

 <p>СИБИРСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ SIBERIAN FEDERAL UNIVERSITY</p>	<p>P6: SIBERIAN FEDERAL UNIVERSITY Krasnoyarsk, Russia</p> <hr/> <p><i>Departments concerned with SUNRAISE-related topics:</i></p> <ul style="list-style-type: none">- Department of Ecology and Environmental Studies <hr/> <p><i>Contact person:</i> Nina Pakharkova (nina.pakharkova@yandex.ru)</p>
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Siberian Federal University (SFU) has been established in 2006 through the merge of several universities in the city of Krasnoyarsk. It is among the Russia's biggest universities in terms of student population (26000), and it usually features in any national top 10 rankings. It is a truly comprehensive university covering practically any scientific fields of practical sectors except agriculture and medicine. The need for multidisciplinary academic efforts to tackle societal and environmental problems was understood, apparently, already at the time of the establishment of SFU, when its institutes have been set up. First all the academic units dealing with environment ended up in the Institute of Economics, Management and Natural Resources, with an underlying hope for some synergy to emerge, and for environmental academic agenda to become strongly backed up by expertise in economics and management. This did not work out as expected, and in 2016 most of the institutes had been restructured. In the new structure environmental units have been placed within a new Institute of Ecology and Geography. This more traditional thematic structure seemed to be better accepted by academic communities within and outside of the University, and probably it will remain further on without major changes with the three departments:

- Ecology and Environmental Studies,
- Geography,
- Game Resources and Conservation.

As an indirect outcome of SUNRAISE, the brand new Institute of the North and Arctic has been established at SFU in 2020. For the purposes of SUNRAISE the analysis and conclusions have been developed for the Institute of Geography and Ecology, and with the main focus on the Department of Ecology and Environmental Studies. The Institute of the North and Arctic is not directly present in the analysis because the data collection and the development of the research framework took place before the establishment of this Institute. Nevertheless, special updates have been introduced to account for this.

The university does not publish any kind of research agenda or explicitly set research priorities. The document titled "SFU Research and Innovation Objectives" contains such lines as:

- priority of fundamental research and application of innovative technologies,
- use of the latest international research for better education and training,
- research of higher education for transitions to the innovative society,
- development of new collaborative approaches with praxis to address regional and national development challenges,

- prioritizing development of high tech materials and solutions,
- encouraging younger generations to pursue academic track,
- ensuring intellectual right protection,
- encouraging international collaborations with universities and companies,
- upgrading and restyling production facilities of SFU.

Although this document does not list research topics and areas, it gives some indications of what kind of research would be encouraged. It also demonstrates an intention is to keep a watchful eye on the international research agenda and needs of the regional and national economies. It is also noteworthy, that SFU formally recognizes within its ranks only three “scientific schools”. Normally in Russian universities “scientific schools” (i.e. high profile research groups with several generations of disciples pursuing a certain research direction and centering around 1-2 renowned scholars) are recognized at higher numbers: at least one or more per a faculty or institute, as this is usually understood as a sort of an honor to a successful professor. In contrast, at SFU those groups (and professors) have received that accolade, which are impactful in their respective fields internationally. This further demonstrates the seriousness in approaches for the development an internationally competitive research university.

In terms of sustainability science, three topics appear to be prioritized at SFU:

- Carbon biogeochemistry and coupling of carbon cycles and climate dynamics;
- Forest ecology and genetics and implications for forestry and carbon sequestration;
- Environmental biogeophysics, in particular in relation to water bodies.

While these topics belong to dynamic and quickly developing scientific fields, and they are related to important policy issues, we nevertheless offer the following recommendations:

- Review earlier attempts to introduce multidisciplinary research of interfaces between nature and society, and consider to invite internationally renowned scholars capable with launching such a research direction and developing capacity for its sustainability;
- Keep within the attention span the areas of research expertise, which are traditionally strongly developed at SFU, although not recognized internationally (e.g. due to high local relevance, communication barriers etc); those include e.g. environmental plant physiology, bird and mammal ecology (with implications for game management), soil ecology;
- Pay attention to the development of research fields related to industrial and urban ecology – partly this can be supported by existing expertise in biomonitoring and bioremediation, and partly by expertise from SFU institutes focusing in engineering and technology;
- Pay attention to the development of research expertise in relation to the governance over natural resources and environmental issues – while there were several attempts to develop such expertise (e.g. externally funded training and networking opportunities), this did not produce any sustainable impact as yet; it should be noted that in case of a continued failure to develop such research, the niche will be overtaken by other players.

SUNRAISE-RELEVANT RESEARCH TOPICS

1.	<p>Social, economic and engineering support of northern regions, including:</p> <ul style="list-style-type: none"> - Methodological approaches and partnership models for implementation of strategic tasks in economic development and building of transport and energy infrastructure in northern areas - Methodological approaches to formation of principles of horizontal interaction in resource development integrated projects in northern areas - New resource efficient and environmentally safe technologies in the context of green economy in northern areas - Methodological proposals for models of comfortable life and working conditions formation in northern areas
2.	Modern educational technologies and continuous lifetime learning aiming at development of multicultural education and tolerance in Russia
3.	Preservation and regeneration of the traditional culture of indigenous peoples of the North
4.	<p>Ecology, including:</p> <ul style="list-style-type: none"> - Comprehensive usage and preservation of water bodies - Reindeer migration monitoring in the Arctic zone as a tool for the management of indigenous peoples' traditional activities - Preservation and efficient use of wild reindeer

KEY PERSONALITIES, POTENTIAL MASTER'S AND DOCTORAL SUPERVISORS

- Prof. Dr. Irina Bezkorovainaia – *Research interests: Forest ecology; Soil ecological functions; Forest fire; Climate change*
- Assoc. Prof. Dr. Vladimir Gavrikov – *Research interests: Tree stand growth modelling; Late Holocene dynamics of boreal forests; Climate change*
- Assoc. Prof. Dr. Nina Pakharkova – *Research interests: Ecophysiology of plants; Climate change; Forest ecosystems; Biomonitoring of air pollution; Phytoremediation*

CURRENT AND PAST PROJECTS

Project 1: “Lifelong Learning for Sustainable Development”	Funded by: Erasmus + programme of the European Union	Project type: education
	Keywords: Lifelong learning; Green skills	

CURRENT AND RECENT PhD THESES

- Irina Gette “Recovery of *Pinus sylvestris* physiology following a fire” (2013 – 2019)
- Marina Rubleva “Substance migration features in ecosystems of the mountain taiga zone” (2019 – ongoing)

RESEARCH AMBITIONS IN RELATION TO SUNRAISE

1. Developing further research activities on:
 - Environmental study in the Arctic
 - Study of mountain ecosystems

ENABLERS AND BARRIERS ENCOUNTERED FOR RESEARCH DEVELOPMENT

Enablers	Barriers
<ul style="list-style-type: none"> ➤ Membership of an international network of universities: University of the Arctic (UArctic) 	-

NATIONAL RESEARCH/ POLICY SUPPORTING RESEARCH DEVELOPMENT

1. Agreement on the formation of the Arctic Union Regions of Russia (2014)
2. Agreement about the joint programme of the Northern and Arctic territories exploration between the Russian Geographic Society and the Krasnoyarsk Territory

CAPABILITY IMPROVEMENT TARGETED TO FULFIL THE ASPIRED RESEARCH GOALS

Improvements are desired in:

- Training for academic or technical staff
- Access to international databases

ENABLERS AND BARRIERS ENCOUNTERED FOR RESEARCH TRAINING

Enablers	Barriers
The university has created the Institute of the North and the Arctic	-