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**Environmental Governance for Effective Climate Change Adaptation in
Indian Himalayan Region (IHR)**

Draft Policy Brief

Submitted to

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Environmental Governance for Effective Climate Change Adaptation to Resolve Critical Environmental Issues of the Indian Himalayan Region (IHR)

Draft Policy Brief

Executive Summary

The importance of Indian Himalayan Region (IHR) with a geographical coverage of over 5.37 lakh km² (0.537 million km²) is incontestable. In a region as vast as IHR, there is a need for an integrated legal and policy framework on environmental governance to address threats of climate change and related environmental disasters. This policy brief highlights the lack of such an integrated framework in IHR with each state having its own separate sets of laws and policies without scope for any linkages and stakeholder participation; the issues therein and possible alternatives to address these issues. The brief also illustrates various examples of good community practices which can contribute towards climate adaptation and mitigation. Lastly, the brief brings out important policy recommendations which would contribute towards a dynamic and effective framework for the region as a whole.

1. Importance of the environmental governance in context to climate change adaptation in IHR region

The unprecedented growth of developmental projects along with irresponsible tourism practices in the IHR has led to loss in biodiversity and hazards of climate change. The recent examples of flash floods in Uttarakhand and Jammu & Kashmir shows how unprepared this region is to withstand unsustainable human pressure. The consequences of such pressure are evident in the agricultural sector, water resources and forest ecosystems. Due to the above specified reasons, there is an immediate need for defining effective environmental governance in IHR, which would aim at ensuring climate adaptation of the Himalayan region and building adaptive capacities of the mountain dwellers. Adaptation involves how communities adjust to the changing climate and thus, the involvement of local communities is a must. Till date, there have been various discussions and dialogues on the need of an integrated set of regulatory framework for the IHR, but the government is yet to formulate such a framework. The states coming under the IHR have their own set of state legislations for the conservation of the Himalayan region, however these laws seem to be doing little in fulfilling their objectives and the key principles of good governance. The IHR and its resources are the only source of livelihood for local communities, and their indigenous practices which are distinct from the communities in the rest of the country. These communities not only extract and use the resources, but also give back to the environment through their environment friendly indigenous practices. It must be understood that in spite of the differences, the states as well as its communities share a common region and any legal and policy framework must take this commonality into the equation.

To ensure effective governance of these diverse natural resources, it is imperative that the process recognizes and engages all the stakeholders that influence the environment, regionally as well as globally.¹ Good environmental governance must also ensure cooperation among such different stakeholders, including government, local communities, businesses and

¹ Environmental Governance, United Nations Environment Programme. *See:* <http://unep.org/pdf/brochures/EnvironmentalGovernance.pdf>

NGOs to achieve outcomes such as development, resource conservation, increase livelihoods, food security among others.² Further, the governance mechanism must promote the rule of law by ensuring access to information, public participation, and access to justice. All this makes environmental governance a complex, yet an imperative topic which needs urgent attention.

2. Issues in implementation of environmental governance for effective climate change adaptation

There are several issues blocking implementation of environmental governance in the IHR. Data collection is one of the most challenging and important tasks of governance as it is difficult to come up with a common policy in a region with culture, climatic conditions, land, flora and fauna so diverse that all the relevant data is mapped and analyzed for identifying common concerns and replicable measures. A proper vulnerability assessment (VA) report along with gap analysis activity from the data gathered, are part of the foundation of policy-making along with scientific evidence. It is especially challenging to come up with a one-shoe-fits-all environmental governance policy in such a diverse and vast region. Even if such an integrated policy framework is prepared, translating it into specific state laws would be difficult. Moreover, existing pilot or model approaches on environmental governance introduced in some of the states may not always be replicable in others. Lack of coordination among the various departments has been a recurrent problem in implementation of the development and conservation objectives in India. Absence of regard to traditional practices of local communities and recognition/ validation community efforts for climate change adaptation is another concern. A strong financial security net for small farmers as protection against climatic vagaries and financial support to IHR climate change adaptation measures is missing and is a need of the hour. Improper understanding of climate change and its implication on the resources and local livelihoods due to inadequate awareness building amongst stakeholders is a major issue which needs attention. Other issues requiring focus include need for ecosystem based land use planning, cost-effective research in IHR, legal support to national and state level policies, access of communities to alternative resources or adaptation technologies, the establishing of a two-way link between science, policy and practice, action based policy and regular assessment of implementation of policy, statutory backing to the policy followed by time-bound action plan monitored and enforced by a statutory body and finally defined institutional support at different levels.

3. Possible solutions to address issues with current policy approach

For proper implementation of an integrated climate change legal and policy framework, problems regarding “policy fragmentation” and “institutional barriers” should be addressed as a first step, through regular national adaptation-policy-response assessments. Next, national policy must necessarily translate into legislative, executive and judicial fibre at the state level, keeping in mind, unique state setup. Strengthening the institutional coordination and cumulative assessment of integrated projects from a climate adaptation perspective is required and addressed the issue of “institutional barriers”. An important part of environmental governance framework is capacity-building (especially adaptive capacities) and training of the communities on science around climate change and outreach to communities and local agencies with the goal to sustain the adaptation efforts beyond

²https://www.iucn.org/about/work/programmes/environmental_law/elp_work/elp_work_issues/elp_work_governance/

projects. Barefoot science need to be introduced in a systematic manner where community is trained to conduct scientific research, for instance, water quality testing, MRV, among others. Further, before developing adaptive capacities of the institutions and communities, a pre-piloting assessment may be conducted. Finally, communication of all the complex climate science and information about its repercussions on the day-to-day lives of the mountain dwellers needs to be contextualized for the general public. It is part of the effective governance that the information is downscaled for the understanding and awareness of the communities. It is pertinent to earn community acceptance for the new adaptation technology along with their traditional practices to ensure the information and policies are actualized on the ground. Overall, it is necessary that any possible solution should consider general principles of sustainable development, precautionary principle, integrated management, decentralized governance, gender and equity, dynamicity of policy measures, respect for traditional or customary practices, transboundary approach, etc.

4. Specific Recommended Policy Measures

Some of the key changes necessary for governance focussing on climate adaptation in the IHR at regional, state, as well as local level are discussed below:

4.1. Changes at the Policy Level

4.1.1 Developing an Integrated Policy for IHR

Ecosystem resilience has a limit that needs to be addressed. Ecosystem based planning and management needs to be integrated in future policies for the Himalayan region. Ecosystem based planning should be present with the forest management code or manual based on changing needs and change in working plans with a climate change perspective. There are policy prescriptions at the Government of India and State Government levels that advance these goals, but there are existing policies, mainly at the State Government and Municipality/Panchayat levels that are not in consonance with these policy prescriptions. There are also significant implementation gaps even when policies at the Central, State and local Government levels are in consonance.

- *There is a need to integrate all the data on climate science and its adverse effects on the Himalayan ecosystem with the existing or planned adaptation measures in different regions of the Himalayas into one holistic document.*
- *Ideally two such integrated documents can be developed to incorporate the unique regional variations in the North-west and North-east Himalayas.*
- *Integrated policy for IHR should have a mix of sectoral approach with cross-cutting themes on governance, finance, and science and a clustered approach where interdependent sectors and immediate landscape can be studied together, with regional livelihood and conservation priorities at its core.*

4.1.2 Action based state level policies with statutory backing

Each Himalayan state must ensure their SAPCCs from the Himalayan states are duly incorporated in the sector-specific policies to lend it statutory backing. Further, these 'action-based policies' must be enforced and monitored in a time-bound manner with a proper strategy laid down in a multi-state or regional strategy document sensitive to the mountain ethos. A regional or national Himalayan statutory body can oversee and ensure that the approach is anticipatory/ preventive rather than reactive.

4.2. Amendments on the Legal Front- Translating policy into law

4.2.1 Specific law pertaining to governance of IHR

The IHR environmental governance policy must be translated into state laws to ensure climate adaptation becomes part of the legislative, executive, and judicial fibre. One way to do this could be to enact a specific law pertaining to the environmental governance of IHR which would lay down specific guidelines for managing all aspects of environment in the IHR states, general and specific. These guidelines should range from sector-specific guidelines to the Constitutional status of different regions including the Schedule V and VI context. This could be a touchstone document for all the IHR states to review their environmental laws and policies. Given its statutory backing, unlike GSHE, the incorporation of its principles would be ascertained through judicial action.

4.2.2 Review of existing state laws

It is need of the hour to conduct a legislative gap assessment for each IHR state. An assessment to determine the nature of legal reform needed in existing Acts, Rules, and Orders at the State level to support pan-Himalayan climate adaptation measures should be conducted. All relevant state laws of IHR states must be reviewed and amended to be in consonance with the SAPCC, NMSHE, and GSHE.

4.2.3 Making Climate Impact Assessment part of EIA process

Climate Impact Assessment should become part of the EIA process particularly in the IHR states under the Environment Protection Act given its high vulnerability to large development projects. Since all the IHR states are part of one big Transboundary Himalayan ecosystem, prior to clearance of any project, an impact assessment on the entire IHR should be done, keeping in mind the NMSHE and GSHE guidelines. To add more value to this exercise, the procedure for clearance of a project in the Himalayan region must go through the scanner of what climate adaptation practices or measure can be introduced in the implementation of the project.

4.3. Regulatory and Institutional changes

4.3.1 Strengthening Line Departments

Climate adaptation concerns and objectives should be built into the psyche of the various line departments and other implementing agencies. Lack of coordination among the various departments has been a recurrent problem in implementation of the development and conservation objectives in India. It is particularly true for IHR due to difficult terrain and less connectivity during the winter season.

- *Setting up of a state-wide inter-departmental authority for climate change adaptation and mitigation, with representation from the departments dealing with land, agriculture, forests, water, energy, meteorology and finance would improve coordinated action plans. The proposed authority should have a scientific panel and a steering committee including representatives of business, civil society, and academia.*
- *Following principles of adaptive management, periodic evaluation of intervention outcomes must be undertaken. Interventions should be designed with explicit feedback loops to register signals for the need to adapt or modify interventions as social and environmental conditions change.*
- *A series of weather stations are needed along the full altitudinal gradient to track changes in*

temperature, precipitation, glaciers and GLOFs, springs and rivers.

Strengthening the institutional coordination and cumulative assessment of integrated projects from a climate adaptation perspective is essential in the IHR due to its existing diversity within one huge landscape. Therefore special focus should be given to strengthen decentralized governance system and local leadership to ensure holistic resilience-building within entire institutional skeleton.

4.3.2 Establishing institutional support through gap analysis

It is pertinent to establish defined institutional support at different levels for enhancing adaptive capacities and for climate adaptation strategies to implement effectively. For this, an institutional gap analysis needs to be conducted at the state and entire Himalayan regional level.

4.4. Recognition of traditional community practices

Himalayas are a storehouse of rich biodiversity and traditional knowledge (TK) attached thereto. This time-tested community knowledge varies within the IHR, as well as within the IHR states itself depending on the available resources and topography. Traditional practices of local communities including local architecture, farming techniques, livestock and forest management, medicinal treatments among others must be given due regard in the governance of their natural resources since it evolved from the deeper local understanding of their regional ecosystem. In the Vth and VIth Schedule context, it may also be added that customary and traditional practices have been recognized and thus such recognition must be brought into fruition by incorporating traditional environmental friendly practices into sector specific laws. TK on the existence of various natural resources such as NTFPs as well as their uses is a highly valued asset amongst these communities. IHR policy must have requisite safeguards to protect, record, and validate such traditional knowledge with science.

4.4.1 Enacting Biological Diversity Act and related rules and documenting traditional knowledge

It would be crucial to enact and implement Biodiversity Rules in all the IHR states at the earliest through

- *Creation of Biodiversity Management Committees (BMCs) and People's Biodiversity Registers (PBRs)³*
- *Oral as well as written TK should be documented in the PBRs.*
- *A formal recognition system must emerge at the behest of IHR states to recognize traditional healers based on knowledge, credentials, effectiveness, and acceptance by the local community among others.*
- *A regional TK Digital Library specific to Himalayan region might play a crucial role to recognize, evaluate, and track the conservation practices in the IHR.*

4.4.2. Recognizing and validating community efforts through legal measures

There is a need for integration of various Himalayan conservation and development plans falling within various departments, including forest, irrigation, horticulture, agriculture,

³Rule 22 (6), BD Rules.

revenue, among others with community practices. This can be done through creation of Conservation Reserves and Community Reserves under the Wild life Protection Act in Protected Areas and through recognition of claims to Community Forest Resource and preparation of Conservation and Management Plan under Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA).

Certain good practices in IHR environmental governance with evidences indicating its success which need to be documented at the earliest are as follows:

<i>Some Best Practice Examples from Communities</i>
<i>Traditional Agro-diversity system of Sikkim which not only ensures food security and economic returns from high-value medicinal plants and large cardamom plantations, but also offers a range of supporting, provisioning, regulating, and cultural services. Integrated farming with a combination of crop, plant, and animals by the native farmers of Sikkim is a common adaptation practice.</i>
<i>Conservation practices such as the institutions of NabuSamo and Kathburiya Devi are important in Uttarakhand. The locals pay their homage to Kathburiya Devi by placing a branch of deodar or its cones as a thanks giving for the successful climb to that point. In NabuSamo, the insects which harm the crops are collected and tied to the horns of a goat which is then sacrificed. These practices thus represent an effective means of regeneration of flora and effective way of getting rid of the harmful insects.</i>
<i>Uttarakhand has numerous traditional techniques for water resource management. The locals follow a system of rain water harvesting by building several structures such as chaals, khaal, chuptyaula, dharassimars, naula/baori, guhl etc. which are mainly used for human consumption and livestock feeding.</i>
<i>Another practice by the locals is that of sacred natural sites (SNS), which are distributed throughout the state of Uttarakhand. They are referred to as Se-Rong or God Forest. In the nine districts in Uttarakhand, there are 168 SNS including 75 sacred forests, 74 sacred groves, 10 water bodies and 9 pastures. In some cases, entire forest areas are dedicated to deities. The villagers don't enter those areas or defy the norms to produce dead wood, fodder grasses or any other forest produce, fearing wrath of the forest deity, except on the occasion of annual festivals.</i>
<i>In the state of Arunachal Pradesh, there are at least 101 sacred groves which are primarily managed by the Buddhist monasteries along with a few which are being managed by the local communities for their respective deities.⁴ The sacred groves attached to monasteries are called Gumpa Forest Areas with the deity being Buddha.⁵ These groves have been culturally limited and, thereby, reduced the human impact in terms of harvesting of natural resources.</i>
<i>In Nagaland, communities are investing in small pycohydels upto 5 KW to generate power. Such smaller projects are more economical and do not affect the ecosystem</i>
<i>In Himachal Pradesh, the reduction in apple production in certain areas due to climate change has led to a mechanism of payments of 'ecosystem services' and 'riparian rights system'. Under this, communities located on a lower altitude give fee to those at a higher altitude for not hindering their water supply.</i>
<i>Regular flooding in the river Brahmaputra of the Eastern Himalayas is a common occurrence during the rainy season, often impacting the town of Dibrugarh in Assam, but was earlier not perceived to be detrimental. Traditional wisdom was used to predict the occurrence of these floods-e.g. the movement of ants or the behaviour of the gagini locust. Local plantain and bamboo rafts called bhoor were rapidly built to escape the floodwaters while loose bamboo matting was used to form a barrier to trap fish in the flood waters.</i>

⁴ [http://ecoheritage.cpreec.org/viewsacdetail.php?\\$mFJyBfK\\$MOIb-B5vugEjB_k\\$dEi@o7VWHpb%PO](http://ecoheritage.cpreec.org/viewsacdetail.php?$mFJyBfK$MOIb-B5vugEjB_k$dEi@o7VWHpb%PO)

⁵ http://www.ces.iisc.ernet.in/biodiversity/sahyadri_eneews/newsletter/issue4/Yogesh_CEdimensions.pdf

4.5. Financial support to IHR climate change adaptation measures

Implementation of the policy measures will require significant financial and human resources.

4.5.1 Investment Program for IHR

The Central Government should develop a long-term investment programme for IHR funding, commensurate with the contribution of this geographical region to the national GDP. This can be done through public sector participation and need-based international funding, in addition to the regular budgetary allocation. The Central Government should also promote self-generating mechanisms on mobilisation of resources such as value addition to forest products, market linkages, and tourism. Therefore, the environmental governance policy for IHR must lay foundation for generating finance for continued Himalayan climate research, establishing sustainable mountain-based businesses, and strengthening of environmental governance framework in the region. Financial attention is also critically needed for the assessment and evaluation of the existing climate change adaptation responses in the region based on high resolution sector-specific vulnerability assessment.

Attention should also be given to creating a stronger financial security net for small farmers to protect them against climate vagaries. In this regard, expanding the use of weather or climate insurance products such as subsidized rates under the crop insurance schemes is a worthy research topic. Making such schemes and insurances available for the agricultural, energy generation, and other urban infrastructural adaptation programmes will ensure involvement of communities in adaptation efforts in IHR.

- *Adequate funding should be made available to the communities to explore climate adaptive strategies and practices at local level through central and state level schemes such as MNREGA and through funds available under CAMPA. Further research is needed on the central and state schemes available for promoting climate innovative strategies on livelihood protection.*

4.5.2. Developing a budget code

- *A legal system such as Nepal Climate Budget code can be explored to ensure effective use of climate finance and to introduce long-term investment in building climate change adaptation. It can help source funding from different channels for institutional and personnel capacity building along with research and development. Alternatively, Climate Adaptation Fund may be considered to finance new scientific evidence-based research on different adaptation technologies and how it improves the livelihoods of various IHR communities. Part of the fund may be disbursed to the communities (or community-level institution) for contributing their time and efforts in piloting adaptation projects.*

4.6. Training and capacity building of communities

Capacity-building (especially adaptive capacities) and training of the Himalayan communities on science around climate change, outreaching communities and local agencies with the goal to sustain the participatory adaptation efforts beyond projects is another aspect that needs urgent attention. Given the close proximity between the environment and community in the IHR, it is only objective to include and equip the community to monitor and manage their immediate landscape.

- *Barefoot scientists need to be introduced in a systematic manner where community is trained to conduct scientific research, for instance, water quality testing, MRV, among others.*

- *Before developing adaptive capacities of the institutions and communities, a pre-piloting assessment should be conducted to capture the true essence of the mountain context. This could be done through workshops at State, Municipality and Panchayat levels for lawmakers, bureaucrats, members of the civil society and the media.*

4.7. Effective land use planning for Slope Management

The need for an ecosystem based land use planning becomes imperative to balance the competing demands of different sectors in order to promote balanced land use and check the diversion of prime lands under industrialization, forestry and agriculture. In the Himalayan context, an unplanned land use change in one state can have destructive consequences in the other state in the IHR and neighbouring Himalayan countries. The respective State Land Use Boards should be revived to undertake the task of sustainable planning as a priority particularly for land under government control with an understanding of local mountain context.

4.7.1. Town planning

- *Consolidation of existing urban settlements governed through land-use planning incorporated in a municipal master plan needs strict implementation.*
- *Such designated settlements would have all basic urban facilities and the civilian growth would be decided based on the carrying capacity of the region, including seismic vulnerabilities, local aesthetics, water and power availability among others.*

4.7.2. Adoption and enforcement of Architectural norms

- *Municipal bye-laws must be amended to prohibit any illegal activity in hazardous zones or watershed near urban settlement. Strict enforcement through heavy penalties and compulsory demolition of illegal structures must be imposed.*
- *National Building Code for mountain areas needs to be developed by Union & concerned IHR states with emphasis on uses of local material and traditional architectural practices, compulsory use of solar heaters, rainwater harvesting and appropriate sanitation facilities, among others. For instance, in Leh Old Town, traditional forms of architecture using locally available mud and timber is still practiced ensuring that the structure remains strong, catering to the growing population without being unsustainable.*
- *A monitoring body under legislation maybe established, if necessary, either at State-level or regional “Urban Arts Council” to ensure implementation of National Building Codes.*
- *No construction at source-catchment areas of cities or their feeder channels, including mountain lakes, natural springs, among others should be allowed.*
- *Inventorying all such water sources and their channels in entire IHR and declaring those as protected zones is crucial.*

4.7.3. Green Road Construction

The roads in the Himalayas are the life-line for rural people living in remote and inaccessible region as well as the border defence establishments. However, the construction of roads must fully take into account the environmental fragility of the region. To this end, the concerned State Governments will consider promulgating, as soon as possible, the following guidelines for road construction in hill areas.

- *Environmental Impact Assessment are to be made mandatory for the construction of all state & national roads and expressways of more than 5 km length, including in the extension and widening of existing roads. This will not apply to inter-village roads.*

- *Road construction projects should for the treatment of hill slope instabilities resulting from road-cutting, cross drainage works and culverts, using bio-engineering and other appropriate technologies. Cost estimates for road construction in these areas should include estimates on this account.*
- *Plans for road construction must provide for disposal of debris from construction sites at suitable and identified locations, so as to avoid ecological damage and scarring of the landscape. Proposals for road construction must henceforth include cost estimates in this regard.*
- *Hot mix plants will only be set up at least 2 kms away from settlements. These sites should have a minimum open area of 200 sq. metres and should be already devoid of vegetation.*
- *All hill roads must provide adequate roadside drains and, wherever possible, be connected to the natural drainage system of the area.*
- *Alignment of proposed roads should avoid fault zones and historically landslide prone zones. Where this may not be possible, adequate measures will be taken to minimize associated risks, in consultation with experts.*
- *Innovative methods for constructing hill roads causing minimum damage to existing landscape must be devised often requiring inputs from good models adapted in other more developed countries.*

4.8. Encouraging place based, locally driven adaptation measures

The vast Himalayas are the house to many mountain communities with their unique measures and practices specific to the local mix of resources. With the intensifying climate-related resource stress, the SAPCC and state laws should ensure place-based and locally-driven adaptation measures are adopted with meaningful public participation in a time-bound manner.

4.9. Disaster management in Hindu Kush countries through trans-boundary approach

A joint ecological mechanism of India, China, Nepal and Bhutan needs to be created. This joint platform is most important to prevent floods and damage reduction. This will lead to the development of joint policy and security mechanisms. There is also a need for an early warning system within the Hindu Kush Himalayan Region to prevent loss of life and property. Work to reduce the destructive power of rains needs to be taken up at a larger scale by gaining extensive knowledge about glaciers, lakes, forests and their sensitivity levels.

Specifically:

- *There is a need for flexible design in structural measures.*
- *Safe carrying capacity of hill towns must be assessed.*
- *More emphasis should be laid on recovery and reconstruction.*

4.10. Investment on Research and Development

The government should promote cost effective research in IHR that responds to the needs of local communities, government agencies, private investors and other stakeholders. Institutional co-ordination and collaboration between researchers and end users should be improved. Applied research in IHR should be addressed through a specialized research and development (R&D) unit managed by the MoEFCC. Participatory research relevant to sustainable development and enhancing livelihoods shall be promoted with the involvement of stakeholders. Appropriate rural technologies shall be promoted for climate change adaptation.

4.11. Clearer two-way link between science, policy and practice

Scientific evidence on climate change should be basis for policy-formulation and a mechanism needs to be developed to ensure that the policy brings about adaptive change in the community practice through the support of people and CBOs.

4.12 Climate Intervention through local vulnerability assessment

Adaptation being a more local practice, identification of sector related areas-specific vulnerabilities is an imperative policy tool for IHR environmental management. Climate change vulnerability, sensitivity and adaptive capacities should be studied through local interventions supported by climate scenarios. This way the resource utilization strategy would be mindful of location-specific vulnerabilities and needs.

4.13. Gender focused diversification of livelihood

The role of women in the use and conservation of natural resources in the IHR is dominant on the ground. Conversely, any adverse impact of climate change directly affects day-to-day lives. In the north-west Himalayas, there is an increasing trend of rural out-migration by men in search of livelihood due to lesser agriculture yields. Thus, gender-focused diversification of livelihoods based on climate-related variation in mountain ecosystem is required to build adaptive capacities, such as technological or skill development, credit facilities, and institutional coherence. The policy and practice should focus on transforming women from vulnerable group to risk managers.

4.14. Avoiding Pilot models

Pilot or model approach introduced through projects in several states, limited to time-bound funding should be avoided.

- *The Chinese model maybe looked into, wherein climate adaptation has been incorporated in the planning through each and every environmental policy.*

4.15. Propagating Ecotourism

Since tourism is the mainstay economy for most of the IHR states, it would be advisable to follow a sustainable model rather than being indiscriminately exploiting the natural beauty of this region. There is still a lack of proper understanding and awareness on the linkages between irresponsible tourism and climate change. As of now, there is no proper tourism policy for the North East region in spite of the heavy tourist influx in these states which has to be set right. By promoting ecotourism in the IHR states, it would not only help conserve the region but also provide locals a respectable mode of income.

- *Unique mountainscapes are to be considered as entities with “Incomparable Values” while developing strategies for sustainable eco-tourism. For example in Sikkim, a management system was put in place, wherein all the disposable non-degradable items being taken inside the park (like cans, plastic, thermocol, glass etc.) were recorded in the check post during entry, and was disposed in the 9 bins setup nearby when the tourists exited. This waste was further segregated into more than 21 chambers by the supervisors and transferred to the resource recovery centre. The waste is safely stored for around 10 months until it becomes a truck load full to be transferred to the recycler. This way a large quantity of waste was not*

only converted into a resource but also the pristine ecosystem of a global biodiversity hotspot preserved.

- *Measures must be taken to regulate tourist inflows into mountain regions to ensure that these remain within the carrying capacity of the mountain ecology.*
- *Appropriate land-use planning and watershed management practices must be adapted for sustainable development of infrastructure supporting eco-tourism.*

5. Concluding Remarks and Policy Takeaways for Effective Climate Adaptation in IHR

After a thorough review of the IHR's legislative and policy framework on environmental governance, it can be understood that the IHR has a thoroughly dynamic climatic and environmental diversity. Any policy framework on IHR must be constantly updated in order to keep up with the changing environs. There is no doubt that such a policy framework would be beneficial for the long term development of the region, its people and its environment as it is favourable, both for the economic progress of local communities as well as conservation of the forest resources. Climate adaptation should become a crucial consideration of governance at every level from national, state to local level.