

	<p>A double-blind, peer-reviewed, open-access, and an HEC-recognized <u>Y-category</u> Journal</p> <p>Research Journal of Human and Social Aspects</p> <p>Web link: https://rjhsa.com/index.php/rjhsa</p> <p>P-ISSN: 3006-9696, E-ISSN: 3006-970X</p> <p>Volume 4, Issue 2, 2026</p>	
---	--	--

Sovereign Territorialities and Environmental Challenges: Regional Environmental Complexes, Polycentric Regimes, and Climate Governance in South Asia

Dr. Sehar Sabir ¹ Dr. Shah Rukh Hashmi ² Sumayya Bibi ³

¹ Assistant Professor, the Department of International Relations, The Islamia University of Bahawalpur, Punjab, Pakistan.

² Assistant Professor of Current Affairs, the Department of Business Administration, Sukkur IBA University, Pakistan.

Correspondence Author: sr.hashmi@iba-suk.edu.pk

³ Ph.D. Scholar, Research Centre for History, Politics & International Affairs (SPHEA), Faculty of Social Sciences & Humanities, Universiti, Kebangsaan Malaysia (UKM).

Article information

Article History:

Received: 2026-03-13

Received in revised form:
2026-04-18

Accepted: 2026-05-20

Published Online: 2026-05-29

Keywords:

South Asia; Climate Change; Sovereignty; Tragedy of the Commons; International Regimes; Polycentric Governance; Regional Environmental Complex; Climate Regime Complex; Transboundary Rivers; Environmental Security.

ABSTRACT

South Asia is among the most climate vulnerable regions in the world, but its environmental governance is stuck in a state-driven political framework. This paper looks at the conflict of sovereignty and trans-boundary ecological systems in South Asia. It presents suggestions that the challenge of climate change in the region is not only a 'technical' one of adaptation, but also a 'diplomatic' one of weak cooperation. It is a structural governance issue that emerges when two logics clash: the tragedy of the commons (where shared ecological systems are "taken for granted" by actors acting at their own level of authority) and the sovereignty dilemma (that states do not wish to be bound by regional institutions due to the fact that territorial sovereignty is the dominant norm for regional politics). The paper builds on the notion that "Regional Environmental Complex" is a term for ecological systems that extend beyond state boundaries and need to be governed beyond the limitations of national planning. These complexes comprise the Himalayan cryosphere, the Indus-Ganga-Brahmaputra river systems, the Indo-Gangetic airshed and the larger delta zone of the Bay of Bengal. The paper links this concept with regime theory and polycentric governance in international policy development, and posits the concept of Regional Environmental Complexes as sub-regional ecological regime complexes within a wider climate regime complex.



© 2026 by the Authors. Licensee Sabir, Hashmi & Bibi. This article is an open-access distributed under the terms and conditions of the Creative Commons Attribution (CC BY) License <https://creativecommons.org/licenses/by/4.0/>

Introduction

Climate change reveals one of the major paradoxes of contemporary international relations: the rule of human societies is ensured by sovereign territories, while ecological systems are not political entities. This paradox is especially stark in South Asia, where glaciers, rivers, monsoons, airsheds, coastal deltas, forests and disaster corridors are linked to neighbouring states who are politically suspicious of each other. Although the sovereign state is still the most important unit of authority, law, security and political legitimacy, the biggest and most severe climate risks are created and felt across sovereign borders (IPCC, 2022; World Bank, 2021).

The problem, therefore, is not simply that South Asian states fail to cooperate. That's not enough of an explanation. The underlying issue is that climate change works on the principle of ecological interdependence while the politics remains territorial, on the basis of sovereignty, security-insecurity paradox and historical mistrust in South Asia. Climate vulnerabilities of India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives are unique and some of them are interlinked with each other through common ecological systems. The impacts of downstream plains flooding, glacier retreat in the Himalayas, air pollution in the Indo-Gangetic basin, heat stress in urban corridors and sea-level rise in low-lying deltas can be controlled only through coordinated national adaptation plans (ADB, 2014; IPCC, 2022).

The paper suggests that the problem of climate governance in South Asia can be seen from three nested perspectives: tragedy of the commons, state sovereignty, and international regime formation. The tragedy of the commons describes situations where shared ecological resources become depleted when they are used by people with conflicting interest without any rules, monitoring or sanctions to protect against the damage (Hardin, 1968). The most awaited characteristic of modern states is that of sovereignty, so that states are opposed to institutions that seem to limit their territorial

power, even if it is materially required (Krasner, 1999). Krasner (1983) and Young (1989) have both argued that states are able to establish rules, norms, principles, and procedures for various issue areas without establishing a world government or giving up sovereignty, through the use of conventional logic of Regimes.

The core concept that the paper introduces is the Regional Environmental Complex. A Regional Environmental Complex can be understood as a transboundary ecological system where the risks of climate change, resource flows and adaptation needs are functionally interconnected and thus need institutionalised regional governance. The idea is not for supranational government. It is an indicator of the ecological scale of governance organisation. The unit of governance for climate change in South Asia is not the state, but the eco-region.

The idea is also directly related to the notion of polycentric governance. Ostrom (2010) claimed that environmental issues in the world scale should be solved by using a variety of decision-making centres, not only a single centralised decision-making centre. Keohane and Victor (2011) also suggested that climate governance would not be 'governed by a single comprehensive regime' but rather would emerge as a 'climate regime complex' – a set of overlapping institutions. This paper follows that logic in the case of South Asia, and proposes that the Regional Environmental Complex should be considered to be the ecological sub-regime within the larger climate regime complex. This discourse discards the notion of sovereignty, and makes the argument more real because the South Asian states need not relinquish sovereignty. It forces them to create reduced, but functional, regimes that address common environmental threats.

The argument is intentionally cautious. South Asia is not politically prepared for an EU-style environmental authority. India-Pakistan hostility, India's asymmetrical power position, water-sharing mechanisms and conflicts, weak SAARC mechanisms, and securitised territorial disputes make deep supranational regionalism

improbable. Yet the opposite position, that sovereignty makes regional climate governance impossible, is also unsatisfactory. States routinely cooperate under sovereignty when cooperation protects national interests, reduces uncertainty, or solves problems that unilateral action cannot manage (Keohane, 1984; Krasner, 1999). Climate change belongs precisely to that category.

The paper, therefore, proposes sovereignty-compatible regionalism. This means regional institutions that operate under state consent possess technical autonomy, and remain limited to specific functions such as shared data generation, early warning, river-basin modelling, cryosphere monitoring, disaster preparedness, air-quality assessment, and adaptation finance. Such institutions would not override sovereignty. They would allow states to exercise sovereignty more effectively in the face of ecological risks that no single state can control.

Theoretical Framework: Commons, Sovereignty, Polycentricity, and Regimes

The tragedy of the commons and South Asian climate risk

One of the fundamental principles in environmental politics is still the tragedy of the commons. Hardin (1968) contended that when actors act on the basis of their narrow self-interest with respect to shared resources, ecological degradation can occur even if no one actor has the intention of collective ruin. Climate change can be described as the greatest tragedy of the commons because the atmosphere is shared, the costs of ecological disruption are spread-out across states, classes and generations, and the emissions are dispersed. (Hardin, 1968; Ostrom, 2010).

This is evident from the environmental crisis in South Asia at different scales. The harms of climate change are starkly felt in South Asia, and are heavily linked to the climate impacts from emissions produced in the industrialised world over the past several hundred years (IPCC, 2022). At the regional level, there are boundaries of shared rivers, air basins, glacial systems, coastal risks and disaster corridors. Governments at the national level tend to have a greater focus on

short-term development, energy security, electoral pressures, and territorial control, rather than long-term ecological resilience (ADB, 2014; UNEP, 2024).

However, Hardin's formulation is not descriptive enough. It can foster a sense of fatalism, suggesting that communism is inevitably doomed unless it is subjected to a strict control system from above or is privatised. Ostrom's research offers a remedy for this negativity by demonstrating that common-pool resources can be managed with rules, monitoring, graduated sanctions, conflict-resolution mechanisms and nested institutions within communities (Ostrom, 1990). In her work on climate change, she highlighted how polycentric systems can facilitate experimentation, learning, trust-building, and action at multiple levels (Ostrom, 2010).

This is important for South Asia because there is not likely to be a central environmental authority with coercive authority in the region. If the solution is interpreted as centralised control, it would run into conflict with sovereignty, as is a Hardin-style solution. By contrast, an Ostrom-style solution can involve a multitude of institutions at multiple scales: local disaster committees, national climate ministries, bilateral river commissions, regional scientific bodies, global climate funds, and international environmental regimes. The South Asian problem is not a lack of institutions but a lack of relevant and appropriate institutions. The lack of an effective regional layer that connects these institutions around common ecological systems.

Sovereignty as Constraint and Resource

The rule of sovereignty still prevails in South Asian politics. It is not only a legal principle, but a political memory that is shaped by colonialism, the partition, war, border disputes and struggles for state-building. In Pakistan and India, the concept of sovereignty is tied with the issue of partition, Kashmir, water security and national identity. Sovereignty is associated with liberation, migration, rivers and vulnerability to upstream choices in Bangladesh. Sovereignty for Nepal and Bhutan is linked with autonomy in the context of

Indian and Chinese proximity. Sri Lanka and the Maldives associate sovereignty with maritime identity, territorial integrity and dependency on the outside. Any regional climate action that does not respect the political nature of sovereignty, but rather views it as a relic, will be, before it starts, an action without political content (Krasner, 1999).

According to Krasner (1999), the concept of sovereignty is “organized hypocrisy” as states often maintain independence and yet permit outside influence if it will benefit their interests. This is an insightful piece of information, but it should not be taken as literal. It's not a sham. Sovereignty is not a pretension. It is flexible. In some areas, states are fiercely protecting it, while in others they are being pragmatic. As long as external intervention in domestic affairs is rejected and external finance, disaster assistance, technical assistance, rules of trade, and agreements on the river is accepted, South Asian states will be free from outside pressures.

Climate governance creates unease because environmental knowledge can turn into strategic knowledge. In South Asia, politically-sensitive data include river flows, dam operations, glacial melt, groundwater stress, land use, crop vulnerability, flood mapping, and climate migration data. States might be concerned that data sharing may undermine their negotiating positions, reveal shortcomings in governance, or result in pressures for outside intervention. The sovereignty dilemma, however, does not just stand as an obstacle in the way of cooperation; it influences the kind of cooperation that is politically acceptable.

It is for this reason that the paper does not call for post-sovereign climate governance. On the contrary, it calls for regional governance that is compatible with sovereignty. In such governance, the state is recognized as the gatekeepers of authority, but not that all delegations are a dilution of sovereign authority. Technical monitoring does not mean territorial control is handed over to a regional scientific body. Data sharing of flood early warnings isn't an internationalisation of a border issue. It is not a compromise of territorial claims

over mountains to support a joint glacial-risk observatory.

International Regimes and the Climate Regime Complex

Sovereignty and regional environmental cooperation must be linked by a missing middle, and that is international regime theory. Krasner (1983) defines international regimes as "sets of principles, norms, rules and decision-making procedures around which the expectation of actors coalesce in an issue area. There is no need for a world government for regimes. States exist because under conditions of interdependence, it is sometimes useful to states to have patterned expectations, lessen uncertainty, and coordinate behaviour (Krasner, 1983; Keohane, 1984).

This is a regime-theoretic perspective that is key for South Asia. For now, it looks like there are only two options – either full sovereignty or supranational authority – and it looks like there will be no political way to get to a state of climate cooperation. A third approach, offered by regime theory, is that governments can make rules and procedures on particular issues, without giving up their sovereignty. Water regime is an example of Indus Waters Treaty. SAARC climate declarations are inadequate norms on the regional level. National adaptation plans are part of a global climate governance framework. Disaster-risk frameworks, climate-finance channels, and scientific assessment bodies are another component of the regime complex.

Keohane and Victor (2011) state that a better understanding of climate governance is achieved by conceptualizing it as a regime complex, not as a single integrated regime. A regime complex is a group of institutions that is unstructured, partially overlapping, and has no overwhelming order. This can seem like a messy arrangement, but may be more politically viable than a broad one, and can permit more limited cooperation, experimentation and adaptation in the face of uncertainty (Keohane & Victor, 2011).

This diagnosis is applicable to the issue of climate governance in South Asia. The area doesn't require one massive cooperation plan and accord

on all climate threats. It must be a series of inter-related sub-regimes that are focused on ecological systems: a cryosphere regime, a river-basin adaptation regime, an airshed regime, a coastal resilience regime, a disaster early-warning regime. These would be included in international climate action, but customized for regional ecological contexts. These sub-regional ecological regimes are called “Regional Environmental Complexes” by the paper.

Polycentric Regimes and Subregional Complexes

Polycentric governance and regime theory are treated separately in the literature, but are complementary analytically. Multiple decision-making centres can be successful in complex commons problems as explained by Ostrom's polycentric approach (Ostrom, 2010). Regime theory is an explanation of the organisation of co-operation among sovereign states without central authority around issue areas (Krasner, 1983; Keohane, 1984). As a whole, they help to support the concept of polycentric regimes: overlapping, issue-based, governance arrangements that work across scales and are compatible with the state.

This holistic strategy is more powerful than a general call for regional cooperation in South Asia. It acknowledges that environmental governance should be decentralized but at the same time coordinated so as to reflect ecological interdependence and respect sovereignty. It also acknowledges that the structure of institutions must be based on the structure of the problem. There is a need for hydrological data and allocation systems for river basins. Emissions inventories and public-health coordination are needed with airsheds. Scientific monitoring and early-warning networks are needed for glacial systems. Disaster preparedness is a need in coastal zones, as well as project planning of migration and ecosystem restoration. All of these systems can't be managed well by a single institution.

A polycentric regime architecture would, therefore, link local, national, bilateral, regional, and global institutions, but not give them all

power. This is not elegant as a constitutional matter, and climate governance is not always elegant. It's not architectural fantasy but institutional carpentry - lots of joints, some supports, and enough flexibility to meet the political climate changes.

Ecological Embedded but Politically Fragmented Realities

South Asia is an ecologically and politically interconnected region. The Himalayas have impacts on water availability, monsoon processes, biodiversity and disaster risk on the subcontinent. The Indus, Ganga and Brahmaputra Rivers systems provide water supply for agriculture, irrigation, hydropower generation, fisheries, transportation and urban settlement in several states. Indo-Gangetic Plain is a common airshed. IPCC (2022) and the World Bank (2021) stipulate that cyclone hazards, storm surges, sediment flows, salinity intrusion and coastal displacement are interlinked in the Bay of Bengal.

The impacts of climate risk are already high in the region. Asia is especially vulnerable to the adverse effects of heat extremes, flooding, sea-level rise, glacial change, water insecurity, and limits to adaptation, as revealed by PCIC assessments (IPCC, 2022). Climate projections for South Asia suggest an increase in air temperature and shifts in precipitation, which will have significant impacts on agriculture, water, infrastructure, and livelihoods (Mishra et al., 2020). The Asian Development Bank has also pointed out the high vulnerability of the region, primarily driven by poverty, high population density, reliance on climate sensitive livelihoods and inadequate adaptation capacity (ADB, 2014).

This is an ecological interdependence, which is in contrast to the political fragmentation. India and Pakistan continue to have a strategic rivalry. India and Bangladesh have suffered from water and migration sensitivities in the past. Under asymmetrical relations with India, Nepal and Bhutan talk about hydropower and water. Security issues tend to dominate discussions on Afghanistan's ecological relations with the region. The Maldives faces existential sea-level threats but

is structurally weakened when it comes to regional sea-level climate politics. Geopolitical rivalry particularly between India and Pakistan has been a major setback for SAARC and the organization has not yet been able to establish climate declarations into workable governance (Majaw 2012; SAARC 2010).

This again relates to the theme that ecology links the region, politics divides it. Climate-risk flows across basins, mountains across airsheds, and coastlines, while governance is structured by ministries, borders, and national plans. This results in under-governance in practice, at the most appropriate scale: the regional ecological scale. A mutual interest is ignored by both parties.

Regional Environmental Complex: Definition and Analytical Value

A Regional Environmental Complex is an ecological system that has a climate risk, resources flow and adaptation needs that are transboundary and therefore needs institutionalised regional governance. Adapts the concept of regional security analysis but focuses on ecological threat interdependence instead of military threat interdependence. States are interconnected in a security complex because their security issues can only be comprehended in relation to one another. States are connected in an environmental complex in that ecological risks cannot be managed independently. The idea has 4 key elements.

First, it's ecologically connected. System parts are interconnected. Water timing is impacted by glacier retreat. The operation of dams upstream may affect downstream flood and sediment regimes. Air pollutants are carried by the atmosphere. Marine processes and river management up stream all effect coastal erosion.

Second, it is politically divided. The ecological system involves multiple sovereign nations that have varying laws, interests, capabilities and threat perceptions. This disintegration leads to incentives for being secretive, acting alone and externalising costs.

Third, it lacks institutional development. Cooperation is typically bilateral, sectoral and

reactive. Climate adaptation is rarely addressed in a comprehensive manner in river basin treaties. Cooperation in the context of disasters is often centred on the emergency response, and not on building resilience. Security concerns are a barrier to scientific cooperation. Regional climate statements are non-binding.

Fourth, it needs a governance system that is compatible with sovereignty. Institutions need to be powerful enough to provide valuable information and coordination, but not so powerful as to cause security problems. The design principle is Technical autonomy without political supremacy.

The importance of the concept is to make sense of the scale of governance. While global climate diplomacy is needed, it is too comprehensive to address many adaptation issues in South Asia. National climate plans are needed but are not enough for transboundary ecological systems. The Regional Environmental Complex identifies the middle scale where many climate impacts are actually produced and where practical cooperation is most urgently needed.

Key Regional Environmental Complexes in South Asia

The Himalayan Cryosphere Complex

The cryosphere in the Himalayan region is one of the significant environmental systems in the region. High elevation ecosystems, glaciers and snow pack influence water flows during different seasons into major river systems. The World Bank's Himalayan Glacier Initiative states that black carbon accumulation from factories, cooking and vehicles exacerbates climate change, driving glacier melting and jeopardising the security of water supplies in the region (World Bank, 2021). The assessment of the Hindu Kush Himalaya by ICIMOD also indicates that the cryosphere of the region is rapidly and almost irreversibly changing, and that this change has a cascading impact on water resources, ecosystems and society (Wester et al., 2023).

The governance challenge is politically sensitive as the cryosphere intersects with sensitive borders

with India, Pakistan, China, Nepal, and Bhutan. The acquisition of data in the field, by satellite, hydrological monitoring and long-term modelling are essential for glacial sciences. However, scientific cooperation is restricted by national security issues. This creates a dangerously paradoxical situation: the more strategically important the mountain region is, the more important shared scientific knowledge is, and the more difficult it will be to produce that knowledge.

A Regional Environmental Complex approach does not require states to resolve territorial disputes prior to collaboration on glacial risk. It would divorce science monitoring from territorial claims. Territorial positions could be undamaged by the introduction of joint databases, glacial lake outburst flood early-warning systems, shared black-carbon reduction strategies, and regional mountain adaptation funds.

The Indus-Ganga-Brahmaputra River Complex

The waterways of South Asia are excellent examples of an ecological interdependence that extends across international borders. The Indus basin is a region that links the four countries of India, Pakistan, Afghanistan and China. India, Nepal and Bangladesh are linked by the Ganga basin. The Brahmaputra flows through China, India, Bhutan and Bangladesh. These rivers provide food production, hydroelectric power, fish harvesting and recharging groundwater, transport and high population density.

Current river treaties have been useful, but not comprehensive. Since 1960, the Indus Waters Treaty was one of the world's most robust water accords, holding up during repeated crises and wars between the two countries since then, until April 2025, when the treaty was placed on hold after the attacks on the Indian town of Pahalgam (Britannica, 2026). Apart from this recent rupture, the treaty was never about adaptation to climate change, it was about water sharing. It fails to respond to the challenges of glacier retreat, ground water stress, ecological flows, sediment, basin-wide resilience, and climate uncertainty (Phanbuh, 2025). The Ganges Water Sharing

Treaty signed by India and Bangladesh in 1996 is also limited in scope compared to today's climate risks in the basin.

The approach would shift the river debate from allocation towards adaptation governance within the framework of the Regional Environmental Complex. The primary question will no longer just be "who gets how much water? It also would be "how can basin states work together on flood risk, drought risk, sediment, groundwater stress, hydropower planning, and climate uncertainty? Questions about allocation will be zero sum in most cases. Questions about risk reduction can help to bring room for collaboration.

The Indo-Gangetic Airshed Complex

The Indo-Gangetic Plain is one of the world's most polluted airsheds. Air pollution is a regional problem, travelling long distances across the South Asian region and stuck in the same airshed, defined by climatology and geography (World Bank, 2023). Transport, industry, coal, brick kilns, agriculture and household energy and crop residue burning are interlinked in the North of India, Pakistan, Nepal and Bangladesh. The impacts of pollutants are spread along with air pollution patterns, and the public health consequences are spread across borders.

It's a tragedy of the commons in the air. The result is common harm, from the sum total of each jurisdiction's defence of its own economic practices. Air pollution is also linked to climate as a result of short-lived climate pollutants (SLCPs) such as black carbon, which have an impact on climate warming and glacial melt (World Bank, 2021). The airshed complex thus connects public health, climate mitigation, agriculture, energy and cryosphere protection.

The development of a sovereignty-compatible airshed regime could start with sectoral collaboration on brick kiln emissions, crop residue burning and clean household energy, seasonal public-health alerts and harmonised measurement standards, and joint monitoring. Such cooperation would not need any regional control on domestic industries. This would take a uniform recognition of the fact that atmospheric

harm is not "territorially obedient."

The Bay of Bengal Deltaic Complex

Another critical Regional Environmental Complex is constituted by the Bay of Bengal and the deltaic environments in the region. The sea level rise, cyclones, storm surge, coastal erosion, salinity intrusion and displacement poses risk to Bangladesh, eastern part of India, Sri Lanka and Maldives. Rivers upstream and coastal exposure are both contributing factors to Bangladesh's vulnerability. The problem with territoriality is one of an existential nature in Maldives due to sea-level rise having a direct adverse impact on the physical basis of statehood.

The deltaic complex is an example of how climate change can affect sovereignty in the real world. The climate threat is not just damage to infrastructure or livelihoods for low-lying and island states. It is the potential loss of lands. This adds a new existential dimension to South Asian climate governance, one not fully integrated by the traditional regional climate diplomacy.

Regional coastal regime could mainly be based on cyclone early warning, mangrove restoration, salinity management, disaster finance, planned relocation, fisheries resilience and research on climate migration. A multi-sectoral approach involving environmental ministries, disaster authorities, meteorological agencies, local governments and climate finance institutions from the global level will be needed to address these challenges.

Existing Regionalism and the Problem of Declaratory Cooperation

Climate change has not been unknown phenomenon in South Asia. SAARC has issued statements and plans such as the Thimphu Statement on Climate Change which was issued at the ISF in 2010 acknowledging the need for cooperation in the region on the issues related to ecosystems, mountain ecology, biodiversity and climate resilience (SAARC, 2010). The problem is not that there's no language. It is a lack of action.

There are three weaknesses in the cooperation on climate change in the SAARC region. First off all, it

is politically at the mercy of the rivalry between India and Pakistan. If the relationship between the center is frozen, the institutional activity is also frozen at the regional level. Secondly, it has no enforcement or financing power. Declarations are rarely translated into meaningful outcomes if they are not backed by institutions, funding, data and monitoring (Thapa, 2013). Third, it takes a too broad approach to climate change. A general regional climate plan might seem like a lot of stuff, but it typically doesn't generate action plans for specific ecological systems (Vaidya, 2014).

Declaratory regionalism can be described as a repeated consensus on the desirability of cooperation with no enduring mechanisms that can affect behaviour. Declaratory regionalism is not redundant, it establishes norms and language. However, during climate acceleration, vocabulary is not sufficient.

The explanation of the problem is given by the regime theory. Krasner (1983) has defined regimes as "the principles, norms, rules and decision-making procedures based on which actors' expectations converge in a particular issue area. South Asia is a region with climate norms and weak climate regimes. Has declarations, but few decision making procedures. Has two-way agreements, some nesting in the region. It is not well-integrated and has national adaptation plans. As is normal in a Regional Environmental Complex approach, which builds on the logic of the regional security complex theory, in which security and by extension, ecological interdependence is geographically concentrated (Buzan & Wæver, 2003). The region would shift from a declaratory component of cooperation towards issue specific ecological regimes.

Toward a Sovereignty-Compatible Regional Regime Architecture

A practical South Asian climate regime architecture is envisaged under five principles in this study. Once such a body of regimes is regarded seriously, more deliberation is possible.

Technical Autonomy without Political Supremacy

Regional environmental organisations need to be technically autonomous, but politically not all powerful. Their role should involve collecting data, modelling risks, early warning, scientific evaluation and policy recommendations. They should not make judgements on territorial issues or make decisions that are politically binding. This design will help to minimize sovereignty concerns and add to the functionality.

A Himalayan Cryosphere Monitoring Centre, for instance, could provide joint scientific diagnosis, without discussion of borders. There could be basin-wide flood and drought scenarios without renegotiating water treaties in the Indus-Ganga-Brahmaputra Climate Forum. The establishment of an Indo-Gangetic Airshed Observatory would be a mechanism to integrate air-quality data without engaging in direct regulation of national industries.

Nested and Polycentric Institutions

The institutions should be nested at the local, national, bilateral, regional and global levels with a special emphasis on South Asian region. Local communities have a first-hand knowledge of the disaster and resource risks. The law and finances are governed by national governments. The sensitive relations are under the control of bilateral commissions. Shared systems can be coordinated at regional level. Global institutions offer science, finance, and normative pressure. This is exactly what Ostrom's polycentric approach favors: a multi-layered system of governance, where multiple entities govern at different scales of action, rather than a monocentric system (Ostrom, 2010). Interestingly, in the case of South Asia, the political fragmentation is not too old to not have an eye for the fact that people are connected across the state lines; take that of Punjab and Bengal, both of which had been partitioned. However, there is a history of thousands of years between Sindh (Pakistan) and Rajasthan and Gujarat (India) and so the sensitivity is higher in the communities that are border-sharing.

Data-Sharing as Confidence-Building

Public use of environmental data should start with

low-politics spaces where there is a near-term benefit for the general public. Early warnings for floods, glacial lake risks, cyclone tracking, heat waves, crop disease monitoring, or air quality measurement are good beginnings. These types of data collaboration can facilitate trusted data exchanges without the disclosure of highly sensitive strategic data. Trust is not generated in dramatic diplomatic breakthroughs in South Asia. It is likely to become visible in the process of frequent, technical, invisible co-operation. Climate science can be a back corridor of confidence building if it is shielded from the conflict of high politics.

Flexible Coalitions

This is not the only path towards achieving consensus for the SAARC. Coalitions of directly affected states that are more flexible in their makeup are more feasible. Cooperation between India, Nepal, Bhutan and Bangladesh around the Ganga-Brahmaputra-Himalayan systems is possible. It may be advisable for India and Pakistan to start with narrow flood-warning and Indus climate-risk modelling. Such a mechanism for coastal resilience in the Bay of Bengal can be created in Bangladesh, India, Sri Lanka and the Maldives.

Flexible coalitions don't betray regionalism. They are an effective means to regionalize in a political fragmented environment. Climate impacts are not uniform, and institutions should be based on exposure and willingness, not formal membership.

Regional Adaptation Finance

Governance at the regional level is impossible without finance. Projects that have trans boundary benefits that might benefit from support from a South Asian Climate Resilience Fund are: glacial monitoring, floodplain restoration, early-warning infrastructure, air shed monitoring, mangrove restoration, drought planning, and climate-resilient infrastructure. The fund may be financed with contributions from the member states, multilateral development banks, global climate finance and philanthropy. Regional environmental governance can still be a

committee system under a green cap if it is not backed by finance.

Discussion: From Territorial Sovereignty to Ecological Sovereignty

This paper does not suggest that sovereignty needs to be eradicated. Politically, that would be unfeasible, and theologically simplistic. The more serious argument is that sovereignty, as a concept, needs to be reinterpreted in the context of climate conditions. In the twentieth century, sovereignty is often thought of in terms of control over territory. Climate Century, sovereignty must be the ability to safeguard populations from transboundary ecological damage as well.

This change is sometimes referred to as 'ecological sovereignty'. Ecological sovereignty is not a threat to the state. It queries how realistic it is for the state to guarantee water, food, air, health, territory and survival in a climate of interdependence. A state that cannot cooperate with neighboring states in the interests of the people will formally assert its sovereignty while denying it to its citizens. That is what it means to have sovereignty as theatre. Under ecological sovereignty, cooperation would be a tool of state responsibility rather than a giveaway.

So the tragedy of the commons and regime theory converge. The commons logic explains why unilateral measures are not enough. Regime theory explains how states are able to enact rules without loss of autonomy. The governance of polycentricity demonstrates the advantages of decentralising power to many rather than just one big institution. The Regional Environmental Complex translates these insights into the context of South Asia and defines the ecological units which should form the basis for the implementation of such regimes.

The contribution, thus, is not just policy advocacy. It is conceptual. It provides a more practical approach to addressing climate governance in

South Asia than the visionary regionalism and the defensive state-centrism that dominate the debate. South Asia does not have time to settle all its political issues; there is no climate for that. Governance should start within the flawed (and existing) political system.

Conclusion

Climate crisis is also a political crisis in South Asia. The area still wields power through sovereign territorialities, yet its most critical environmental threats are carried across natural systems that are trans-border. There are no political maps for rivers, glaciers, air sheds, deltas, heat corridors or disaster zones. Yet the map remains a map of power, suspicion and institutional possibilities.

This paper has proposed that there should be a Regional Environmental Complex Strategy to South Asia. This takes into account that the unit of climate governance is more often than not bigger than the state, but smaller than the world. It bridges the fields of commons theory, sovereignty, polycentric governance, and IR regime theory and suggests a regional regime architecture that is compatible with sovereignty. It's not that regionalism is going to solve the climate change crisis. In the absence of ecological sub-regimes around shared environmental systems, the argument goes, South Asian climate governance remains woefully inadequate, fragmented, and reactive.

Post-sovereign climate governance is not possible for South Asia. It will be negotiated in the form of sovereignty. The alternative is one of defensive sovereignty, defined as seeing regional ecological cooperation as a threat, or ecological sovereignty, defined as seeing regional ecological cooperation as a condition of survival. The tragedy of the commons is already seen in the mountains, rivers, air and deltas in the region. The question is whether or not South Asian states can create regimes before the tragedy becomes destiny.

References

- Asian Development Bank. (2014). *Assessing the costs of climate change and adaptation in South Asia*. Asian Development Bank.
- Biermann, F., Betsill, M. M., Gupta, J., Kanie, N., Lebel, L., Liverman, D., Schroeder, H., & Siebenhüner, B. (2009). Earth system governance: People, places and the planet. *Science*, 326(5956), 123–125.
- Buzan, B., & Wæver, O. (2003). *Regions and powers: The structure of international security*. Cambridge University Press.
- Encyclopaedia Britannica. (2026). *Indus Waters Treaty: History, summary, disputes, court of arbitration, neutral expert, & facts*. <https://www.britannica.com/event/Indus-Waters-Treaty>
- Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243–1248.
- Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability: Working Group II contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
- Keohane, R. O. (1984). *After hegemony: Cooperation and discord in the world political economy*. Princeton University Press.
- Keohane, R. O., & Ostrom, E. (Eds.). (1995). *Local commons and global interdependence: Heterogeneity and cooperation in two domains*. Sage.
- Keohane, R. O., & Victor, D. G. (2011). The regime complex for climate change. *Perspectives on Politics*, 9(1), 7–23.
- Krasner, S. D. (1983). Structural causes and regime consequences: Regimes as intervening variables. In S. D. Krasner (Ed.), *International regimes* (pp. 1–21). Cornell University Press.
- Krasner, S. D. (1999). *Sovereignty: Organized hypocrisy*. Princeton University Press.
- Krasner, S. D. (Ed.). (1983). *International regimes*. Cornell University Press.
- Majaw, B. (2012). Climate change and South Asian Association for Regional Cooperation. *Journal of Indian Research*, 1(3), 23–32.
- Mishra, V., Bhatia, U., & Tiwari, A. D. (2020). Bias-corrected climate projections for South Asia from Coupled Model Intercomparison Project-6. *Scientific Data*, 7, Article 338.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.
- Ostrom, E. (2010). Polycentric systems for coping with collective action and global environmental change. *Global Environmental Change*, 20(4), 550–557. <https://doi.org/10.1016/j.gloenvcha.2010.07.004>
- Phanbuh, J. I. A. (2025, June 18). *Suspending the Indus Waters Treaty: What it means and why it matters*. New Security Beat, Wilson Center. <https://www.newsecuritybeat.org/2025/06/suspending-the-indus-waters-treaty-what-it-means-and-why-it-matters/>
- SAARC. (2010). *Thimphu Statement on Climate Change: Towards a green and happy South Asia*. Sixteenth SAARC Summit, Thimphu, Bhutan.
- South Asian Association for Regional Cooperation. (2010). *Thimphu statement on climate change*. SAARC Secretariat.
- Thapa, B. (2013). *Thimphu statement on climate change* (Policy Brief No. 28). South Asia Watch on Trade, Economics and Environment (SAWTEE).
- United Nations Environment Programme. (2024). *Adaptation gap report 2024: Come hell and high water*. UNEP.
- Vaidya, R. A. (2014). *Climate risks in the SAARC region: Ways to address the social, economic and environmental challenges*. The Energy and Resources Institute (TERI).
- Wester, P., Chaudhary, S., Chettri, N., Jackson, M., Maharjan, A., Nepal, S., & Steiner, J. F. (Eds.). (2023). *Water, ice, society, and ecosystems in the Hindu Kush Himalaya: An outlook*. International Centre for Integrated Mountain Development (ICIMOD).

<https://doi.org/10.53055/ICIMOD.1028>

Wester, P., Mishra, A., Mukherji, A., & Shrestha, A. B. (Eds.). (2023). *Water, ice, society, and ecosystems in the Hindu Kush Himalaya: An outlook*. International Centre for Integrated Mountain Development.

World Bank. (2021). *Glaciers of the Himalayas: Climate change, black carbon, and regional resilience*. World Bank.

World Bank. (2021). *Glaciers of the Himalayas: Climate change, black carbon, and regional*

resilience. World Bank.
<https://www.worldbank.org/en/news/press-release/2021/06/01/to-slow-himalayan-glacier-melt-curbing-air-pollution-is-key>

World Bank. (2023). *Striving for clean air: Air pollution and public health in South Asia*. World Bank.

Young, O. R. (1989). *International cooperation: Building regimes for natural resources and the environment*. Cornell University Press.

Declaration

Declaration of Conflicting Interest

The author declared no potential conflicts of interest with respect to research.

Funding Statement

No funding is received for this project.