

# Connecting top-down and bottom-up approaches in environmental observing

*Lessons for the Arctic and a review of programs across the globe*

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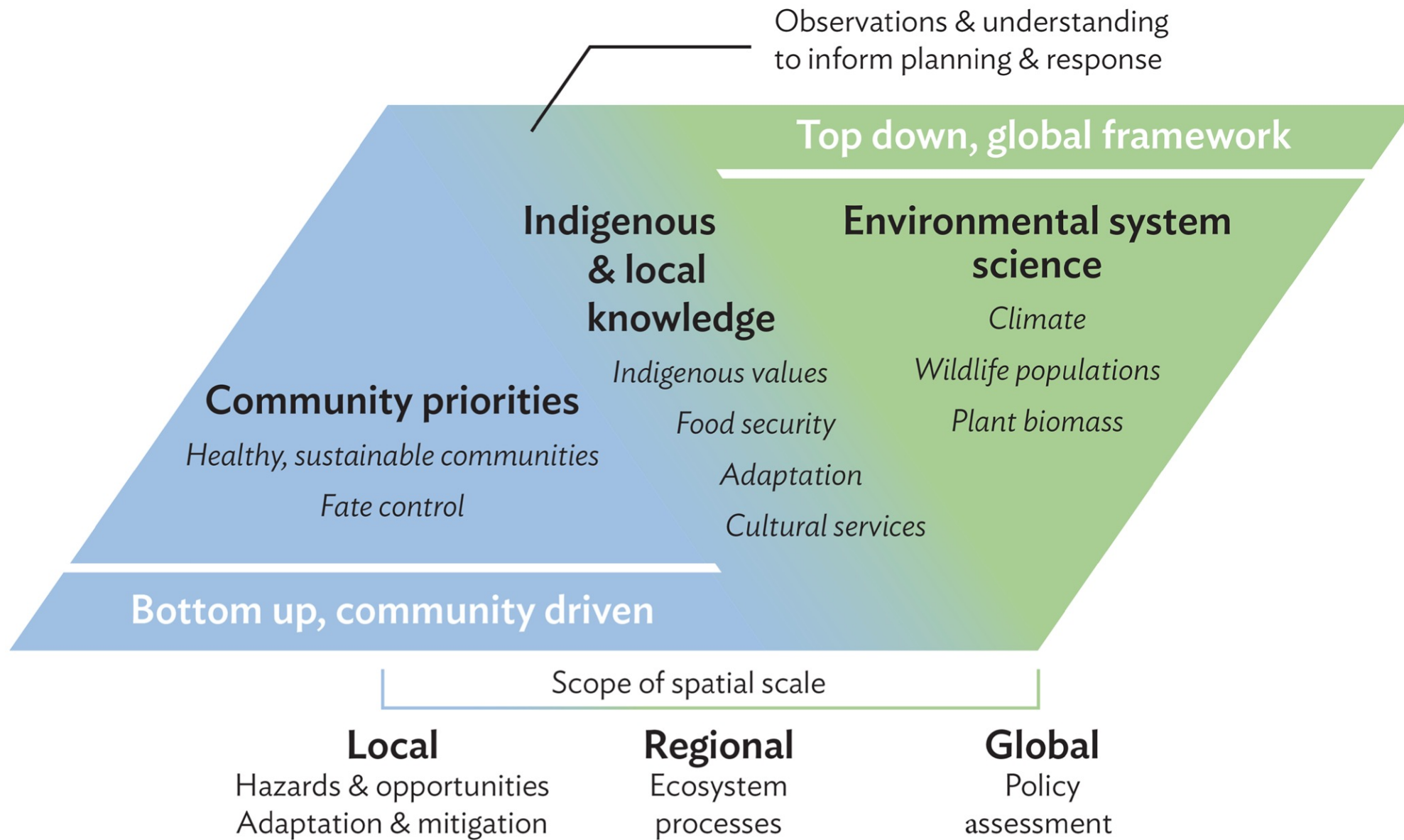
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# Observations inform responses to rapid Arctic change

1. How to foster better linkages between bottom-up, community-driven and top-down, regional/global-scale observing?
2. Review of 124 sustained observing activities across the globe
3. Workshops & surveys of 30 Arctic community-based monitoring programs







# Challenges & Interventions

- Surveyed 30 Arctic community-based programs & held workshops
- Recognizing good practice helps address challenges (2 out of 6 approaches shown here)



Community based observers

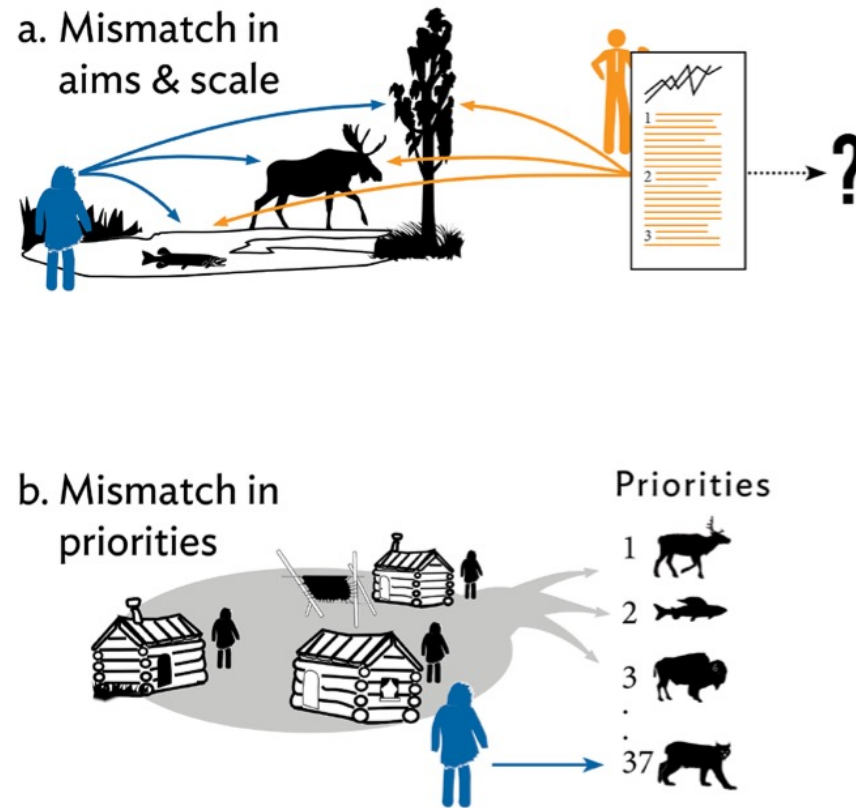


Management authorities

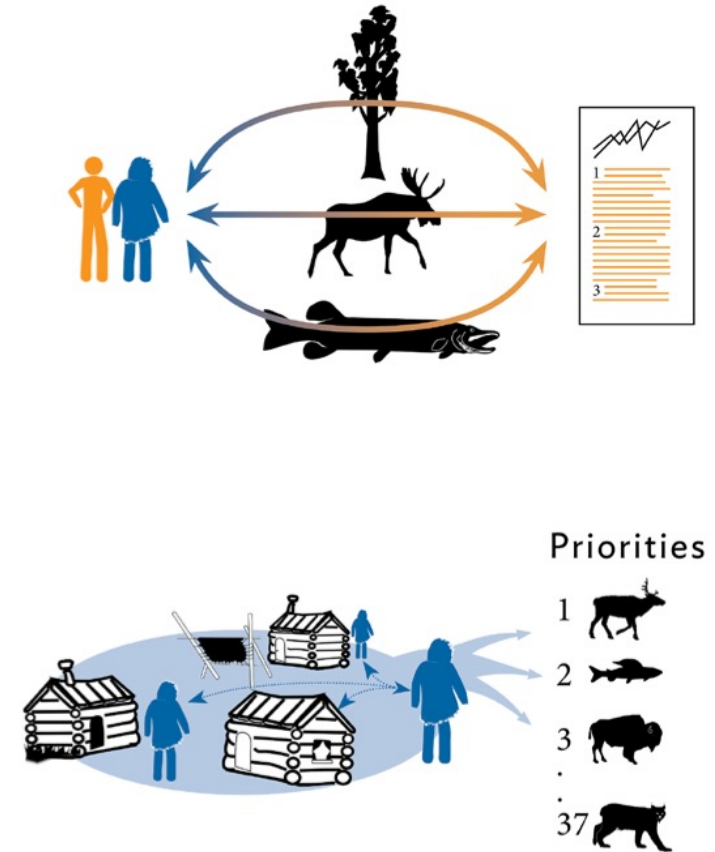


Regulations

## CHALLENGE



## INTERVENTION





**Linking** bottom-up & top-down  
frameworks  
**enhances** information products,  
observing program efficiency &  
sustainability



# Further details

## FUNDING SUPPORT

- EU Horizon 2020 – INTAROS Project
- U.S. National Science Foundation  
– RNA Arctic CoObs Project



## FURTHER READING

Special section in *BioScience* on Environmental Monitoring:

“The Theory, Practice, Application and Results of Locally- Based Monitoring of the Environment” – Danielsen et al.

“Connecting Top-Down and Bottom-Up Approaches in Environmental Observing” – Eicken et al.

“Digital Platforms for Community-Based Environmental Monitoring” – Johnson et al.

“Citizen Science and Indigenous and Local Knowledge Systems” – Tengö et al.

## CONTACT

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