability is demanded in a systemic way of thinking with a focus on people and the environment. So far, most discussions that frame a conceptual understanding of *Baukultur* alternate between generalised intuitions and enforced measurability. To resolve this tension, one could try to frame the problem in terms of societal and ecological needs and ongoing changes in societal values, to name one of the many possible approaches within the framework of the NRP.

In the case of *Baukultur*, the goal of measurability poses significant challenges: on the one hand, *Baukultur* is to be understood as a discursive process that requires constant updating and adaptation of quality criteria; on the other hand, these criteria are highly interdependent with social and environmental actors. The understanding of the notion of *Baukultur* needs to be constantly updated: rather than aiming at a static approach to measurability, it should be treated as a concept that evolves within the current social and environmental context.

### **2.4 Evaluating the impact of actions taken**

The methods, instruments, measures and resources put in place to maintain and develop *Baukultur* may have obvious short-term effects, which can be beneficial, but the long-term effects involve a chain of influences on the urban space and the environment, which requires a forward-looking perspective. Therefore, one of the objectives is to examine the effects of *Baukultur* and to anticipate unforeseen negative and undesirable effects of the implementation of *Baukultur*. An objective evaluation of the measures taken and their short and long-term effects is crucial.

The concept of *Baukultur* is, in a sense, fluid and has a long-time horizon. This requires assessment across spatial and temporal scales and calls for the definition of an evaluation process articulated along these dimensions and involving constant and repeated monitoring and reassessment.

## **3 Main research areas**

The NRP "Baukultur" is structured in two research areas, both of which include an area for implementation studies. All projects funded under this NRP must combine a research question and develop a related implementation scenario, thus assuming an inter- and transdisciplinary framework (see Fig. 1).

### **3.1 Research module A: Material, technical and ecological dimensions of *Baukultur* in relation to social and cultural aspects**

Research module A covers material, technical and ecological aspects, touching on environmental sciences, engineering, urban planning and architectural expertise, as well as energy transition,

sustainable development, biodiversity and climate change adaptation. A link with social and cultural issues is highly valued.

Examples of research questions of module A could be: what are the environmental, economic and social values of *Baukultur*? What qualities and values make it sustainable? How can buildings and spaces (built-up areas, open areas) be maintained, preserved, repaired, (further) developed, transformed, possibly densified, refurbished, sustainably decommissioned and newly created in order to pass on living space to future generations in a resource-efficient and circular economy-oriented way considering future climate conditions? How to decarbonize existing and future buildings and other elements of *Baukultur* in consideration of the net-zero objectives? Which legal frameworks enable or restrict *Baukultur*? What is the critical contribution of *Baukultur* for the promotion of inward development and the preservation of natural landscapes? How can this perspective deal with emerging paradoxes in relation to the fundamental role of open spaces' ecosystem services inside dense built environments? Can emerging powerful trends such as digitalisation, automation in construction and AI-based solutions for designing, monitoring and interacting with our built environment contribute to a vision of *Baukultur*, and if so, how? What are the socio-economic and cultural values of *Baukultur* in the short and long term? What are the dynamics, methods and conditions of funding and investment that need to be addressed in order for *Baukultur* to flourish? How can the search for return on investment be shaped and framed to make *Baukultur* possible? How can technical aspects be quantified and measured across the spatial and temporal scales involved in *Baukultur*? How can *Baukultur* help in conciliating the need for housing and the imperatives of ecological transition (valorisation of embodied energy, minimization of resource and land exploitation, reuse and material recycle, ...) in the different contexts of urbanisation?

Other possible research questions might be: How can ecological and resource-related added value be reconciled with economic viability? What is the scope and potential of existing or newly created processes, methods and instruments to achieve this?

### **3.2 Research module B: Social and cultural dimensions of *Baukultur* in relation to material, technical and ecological aspects**

Research module B embraces social and cultural contexts, with extensions to policymaking, planning, social history and sociology in relation to urban development, construction and housing/living.

Research in this area will be based on qualitative definitions (as an alternative to strictly quantitative measurement). Artistic explorations could also be integrated into this module. It is important to bear in mind that, whatever the approach, *Baukultur* must be seen as a process, defined not only in terms of absolute numbers, but also in terms of essential components and corresponding objectives to be achieved. A content link with material, technical and ecological issues will be highly appreciated.

Thus, research module B explicitly calls for innovative, dynamic methodologies that explore the socio-cultural dimension of *Baukultur*, taking into account the temporal, social, legal, cultural and material dimensions of the lived space. Possible research topics could include studies of urban transformations in the renewal of existing building stock versus new construction, and possible combinations of expanding existing structures to meet future housing needs in the near and distant future coherently to inward urban development in relation to ecological dynamics and human/non-human well-being. Where and how can we (re)build in urban areas without losing valuable open space for recreation or green areas where biosystems and ecosystem services can flourish? How can we make urban areas more usable and safer at day and night, at the same reduce light pollution that imposes threats to human well-being? Which existing and which new decision-making bases for politics, administration

and business contribute to an effective increase in the sustainability of the built environment? What new and experimental approaches to exploring the interdependence of the built environment with traditions and activities at local and regional scales can establish aesthetics, as well as tactics and strategies for making the concept of treasuring *Baukultur* a value for society at large? What new aesthetics can be expected from the combination of traditional and new crafts? What institutions, legal frameworks and innovative and effective incentives need to be created to promote and safeguard *Baukultur*?

Other possible research questions might be: how do perceptions and impacts of *Baukultur* qualities vary? When and how can quality-conscious *Baukultur* contribute to a democratic, inclusive society? How does it influence social action? Is there an interdependence between built heritage conservation, the maintenance of traditions and cultural diversity? What is the role of built heritage in intergenerational relations? What are the links between *Baukultur* and an inclusive society, social cohesion, people's well-being and their shared responsibility for the built environment?

### **3.3 Tandem module C for implementation: Comprehending *Baukultur***

Module C, the “implementation tandem”, refers to the materialisation of the vision outlined in modules A and B by establishing a process of engagement between the actors involved. This module is compulsory for all projects. It includes questions about the relevance of the research to practice and the practical value of the proposed solutions. In this task, the processes of assessment and evaluation of *Baukultur* need to be formalised according to the criteria and expectations of all the actors involved, from planners, architects, engineers and real estate agents, to the professionals involved in the various fields related to the built environment, to stakeholders, authorities and the wider public. At this stage, the proof of value of the envisaged solutions needs to be assessed jointly by academics and practitioners.

This module allows project teams to set up partnerships with practitioners and non-academic organisations or institutions (see chapters 6.1 and 6.4). The field is left open for different implementation scenarios and collaboration schemes, such as living labs, demonstrators (simulated or in the field), platforms, etc. The aim is to involve these actors in collaborations and partnerships leading to specific outcomes and implementation scenarios.

### **3.4 Organisation of the collaboration: Tandem constellation as a prerequisite**

Each project should target research that can address at least one of the research modules A or B, or preferably a combination of them. As many of the disciplines and fields involved still lack concepts and strategies for sustainably maintaining the quality of the built environment, ongoing research to establish a common understanding of *Baukultur* is relevant. The challenges posed by current and planned processes of transformation and regeneration, both in Switzerland and abroad, need to be addressed in an interdisciplinary manner, where appropriate through the collaboration of researchers from different disciplines.

Addressing research area C is therefore mandatory for all projects; applicants must provide an actionable plan for their approach to ensuring impact, effective implementation and the uptake and ongoing evaluation of the results of their research.

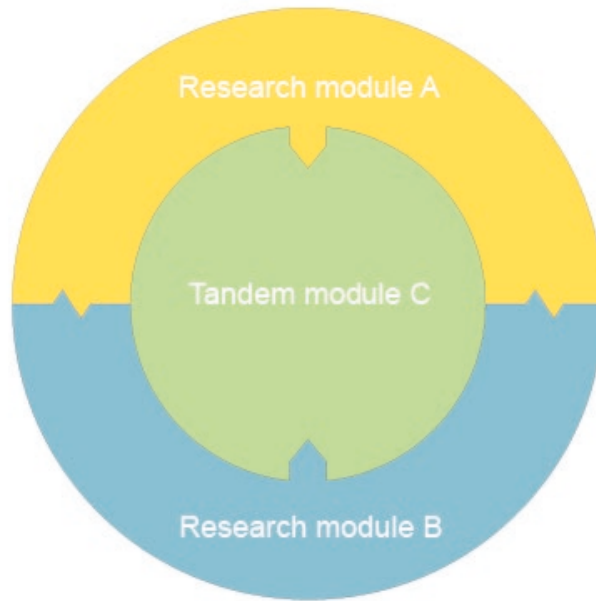


Figure 1: it is possible for each research project to either focus on one research module (e.g. module A or B exclusively) or to contribute to both modules (A+B). It is mandatory that all projects address the tandem module C. The possible work plan constellations are therefore summarised as A+C, B+C or A+B+C.

These envisaged tandem constellations, involving both researchers and practitioners, are seen as a particular challenge of this programme, extending an interdisciplinary approach with aspects of transdisciplinary collaboration, but also as a means of ensuring the quality of the expected exchange. The project partners need to elaborate the concept of collaboration and its value for the practical aspects of the project. Co-creation should be an objective that is an integral part of the project design.

The formats of collaboration and exchange must correspond to the specific questions asked. Each partner should be able to imagine the outcome in his/her specific way (e.g. academic, business, policy, artistic, community). The collaborative element will be part of the project evaluation on a continuous basis, from the beginning to the end of the programme.

In addition, according to the requirements of Open Science and as described in more detail in section 5.3, it is required that all data are stored in standardised formats and are available on an open database to all parties involved in this NRP.

## 4 Implementation and expected wider impacts

The programme aims to find ways to combine and integrate knowledge in order to advance the ecological and social transition inscribed in *Baukultur* at all levels. It therefore promotes partnerships with actors from practice and directly supports these collaborations with proportionate financial support for the implementation scenarios. The programme also aims for sustainable implementation with long-term impact. To this end, it draws on approaches driven by innovation and societal engagement and sets up an evaluation process of the implementation plan. With such results in hand, the achievement of a *Baukultur*, according to the eight criteria of the Davos Declaration should be a feasible goal, both in times of high quantitative growth and in times of economic stagnation.

#### 4.1 Innovation and community engagement

As an inter- and transdisciplinary topic, *Baukultur* is also open to experimentation. Open-ended processes are to be embraced as drivers of innovation and should be conceived in terms of the potential transitions that proposed solutions can bring to the status quo. The following questions seem to be key in motivating innovation through collaboration: how can different actors be engaged to contribute to and shape research? How do we get the next generation of researchers involved?

The concept of "shared learning" is promoted, e.g. through "living labs", as an approach to address complex problems under conditions of uncertainty. The term is used to refer to a wide range of local experimental projects of a participatory nature. Further experimental implementation scenarios can be envisaged, aiming at co-creative laboratories to bridge gaps between disciplines, professions and scales, and to co-produce knowledge and experience. Particular attention will be paid to achieving a composition of actors, stakeholders and users with different backgrounds and interests (e.g., actors and clients, architects and developers, user representatives all along the "*Baukultur* life cycle".)

Implementation scenarios are expected to co-produce knowledge and deliberate on new analysis and information that can improve the quality of decision-making for government, households and the private sector, promote new understanding and framing of problems and appreciation of complexity and uncertainty, and experiment with new ways of working and solving problems. Their design has to be genuinely linked to the research plan, with a two-way flow of information, knowledge and experience.

#### 4.2 Implementation and impact

Implementation scenarios propose to implement relevant approaches to knowledge production and to aim for long-term impacts. However open-ended the experimental settings supported, such visions should be complemented by an appropriate process for tracking and monitoring change in both the short and long term, as well as an appropriate evaluation of the processes implemented.

The outcome of the proposed implementation scenarios should lead to some kind of tangible output, benefiting from the involvement of stakeholders and practitioners. It is highly desirable that the impact of the results of this NRP includes not only an active dialogue between professionals, but also civic communities and the public at large, by addressing issues of public interest, media and dissemination of knowledge through public institutions. As the implementation scenarios will address the innovation, societal and technological domains, project teams will be asked to include in their implementation plan forecasts of the expected technology-, innovation-, and society readiness. The respective achievements during the research phase will be evaluated and monitored on the basis of interim reports and possible site visits.

All project outcomes must clearly demonstrate their social and ethical benefits and their relevance to the built environment. A dissemination and implementation strategy is expected to demonstrate how the research results can influence behaviour, culture and role models and what the expected impact will be over a period of 5-10 years. The evidence should be presented from the perspective of the research and the practice partners.

## 5 Characteristics of NRP 81

### 5.1 Practical relevance and target group

Research in NRP 81 aims to improve current practices for acting, planning, building, operating, legally (de)regulating, maintaining, transforming and evaluating the built environment. It will be realised in collaborative and co-creative partnerships with actors from practice, civic societies, local authorities or other stakeholders taking place concurrently rather than subsequently.

The results of NRP 81 will serve as a basis for sustainable decision-making processes. The results will be relevant to the various actors involved in *Baukultur*, e.g. the interdepartmental working group of federal offices, professional associations and institutions involved in *Baukultur*, actors in the planning and construction sectors (federal, cantonal and municipal authorities, economic actors, NGOs, property owners (profit and non-profit oriented) and other professionals), as well as the general public, the media and civil society.

The basic data, their implementation and the results must be made available to the public and must ensure that Switzerland's fundamental diversity in terms of environment, culture and demography is respected. It is essential to understand the impact of environmental changes, the effects of changing cultural habits and their effects on land use and thus on the local and global ecosystem.

### 5.2 Contribution to the Sustainable Development Goals

*Baukultur* addresses a number of the UN's Sustainable Development Goals (SDGs). NRP 81 has the potential to contribute to the following SDGs: 3 Good health and well-being, 9 Industry, innovation and infrastructure, 11 Sustainable cities and communities, 12 Responsible consumption and production, and 13 Climate action. By linking *Baukultur* to land use preservation, existing built stock valorisation, energy use minimization, and biodiversity increase, projects will also touch on SDGs 6 Clean water and sanitation, 7 Affordable and clean energy, 15. Life on land, and 17 Multi-stakeholder partnerships and voluntary commitments.

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

Publicly funded research should, as far as possible, be accessible to the public free of charge. The SNSF is committed to this goal ([Open Science \(snf.ch\)](https://www.snf.ch/en/open-science)). For most funding schemes, researchers have to include a Data Management Plan (DMP) in their application. At the same time, the SNSF expects data generated by SNSF-funded projects to be publicly accessible in FAIR (making sure that the data are Findable, Accessible, Interoperable and Reusable) digital databases, provided there are no legal, ethical, copyright or other problems.

It will also be important to ensure coherence and interoperability of all infrastructures and services in accordance with the [National Strategy and Action Plan](#). Projects proposing a data-based technical solution are expected to demonstrate how open standards will be used to support and subsequently implement the solution.

## 6 Submission and evaluation procedure

### 6.1 General conditions

**Coordinated research and programme activities:** National Research Programmes aim to contribute to solving pressing challenges of national significance. To this end, the selection of projects, the research carried out and other activities, such as annual programme meetings or exchanges with stakeholders beyond the research, are coordinated and managed by the Steering Committee. The aim is to ensure the quality of the research, to enable synergies and share to disseminate the projects outcomes with relevant target audiences. By submitting a project proposal to this NRP, applicants agree to participate in the programme activities, cooperate with the Steering Committee and the programme management, and to contribute to the collective results of the programme.

**Project duration:** research projects under NRP 81 should have a minimum duration of 36 months and a maximum duration of 48 months. NRP 81 will not fund the fourth year of PhD student's salaries for projects with a duration of less than 48 months. Therefore, projects lasting less than 48 months and employing one or more PhD students must ensure that their salaries are guaranteed for 48 months at the time of project selection.

**Programme structure and project design:** project descriptions must include a research plan addressing at least one research module, A or B, and an implementation plan addressing tandem module C. Both parts must be equally represented in the budget and must comply with the following conditions.

**Project size:** the budget for each proposal includes a budget for a research plan addressing either module A, module B or both, and a budget for an implementation plan addressing module C. The average budget for the research plan is expected to be between CHF 250,000 and CHF 550,000. The budget for the implementation plan is expected to be between CHF 40,000 and CHF 100,000. These figures are provided as an approximate guide.

**Collaboration with actors from practice:** partnerships with practitioners are explicitly requested in NRP 81. The prerequisite for the admission of the partnership is that the cooperation generates added value and that the project does not serve a direct commercial purpose. Within the proposal, actors from practice take on the role of project partners, whose requested funding share may not exceed 20% of the total requested budget. The proposal must be submitted by the academic partners, taking on the role of applicants. Applicants have to be affiliated with a Swiss research institution that meets the general SNSF eligibility criteria.

**Cross-border research projects** are supported if the competence of researchers from abroad is essential for the realisation of the project. As a rule, the funding requested for researchers from abroad may not exceed 30% of the total budget, and the person responsible for the project abroad may not be assigned the role of corresponding with the SNSF. For applicants from abroad, the norms and salary rates of the respective country are applied *mutatis mutandis*, with the SNSF maximum rates as the upper limit. Before submitting a proposal with a cross-border component, please contact the programme managers of NRP 81.

**Language of proposals:** pre- and full proposals are expected to be submitted in English.



**Project start:** to allow for optimal coordination, approved projects must start no later than four months after the approval date.

**Legal basis:** the present call document of NRP 81, the Funding Regulations of the SNSF and the General implementation regulations for the Funding Regulations form the legal basis for the call. ([Funding Regulations](#), [General implementation regulations for the Funding Regulations](#)).

Only one call for proposals is envisaged. However, in the event of significant thematic gaps, a second call may be launched.

## 6.2 Submission procedure

There is a **two-stage submission procedure**: pre-proposals are submitted first, followed by full proposals on invitation.

**Online submission via mySNF:** pre- and full proposals must be submitted online via *mySNF* ([www.mysnf.ch](http://www.mysnf.ch)). Applicants must register as *mySNF* users before submitting a proposal. User accounts obtained in the past remain valid and provide access. It is advisable to apply for a new user account and to create an NRP 81 pre-proposal via *mySNF* as early as possible.

### 6.2.1 Details for pre-proposals

The deadline for submission of pre-proposals is **29 February 2024, 17:00 CET**.

In addition to the data to be entered directly in *mySNF*, the following documents must be uploaded:

- **Research plan** (in PDF format): applicants must use the template provided.
- **Implementation plan** (in PDF format): applicants must use the template provided. The implementation plan describes an outline of the intended partnership with actors from practice, possible project partners, measures to be taken, expected outputs and envisioned long-term impacts.
- The project description, including the research plan and implementation plan, must not exceed six pages in total.
- **CV** (one PDF per applicant): applicants must compile their CV on the SNSF Portal and then upload a PDF in *mySNF* in the data container "CV and major achievements". Information is available on the [CV website](#) and on the [SNSF Portal](#).

### 6.2.2 Details for full proposals

The deadline for submission of full proposals is **2 September 2024, 17:00 CET**.

In addition to the data to be entered directly in *mySNF*, the following documents must be uploaded:

- **Research plan** (in PDF format): applicants must use the template provided.
- **Implementation plan** (in PDF format): applicants must use the template provided. The implementation plan describes the proposed partnership with actors from practice, measures, project management, budgets, time schedules, expected outputs and envisioned long-term impacts.

- The project description, including the research plan and implementation plan, must not exceed 20 pages in total.
- **CV** (one PDF per applicant, including actors from practice): Applicants must compile their CV on the SNSF Portal and then upload a PDF in *mySNF* in the data container "CV and major achievements". Information is available on the [CV website](#) and on the [SNSF Portal](#).
- **Supplementary documents:** letters of support or confirmation of collaboration are required and must be uploaded on *mySNF*.

### 6.3 Evaluation procedure

For the evaluation of pre-proposals, the Steering Committee and nominated ad hoc experts providing additional expertise will form the evaluation panel. The Steering Committee will take the final decision on the basis of the following evaluation criteria.

The Steering Committee will invite the authors of the selected pre-proposals to submit a full proposal. In the invitation, the Steering Committee may include recommendations or conditions for the full proposal. Applicants not invited to submit a full proposal will be informed in writing by means of a ruling.

Full proposals will be reviewed externally. Based on these reviews, the Steering Committee will evaluate the full proposals at the evaluation meeting and propose their approval or rejection to the National Research Council.

### 6.4 Evaluation criteria

The Secretariat of the SNSF checks that the personal and formal requirements are met before forwarding the proposal for scientific review (cf. Chapter 2 of the Funding Regulations of the SNSF). Pre- and full proposals that do not meet the personal and formal requirements will not be considered further. Eligible proposals (pre- and full proposals) will be evaluated according to the following criteria:

- **Compliance with the objectives of NRP 81:** pre- and full proposals must be consistent with the programme objectives specified in this call for proposals and fall within the overall framework of the programme.
- **Scientific quality:** proposals must meet international standards in terms of scientific quality, scientific relevance, topicality and originality, suitability of methods and feasibility.
- **Interdisciplinarity:** bridging disciplinary silos is a key element of the *Baukultur* approach. Proposals for research that involve different disciplines or require approaches that cut across disciplinary boundaries are expected to demonstrate an appropriate methodological groundwork for collaboration and exchange.
- **Scientific qualifications of researchers and infrastructure:** 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.

- **Implementation:** as with the scientific quality of the research plans, implementation plans will be assessed for their relevance, topicality and originality, the suitability of the methods and their feasibility. Similarly, the qualifications of the project partners are expected to demonstrate relevant competence and ability to carry out the implementation project. Implementation plans should also demonstrate the short- and long-term impact potentials of the proposal, as well as adequate project management, reflecting co-creative organisational schemes.
- **Response to comments:** the Steering Committee may make comments, suggestions or recommendations to the research teams when inviting them to submit a full proposal. Consideration of this feedback will be a factor taken into account in the evaluation of research proposals.

Decisions to be communicated by mid-December 2024.

## 7 Budget and schedule

### Budget

Research module A: Material, technical and ecological dimensions of <i>Baukultur</i> in relation to social and cultural aspects	CHF 3.9 million
Research module B: Social and cultural dimensions of <i>Baukultur</i> in relation to material, technical and ecological aspects	CHF 3.9 million
Tandem module C for implementation: comprehending <i>Baukultur</i> "	CHF 1.2 million
Knowledge and technology transfer, implementation	CHF 1 million
Synthesis	CHF 0.3 million
Scientific evaluation and support, administration	CHF 0.3 million
<b>Total budget</b>	<b>CHF 10.6 million</b>

### Schedule

Call for proposals	30 November 2023
Submission pre-proposals	29 February 2024
Communication of decision	Early June 2024
Submission full proposals	2 September 2024
Communication of decision	Mid-December 2024
Start of Research	January to April 2025
End of Research	Spring 2030
Programme closure with publication of programme synthesis and final reporting	Early 2031

## 8 Organisation and actors

### **Steering Committee NRP 81**

Prof. Dr Paola Viganò, Director of the Laboratory of Urbanism, School of Architecture, Civil and Environmental Engineering (ENAC), EPFL, Switzerland and IUAV Venezia (President)

Prof. Dr Eugen Brühwiler, Head of the Laboratory of Maintenance, Construction and Safety of Civil Structures, School of Architecture, Civil and Environmental Engineering (ENAC), EPFL, Switzerland

Prof. Dr Pierre Caye, Director of the Centre Jean Pépin, CNRS, ENS Ulm, Paris, France

Prof. Dr Andri Gerber, Co-Head of the Institute for Constructive Design, School of Architecture, Design and Civil Engineering, ZHAW, Switzerland

Prof. h.c. Regula Lüscher, former Senate Director for Urban Planning and Architecture/State Secretary of the City of Berlin, Germany

Prof. Dr Jonathan Metzger, Professor of Urban and Regional Studies, Department of Urban Planning and Environment, KTH Royal Institute of Technology, Sweden

Prof. Dr Elli Mosayebi, Chair for Architecture and Design, Department of Architecture, ETH Zurich, Partner EMI Architekt\*innen ETH SIA BSA AG, Zurich, Switzerland

Birgitta Schock, Dipl. Arch ETH SIA, Member of the Board SIA and "Bauen Digital Schweiz", Chair of "buildingSMART", Switzerland

Prof. Dr Irmid Seidl, Head of Research Unit Economics and Social Sciences, Swiss Federal Research Institute WSL, Switzerland

Prof. Dr Arjan van Timmeren, Professor of Environmental Technology and Design, Faculty of Architecture and the Built Environment, TU Delft, Netherlands

### **SNSF Research Council Delegate**

Prof. Dr Eleni Chatzi, Chair of Structural Mechanics and Monitoring, Department of Civil, Environmental and Geomatic Engineering, ETH Zurich, Switzerland

### **Representative of the Swiss Federal Administration**

Dr Anne Pfeil, Federal Office of Culture (FOC), Head of Policy and Projects, *Baukultur* Division

### **Knowledge and technology transfer**

N.N.

### **Programme managers**

Dr Boris Buzek, Swiss National Science Foundation (SNSF), Bern, Switzerland

Yvonne Rosteck, Swiss National Science Foundation (SNSF), Bern, Switzerland

## 9 Contacts

For questions regarding the submission of pre-proposals and full proposals, please contact the programme managers Boris Buzek and Yvonne Rosteck, [nrp81@snf.ch](mailto:nrp81@snf.ch) or 031 308 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 031 308 22 22.

Technical help with [mySNF](#) and electronic submissions:

Hotline: Phone. + 41 31 308 22 00

E-mail: [mysnf.support@snf.ch](mailto:mysnf.support@snf.ch)

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