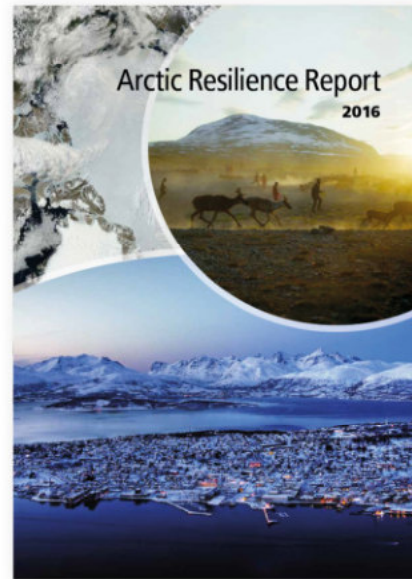
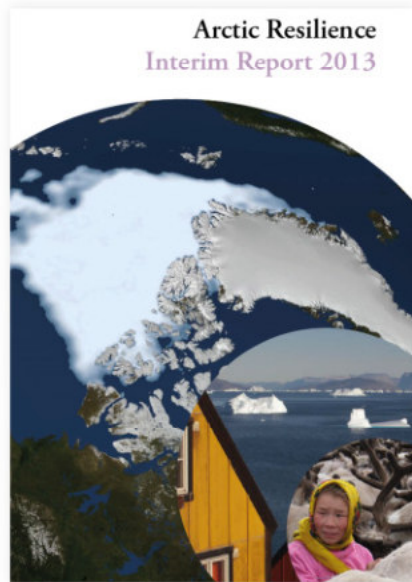


Arctic Resilience Action Framework (ARAF)



Marcus Carson, PhD, Stockholm Environment Institute
Arctic Biodiversity Congress Rovaniemi, 9-12 October 2018

Arctic Resilience Assessment



- Swedish Initiative, Co-Chaired by Sweden & US
- Led by SEI and SRC with pan-Arctic engagement of expertise
- Interim Report – May 2013
- Resilience contribution to AACCA
- Final scientific report - Nov 2016
- Synthesis for Arctic Leaders - 2017
- Arctic Resilience Action Framework – (ARAF) 2017

A green rectangular road sign with rounded corners and a white border of reflective dots. The word "Resilience" is written in large, white, sans-serif capital and lowercase letters. The sign is mounted on a wooden post and is tilted slightly to the right. The background is a bright blue sky with scattered white clouds.

Resilience

capacity that empowers a community to deliberately engage in adaptive or transformative change – either in response to disturbances, or in pursuit of a more desirable set of arrangements (Davidson 2010)

A silhouette of a group of people and a horse standing on a grassy hill against a bright, cloudy sky. The figures are dark against the lighter background, creating a strong contrast. The group includes several individuals, some standing and some kneeling, and a horse in the center. The overall mood is contemplative and resilient.

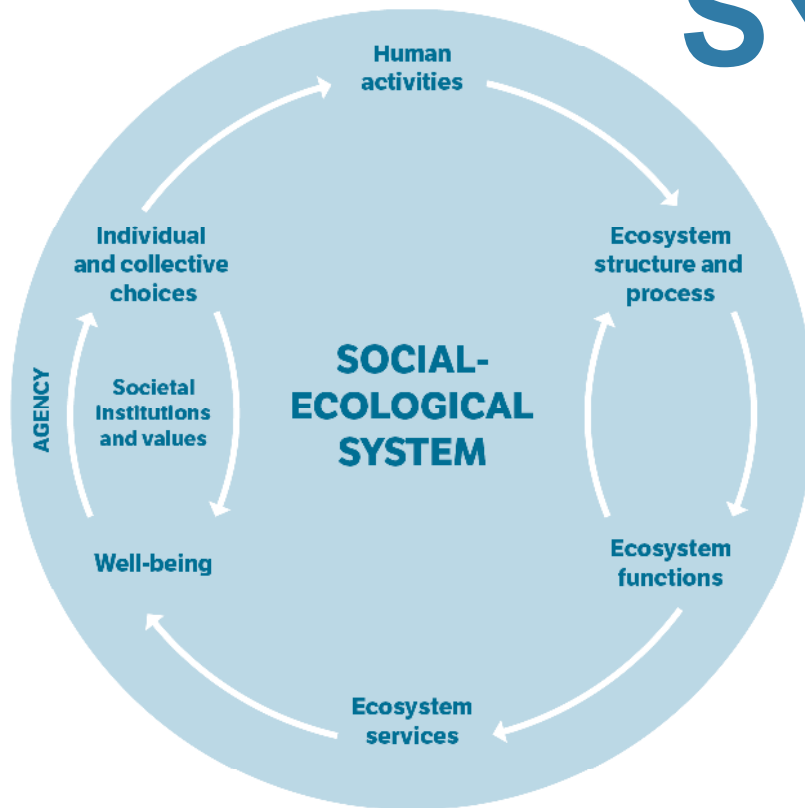
Resilience in Social Systems

Resilience in Ecosystems

the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks
(Walker et al 2004)

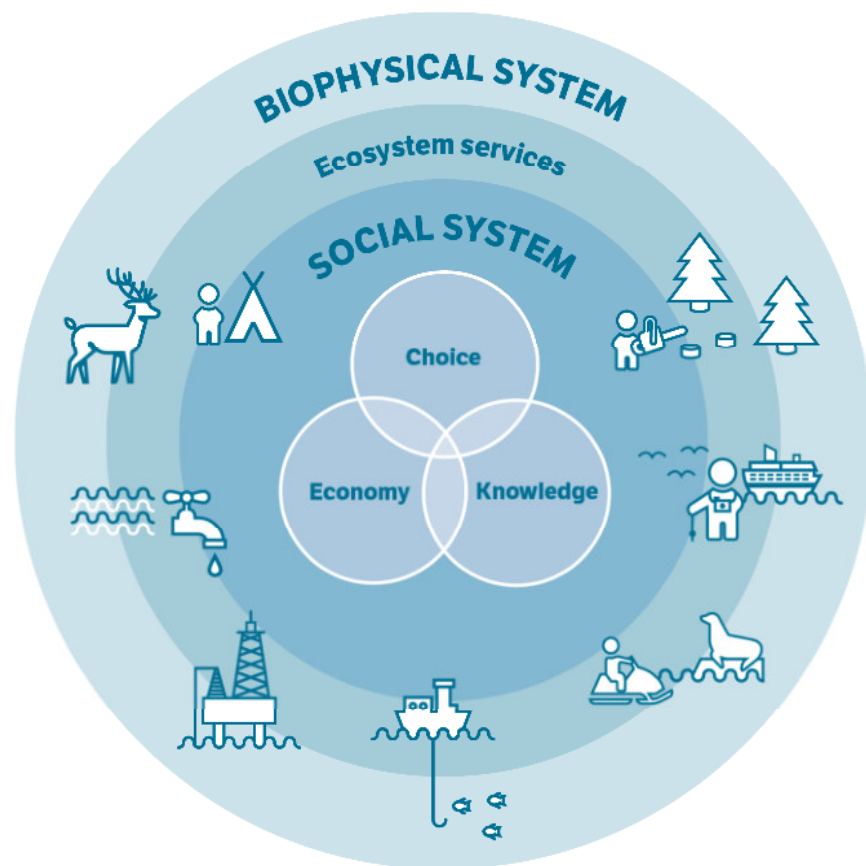


SOCIAL-ECOLOGICAL SYSTEM

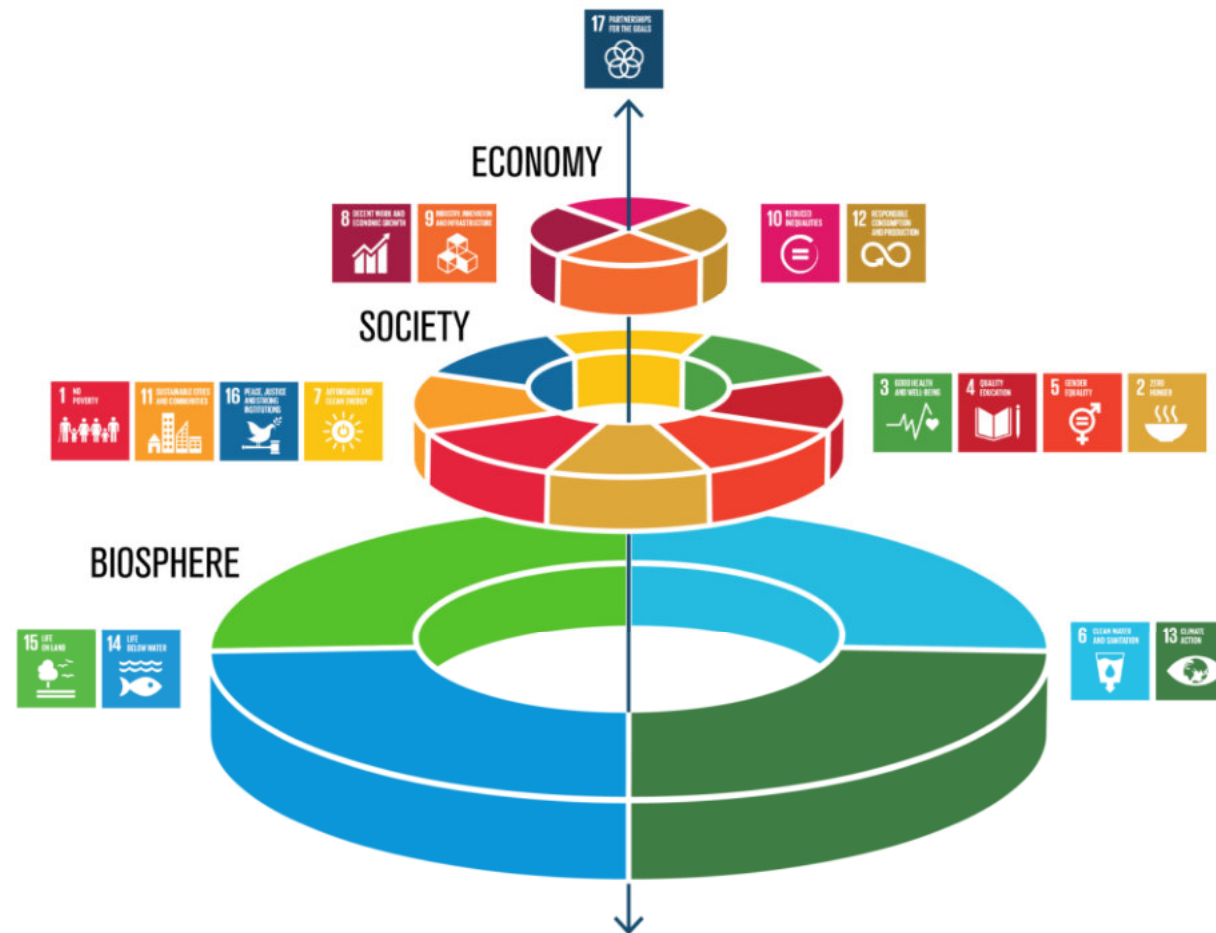


- Emphasis on:
 - Connection
 - Feedbacks
 - "non-linear" change (i.e. Tipping points)
 - "Agency"

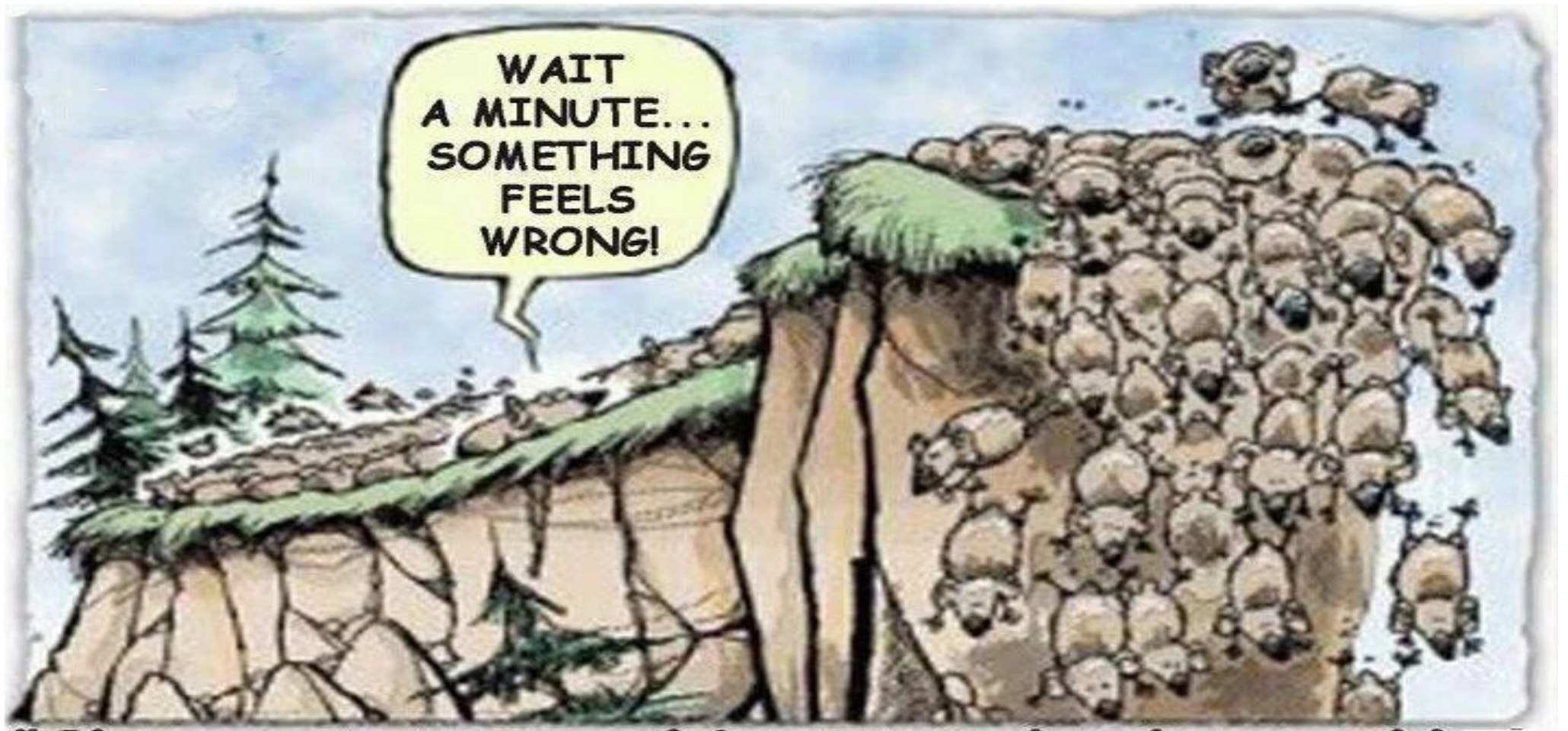
ARCTIC RESILIENCE: KEY FINDINGS



- Connectedness
- Arctic change mostly externally driven
- Resilient communities – requires flexibility and support
- Strengthening resilience can build on existing Arctic Council efforts
- Recommendations to follow



Thresholds



19 Types of Arctic Regime Shifts:

some occurring now, others possible but unlikely



LAND AND LAND/WATER

Arctic mobility Coniferous to deciduous forest Peatlands
River channel change Steppe to tundra Thermokarst lakes
Tundra to forest



COASTAL AND MARINE

Arctic benthos Fisheries Hypoxia Kelp transitions
Marine eutrophication Marine food webs Primary production in the arctic
Salmon potential decline Salt marsh to tidal flat



EARTH SYSTEM

Arctic sea ice Greenland Thermohaline circulation

DRIVERS

INTERNATIONAL

Climate change, Greenhouse gases, Sea surface temperature, Water stratification, Temperature, Nutrient inputs, Climate variability (NAO, PDO, ENSO), Sea water density, Wind stress, Precipitation, Upwellings, ENSO-like events, Ice cover, Trade, Ocean primary productivity, Floods, Permafrost thawing, Droughts, Wetland drainage, Freshwater input, Ocean acidification, Rainfall variability, Flushing, Sea-level rise, Ice melt water



REGIONAL

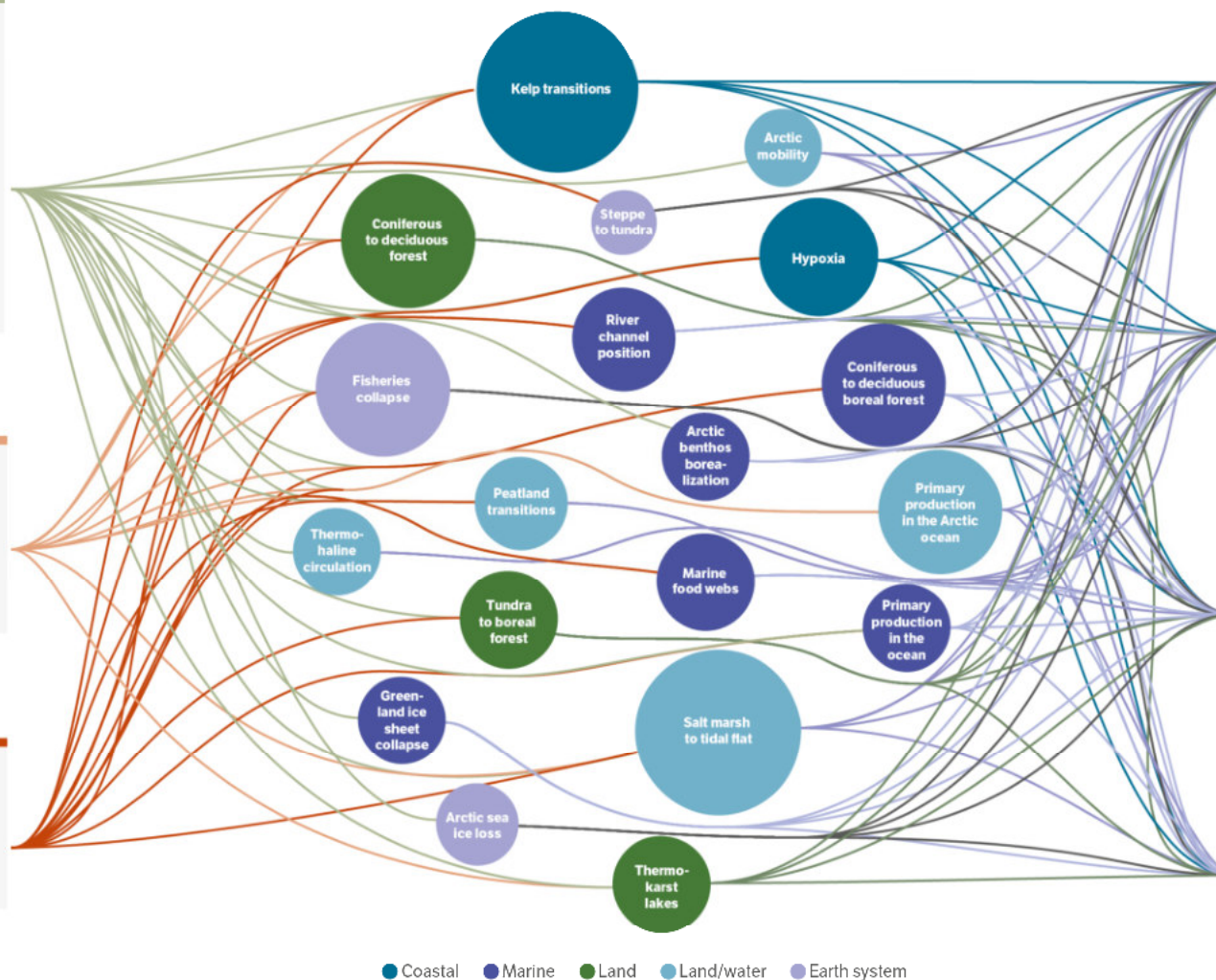
Water vapour, Deforestation, Erosion, Urbanization, Genetic erosion, Landscape fragmentation, Hatcheries, Lake drainage, River channelization, Fire frequency, Coastal erosion, Impoundments



LOCAL

Fishing, Agriculture, Hunting, Disease, Fertilizers use, Sewage, Invasive species, Sediments, Urban storm water runoff, Soil moisture, Harvesting (animals), Turbidity

REGIME SHIFTS



ECOSYSTEM SERVICES

SUPPORTING

Biodiversity, Primary production, Water cycling, Nutrient cycling, Soil formation



REGULATING

Climate regulation, Water regulation, Pest and disease regulation, Water purification, Natural hazard regulation, Regulation of soil erosion, Air quality regulation



PROVISIONING

Fisheries, Wild animal and plant products, Freshwater, Wild animal and plant foods, Livestock, Food crops, Hydropower, Fuel and fiber crops, Timber, Wood fuel, Other crops (e.g. cotton)



CULTURAL

Aesthetic values, Recreation, Knowledge and educational values, Spiritual and religious

HOW WELL ARE COMMUNITIES NAVIGATING CHANGE?



25 cases illustrating

- Loss of resilience
- Capacity to effectively adapt to change
- Engagement in transformational change

ARCTIC COMMUNITIES CAN BE HIGHLY RESILIENT



Keys to success

- Self-organization
- Knowledge integration
- Diversity
- Change as the norm



ARAF goals is to achieve:

A measurable increase of the capacity of Arctic countries and communities to understand and respond to risks and changes in ways that support positive socio-economic development and healthy, functioning ecosystems and ecosystem services.

Arctic Resilience Action Framework (ARAF)

PRIORITY AREA I: Analyzing and Understanding Risk and Resilience in the Arctic

- Objective 1.1: Increase the effectiveness of existing monitoring systems and include social-ecological indicators and their interactions.
- Objective 1.2: Substantially enhance our understanding of ecologically vulnerable areas and climate refugia.
- Objective 1.3: Improve scientific projections for the Arctic.
- Objective 1.4: Develop sea level rise and coastal change projections for the Arctic, particularly in areas of frequent human use.

PRIORITY AREA II: Building Resilience and Adaptation Capacity

- Objective 2.1: Increase the co-production of science with Indigenous Knowledge.
- Objective 2.2: Expand the ability of community-based observation networks to collect critical data for monitoring change.
- Objective 2.3: Improve tools that allow for local engagement in integrated spatial planning.
- Objective 2.4: Substantially increase the number of communities, youth, and promising leaders that are trained to understand Arctic change and implement a resilience approach to anticipate and address these changes.
- Objective 2.5: Increase support to communities for applying resilience knowledge to local decision-making.

PRIORITY AREA III: Implementing Resilience through Policy, Planning and Cooperation

- Objective 3.1: Increase the engagement of local perspectives in local and sub-regional decision-making.
- Objective 3.2: Enhance the development and deployment of resilient infrastructure and telecommunications.
- Objective 3.3: Expand the use of ecosystem-based management in the Arctic.
- Objective 3.4: Substantially expand the use of transdisciplinary approaches for resilience.

PRIORITY AREA IV: Encouraging Investment to Reduce Risk and Build Resilience

- Objective 4.1: Improve our understanding of best practices for resilient or “climate proof” investments in the Arctic.
- Objective 4.2: Substantially increase private sector investment in resilient communities.
- Objective 4.3: Expand the use of innovative financial mechanisms for improving resilience.



ARAF: Getting from insight to action

- Identify ongoing projects and activities that are resilience building
- Build and support community of practice (via Resilience Forum)
- Design and develop projects base on SES thinking (WGs)
- Develop indicators of social-ecological resilience



Sustainable Development
Working Group



ARCTIC COUNCIL

FOR INFORMATION CONTACT:
MARCUS.CARSON@SEI.ORG

ARCTIC RESILIENCE ACTION FRAMEWORK

Thanks!

SEI Stockholm
Environment
Institute

ARAF Guiding Principles and Priorities for Action

1. Define and establish clear, consistent linkages between resilience and climate adaptation.
2. Focus on the circumpolar Arctic region.
3. Draw on and recognize the value of indigenous knowledge and other local communities.
4. Integrate disciplines, knowledge and experience.
5. Address multiple risks, opportunities, and co-benefits whenever possible.
6. Consider risk and resilience at a range of time-scales.
7. Enhance social learning
8. Recognize the importance of the capacity for self-organization.
9. Empower local communities.
10. Adopt a multi-stakeholder approach.
11. Pursue coherence between sustainable development, climate change and disaster risk reduction.
12. Prevent the creation of new risk by promoting proactive action to address the underlying risk

THE GLOBAL GOALS

For Sustainable Development

