

**Table 1.** Category-wise sources of conflicts or injustices

Type of conflict/injustice	Number of cases	Example
Water management	59	Srinagar hydro electric project on Alaknanda River, Uttarakhand
Fossil fuels and climate justice	47	Kusum Tola, Jharkhand
Industrial and utilities conflicts	36	Bhopal gas tragedy, Madhya Pradesh
Mineral ores and building extractions	18	Niyamgiri-Vedanta bauxite mining, Odisha
Infrastructure and built environment	18	Dr Babasaheb Ambedkar International Airport MIHAN Project, Maharashtra
Waste management	16	Kodungaiyur garbage dump site in Chennai, Tamil Nadu
Nuclear	11	Kudankulam nuclear power plant, Tamil Nadu
Biomass and land conflicts	8	Eucalyptus conflict, West Bengal
Tourism recreation	4	Sahara India eco-tourism project in Sundarbans, West Bengal
Biodiversity conservation conflicts	1	Shrimp farming at Chilika Lake, Odisha

with 59 cases, followed by the conflicts in the ‘fossil fuels and climate justice’ category with 47 cases and ‘industrial and utilities conflicts’ category with 36 cases. Other categories of conflicts include cases related to mineral ores and building extractions; infrastructure and built environment; waste management; nuclear; biomass and land conflicts; tourism recreation and biodiversity conservation conflicts. As indicated in Table 1, EJAtlas also includes the retrospective cases such as the one on the Bhopal gas tragedy.

Each of the cases includes a structured detail of information such as description, basic data, source of conflict, project details and actors, the conflict and the mobilization, impacts, outcome, sources

and materials, meta information and comments. Many of these cases can be studied thoroughly, particularly by the doctoral and pre-doctoral students in Indian universities, to assess their impact on the environment, ecology and society. In September 2015, the United Nations General Assembly introduced a set of Sustainable Development Goals, achievable by the year 2030 replacing the Millennium Development Goals, which include several targets and indicators related to climate change, biodiversity, ecological and environmental security. EJAtlas will help us in benchmarking some of the global development agendas. EJAtlas also facilitates us in learning from the past mistakes for avoiding potential environmental or eco-

logical conflicts in future public policy-making.

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2. Patra, S. K. and Krishna, V. V., *Indian J. Geo-Mar. Sci.*, 2014, **44**(4), 1–9.
3. Martínez Alier, J., Demaria, F. and Temper, L., *Indialogs: Spanish J. India Stud.*, 2014, **1**, 51–83.

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## MEETING REPORT

### Sustaining the Himalayan ecosystem\*

On the occasion of International Earth Day, a joint programme on the Himalayan ecosystem was organized which was attended by over 100 participants from different walks of the life. For 2015, the

\*A report on the joint discussion programme on ‘Sustaining Himalayan Ecosystem – Emerging Issues and Challenges’ organized by G.B. Pant Institute of Himalayan Environment and Development and Indian Himalayas Climate Adaptation Programme run under the Global Programme Climate Change by the Swiss Agency for Development and Cooperation, New Delhi at the premises of the Indian National Science Academy, New Delhi on 22 April 2015.

Earth Day theme ‘It’s our turn to lead’ calls for sustainable economic development by reducing poverty, fossil-fuel use and carbon emissions. The world is looking to agree for a binding climate change treaty in Paris at the end of the year and advocating for sustainability as the best answer to development. Deliberations are going on to address the issue of sustainability for different ecosystems and landscapes. In recent years the world mountain systems (including the Himalayan region) have gained significant attention for the goods and services they provide, that are considered most desirable to the survival of the global ecosystems. It is therefore strongly desired to have adequate and

sound discussion on the developmental approach of such areas.

The Himalayan ecosystems represent a complex and interrelated ecology of planet earth. It is one of the longest, loftiest and dynamic mountain chains on earth, spreading over a length of 2500 km covering five countries (Pakistan, India, Nepal, Bhutan and Bangladesh), and is a huge reservoir of resources – flora, fauna, water and fresh air. The Indian Himalayan region (IHR) extends over an area of 594,427 sq. km (18.15% of India) covering ten states fully and two states partially. The region supports 6.36% of India’s population (2011 census). It is also considered a regulator of Indian monsoon and is categorized as the

world's youngest mountain chain. The average forest cover of the area is 38%. Interestingly, the region contributes 63% to India's water budget with Brahmaputra basin contributing 34%, Ganga basin 25%, and Indus basin 4% to the total water. The Himalaya region is highly sensitive because of continuous mountain-building activity as well as seismic susceptibility. Various developmental activities, such as road construction, mining and hydropower projects are often considered devastating to local environment and ecosystems, which have raised diverse issues and challenges for the well-being and progress of the region. Therefore, it is strongly desired to address sustainable development issues and challenges across all ecosystems and landscapes of the Himalaya.

Speaking on the occasion, P. P. Dhyani, (G.B. Pant Institute of Himalayan Environment and Development (GBPIHED)), while welcoming the dignitaries and participants, highlighted that the Himalaya region is inherently unstable, fragile and prone to natural disasters. The socio-economic and cultural characteristics of local communities are closely linked to this dramatic ecological setting. He further elaborated on recent R&D activities taken up by the Institute to address the sustainable development challenges in IHR.

Junine Kuriger (Swiss Agency for Development and Cooperation) emphasized that the IHR is highly vulnerable given its geological and ecological uniqueness that distinguishes it from other ecosystems. She detailed the approach that the Indian Himalayan Climate Adaptation Programme is adopting to strengthen the resilience of Himalayan communities and to enhance the capacities of research institutions, communities and decision makers. It is critical to develop appropriate policies to address vulnerability issue in the Himalayan region along with adaption plans.

Hem Pandey (Ministry of Environment, Forests and Climate Change) highlighted that Himalayan Mountains are important

because of the climate, landforms, ecosystems and hydrology. Unfortunately, the region has become highly vulnerable to climate change and anthropogenic pressure in recent times. He elaborated that the Govt of India has launched a National Mission for Sustaining the Himalayan Ecosystem for developing a better understanding of the coupling between the Himalayan ecosystems and climate factors. It is expected that the programme will provide the desired inputs for sustainable development of the fragile Himalayan system; however, it needs combined actions from climatologists, glaciologists and experts from other domains. He also mentioned that the Prime Minister of India has recently launched a National Mission on Himalayan studies.

Chandi Prasad Bhatt highlighted that since time immemorial, mountain communities follow a tradition of judicious utilization of natural resources. Based on his practical and field experiences gained through various expeditions made in the Indus, Ganga and Brahmaputra basins, he narrated how sensitive these Himalayan river systems are to human impacts. The Himalayan terrain is inhabited by multilingual and multiracial communities, who have a common heritage and are dependent on natural resources. There used to be a symbiotic relationship among the people and nature in the past. The societies had patience, commitments and appreciation for the values that made them self-sustaining. However, commercial exploitation of natural resources in the past has not only led to their rapid depletion, but also deprived mountain societies of their livelihood support. Highlighting the historical perspective of resource exploitation, Bhatt narrated how the colonial government violated the harmonious relationship of the local people with the forests in the beginning of the 19th century in order to generate revenue, which led to unrest among the local communities. He further shared the experience of the Chipko movement that

took place during 1970s and narrated how the eco-development camps in Alaknanda valley, Uttarakhand, made a difference in upgrading natural resource status over the years. It clearly proved that development in the Himalaya region should be focused on local resources and their management.

During the discussion various strategic issues emerged. It was agreed that the policy of exploitation of the forest resources, as adopted in the past, by depriving the local communities to self-governance of the resources has not done any good to the region. The communities in the Himalaya have traditions to conserve landscapes, ecosystems and resources, and accordingly, practices and way of life have been modified to adjust to them. Unfortunately, such practices did not get any recognition in policies. All agreed that there is a need to critically examine the present situation of the natural resource status in the Himalaya, and design pragmatic policy and planning to improve the natural resources base. In order to have a holistic policy, it is essential to integrate traditional knowledge with the new scientific approach. It is important to first understand the complexities and contradictions, and then change them according to the existing crises of the depleting natural resource base in the Himalayan ecosystem.

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