

Headlines Himalaya

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Editorial Team: Rashmi Tachamo and Sabita Nepal

For the 573-574th issues of Headlines Himalaya, we reviewed journal articles from four sources and selected 11 happenings from five countries. We selected seven happenings from Nepal and four happenings from other Himalayan countries (India, China, Bhutan and Pakistan). The overall coverage of this issue is biodiversity, wildlife, invasive species, climate change, pollution and environment.

Headlines Himalaya, a weekly research based information fact file is an attempt to keep our global readers abreast with the happenings in the Himalaya. Please share it with your colleagues and friends. Also, subscription is free. Enjoy!

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AN ASSESSMENT OF POTENTIAL SYNERGIES AND TRADE-OFFS BETWEEN CLIMATE MITIGATION AND ADAPTATION POLICIES OF NEPAL

Subina Shrestha and Shobhakar Dhakal

Journal of Environmental Management 235 (2019): 535-545.

ABSTRACT

Climate actions are centered on either mitigation or adaptation or both. Mitigation and adaptation actions can interact with each other resulting in synergies or tradeoffs. An integrated approach that considers these interactions is important to harness the synergies to create win-win situations and to avoid trade-offs for no-regret decisions. In this context, this study presents a qualitative analysis of the existing national level climate policies of Nepal to identify the extent and mechanism of their mitigation-adaptation interactions based on expert survey. Four key sectors having inter-relationships between mitigation and adaptation were identified as Agriculture, Forestry and Land use (AFOLU), urban planning, energy and water. We used Analytical Hierarchical Process (AHP) to rank and prioritize the opportunities and barriers for harnessing synergies and avoiding trade-offs of mitigation-adaptation interlinkage with these sectors in view. Our results show that such interactions in the Nepalese policy context are present mostly in the form of synergies in the order of AFOLU > Urban Planning > Energy > Water. We identified that developing an institution dedicated to climate change at the national level is the most important opportunity while inadequate institutional co-ordination is the most important barrier for harnessing these synergies.

For further details: <https://doi.org/10.1016/j.jenvman.2019.01.035>

MIGRATION, FOREST MANAGEMENT AND TRADITIONAL INSTITUTIONS: ACCEPTANCE OF AND RESISTANCE TO COMMUNITY FORESTRY MODELS IN NEPAL

Dilli Prasad Poudel

Geoforum 106(2019): 275-286

ABSTRACT

Although studies on Community Forestry (CF) have been focused on what makes a CF model sustainable and how it can achieve success, CF lacks study on why a community accepts or resists a model. This study explores the reason why some CF models are accepted and others are resisted by communities by studying two different types of CF model in Nepal – Community Forestry User Groups and Conservation Area Management Committees. Based on household surveys, semi-structured interviews and historical analysis, such variations in local acceptance have been examined on the basis of the following three hypotheses: the variation in local acceptance is due to increasing out-migration and the subsequent decreasing use of community-managed forests for livelihoods, the variation is due to the management arrangements of the CF models themselves, and the variation is due to the persistence of traditional practices of forest use. The article ultimately finds that an acceptance of or resistance to a CF model cannot be explained solely by relying on the migration of users and their decreasing dependency on the forests. Rather, in addition to reducing active leadership, out-migration prevents local participation in the design and implementation of new forestry institutions, and therefore makes an institution vulnerable and increases the risk of accepting a CF model. Moreover, a CF model that has wider institutional flexibility in terms of rules and rights can succeed in incorporating villagers' priorities, and can thus enjoy enhanced local acceptance. Finally, the

persistence of traditional institutions with the ability to impose sanctions on forest uses can resist to a formally designed CF model. As the government of Nepal is revising forestry legislation in the context of climate change and REDD+, the findings may provide knowledge for the sustainability of emerging forestry governance practices.

For further details: <https://doi.org/10.1016/j.geoforum.2019.09.003>

SPIRITUAL ENRICHMENT OR ECOLOGICAL PROTECTION?: A MULTI-SCALE ANALYSIS OF CULTURAL ECOSYSTEM SERVICES AT THE MAI POKHARI, A RAMSAR SITE OF NEPAL

Sunita Chaudhary, Andrew McGregor, Donna Houston, and Nakul Chettri

Ecosystem Services 39 (2019): 100972.

ABSTRACT

Ecosystem services, a globalizing discourse referring to benefits humans gain from ecosystems, has been rapidly mainstreamed into scientific and political thinking of environmental management. However, non-material benefits, also known as cultural services, have been rather subsumed within the dominant ecosystem services discourse. This paper explores local cultural services in the Mai Pokhari, a Ramsar site of Nepal, and adopts a multi-scalar analysis to explore the implications of global policy making at the local scale. The research, informed by political ecology, applies mixed methods. At the local scale, spirituality, sense of place and traditional practices were identified as important local cultural values within ecosystem management. But such local values were found to be marginalized in conservation policy making at national and global levels. The Ramsar listing at the case study site resulted in restrictions on community activities and opened the possibility of resettlement, creating disenchantment among the local community whose access to cultural services was curtailed. The study emphasizes the need to recognise and value local cultural services in policy-making at all levels. This is important not only for refining and improving global conservation policy initiatives based on ecosystem services, but also for securing just and sustainable conservation and development goals.

For further details: <https://doi.org/10.1016/j.ecoser.2019.100972>

IMPACTS OF FOREST MANAGEMENT ON TREE SPECIES RICHNESS AND COMPOSITION: ASSESSMENT OF FOREST MANAGEMENT REGIMES IN TARAI LANDSCAPE NEPAL

Bishnu Hari Poudyal, Tek Maraseni, and Geoff Cockfield

Applied Geography 111 (2019): 102078.

ABSTRACT

The role of natural (non-plantation) production forests is increasingly recognized in conservation of forest biodiversity globally. Government and other forest stakeholders in Nepal are, however, still reluctant to promote active management of production forests for fear of negative impacts on forest biodiversity. Moreover, Nepal's government is converting production forests into protected areas thus restricting the area available for multiple uses. To assess the implications of forest management practices on forest biodiversity at landscape level, we compared the richness and composition of tree species among regularly harvested community forests, irregularly harvested community forests, protected area and national forests in sub-tropical forested landscape of Nepal using tree species inventory and assessment of key environmental variables. Results showed that regularly harvested community forests could be effective in supporting tree species richness and composition compared to other management regimes. Results supported the hypothesis that high forest disturbance and no disturbance do not support tree species diversity and composition. In addition, this study found that regularly managed community forests also protect ecologically important and vulnerable tree species. Some possible explanations for the better performance of these community forests could be tenure security, frequency and regularity of

silvicultural operations and sensitivity of forest users to the ecological aspects of forest management. Our study reaffirmed the need for active forest management at the local level to contribute to global conservation initiatives such as sustainable forest management, reducing emissions from deforestation and forest degradation in developing countries (REDD+) and biodiversity conservation. Better compliance with forest management plans and capacity development of local forestry stakeholders in forest management operations are suggested for managing forests outside protected areas that is, in national and community forests.

For further details: <https://doi.org/10.1016/j.apgeog.2019.102078>

REVIEW OF FLOOD DISASTER STUDIES IN NEPAL: A REMOTE SENSING PERSPECTIVE

Til Prasad Pangali Sharma, Jiahua Zhang, Upama Ashish Koju, Sha Zhang, Yun Bai, and Madan Krishna Suwal

International Journal of Disaster Risk Reduction 34 (2019): 18-27

ABSTRACT

Research on flood disaster generate ideas and provoke the best solution for disaster management. This work primarily focuses research on monsoon flood due to its frequency and severity in the southern flood plain of Nepal. Here we review the previous studies on flood disaster at the regional and national level and compare with the global context. This facilitates exploring the data and methods that are mostly unexplored, and areas that have not lightened in the field of flood studies in Nepal. Our scope of literature review limited the literatures that are accessed through internet. The findings are revised and compared with different contexts. Multi-criteria weighted arithmetic mean has been used to find the spatial severity of flood disaster in 2017. We found several studies carried out on flood in Nepal. They are mostly based on field-based data, except few that have used current state-of-art, remote sensing method, using satellite images. Since the multi-spectral optical satellite imageries have a high cloud effect, it is not very useful in real time flood mapping; and very limited Synthetic-Aperture Radar (SAR) image, has been used in Nepal. In Global context, Support Vector Machine and Random Forest method are used in flood risk assessment; VNG flood V1.0 software has been used in flood forecasting, and Probabilistic Change Detection and Thresholding have widely been used in flood research, which can also be adopted in Nepalese context.

For further details: <https://doi.org/10.1016/j.ijdr.2018.11.022>

RESOLVING THE TRANS-BOUNDARY DISPUTE OF ELEPHANT POACHING BETWEEN INDIA AND NEPAL

Sujeet K. Singh, Gul Jabina, Thomas Basumatary, Gopal Prakash Bhattarai, Kailash Chandra, and Mukesh Thakur

Forensic Science International: Synergy 1 (2019): 146-150.

ABSTRACT

In Kangchenjunga Landscape (KL), which is shared by three countries – Bhutan, India, and Nepal, the wild elephants migrate from east of Jhapa (Nepal), through West Bengal (India) and Sibsoo (Bhutan) to further east in Assam (India). The route Jhapa-WB-Sibsoo-Assam is a known route for elephant movements where maximum casualties have been reported in the past. The present study was undertaken to ascertain the individual identity of a poached elephant in Jhapa, Nepal and ivory which was suspected to be from the same individual elephant confiscated in Siliguri, India. We undertook STR profiling of the confiscated specimens with nine polymorphic STRs. The forensic parameters have established the fact that the two analyzed samples of elephant were not identical and belong to two different individuals. The present study highlights the necessity of transboundary research for elephant conservation and monitoring their movements in Kangchenjunga Landscape and emphasizes the use of forensic genetics in curbing illegal wildlife trade.

For further details: <https://doi.org/10.1016/j.fsisyn.2019.07.007>

**TOURIST ARRIVALS, ENERGY CONSUMPTION AND POLLUTANT EMISSIONS IN A DEVELOPING ECONOMY–
IMPLICATIONS FOR SUSTAINABLE TOURISM**

Rabindra Nepal, M. Indra al Irsyad, and Sanjay Kumar Nepal

Tourism Management 72 (2019): 145-154

ABSTRACT

Sustainable tourism management policies should aim at maximising economic benefits from tourist arrivals while minimising associated adverse impacts on the environment. This study assesses the short-run and long-run relationships between tourist arrivals, per capita economic output, emissions, energy consumption and capital formation, citing Nepal as a specific case study. We developed four hypotheses and tested them using time-series econometrics based on the autoregressive distributed lag model and Granger causality tests. The results provide strong evidence of an economy driven tourism sector where expansion in economic output leads to expansion in tourist arrivals. More tourist arrivals, in turn, generate positive impacts on gross capital formation. Energy consumption negatively affects tourist arrivals, calling for increased attention towards improving energy efficiency and energy diversity. We conclude that national policies to increase tourist arrivals should be integrated with national energy and environmental policies in order to facilitate the transition towards a sustainable tourism sector.

For further details: <https://doi.org/10.1016/j.tourman.2018.08.025>

India-Himalaya

**EVALUATION OF HYDROGEOCHEMICAL CONTROLLING FACTORS AND WATER QUALITY INDEX OF WATER
RESOURCES OF THE BARAK VALLEY OF ASSAM, NORTHEAST INDIA**

Sharmila Khangembam, K.S. Kshetrimayum

Groundwater for Sustainable Development 8 (2019): 541-553

ABSTRACT

The hydrogeochemical processes and water quality index of Barak Valley of NE India has carried out to delineate the processes controlling the quality. 33 water samples representing river, pond, lake, paleochannel, groundwater were selected. Analyses using correlation matrix, scatter plots, Schoeller, Gibbs, Trilinear, Ternary diagrams and water quality index were examined. The water type is characterized by high HCO₃ (70% in SW and 66% in GW) and depleted SO₄ (<0.5% of TDS) indicating significant bacterial reaction. Gibbs diagram, bivariate relations of Na/Cl, Ca/Mg vs. Na/Cl, Ca+Mg vs. TZ suggest silicate weathering. The scatter plots of Ca+Mg vs. HCO₃+SO₄, Ca/Mg vs. Na/Cl, (Ca+Mg)/(HCO₃+SO₄), (Na-Cl) vs. (Ca+Mg-HCO₃+SO₄) further indicate normal ion exchange. Chemically the surface water evolved through initial stage depicting Ca-Mg-HCO₃ type while groundwater represents mixed type. WQI suggest not suitable for drinking due to excessive elevation of As, Fe, Mn. However, SAR, %Na recommend for drinking and agricultural uses.

For further details: <https://doi.org/10.1016/j.gsd.2019.02.001>

China Himalaya

GREENHOUSE GAS EMISSIONS FROM LANDFILLS: A REVIEW AND BIBLIOMETRIC ANALYSIS

Chengliang Zhang, Tong Xu, Hualiang Feng, and Shaohua Chen

Sustainability 11 (2019): 2282.

ABSTRACT

The landfill is an important method of disposal of municipal solid waste. In particular, the landfill is especially vital in many developing countries, with it being the main biodegradable waste disposal method due to its simple management and ability for mass manipulation. Landfills have recently been shown to be an important source of greenhouse gas (GHG) emissions by researchers in different countries. However, few reviews have been conducted within the related fields, which mean that there is still a lack of comprehensive understanding related to relevant study achievements. In this study, a bibliometric analysis of articles published from 1999 to 2018 on landfill GHG emissions was presented to assess the current trends, using the Web of Science (WOS) database. The most productive countries/territories, authors and journals were analyzed. Moreover, the overall research structure was characterized based on co-cited references, emerging keywords and reference citations by means of bibliometric analysis. Due to the increasing amount of attention being paid to the GHG emissions and their mitigation methods, this study provided comprehensive bibliometric information on GHG emissions from landfills over the past two decades and highlighted the importance of the development and dissemination of updated knowledge frameworks.

For further details: <https://doi.org/10.3390/su11082282>

Bhutan-Himalaya

Distributions of Alien Invasive Weeds under Climate Change Scenarios in Mountainous Bhutan

Ugyen Thiney, Poramate Banterng, Santimaitree Gonkhamdee, and Roengsak Katawatin

Agronomy 9 (2019): 442.

ABSTRACT

Climate change is viewed as a cause in accelerating the rate of invasion by alien species in addition to the globalization of anthropogenic activities. Ecological niche modeling has become an instrument in predicting invasion from natural or invaded ranges to uninhabited ranges based on the presence records of organisms and environmental parameters. This study explored the changes in the distributions of globally noxious alien species (*Aegrotina adenophora*, *Ageratum conyzoides*, *Chromolaena odorata*, *Lantana camara*, *Mikania micrantha*, and *Parthenium hysterophorus*) in Bhutan, to provide evidence that even a mountain environment is under the threat of invasion given the change in climatic conditions. With fairly high accuracy, the model results suggest that there will be a potential increase in the areas of invasion among most of the species, except *Parthenium hysterophorus*, which will experience a northerly shift and decline in distribution. The results also indicate changes in patterns of invasion, some becoming more concentrated toward a given direction, while others become more dispersed over time. This study provides a framework that can be used in the strategic control of the species, future detection surveys, and further research.

For further details: <https://doi.org/10.3390/agronomy9080442>

Pakistan-Himalaya

BARRIERS TO HYDRO-POWER RESOURCE UTILIZATION IN PAKISTAN: A MIXED APPROACH

Kafait Ullah, Muhammad Shabbar Raza, and Faisal Mehmood Mirza

Energy Policy 132 (2019): 723-735.

ABSTRACT

The share of hydro power in the energy mix of Pakistan has not exceeded beyond 40% despite abundant hydro-power potential in the country. Owing to the slow pace of hydro-power development under the public sector, various policy frameworks and institutional arrangements have been introduced to develop the resources by involving the private sector. Even those arrangements have not succeeded in directing the attention of private investment towards the hydropower but the thermal sector. This study investigates the reasons behind the slow progress of hydro-power sector in Pakistan. A mixed approach comprising NVIVO analysis and Q methodology has been used to explore the impending reasons. Both, primary and secondary data, in the form of interviews, published reports, papers and other documents related to the hydro-power sector of Pakistan were collected for the analysis purpose. NVIVO analysis of primary and secondary data identified important variables that were further used for Q methodology. Q methodology revealed four important discourses on barriers to the hydro-power development in Pakistan. Discourses included less participation of private sector in running the electricity market operations, incoherent planning, financial barriers and institutional barriers. The revelation of these discourses is important for framing policies on the development of indigenous renewable energy resources in Pakistan.

For further details: <https://doi.org/10.1016/j.enpol.2019.06.030>