

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ
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**Сибирь в глобальном контексте.
Взаимодействия и обратные связи арктических
и южных территорий Сибири в условиях
быстро меняющегося климата:
окружающая среда и местные сообщества**

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conomic activities of the local population should be created. The analysis of the results shows both the need to continue research in this regard and the need to additionally improve the project structure and the architecture of data collection and storage. The use of modern technologies allows solving these problems but the research methodology with the participation of indigenous people scattered over a wide area is insufficiently developed. These studies can only be carried out by combining the efforts of local people, doctors, and meteorologists.

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SUSTAINING SIBERIA AND ITS PEOPLES

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Rationale. This abstract intends to present a brief and provocative discussion of the concept of “Sustainable development” and rejecting the practical application of the concept, seeks to explore the concept of sustaining Siberia and its peoples that of course includes “sensitive” development but is not driven by development *per se*.

The Sustainable Development Concept. “Sustainable Development” was defined by the UN World Commission on Environment and Development in 1987 as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This view gives humans the right to exploit everything on Earth for their own benefit and a belief that sustainability can be delivered through exploiting nature in a smarter way and controlling it better. *Horton and Horton 2019*. Therefore,

does “sustainable development” of Siberia sustain the people, ecosystems and environment or only the federal economy?

Sustaining Communities. Sustaining communities is a post-Soviet challenge as there is a trend of migration away from the countryside to the cities. For example, in 2011 there were 71 self-employed farms in the Krivosheinskiy District, but on January 1, 2018 only 2 were left! Most of their land was abandoned. The Kajbasovo Village now has just 1 permanent resident! This migration has implications for both the cities (outside the scope of this abstract) and the countryside where there is a loss of knowledge and stewardship of the wilderness. There are some examples where traditional life styles have been varied experimentally to move from herding reindeer to using reindeer to sustain old, biodiverse hay meadows in Norway (Eilertsen). These meadows are being abandoned to shrub and tree growth. Between 1959 and 1999, 32,000 farms representing 34,000 ha were abandoned in Northern Norway. In Siberia, what is the optimum use of abandoned land – more forest and carbon draw-down? In other areas of the Arctic, such as some parts of Greenland, migration problems are more severe. Young females are more mobile than males and move away from small villages leaving “troubled” and imbalanced communities with elevated rates of suicide and violence.

Sustaining and / or Stabilising Climate Services and other Life Systems. Sustaining basic human rights to fresh air and clean water are generally accepted but human rights to an equitable climate with its numerous consequences are not accepted adequately (or at all) by some of the earth’s greatest carbon emitting countries. Carbon trading was introduced as one concept to limit global warming. Governments issue permits up to agreed limits, and these are either given free or auctioned to companies in the sector. If a company curbs its own carbon significantly it can trade the excess permits on the carbon market for cash. If it is not able to limit its emissions, it may have to buy extra permits. However, the scheme is open to abuse: rich countries can offset their emissions by paying poorer countries to offset these, thereby limiting the development of the poorer countries. Schemes exist in the European Union and in several regions of the United States, but a national scheme in the US foundered in the Senate in 2010.

A relatively recent trend has been to change diet by moving away from eating meat to vegetarianism and veganism. The aim is well-intentioned as such a shift in diet would reduce methane emissions from agriculture which is a major source. However, a meat diet is important for the culture of Arctic Indigenous People and for their health [1]. Furthermore, a change from a meat

diet would not reduce methane emissions from rice fields and might increase CO₂ emissions elsewhere through soil degradation. Agricultural soils are being degraded by intensive farming practices and erosion. Land degradation directly impacts the health and livelihoods of an estimated 1.5 billion people. Our most significant non-renewable geo-resource is productive land and fertile soil. Each year, an estimated 24 billion tonnes of fertile soil are lost due to erosion. Although intensive agriculture can lead to land degradation, intensive reindeer grazing also degrades land, for example along the Finland-Norway fence line. Is Siberia's future organic soil creation in mires, floodplains, abandoned agricultural lands and forests of Global significance? An estimate needs to be made.

Pre-requisites for the sustainability of life systems. There are many pre-requisites for sustaining life systems. They include sustaining relevant knowledge, experience and wisdom. These attributes include applied science, blue-sky science, and Indigenous / Local Knowledge. Sustaining knowledge also requires sustaining infrastructure and networks such as SecNet, INTERACT, and WMO that facilitate data gathering through conventional science-based monitoring and community based citizen science working together. Furthermore, better communication systems are necessary among scientists, local and Indigenous Peoples and decision makers [2]. No-one listened to the older generation: IPCC warned in 1990 and ACIA repeated in 2005 that the Earth would experience “changes in the amount of precipitation, significantly altered hydrological regime, sea-level rise, and increased variability” (i.e. extremes of weather). Now, a younger generation is using the knowledge and wisdom of their elders and new activist strategies to repeat the old messages: will the governments of the world listen to young people now?

Determining the ultimate causes of lack of sustainability of life systems. In the past 60 years, various environmental problems have been experienced and largely overcome. They include: smog (chemical fog) that killed many people in the UK, acid rain that destroyed central European forests, ozone depletion, climate change and now micro-plastics and global spread of infectious diseases such as the coronavirus. However, combatting these environmental problems is analogous to a doctor who cures the *symptoms* of a disease rather than the disease itself. What is this “disease”. One contributor must be uncontrolled population growth associated with wasteful use of resources and harmful extraction / production of these resources. Another aspect is the current global economy that is based on cash gain over environmental security. Highly contentious pathways to sustaining future life systems could

be based on human population control and introducing environmental credits as a global currency.

Prognosis. Biological populations cannot expand forever and the human population is no exception. Unless population growth is managed, other controls might intervene: spread of disease, geoconflict for resources etc. Until the fundamental causes of environmental security are solved, the human population will not achieve prolonged sustainability of Earth, and Siberian, life systems.

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CLIMATE SENSITIVE INFECTION: COLLABORATION ACROSS THE NORTH

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Introduction. Climate change is first and foremost felt in northern regions, where the rate and magnitude of change are greater than elsewhere. Ecological alterations resulting from climate change are likely to push the geographic boundaries of climate sensitive infections (CSIs) northward, thereby increasing the potential for inhabitant humans and animals to be exposed to new and / or existing CSIs. Most CSIs are zoonoses, i.e. transmitted both ways between animals and humans. CSIs may be carried by vectors and reservoir organisms such as ticks, badgers and roe deer, which are expanding their ranges northwards.

This is a serious concern for many northern societies depending on animal husbandry, such as sheep and reindeer herding, or on other activities such as hunting, fishing and tourism. In the far North, such extensive activities tend as hunting, fishing and tourism. In the far North, such extensive activities tend