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Main principals of sustainable Arctic Science and social science within it:

practical ways for their implementation in the Russian Arctic

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Main principals and trends leading to sustainable Arctic Social Science

- 1. INTEGRATION
- 2.HUMANIZATION
- 3. INTERNATIONALIZATION
- 4. NAVIGATION

(FOCUSING) TO IMPROOVING LOCAL PEOPLE QUALITY OF LIFE COONDITIONS AND HUMAN CAPACITIES DEVELOPMENT

Why Integration is so needed ?

- As Robert Corell (chair of ACIA) said at the closing ceremonies of the Second International Conference on Arctic Research Planning in Copenhagen in November 2005, that we have entered a new paradigm: global change forces us to see humans and environments as inextricably interconnected.

Special attention should be put to the changes having reinforcing threshold character accelerating shifts in integrated Socio-Ecological System cycle

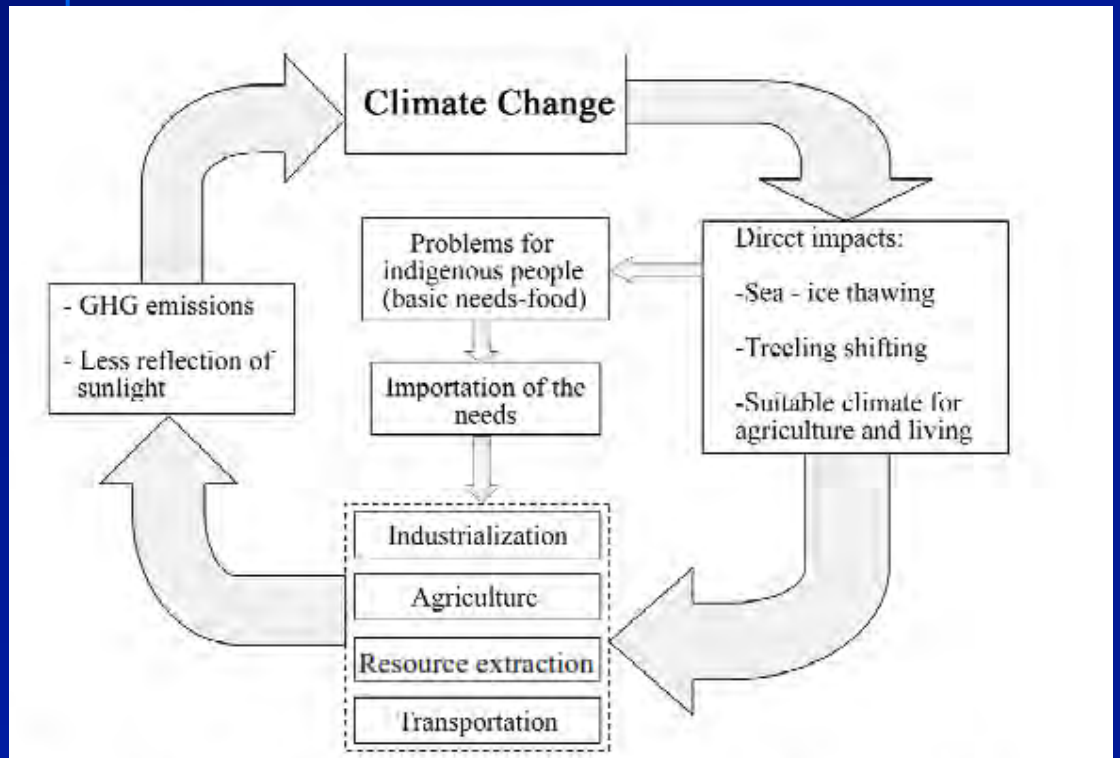
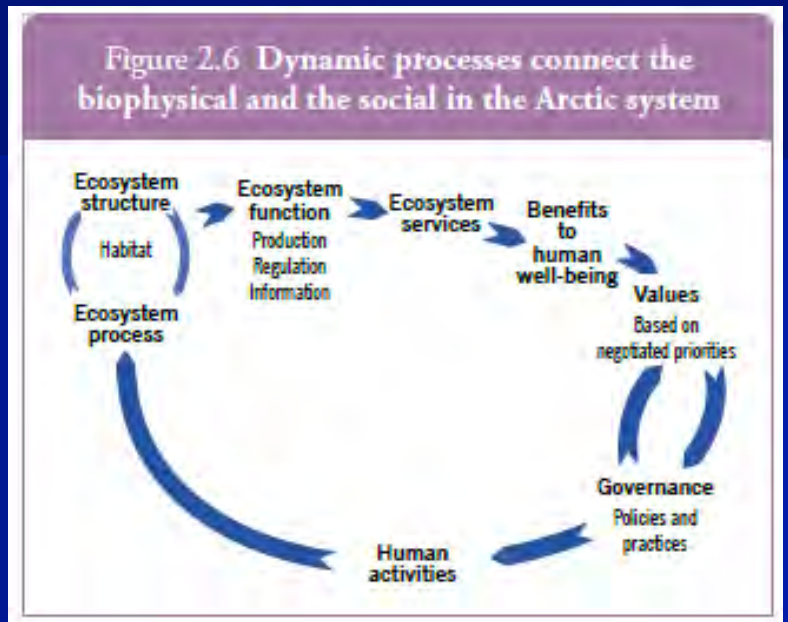


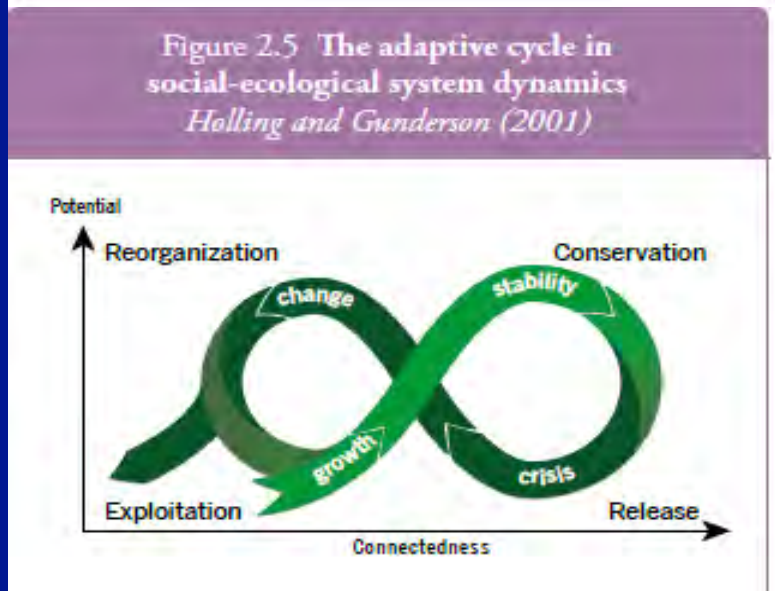
Figure 1. Cause and effect diagram, a form or causal network, showing the relativity between the effects led by climate change impacts

Joseph Santhi Pechsiri
Amir Sattari
Paulina Garza Martinez
2010

Approaches of Integration such as:

- The ecosystem services concept
- DPSIR framework (Driver-Pressure-State-Impact-Response)
- Resilience view at the socio-ecological systems transformations (the adaptive cycle in socio-ecological system dynamics





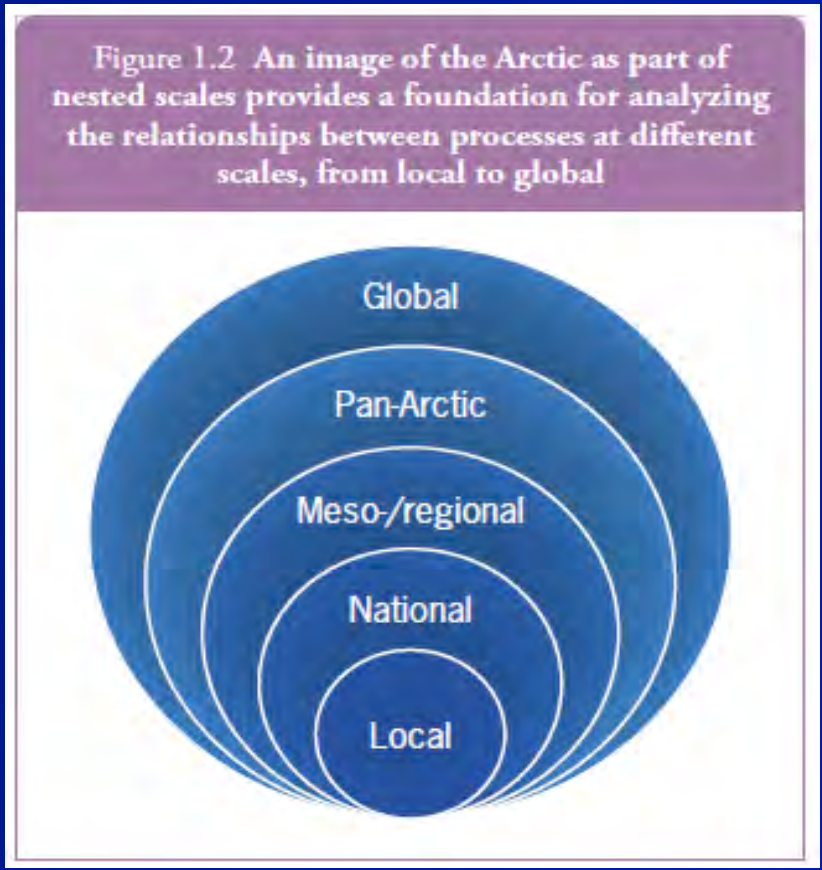
2. Humanization principles

- Not only more social variables to be included in the integrated analyses, but Arctic people (indigenous and non-indigenous) should be considered not only as object of social research but as an active subject doing research and observations.
- "Locals are not only in a good position to observe; they are also in a good position to hypothesize why something is happening" (Larry D.Hinzman, F.Stuart Chapin et al, 11.08.2010) in Arctic System Science.

  Addressing the "whys", not just the "whats"
- We do live nowadays in the era of anthropocene, where human impacts can be compared according to V.Vernadsky word with
- " geological force", but human beings responses (capacities to respond) to rapid socio-ecological changes according to Vernadskiyn are also increasing – this is very necessary to understand

3. Internationalization

- Decision- making for responses need to take into concern multi-scale interactions - From local, national to pan-arctic and global. It should be based on co-design and co-production of Arctic Knowledge.



4. NAVIGATION (FOCUSING) TO CHANGES IN LOCAL PEOPLE QUALITY OF LIFE COONDITIONS AND HUMAN CAPACITIES DEVELOPMENT

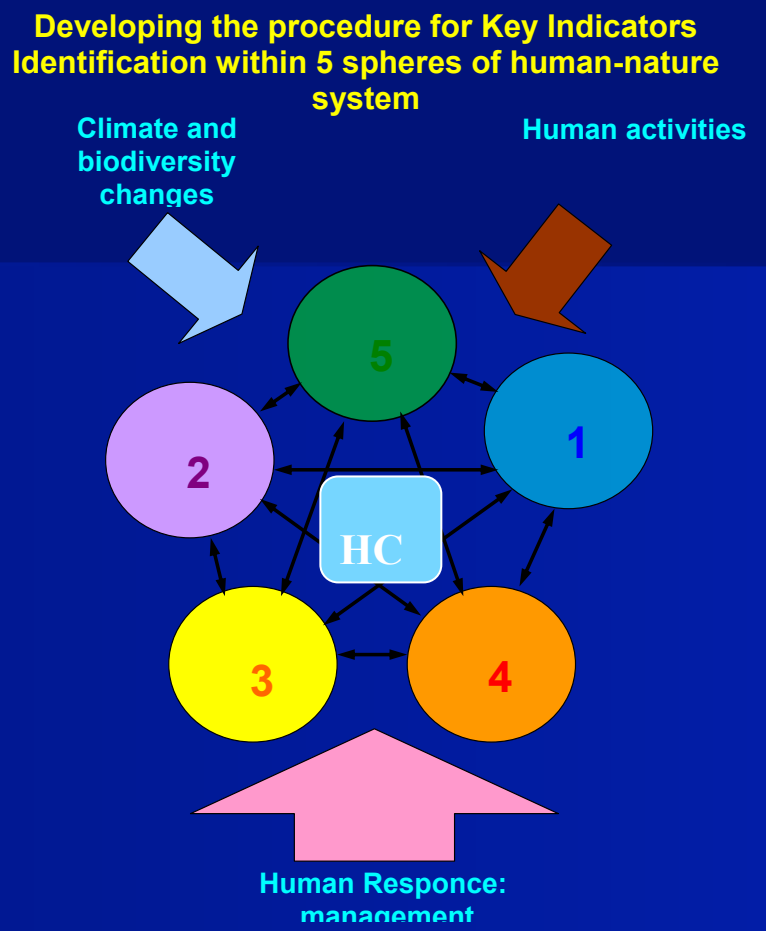
- If social science focuses on analyses and observing of changes happening in LOCAL PEOPLE QUALITY OF LIFE COONDITIONS AND HUMAN CAPACITIES DEVELOPMENT
  and interactions within them, we can better understand and predict arctic natural environment changes happening at pan-arctic as well as national scales.

Social-ecological system (SES) definition according to SOO

Human Capacities and Capital (HC), desires (believes), values and certainly demands are placed in the center position in this SES and is of primary concern of SOO.

HC – is both the main source of resilience and main driver of change with several specific features in the sparsely populated Arctic (with greater importance of traditional wisdom and knowledge

Humans nowadays in order *to achieve resilience and sustainability in permanently changing disturbances have* to adapt and implement *the development strategies for sound solution of appearing* ***issues*** *and thresholds* in interrelated **QL conditions domains** – social, economic, nature-environmental, governance as well as the spiritual-cultural.



Domains → Issues → Indicators

1	Spiritual-Cultural			
2	Governance, Law			
3	Social			
4	Financial-Economic			
5	Natural Environmental			

This methodology is developed within SOO and the IASOS network during the IPY 2007-2008

Multi –National Projects where discussed principles are implemented

State of the Arctic Coast 2010
Scientific Review and Outlook
Lead Editor: Donald L. Forbes
Editorial Board: Volker Rachold, Hartwig Kremer, Hugues Lantuit

Winfried K. Dallmann, Vladislav V. Peskov and Olga A. Murashko (eds.)

Monitoring of Development of Traditional Indigenous Land Use Areas in the Nenets Autonomous Okrug, Northwest Russia

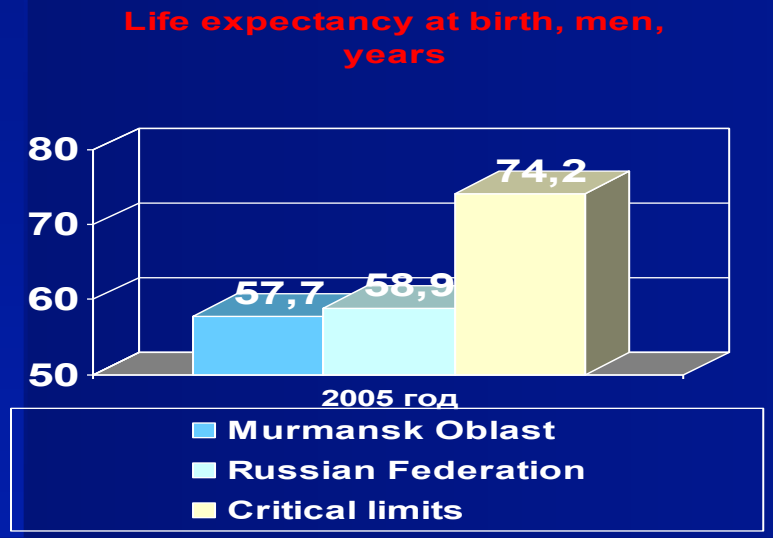
Project report, January 2010

Arctic Resilience Report
The Interim Report of 2013

PPS Arctic

*"**P**resent day processes, **P**ast changes, and **S**patiotemporal variability of biotic, abiotic and socio-environmental conditions and resource components along and across the **Arctic** delimitation zone".*

IASOS tools and Methods for key indicators of HC and QL identification and acquisition by science with local and traditional knowledge integration



Permanent long- term SOO semi - structured interviewing in Apatity and Kirovsk region

Express short-term SOO during field trips (Kalguev Iceland, Ustiansku region, Lavozero region, Izemskiy and Ust-tsilma regions of Komi Republic)

Rapid stakeholder assessments sessions (Apatity 2008)

Statistics, literature, maps, images, Photos repeated in time

Analyses of samples of drinking water and food in polluted areas

Main issues concern in the Russian North

- Main issues and indicators for further observations identified for all our sites, although there are some local differs in specific sites of observations are:
- Material well-being (especially law wages) and high level of income differentiation among the poorest and the most rich groups of the society;
- Unemployment level is becoming more and more important issue and indicator, especially youth unemployment;
- Youth migration and the overall population aging.
- Life expectancy, child mortality and sickness;
- Quality of health-care system and its accessibility;
- Quality of education;
- Quality of socio-cultural service
- Access to ecosystem services (water and food of sufficient quality, wood, etc)
- Poor level of administration control from the local government;
- Poor level of peoples' participation in decision making;

Monitoring of these and newly appearing tipping point issues and indicators is our permanent task. We are gathering semi-structured interviews and continue to collect local peoples perceptions, statistics at our sites.

Final Conclusion remarks

- Following the main principles of sustainable Arctic Science and social science within it, we could definitely find ways of solutions of old socio-ecological issues and appearing new once.

The organizational forms of Human Capital in SES resilience and sustainability building

- The main feature of HC is that it is organized in specific organizational forms- not only territorial but nowadays due to the vast spread of internet communication – these organizational forms are becoming virtual.

  HC Organization- forms the synergy effect which could give enough capacity to understand and find ways to manage such complicated phenomena as the reinforcing cycle of climate change in the Arctic and other issues

The process of Arctic noospherization

- The main role of a new kind of global organizations in order to come to the era of Noosphere was predicted by V.I.Vernadsky
- In many works he wrote about the need in creation of special organization of society which could be capable to support the Future Earth sustainability
- We are extremely happy that such kinds of organizations (as IASC, IASSA, ISIRA and many other institutions and multi-national projects) are founded. We are becoming not only collaborators, but really Arctic families and can not live without each other.

- **Thank you so much !**

IGUmoscow2015

17-21 AUGUST 2015!

We are looking forward to cooperate with all of you and welcome to Moscow to participate in the 2015 IGU Regional Conference Cold Regions Environment Commission sessions which will focus on one of main themes- Quality of Life and Sustainable development in cold regions .

Andrey Petrov and Tatiana Vlasova

WEBSITE:

www.igu2015.ru