A photograph of an Arctic landscape. In the foreground, a wooden rack made of dark logs is covered with numerous strips of dried fish, likely salmon or trout, hanging from the logs. To the left, a large, shaggy brown animal skin hangs from the rack. In the background, a rocky, light-colored mountain slope rises under a pale sky. A small white dog is visible in the lower left corner, and a wooden structure is partially visible in the lower right. A semi-transparent teal box is overlaid on the right side of the image, containing white text.

# Arctic ecosystem services: TEEB Arctic Scoping study

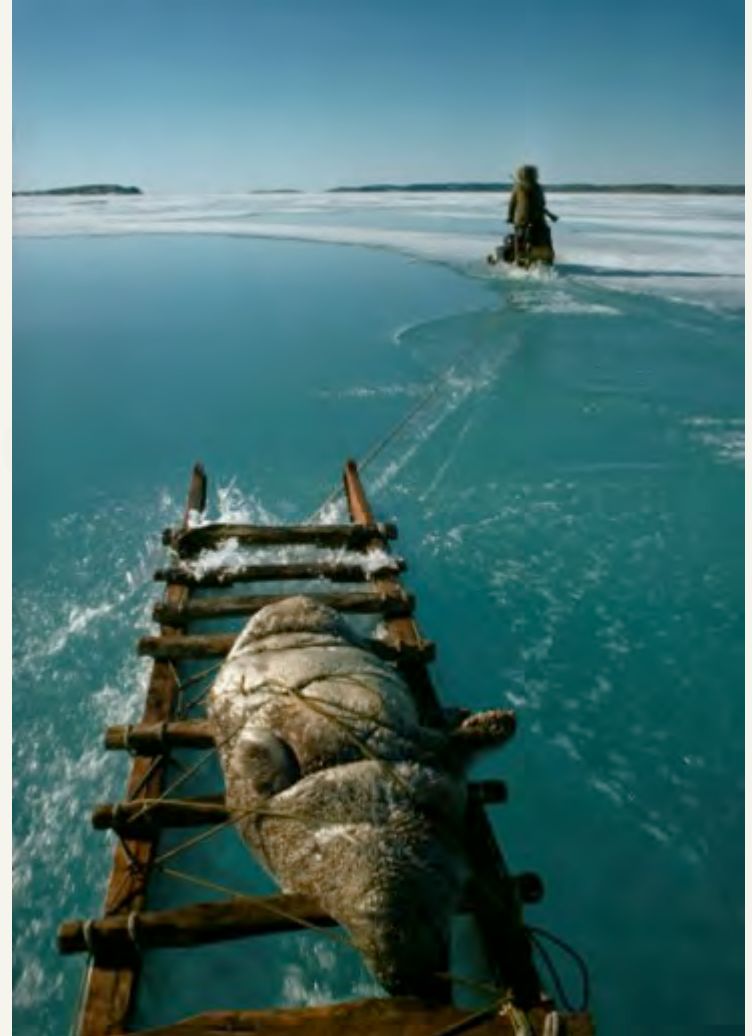
Alexander Shestakov  
WWF Global Arctic Programme  
3 December 2014

Arctic Biodiversity Congress

# Content

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1. Project design
2. Approach
3. Challenges and lessons
4. Next steps





# TEEB Arctic scoping study: context

**GLOBAL**



**REGIONAL**



awareness of the value of BD



biodiversity values  
integration



incentives



restoring and safeguarding  
ecosystems that provide  
essential services



integrating traditional knowledge,  
innovations and practices



- 4. Mainstreaming biodiversity
- 12. Evaluation of services provided by Arctic biodiversity



# TEEB Arctic scoping study: partnership





## TEEB: Making nature economically visible

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Biodiversity in all its dimensions ... needs to be preserved not only for societal, ethical or religious reasons but also for the economic benefits it provides to present and future generations. We should aim to become a society that recognizes, measures, manages and economically rewards responsible stewardship of its natural capital (TEEB 2010c)

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## TEEB for the Arctic

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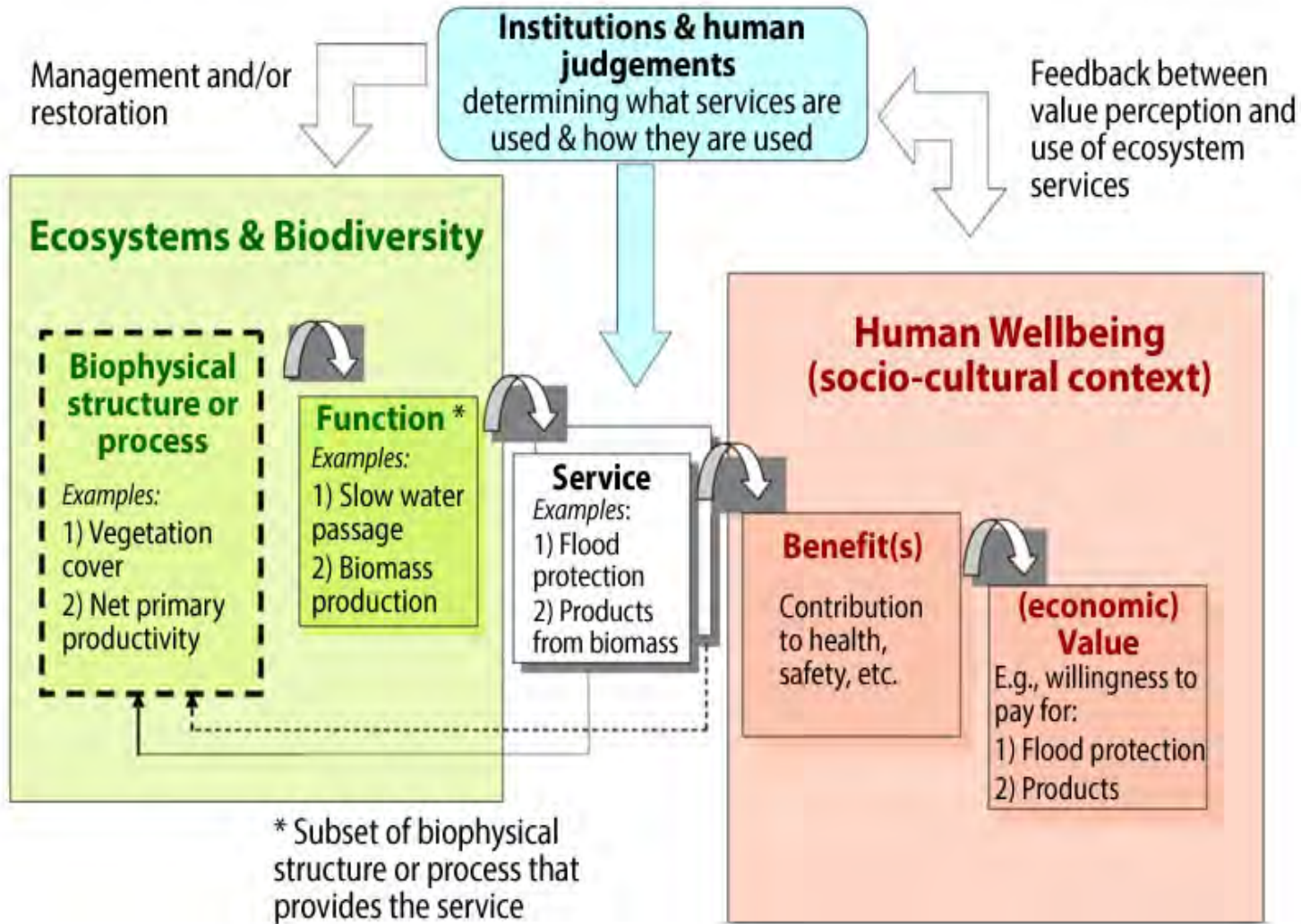
focuses on the benefits people both within and beyond the Arctic receive from Arctic nature

Provides a bridge between the multi-disciplinary science of biodiversity and the arena of international and national policy, local government, traditional knowledge and business practices





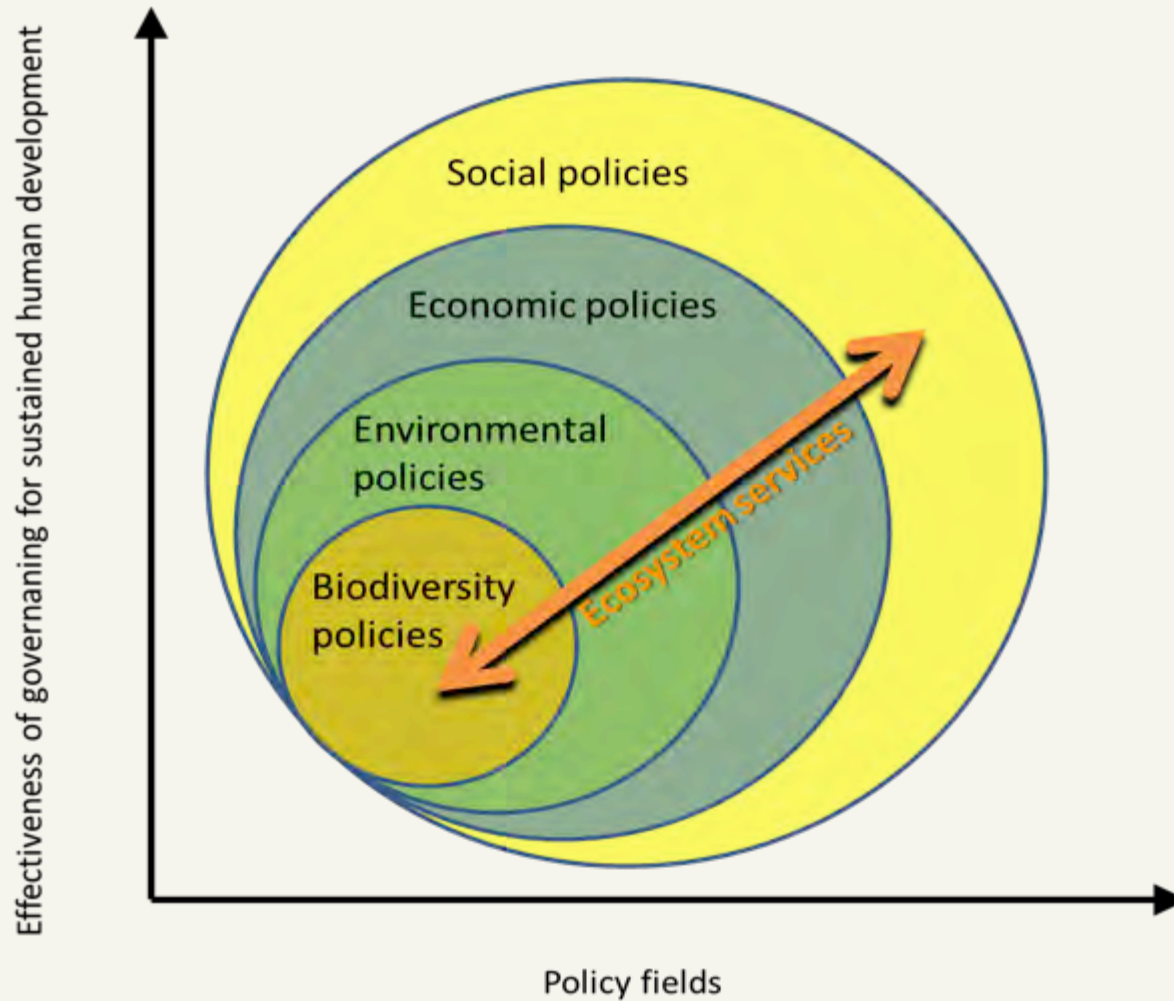
# Ecosystem services



## Services:

- Provisioning
- Regulating
- Cultural
- Habitat
- Supporting

# Integration of ecosystems into policies



# Beneficiaries of Arctic ecosystem services: multi-scale



## Local benefits of Arctic coastal wetlands:

- Food supply and security (e.g. fisheries nurseries) – subsistence and income
- Protection against natural hazards
- Local community livelihood (fisheries, tourism ...)
- Purification of coastal water
- Cultural identity (e.g. fishing communities)

## Regional and national benefits:

- National food supply and security (fish)
- National and regional recreation and tourism
- Regional natural & cultural heritage

## Global benefits:

- Carbon storage / sequestration
- Global food supply and security (fish)
- Recreation and tourism at global level

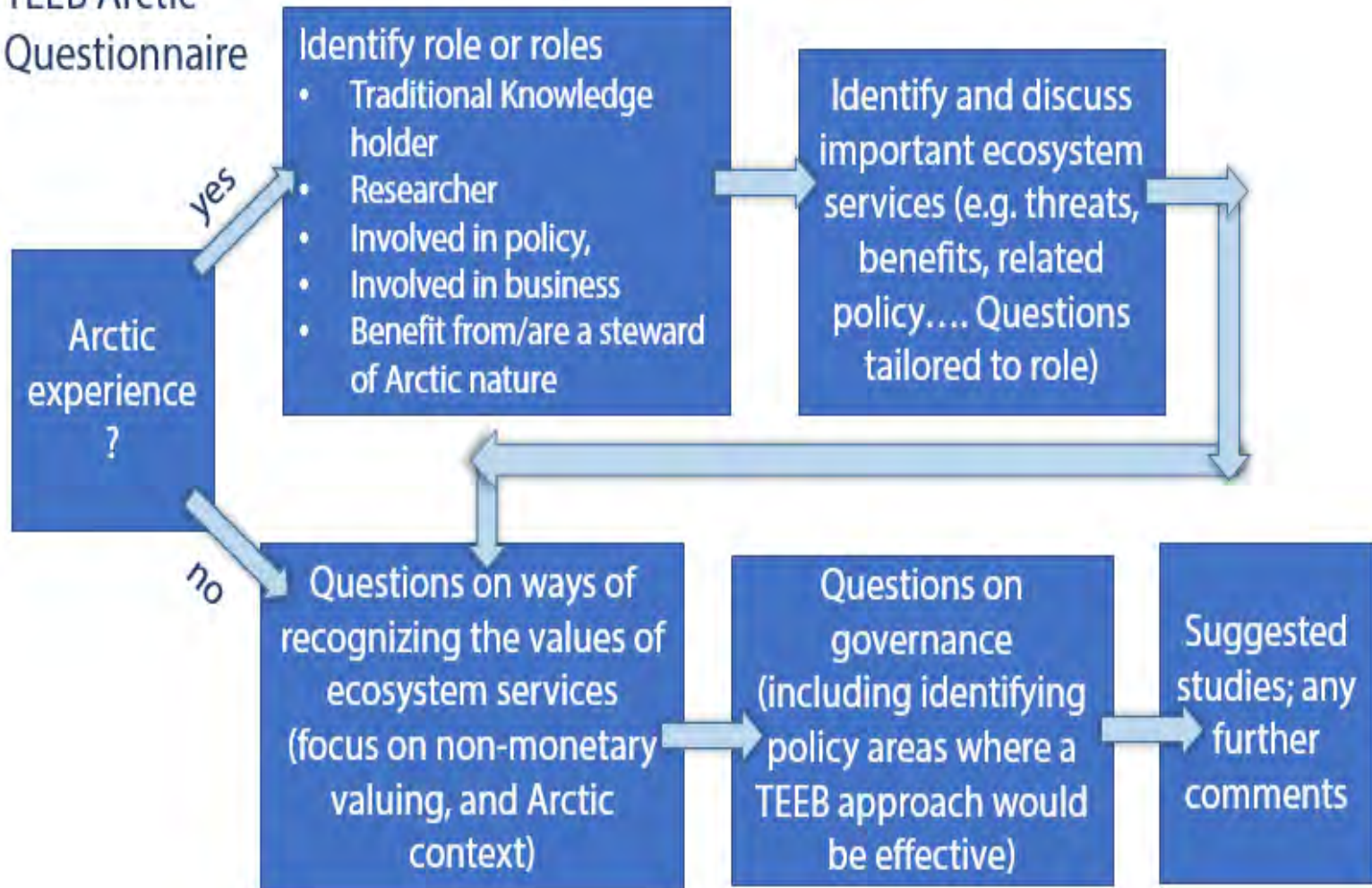


# Methodology

- **TEEB Guidance Manual**
- **on-line questionnaire**
  - targeted at stakeholders (researchers, policy makers, international and indigenous organizations, commercial sectors and TK holders)
  - Questions on i) important ecosystem services, ii) input on policy and governance to visualize the benefits of Arctic nature, iii) identify aspects of governance that either help or hinder the consideration of ES in public and private-sector decisions.
- **Literature review**
- **Case studies**

# Identification and understanding of ecosystem services

TEEB Arctic  
Questionnaire





## Scoping study products

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- provides open inventory of ecosystem services
  - provides overviews and discussion on Arctic issues, policy and governance in relation to Arctic ecosystem services, and an overview of potential approaches to valuation of those services
  - three case studies provide perspectives on options for thematic and policy focal areas for a full TEEB Arctic study
  - stakeholder analysis
  - sets out a plan for moving ahead with subsequent TEEB Arctic phases
  - an outline of elements of a proposed full study on TEEB for the Arctic
-



# Arctic ecosystem services inventory

Ecosystem Service	Ecosystem(s) it depends on	Scale (level) at which it operates	Who benefits	In what way it is important	Status, trends, information on resilience	Current & projected risks (threats)	Studies (examples) on valuation	State of knowledge
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## Over 60 specific services identified

- **Provisioning**

- Food, fisheries, aquaculture, biomass, genetics .....

- **Regulating**

- Air quality, climate, water flow .....

- **Cultural**

- Spirituality, heritage, aesthetics .....

- Inspiration for human creativity .....

- **Supporting**

- Soil formation, water cycling .....



# Cultural ecosystem services

- more challenging
- less studied
- less likely to be integrated into decision-making
- warrant special attention in the Arctic context





## TEEB scoping study: Case studies

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- **Reindeer herding** (Norway, Sweden, Finland, Russia)
- **Expansion of marine oil and gas activities and marine shipping** (coastal nations)
- **Mining, oil and gas, and infrastructure development in terrestrial ecosystems, with a focus on cumulative effects** (North American Arctic)

### Outline of case study presentations

- Ecosystem services: identification, status and trends
  - Current policy and governance
  - Policy options– possible pathways for the future management of ecosystems and their services
    - Future 1 - continuing on the current path (as outlined above in Section 3)
    - Future 2 – with policies that focus more strongly on sustainable ecosystems and ecosystem services
  - Comparison summary – trends in ecosystem services under different futures
-



## Integration of ecosystems into policies

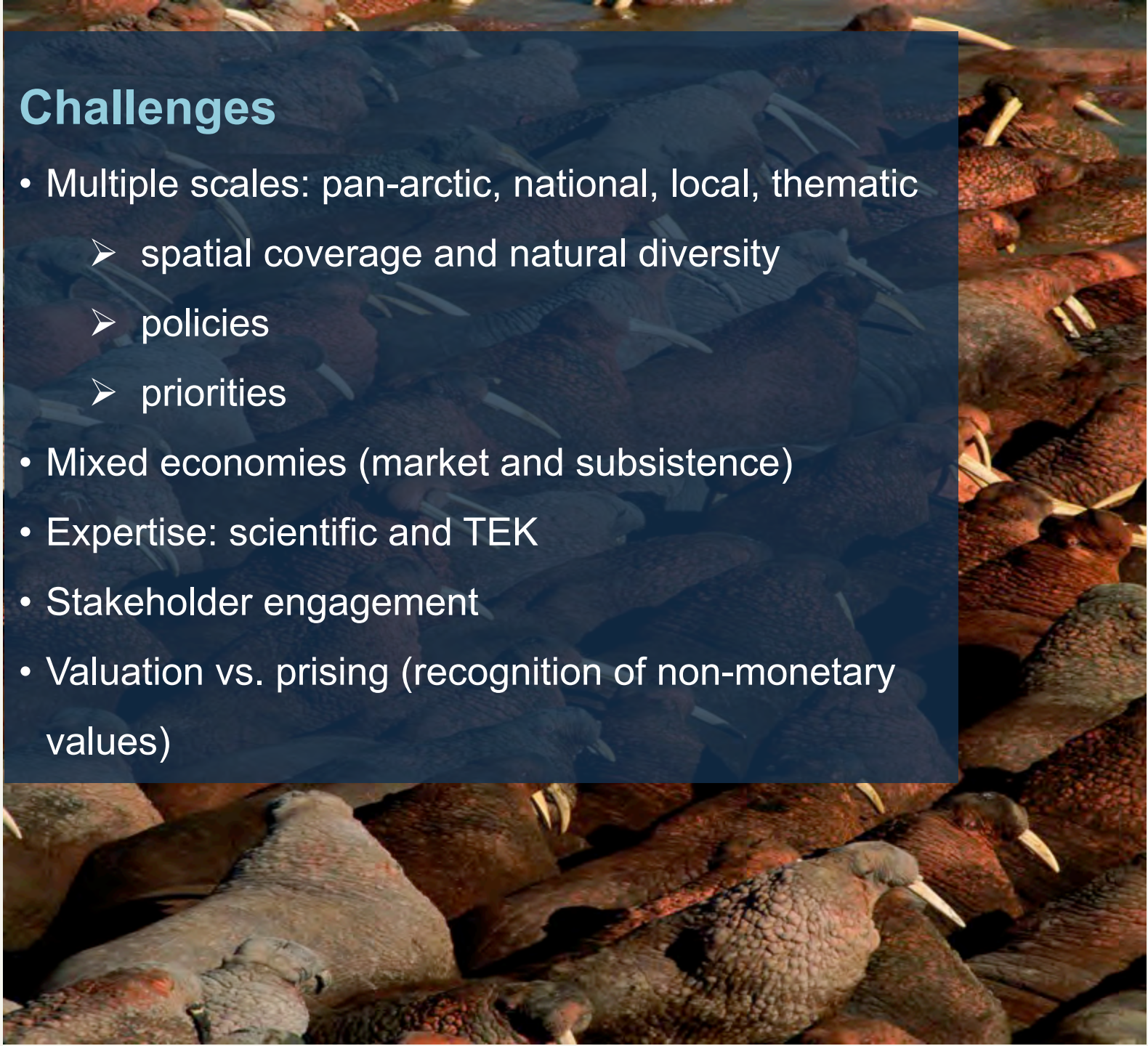
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1. Great spatial heterogeneity in relation to ecosystem service identification and status
  2. Certain ecosystem types are key for certain services
  3. Arctic ecosystems do not show high adaptability to environmental changes (services stemming from these ecosystems are thus bound to be less resilient)
  4. Ecosystem services come in bundles
  5. Holistic perception by Arctic peoples of ecosystems and human well-being (for example hunting or herding)
  6. Coupling between physical processes, biological processes and human processes is extremely tight and visible
  7. Large changes are occurring or expected to occur to most ecosystem services
  8. Changes in the Arctic region have and will have important effects on ecosystem service provisioning to the entire Northern Hemisphere
-



## Challenges

- Multiple scales: pan-arctic, national, local, thematic
  - spatial coverage and natural diversity
  - policies
  - priorities
- Mixed economies (market and subsistence)
- Expertise: scientific and TEK
- Stakeholder engagement
- Valuation vs. pricing (recognition of non-monetary values)





## Key lessons from questionnaire

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- inclusive (with local people participation) and adaptive governance promotes consideration of ES, while rigid and static governance works against it
- decisions that affect ES such as climate regulation need more international-scale efforts and agreements, and other ways of building in the value of these services which Arctic ecosystems provide to the world.
- the need to lengthen planning horizons – “short-term-ism” as main challenge
- the Arctic is changing faster than the training and background of policy makers, governments, and decision makers
- importance of Strategic Environmental Impact Assessments that account for cumulative effects
- mainstream economic concepts are unequipped to grasp most dimensions of value, including biological, aesthetic, ethical, and spiritual

**the TEEB-approach that does not equate value with monetization is critical and appropriate**

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## TEEB study

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### *Recognizing value*

### *Demonstrating value*

### *Capturing value*

STEP 1: Refine the objectives of a TEEB study by specifying and agreeing on the key policy issues with stakeholders

STEP 2: Identify the most relevant ecosystem services

STEP 3: Define information needs and select appropriate methods

STEP 4: Assess and value ecosystem services

STEP 5: Identify and outline the pros and cons of policy options, including distributional impacts

STEP 6: Review, refine and report

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## Further steps required for next phase(s)

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- Fill knowledge and information gaps
  - Update ecosystem services inventory
  - Policies analysis
  - Identify appropriate valuation methods and techniques
    - **Raise awareness of the values of nature**
    - **Put a focus on human well-being (including adequate valuation of food provisioning)**
    - ***“Ask local people”***
    - **Develop or promote methods appropriate for the Arctic**
  - Mobilise right stakeholders
  - Adopt messages to governments, business and communities
-



## Next steps

- Options for valuations: i) full TEEB study, ii) regional studies , iii) thematic studies
- Arctic Council decision on future valuation
- Detailed country specific policies analysis



Thank you !

The Next Generation shall  
remember us for what we  
did, not for what we  
planned

~ Author unknown



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**WWF**



# Questions for discussion

- **What are the potential benefits and pitfalls of an ecosystem services approach in the Arctic?**
- **How can an ecosystem services approach improve stewardship in the Arctic?**
- **What actions need to be taken under ABA implementation plan to promote integration of Arctic ecosystem services into national development policies, strategies and spatial planning processes?**



# ОСВАИВАТЬ АРКТИКУ | **КАК?**

Комплексный план управления ресурсами  
Баренцева моря и прибрежными зонами.

# The Arctic



- 40 million sq.km with about 4 million people
- one of the last large intact ecosystems in the world
- unique highly specialised species and human communities
- warming twice as fast as the rest of the world
- 4 of 10 largest world fisheries
- GHGs storage in permafrost
- 279 species of migratory birds (including 80% of world geese populations)
- key role in the global physical, chemical and biological balance



## Arctic Ecosystem Services

- PROVISIONING SERVICES
- **CULTURAL SERVICES**
- REGULATING SERVICES
- SUPPORTING SERVICES



# Integration of ecosystems into policies

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