

PARKS, PEACE, AND PARTNERSHIP: GLOBAL INITIATIVES IN TRANSBOUNDARY CONSERVATION

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The Siachen Peace Park Proposal: Reconfiguring the Kashmir Conflict?¹

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INTRODUCTION

One of the longest military conflicts in recent history continues high in the mountains of South Asia. It is taking place in the Karakoram Mountains at the western end of the Himalayas at elevations that exceed six thousand metres. While there is a long history of dispute in Kashmir, the current dispute between India and Pakistan in the Siachen Glacier region of northern Kashmir has been underway since 1984 (Raghavan 2002). The history of the confrontation stems, in part, from an undelineated portion of the Line of Control (LOC) that was established after the 1948 war between India and Pakistan. This line defined the separation of forces in Kashmir and has remained in effect with only minor deviations over six

1 A previous version of this chapter was published in *Peace Parks, Conservation and Conflict Resolution*, edited by Saleem H. Ali (MIT Press, 2007).

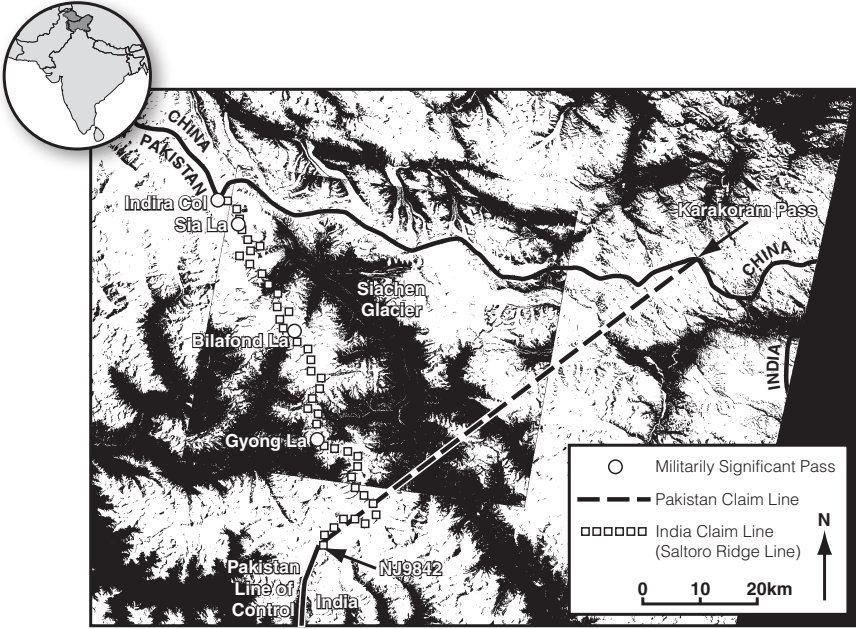
decades. The dominant geographical feature here is the Siachen Glacier, the longest glacier outside the polar caps.

In recent years, there have been several attempts by the countries involved to resolve the dispute. To date, these have been unsuccessful. One goal is to achieve a military disengagement from the region, eliminating the exorbitant human and financial costs associated with this conflict and reducing the military conflict in Kashmir that is and has been a flash-point in South Asian security since the time of partition (Kanwal 2007). There also exists a strong environmental interest in resolving the dispute and minimizing the impacts of maintaining troops on the highest battlefield in the world (Ali 2002; Tallone 2003). Those addressing these issues include individuals in government, the military, academia, and the non-governmental community.

During the sixty years since the partition of India, the region has often been plagued by conflict. Three major wars have been fought between India and Pakistan over that period, and one was fought between China and India (Ganguly 2001; Sidhu and Yuan 2003). In the aftermath of nuclear testing by India and Pakistan in 1998, there have been further series of events that led again to the brink of war. These included armed military manoeuvres by both sides as well as terrorist incidents, such as the attack on the Indian parliament in December 2001.

After the first India/Pakistan war in 1948, a ceasefire line (CFL) divided the princely state of Jammu and Kashmir under the terms of the Karachi agreement for most, but not all, of the disputed region. Once the CFL reached a particular point high in the Karakoram Mountains, referred to by its map coordinates as NJ9842, the agreement specified its extension as “thence north to the glaciers” (Government of India and Government of Pakistan 1949). Pakistan interpreted the line to proceed northeastward to the Karakoram Pass on the Chinese border (Wirsing 1986; Sehgal 1996), whereas the Indians construed it to go along the Saltoro Ridge and Siachen Glacier in a north-northwesterly direction to the Chinese border (Singh 1989; Sidhu 1992). These separate perceptions are reflected in Map 1 overlaid on a satellite map of the region.

With only slight adjustments in the CFL after subsequent wars, Kashmir remains divided. However, in 1984, believing that Pakistan was about to occupy the region, Indian troops moved into the area of the



MAP 1. THE DISPUTED SIACHEN REGION BETWEEN INDIA AND PAKISTAN. CHINA BORDERS THE REGION ON THE NORTH.

Siachen Glacier and the Saltoro ridge, calling into question the interpretation of the phrase “thence north to the glaciers.” The result was an area of about 2,500 square kilometres of disputed territory. The Siachen Glacier region thus became a six thousand-metre-high battleground between India and Pakistan. Although many troops have been killed in the skirmishes that have occurred on this highest battleground in the world, more fatalities and casualties have been caused by the inhospitable terrain and environment.

While there are differing views on the military significance of the area, the Siachen dispute has an undeniably strong political significance. However, as India and Pakistan have worked to reach agreement on many issues over the years, Siachen has been discussed as a potential area for cooperation between the two sides through disengagement of troops from the region. In 1989 and again in 1993, a settlement on the issue was

nearly reached. In 2004, Siachen was designated as one of eight topical areas for dialogue between India and Pakistan in the “composite dialogue” (Manjunath et al. 2006). The costs in financial and human terms of continuing this confrontation make it an excellent candidate for bilateral cooperation while minimizing strategic or military disadvantage.

General Raghavan, who has served in Siachen, has suggested that, if the opposing military positions do not pose a threat or if the contentious area does not have strategic significance, then a solution is possible. He quotes the late Lt. Gen. I. S. Gill, who said, “You cannot build roads on glaciers which are moving rivers of ice. We have no strategic-tactical advantage in this area, and nor has Pakistan” (Raghavan 2002). Admiral Koithara, agreeing with this assessment, states “the area has ... no strategic value. No military threat can be mounted from or through it.” He suggests that both forces should withdraw and a “wilderness reserve” be created (Koithara 2004).

Many factors will influence a resolution of the Siachen conflict. While political will is the predominant one, it will also be affected by other issues. The imperatives of reducing human suffering, saving wasteful expenditures, and ending ecological degradation are three irresistible determinants that justify speedy and positive decision-making. Mechanisms that support political will, by providing assurance that terms of agreements are met, will be required. These may include monitoring systems, inspection regimes, and cooperative projects, all of which can help ensure compliance. While a variety of resolutions and many monitoring options are possible, this paper will address a set of concepts associated with peace parks and science centres that may contribute to resolution of the Siachen dispute.

Impacts of War

An onerous responsibility rests on the governments of India and Pakistan, whose troops are deployed in the inhospitable reaches of Siachen. The impacts of the war can be measured by the human, financial and environmental impacts.

The Human Impact

Clearly the most dramatic impacts of the war on Siachen are on those troops who must operate on this high battleground. While estimates vary, in over twenty years of fighting, thousands of troops have lost their lives to not only enemy fire but more so to the harsh conditions of life at altitudes of six thousand metres and above (Ramachandran 2007). At temperatures of -50°C , the two armies have hammered at each other.

Solutions are needed that can reduce the need for manned presence at these altitudes and conditions. Concepts for demilitarization have been proposed. In April 2007, the Indian and Pakistani defence secretaries met in Islamabad to discuss the Siachen and Sir Creek disputes. "Pakistan insists that there must be some tangible progress on Kashmir for the rapprochement to gather momentum and India continues to reiterate that it is necessary to first build confidence by resolving relatively less intractable problems" (Kanwal 2007).

The Financial Impact

Despite significant increases in the South Asian Human Development Index (HDI) from 0.4 to 0.6 over the past three decades, the region still remains low on the global scale, second from the bottom only to sub-Saharan Africa. India ranks as number 134 and Pakistan as number 145 among the 187 nations ranked in HDI in 2011 (UNDP 2011). The high costs of maintaining large numbers of troops on Siachen saps financial resources needed to advance the standards of living in both nations. The cost of maintaining forces has been reported to be approximately \$1 million a day in India and somewhat less in Pakistan.

The Environmental Impact

There is also a need to reduce the negative environmental consequences of the continued conflict. Because of the high costs and difficulty of supplying troops stationed in and around Siachen, no effort is taken to remove the military and human accumulation of debris. By some estimates, as many as four thousand containers of materials a year have been dumped in the glacial crevasses or left strewn across the landscape (Chatterjee

2001). These will eventually work their way to the headwaters of the Nubra River. The ecological consequences of this accumulated waste can have a significant impact on this otherwise pristine and fragile ecosystem.

But beyond that is a need to address a broader range of regional environmental concerns that affect not only the region itself but more broadly the entire subcontinent. Resolution of the conflict in Siachen can open the door to addressing this broader range of regional concerns.

Degradation of the Himalayan Ecosystem

The future of South Asia's teeming population is at risk if the ongoing environmental degradation and ecological imbalance continues much longer. One of the great concerns of the moment must be the irrevocable damage that is being caused to the environment. This is due to a combination of human depredations and natural causes that have been exacerbated by rapidly increasing populations and industrialization. Together, these forces have combined to create a possible environmental crisis. The Himalayas are not merely a geographical feature or a range of magnificent mountains; they also embody a people's civilization. If this great range with its towering peaks was not there, the Indo-Gangetic plains of the subcontinent would not exist as the one-time 'bread basket' of undivided India. These mountains give birth to nine giant river systems of Asia, including the Brahmaputra, the Ganges, and the Indus. It was along their valleys that great civilizations grew and flourished. But as things are today, the quality of these watersheds is threatened. Together these basins are a lifeline for "half a billion people in the Himalayas, and also for 1.3 billion people living in the nine river basins" (Liu and Rasul 2007).

One such area of environmental concern is the area referred to as the Hindu Kush-Himalayan (HKH) region, and the Siachen area specifically, that is being defiled by negative forms of human activity at an alarming rate. The presence of thousands of troops has turned the region into a vast dumping ground of the detritus of war; empty oilcans, ammunition cases, derelict vehicles, and a vast amount of human waste that is to eventually emerge in the Nubra River (Ali 2002). An end to the conflict could lead to efforts to clean up the fragile environment and help protect this endangered ecosystem against further degradation.

One observer has remarked: “Siachen has also experienced large-scale loss of plant and animal diversity as a result of the conflict. The glacial habitats of ibex [*Capra ibex*], brown bears [*Ursus arctos*], cranes [*Grus spp.*], snow leopards [*Panthera uncial*], and many other species are threatened” (Kemkar 2006). The end of conflict also permits greater opportunities to assess the impacts of biodiversity losses in the region.

Effects of Global Warming

The rapid melting rate of the nearly 15,000 Himalayan glaciers is a major environmental issue in the region. These glaciers comprise the largest bodies of ice and snow outside the polar caps and cover an area of nearly 32,000 square kilometres. In a report prepared for the G-8 meeting in March 2005, the World Wide Fund for Nature (WWF) estimated that the glaciers in the region are receding between 7.5 and 23 metres every year (Rai 2005). According to Professor Hasnain, the head of International Commission for Snow and Ice (ICSI), there is a possibility that the glaciers could disappear by 2035. It is estimated that 70 per cent of the water in the perennial rivers of the subcontinent is snow/glacier-fed. Only about 30 per cent is from the monsoons. Climate change in the high elevation desert areas has led to extreme weather events in the form of heavy cloudbursts. This increase in participation threatens local communities and world-class heritage sites with flood damage. For example, in 1999, the walls of the famous 1,000-year-old Hemis Buddhist monastery in Ladakh crumbled as a result of unseasonable rain, mudslides, and flooding. Climatologists have warned of large meltwater lakes that build up behind glaciers in the high Himalayan ranges. If their icy barriers are breached due to rising global temperatures, whole communities downhill would be at risk of being swept away. Environmental assessment programs have determined there are twenty-six such potentially dangerous lakes in Bhutan and Nepal. This threat could be avoided if concerted action is taken immediately (Times of India 2005). Cooperative scientific collaboration in this region could be one step leading to such action.

In addition, the melting of glaciers “seriously threaten[s] water availability in the region, particularly during lean flow seasons when meltwater contribution is crucial to sustain the river flow which supports human activities and ecosystem services” (Liu and Rasul 2007). Because of these

growing climate concerns in the region and around the world, the attractiveness of resolving disputes and making these areas available for scientific study as well as potentially freeing resources for this purpose give added incentive for resolution to the Siachen conflict.

CONCEPTS FOR ALTERNATIVE FUTURES

Over the last decade, an increasing set of ideas has been proposed that could provide a peaceful future for Siachen and an opportunity to address many of the environmental issues highlighted above. Many in the mountaineering community, who have historically been the most engaged in the Siachen region, helped initiate concepts for conflict resolution. Subsequently, government agencies, academic and non-government organizations, and other research institutions have contributed refinements to the ideas and initial efforts to engage in regional cooperation to address issues in Siachen. Their concepts include military disengagement, monitoring, and scientific collaborations. Representative ideas from among these concepts are outlined here.

Siachen Peace Park

Aamir Ali, an Indian mountaineer now settled in Switzerland, proposed the idea of the Siachen Peace Park in a 1994 publication (Ali 1992). He has, with many other mountaineers and environmentalists, deplored the degradation of the magnificent Himalayan chain that stretches from the northern borders of Afghanistan to the junction of the borders between India, China, and Myanmar. His proposal would not only help to prevent the further degradation of the Siachen area but would constitute a confidence-building measure through the demilitarization of this volatile area. The idea found widespread support among like-minded colleagues and was endorsed at an open meeting at the India International Centre, New Delhi, on 23 June 2001. The meeting addressed an appeal to Indian Prime Minister Vajpayee on the eve of his summit with General Musharraf, then President of Pakistan, proposing that a transboundary peace park be established that would allow the armed forces of both countries to withdraw,

under strict guarantees and surveillance, in conditions of honour and dignity. Though the summit ended in disarray, the idea of a Siachen Peace Park has found support in India and Pakistan, and indeed in many parts of the world. This support is evidenced by the forums on this issue held by government, academia, and non-government organizations that are referenced throughout this chapter.

While there can be no doubt that establishing such a transboundary peace park covering the entire Siachen area would prevent further armed confrontation and save thousands of lives and millions of dollars, it would also permit the two governments to assure their respective electorates that there has been no 'sell out' of interests. Because of the tremendous costs in human and financial terms associated with twenty-five years of conflict, there is a great need to convince the populations in both countries that neither side is capitulating to the other and thereby reducing the value of the sacrifices made. It would also help ensure that the countries meet their constitutional obligations to protect the Siachen environment. "A principal feature of both the Indian and Pakistani constitutions is the guarantee of several judicially enforceable 'fundamental rights.' These fundamental rights may serve as legal justifications in their respective countries for the protection of the environment generally, and the Siachen specifically" (Kemkar 2006). Further, both nations have ratified UNESCO's World Heritage Convention that encourages "identification, protection, conservation, and transmission to future generations of the cultural and natural heritage" (UNESCO 1972). The World Conservation Union (IUCN) believes that "protected areas along national frontiers can not only conserve biodiversity but can also be powerful symbols and agents of cooperation especially in areas of territorial conflict" (WCPA 2000). The loss of biodiversity and degradation of ecosystems can reshape the continental landscape directly affecting cultural and economic development. This is precisely what has taken place in the demilitarized zone between the two Koreas as has been brought out by Ke Chung Kim in his recipe for conservation of the Korean peninsula (Kim 2007).

In concluding an article in the *Mountain Research and Development* journal in November 2002, Aamir Ali (2002) says, "It is said on both sides of the Line of Control that to honour the blood of brave soldiers that has

been spilled, not an inch of territory should be given up. One could say with even more emphasis that the sacrifice of brave men could best be honoured by protecting a spectacular area consecrated with their blood.” A prior review of the peace park concept for the region has suggested that demilitarization is a viable option and that collaborative work on ecosystems could benefit both nations. It further recommended a three-step phased approach to the demilitarization process that suggests an end to the conflict while disengaging for a mutually agreed period of time, next a negotiated force reduction to be monitored by appropriate technical means, and thereafter an agreed and complete demilitarization plan (Kemkar 2006). Such a phased approach will likely be required to help develop the confidence needed to ensure a lasting settlement of the conflict.

The Science Centre Concept

The concept of a science centre in the Himalayas is to replace a military presence with a scientific presence in the Siachen region. A “Siachen Science Centre” (Biringer 1998) would satisfy the requirement for a national presence by both India and Pakistan that would help ensure terms of a military disengagement agreement, while advancing the cause of high-altitude scientific study. The project could initially be conducted cooperatively by India and Pakistan. Later, other regional and international participants and sponsors could be included in this effort to bring peace as well as establish transboundary environmental protection. Already there are 227 transboundary protected areas worldwide (UNEP-WCMC 2007).

Particularly pertinent to the Siachen issue is the precedent of the Antarctic Treaty of 1959 that set aside the entire continent for peaceful scientific use only. Since entry into force in 1961, forty-three countries have become its signatories, including the seven states that originally laid claim to portions of the continent. Under terms of the treaty, all claims are held in abeyance for the term of the treaty and no new territorial claims can be submitted. India acceded to the treaty in 1983 and maintains the Maitri research station as a permanent presence there. Pakistan is not a signatory; however, it maintains the Jinnah Station. Prospects for collaboration in Antarctica can certainly be expanded as discussed by Michele Zebick-Knos (2007).

The Antarctic Treaty bans any military activity in the defined area and prohibits nuclear testing. It limits national programs to those of scientific research and ensures the free exchange of information and scientists between countries. Inspection rights are granted to the facilities and operations of other countries with a presence on the continent. Provisions are made to have an open skies regime, enabling aerial observation at any time over any and all areas of Antarctica by any of the contracting parties having the right to designate observers. Regular consultative meetings of the signatory states are held and disputes are resolved by peaceful negotiation, including recourse to the International Court of Justice (Joyner and Chopra 1988).

While not a perfect model for South Asia, there are many features of the Antarctic Treaty that might be considered for application in Siachen. Some of these include demilitarizing the area and dedicating it to scientific research and establishing a joint research centre. Other useful concepts include some aspects of the Kuril Island and Korean peninsula proposals that could be adapted to meet the peculiarities of the Himalayas.

While the nature of an agreement on Siachen could take many forms, the science centre concept assumes an agreement in which a designated area would be set aside for peaceful scientific use only. The signatories to such an agreement would seek peaceful coexistence. Other parties could become signatories in various support or participation categories. Establishing a centre for scientific research in the Himalayas would provide a unique location for specialized research as well as the possibility of being integrated into other regional and international networks of scientific research such as the Himalayan Research and Cultural Foundation (2001) and the International Centre for Himalayan Biodiversity (Bhandari 2004). International participation could take the form of providing any combination of funding, research, or operational manpower, guidance, or administration.

The Siachen Science Centre would consist of a manned scientific research facility within a designated zone in the Karakoram Range. A base camp would be established with the potential for outlying field sites where scientific instruments could be placed. Smaller-scale manned outposts in the vicinity of the base station could also be considered. Scientists,

engineers, and technicians conducting research and experiments would staff the centre. Infrastructure support would have to be provided to meet administrative requirements by staff that could be a mix of bilateral, regional, or multinational personnel. The location high in the Karakoram Range in the western part of the Himalayan Mountains offers many advantages as a base for conducting a wide spectrum of scientific research in a unique geographic region. The facility has the potential to be the highest altitude manned research station in the world. Among the highest in the world currently are astronomical sites in northern Chile at elevations in excess of five thousand metres.

A number of scientific missions are possible. Examples include:

- astronomy, high above much of the earth's atmosphere;
- geology in an area of interesting tectonics;
- atmospheric sciences in the complex terrain of the Himalayas including climate change and global warming impacts;
- glaciology to provide insight into climatic variations throughout history;
- hydrologic studies to provide insight into relationships between snowfall, glacial activity, and river flows of critical water resources impacting agriculture as well as potential flooding concerns;
- life science studies of this harsh environment;
- physiology research to study the effects of high altitude on humans; and even
- psychological studies investigating the effects of a multinational group working together for prolonged periods in this hostile climatic environment.

In addition to scientific research, engineering knowledge can be obtained in the Siachen. Studies of the design, deployment, and operation of severe climate shelters, logistical issues of supplying and maintaining a remote

installation, and characterization and operation of monitoring systems in a severe environment are all ideally suited to the Siachen.

International Karakoram Science Project (IKSP)

The IKSP is a multinational, interdisciplinary effort by American, Indian, and Pakistani scientists to carry forward the best possible research options and methodologies into the Karakoram Himalayas. Offices have been established in the three countries by university professors, with plans for further development if the concept succeeds. Collateral efforts include the American Association for the Advancement of Science (AAAS), Himalayan High Ice Symposium, a Global Land Ice Measurements from Space (GLIMS) Project, a University of Nebraska IKSP Expedition to K2 Mountain, and an IKSP Workshop in South Asia. The GLIMS Project is a worldwide effort supported by the United States Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA) to assess the global ice mass with a view to addressing the many problems that result from global warming and glacier diminution. Depletion of fresh water sources for irrigation, hazards resulting from weakened rock walls following glacier melt, catastrophic meltwater floods, and many other related factors are part of the assessment process using the new ASTER satellite imagery and state-of-the-art analytical techniques. Combining these remote sensing techniques with eventual ground truth measurements in Siachen can help improve the analytical efforts to understand the watershed and environmental impacts.

Future plans call for joint Pakistani–Indian IKSP workshops on improving scientific knowledge in the Karakoram Mountains. The goals of these workshops are to facilitate cross-border communication and collaboration between geoscientists. Details of this effort were also presented in 2005 at the annual meeting of the American Association for the Advancement of Science. The army could also play a constructive role in the transition phase of this project by acting as rangers and engineers to coordinate the post-conflict clean-up effort (Ali 2005). While the IKSP has not established a permanent science centre in the region, the ideas of cooperative scientific research in the region are a first step in achieving a more permanent cooperative scientific presence in the region.

CONCLUSION

A variety of concepts, whether a peace park or science-based initiative, hold promise for reconfiguring the conflict and initiating peaceful and productive uses of the unique Siachen region environment. Finding ways to end the conflict will reduce human, financial, and environmental costs and its impact on the populations of the bordering countries. It would provide a positive frame for the withdrawal of both armies with dignity and honour and would be a fitting monument to the soldiers of both countries to memorialize lives lost. In addition, it would be an appropriate follow-up to the International Year of the Mountains (2002) and to the International Year for Water (2004).

The Siachen Glacier and the surrounding areas form a remarkable ecosystem and are part of the world's cultural and geographic heritage. The proposed peace park would, in effect, become a 'Transboundary National Park' that would straddle the frontier. It would be a powerful force in promoting peace, protecting the environment, and safeguarding the cultural values of indigenous peoples. This park would be unique; its size, boundaries, management plan, environmental protection, and research facilities would be negotiated by India and Pakistan for their mutual benefit. Although there can be no magic formula, the following may be possible:

- a joint declaration by the two prime ministers stressing their political commitment to the establishment of the peace park;
- a joint body to delineate the boundaries and plan the phased withdrawal of troops;
- a joint planning team with an alternating chairperson who would seek assistance and guidance from NGOs, such as IUCN, the International Mountaineering and Climbing Federation, and others;
- a memorandum of understanding for the cooperative management of the park; and

- an international treaty on the establishment of the park to be signed by the two heads of government.

Political will is the key to making progress. The future looks brighter, now that relations between India and Pakistan are improving. Cooperation on Siachen and development of a peace or science park could pave the way for a broader set of confidence-building measures to benefit the diverse peoples of South Asia.

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