

Protected area governance challenges in the Arctic and Hindu Kush Himalaya: A comparative assessment of interconnections of the Polar regions

Ahmed Nawaz¹ & Jón Geir Pétursson²

1. Introduction

There is a growing interest in understanding linkages and interconnections between the Arctic and Hindu Kush Himalaya (HKH) regions. Different influential regional actors, such as the Arctic Circle, Arctic Council, University of the Arctic (UArctic), and International Centre for Integrated Mountain Development (ICIMOD) are promoting mutual knowledge building and learning between these regions, also referred to as the First and Third poles [1-3]. The Arctic and HKH are critical components of global cryosphere, and jointly hold a significant part of the globe's frozen water. Both regions are home to some of the Earth's most challenging environments, where species and communities have biologically and culturally evolved to adapt and thrive in extreme conditions [4, 5]. However, both regions are experiencing cryosphere thawing, glacier retreat, permafrost degradation, and other manifestations of climate change [6], which are affecting the ecological status of their local ecosystems,

economies and livelihoods of regional populations, as well as amplifying impacts that are far-reaching and worldwide.

The two regions are also experiencing accelerated rate of warming relative to global rates as ramifications of climate change are unevenly spread across the globe [6, 7]. In the HKH specifically, climate change and other drivers such as population growth and unprecedented development are bringing profound ecological and geophysical transformations that require new avenues of collaboration and cooperation. Studies indicate a growing enthusiasm for international research collaboration in the HKH region, accompanied by a shift in research focus from sector-specific to a more interdisciplinary approach [8].

Establishment of protected areas (PAs) is considered to be a key global strategy for nature conservation, provision of ecosystem services, and promoting sustainable development [9, 10], and recent studies from the two Polar regions indicate

¹ Doctoral Candidate. Environment and Natural Resources, University of Iceland. Email: ahn3@hi.is

² Professor. Environmental Governance. Environment and Natural Resources. School of Engineering and Natural Sciences. University of Iceland. E-mail jgp@hi.is

that a significant area of both has been put under PA land use regimes [10, 11]. Moreover, there is a strong likelihood of further expansion of PAs in both regions as nation states attempt to meet the new global target set under the Global Biodiversity Framework (GBF) of bringing 30 percent of their territory under conservation by 2030 [12].

Hence, with PAs being a significant land-use category in the Arctic and HKH, attempts to promote sustainable development, counter degradation, and ecosystem restoration become, to a large extent, their governance system issue. This exploratory paper provides a brief overview of the status of conservation efforts in the Arctic and Third Pole regions, and puts a focus on governance commonalities and challenges of the conservation landscapes of the two regions. Using interdisciplinary lens, the paper aims to explore the interconnectedness between the Arctic and HKH, and what issues might be of interest for the two distinct, yet somewhat similar regions. We then provide insights from two large glacier PAs, Vatnajökull National Park in Iceland and Central Karakorum National Park in Pakistan.

2. PA estate of the Arctic and the Hindu Kush Himalaya

Conservation areas in the form of PAs are a major land use category in both the Arctic and HKH regions. According to recent studies, as of 2021, 20.77 percent of the

Arctic's terrestrial area is protected (Figure 3) [11], whereas the HKH has a total of 575 PAs covering 40.17 percent of the region (Figure 4) [10]. Both regions have experienced recent increase in size, as the extent of terrestrial PAs in Arctic region has doubled since 1980s, and the number of PAs in HKH has increased significantly from 142 PAs in 1980 to 575 PAs in 2020 [10, 11].

Moreover, around 99 percent of terrestrial PAs in the Arctic have been assigned an International Union for Conservation of Nature (IUCN) management category I-VI [11], whereas only about 79 percent of PAs in HKH have IUCN categories [10]. The six management categories identified by IUCN serve as global standards for defining, documentation and communication concerning PAs, and are closely linked to the flexibility allowed for land use in the definition of PAs [13]. A vast majority of Arctic region's terrestrial PAs, about 50 percent, have been assigned the Category II, National Park [11], whereas in the HKH region, a majority of PAs fall under the Category V, Protected Landscapes/Seascapes [10]. The key difference between the two categories is that while Category II PAs focus on minimizing human activities, PAs in Category V attempt to strike a balance between nature conservation and continuous human interaction [13], which is more important for the HKH due to the unique socio-ecological systems of the

region, developed through centuries of human interactions [14]. This illustrates

the importance of both regions for nature conservation.



Figure 1. PAs in the Arctic region (Source: [15])

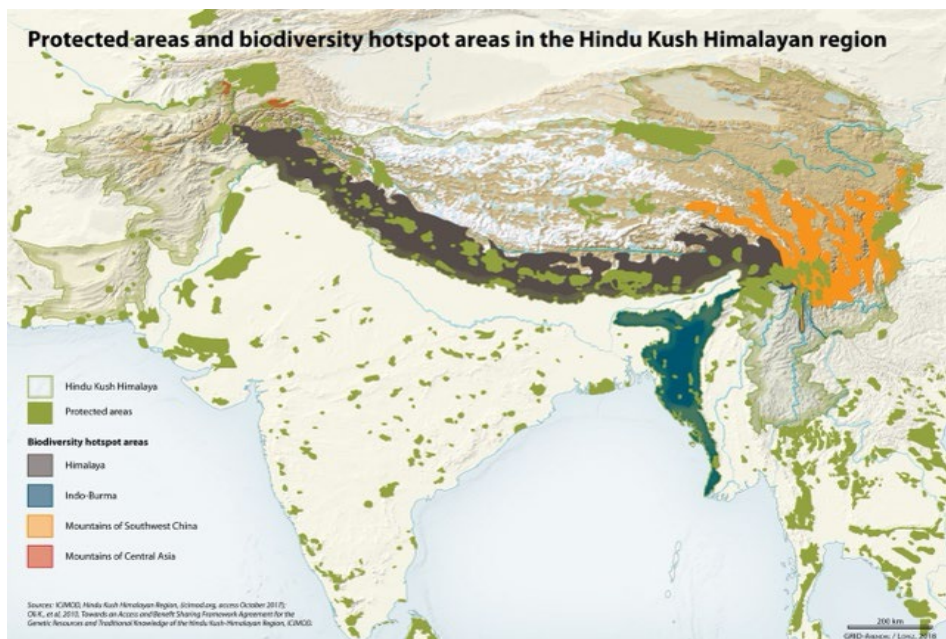


Figure 2. PAs in HKH region. (Source: [16])

3. Some interconnected PA governance issues

PAs are, fundamentally, governance systems that are, established by law, clearly demarcated geographical spaces with significant natural and cultural values, governed by actors with various roles and decision-making powers, and institutions that guide and are guided by human interactions [17-19]. Since PAs are organized in accordance to the attributes of the area under protection, expected outcomes, and level of human interaction allowed within its boundaries, the approach and effectiveness of governance systems can vary considerably [20]. Thus, in addition to PA coverage, effective management and equitable governance of PAs become critical elements for meeting conservation objectives [21, 22]. Equitable governance refers to distribution of costs and benefits of conservation, recognition of traditional values and rights, and how decisions regarding PAs are made, whereas management effectiveness indicates achievement of desired outcomes [23]. Both elements are strongly linked with positive conservation and socioeconomic outcomes, as evidenced by GBF targets, which also require PAs to be effectively and equitably governed [12]. Thus, how the large PA estate of Arctic and HKH is being governed becomes a major conservation and sustainable development issue for both regions, creating an interesting and important platform for

exploring multiple interconnected interests. Here we explore a few such issues.

3.1. Human – environment interactions and rights of indigenous people

Demography of both regions pose interesting challenges to their constituent nation states. The Arctic, with about 4 million people, is a sparsely populated region [1], whereas HKH is home to approximately quarter of a billion people [5]. A key demographic feature of both populations is the significant proportion of indigenous people inhabiting the regions. While the settlements in Arctic are dispersed, the indigenous people in certain areas make up the majority of the population, exhibiting high economic dependence on natural resources, and in some cases, enjoying a greater per capita disposable income than the national average [24]. The HKH is also home to indigenous people, albeit in millions, who, along with the rest of HKH inhabitants, are significantly dependent on resources of the region, but in contrast of the Arctic region, face greater economic, social and political marginalization [25, 26]. Some of the key human environment interactions common to both regions that require conservation actions include, hunting of wildlife, livestock herding, resource and mineral extraction, and tourism [4, 25, 27]. These interactions create similar issues for conservation, indigenous peoples' rights,

and sustainable use and development that need to be addressed across regions. It is important to acknowledge that indigenous people and communities have multiple traditional and historic rights to resources that go beyond the formal regulatory framework, which are important for PA governance in both regions.

3.2. Evolutionary trajectories of governance and inclusion of stakeholders

PA governance, as a concept, has seen considerable evolution over decades as conservation discourse has developed [28]. Historically, the establishment of PAs had often been used as a tool of colonialism by European nations, which typically resulted in dispossession and displacement of indigenous communities from their lands [12]. Both the Arctic and HKH have been significantly impacted by colonialism, albeit in different ways [29, 30]. Nation states that emerged from the decolonization process often continued the “fortress” conservation approach of separating nature and humans, and up until the 1990s, PAs were commonly being established under strict, exclusionary patterns [31]. Hence, many of the earlier PAs in HKH were also based on laws and policies prohibiting human interactions with ecosystems [32].

As a consequence of this legacy, and the realization that conservation goals are often not attainable without giving due consideration to local communities’ needs,

the narrative shifted from the “fortress” model towards community-based conservation approach [33]. Among the various types of PA governance arrangements that have evolved, co-management has emerged as an influential approach of joint decision-making and power sharing between state and local level actors [34]. This governance type has gained prominence by obtaining an expanded role for community involvement in decision-making, and is seen as a suitable compromise between top-down and bottom-up governance approaches [35]. Consequently, governance systems that engage, and are inclusive of local and indigenous communities have become a priority in several countries of the Arctic region [36]. Similarly, the HKH is also exhibiting a general trend of moving towards participatory and decentralized forms of PA governance in recent years [32]. Since governance approaches are generally case-specific and context-dependent [18], and both regions exhibit a significant concentration of PAs [8, 36], there exists an opportunity to analyse the diversity of PA governance across the regions.

3.3. Complex neighbourhood with transboundary landscapes

The location and geo-politics of both the Arctic and HKH attract security concerns, territorial and border tensions, and militarization. In building an effective model of governance for cooperation, the

Arctic states have long ensured scientific and research collaboration between them rather than regional conflicts [1]. Through an intergovernmental forum, the Arctic Council, the regional states have developed a range of recommendations and goals for protection of critical Arctic habitats, and to strengthen key national and international processes [11]. While this cooperation has eroded in recent years due to Russian engagement and contestation in the Arctic [37], evolution of the Arctic cooperation is considered to be an important model for building trust and fostering cooperation within a region [1]. In stark contrast, perpetual border conflicts between the key nation states of HKH have limited any significant intergovernmental response to intensifying regional environmental concerns [38]. A key issue arising from this lack of cooperation is that HKH is an area of interconnected transboundary landscapes, where PAs are being governed by individual countries [39]. While avenues of cooperation have been limited, ICIMOD, provides an important regional platform for networking, knowledge exchange and building, and sharing of ideas across borders, including PA issues [1].

4. Glacier park co-management across regions in local settings

Looking at the interconnections at different scale, it is informative to explore governance challenges of PAs from the two regions (Table 1). Vatnajökull National

Park (VNP) is the largest national park in Europe outside of Russia, and incorporates the Vatnajökull glacier and some contiguous landscapes [18]. The park was established in 2007 after a merger of two existing national parks, and has a site-specific co-management governance system, which was established by a park-specific legislation, allowing VNP to run as an autonomous government agency [20]. This shift away from traditional, top down approach of governance, and finding a balance between nature conservation and rural development are generally seen as the impetus behind VNP's establishment [18]. Consequently, what we see is that despite being spread over a vast region with different natural characteristics, populations, perceptions and priorities, co-management governance structure has benefited the institutional fit of VNP [20]. Central Karakoram National Park (CKNP), nestled in the western region of HKH, is the largest alpine PA in Pakistan, which was gazetted as a national park in 1993 [40]. There is a legacy of notifying PAs in Pakistan under strict top-down governance models, and without community involvement [41], which has generally resulted in lack of ownership and legitimacy among the local communities. Hence, CKNP existed as a "paper park" after its inception, and only became operational in 2008 after community participation in the planning process and readjustments to the Park's resource regimes [42, 43]. In so doing,

CKNP became one of the few PAs in Pakistan with an approved management plan, seeking shared governance and

allowing sustainable resource use in the PA's buffer zone.

Table 1. Examples of interconnected governance issues for two PAs in Polar region

| Governance challenges | Vatnajökull National Park | Central Karakoram National Park |
|-----------------------------|---|---|
| Attributes | Major glacier with several outlet glaciers | Snow and several glaciers cover majority of the area |
| | Highest peak and largest PA in Iceland | Second highest peak in the world, K2, and largest PA in Pakistan |
| | Size: 14,700 km ² | Size: 10,557 km ² |
| System of governance | Park specific legislation | State legislation for all PAs |
| | Co-management approach | Aspires to co-management model |
| | Stretches across six municipalities | Spread over five administrative districts |
| Approach to sustainable use | Sustainable use of some natural resources allowed | Sustainable resource use allowed in the buffer zone |
| | No permanent human settlement within the park | Settlements on the southern and western boundaries of CKNP |
| | Specific resources regimes to regulate resource use | Resource regimes modified to make park functional |
| Tourism | Grown exponentially, major issue of the PA | Objective of increasing tourism, tourism related issues a concern |
| International designation | World Heritage status since 2019 | On World Heritage tentative list since 2016 |
| | Ramsar site within VNP | |
| IUCN category | Mainly category II with embedded Ib and VI areas inside VNP | Category II, with strict conservation zones inside CKNP |

5. Conclusions and way forward

The objective of this exploratory paper is to identify some common themes within the conservation landscapes of the Arctic and HKH that highlight their interconnectedness, and provide avenues of further exploration and analysis. We have compared the PA estate of the two regions, and briefly described interconnected issues concerning PA governance in both Poles. Looking at the local level, the brief comparison of two large glacier parks, VNP and CKNP, indicates that PAs of similar attributes tend to have many similar governance issues and challenges. This short review clearly

illustrates that there exists substantial scope for mutual learning between the regions for addressing conservation and PA governance issues in an interdisciplinary perspective.

6. References

1. Ibsen, T., *The Arctic Cooperation, a Model for the Himalayas—Third Pole?* Science and Geopolitics of The White World: Arctic-Antarctic-Himalaya, 2018: p. 3-16.
2. Marsden, S., *From the high north to the roof of the world: Arctic precedents for third pole governance.* The Yearbook of Polar Law Online, 2017. 8(1): p. 56-75.

3. Steinveg, B., *The role of conferences within Arctic governance*. Polar Geography, 2021. **44**(1): p. 37-54.
4. Meltofte, H., *Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity*. 2013, CAFF Secretariat: Akureyri, Iceland.
5. Sharma, E., et al., *Introduction to the Hindu Kush Himalaya assessment*. The Hindu Kush Himalaya Assessment: mountains, climate change, sustainability and people, 2019: p. 1-16.
6. Fernandes, M., et al., *Comparing recent changes in the Arctic and the Third Pole: linking science and policy*. Polar Geography, 2022. **45**(3): p. 197-225.
7. Yao, T., et al., *A Scientific Assessment of the Third Pole Environment*, T. Yao, et al., Editors. 2022, United Nations Environment Programme: Nairobi.
8. Chettri, N., et al., *Changing discourses in the third pole: A systematic review of climate change impact on biodiversity in the Hindu Kush Himalaya*. Ecological Indicators, 2023. **155**: p. 111046.
9. Geldmann, J., et al., *A global-level assessment of the effectiveness of protected areas at resisting anthropogenic pressures*. Proceedings of the National Academy of Sciences, 2019. **116**(46): p. 23209-23215.
10. Chaudhary, S., et al., *Protected areas in the Hindu Kush Himalaya: A regional assessment of the status, distribution, and gaps*. Conservation Science and Practice, 2022. **4**(10): p. e12793.
11. Barry, T., et al., *Status and Trends for Arctic Conservation Measures*. PARKS, 2023. **29.1**: p. 43-58.
12. Gurney, G.G., et al., *Area-based conservation: Taking stock and looking ahead*. One Earth, 2023. **6**(2): p. 98-104.
13. Dudley, N., *Guidelines for applying protected area management categories*. 2008, Gland, Switzerland: IUCN.
14. Xu, J., et al., *Sustaining biodiversity and ecosystem services in the Hindu Kush Himalaya*, in *The Hindu Kush Himalaya assessment: Mountains, climate change, sustainability and people*, P. Wester, et al., Editors. 2019, Springer. p. 127-165.
15. Ahlenius, H., *Protected areas in the Arctic*, in *Arctic conservation collection*. 2006, GRID-Arendal.
16. Isquierdo, N.L., *Protected areas and biodiversity hotspot areas in the Hindu Kush Himalayan region*, in *Graphics from: Outlook on climate change adaptation in the Hindu Kush Himalaya*. 2018, GRID-Arendal.
17. Ostrom, E., *A general framework for analyzing sustainability of social-ecological systems*. Science, 2009. **325**(5939): p. 419-422.
18. Petursson, J.G. and D.M. Kristofersson, *Co-Management of Protected Areas: A Governance System Analysis of Vatnajökull National Park, Iceland*. Land, 2021. **10**(7): p. 681.
19. Vatn, A., *Environmental governance: Institutions, policies and actions*. 2015: Edward Elgar Publishing.
20. Siltanen, J., et al., *Diversity in Protected Area Governance and Its Implications for Management: An Institutional Analysis of Selected Parks in Iceland*. Land, 2022. **11**(2): p. 315.

21. Chape, S., et al., *Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets*. Philosophical Transactions of the Royal Society B: Biological Sciences, 2005. **360**(1454): p. 443-455.
22. Oldekop, J.A., et al., *A global assessment of the social and conservation outcomes of protected areas*. Conservation Biology, 2016. **30**(1): p. 133-141.
23. Borrini-Feyerabend, G., et al., *Governance of protected areas: From understanding to action*. Vol. Best Practice Protected Area Guidelines Series No. 20. 2013, Gland, Switzerland: IUCN.
24. Jungsberg, L., et al., *Atlas of population, society and economy in the Arctic*. 2019, Nordregio: Stockholm, Sweden.
25. Chettri, N., et al., *Real world protection for the "Third Pole" and its people*. Protection of the three poles, 2012: p. 113-133.
26. Gioli, G., et al., *Understanding and tackling poverty and vulnerability in mountain livelihoods in the Hindu Kush Himalaya*. The Hindu Kush Himalaya Assessment: Mountains, Climate Change, Sustainability and People, 2019: p. 421-455.
27. Wang, Y., et al., *Drivers of change to mountain sustainability in the Hindu Kush Himalaya*. The Hindu Kush Himalaya assessment: Mountains, climate change, sustainability and people, 2019: p. 17-56.
28. Petursson, J.G. and P. Vedeld, *Rhetoric and reality in protected area governance: Institutional change under different conservation discourses in Mount Elgon National Park, Uganda*. Ecological Economics, 2017. **131**: p. 166-177.
29. Jensen, L., *Approaching a postcolonial Arctic*. KULT-Postkolonial Temaserie, 2016. **14**: p. 49-65.
30. Randeria, S., *Global designs and local lifeworlds: colonial legacies of conservation, disenfranchisement and environmental governance in postcolonial India*. Interventions, 2007. **9**(1): p. 12-30.
31. Adams, W.M., *Nature and the colonial mind*, in *Decolonizing nature*. 2012, Routledge. p. 16-50.
32. Sharma, E., N. Chettri, and K.P. Oli, *Mountain biodiversity conservation and management: a paradigm shift in policies and practices in the Hindu Kush-Himalayas*. Ecological Research, 2010. **25**: p. 909-923.
33. Doolittle, A.A., *Fortress conservation*, in *Encyclopedia of environment and society*, P. Robbins, Editor. 2007, SAGE. p. 704-705.
34. Berkes, F., *Evolution of co-management: Role of knowledge generation, bridging organizations and social learning*. Journal of environmental management, 2009. **90**(5): p. 1692-1702.
35. Armitage, D., F. Berkes, and N. Doubleday, *Introduction: Moving beyond co-management*, in *Adaptive co-management: Collaboration, learning, and multi-level governance*, D. Armitage, F. Berkes, and N. Doubleday, Editors. 2007, UBC Press: Vancouver, Toronto. p. 1-18.
36. Herrmann, T.M. and T. Martin, *Indigenous peoples' governance of land and protected territories in the Arctic*. 2015: Springer.

37. Østhagen, A., O. Svendsen, and M. Bergmann, *Arctic Geopolitics*. 2023.
38. Marsden, S., *Environmental assessment of cross-border development: China and the Third Pole*. *Journal of Environmental Assessment Policy and Management*, 2016. **18**(02): p. 1650009.
39. Ojha, H.R., et al., *Governance: Key for environmental sustainability in the Hindu Kush Himalaya*, in *The Hindu Kush Himalaya assessment: Mountains, climate change, sustainability and people*, P. Wester, et al., Editors. 2019, Springer International Publishing. p. 545-578.
40. Salerno, F., et al., *Experience with a hard and soft participatory modeling framework for social-ecological system management in Mount Everest (Nepal) and K2 (Pakistan) protected areas*. *Mountain Research and Development*, 2010. **30**(2): p. 80-93.
41. Khan, Z.I., *Protected areas in Pakistan: Management and issues*. *Journal of the National Science Foundation*, 2003. **31**(1-2): p. 239-248.
42. Mari, F., et al., *Management Plan for Central Karakorum National Park 2014-2019*. 2014.
43. Nawaz, A., *Transition towards co-management of protected areas in the Hindu Kush-Karakoram-Himalaya region: An analysis of the governance system of Central Karakoram National Park, Pakistan*, 2023. University of Iceland.

