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SEMINAR PAPER

ENVIRONMENT SECURITY IN NEPAL

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WILDLIFE CONSERVATION NEPAL

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Background

Nepal's diverse landscape range from tropical to alpine ecosystems and with over 6000 rivers is rich in natural resources. The fledgling democratic set up in Nepal has brought tremendous changes in the governance, ushered economic growth and developed infrastructure that has added value to the local products for markets in rural and urban centers. However with the fast track development of infrastructure coupled with forest degradation, there is rise in environment degradation and threat to environment security.

Nepal has an outstanding policy to protect natural resources and the environment (annex 1).

Introduction

The State is responsible for environment security[1]. Providing environment security by the Sate not only includes safety and welfare of the citizens to live without fear of natural disaster[2] and foreign interventions in politics[3] but also equally provide better education, health and hygiene. Besides the State Actor, there are few institutions that contribute to environment security[4]. For example, many conservation and social organizations support the State to protect the social fabric of biodiversity, improve degradation of soil and forest, encourage sustainable resource use and promote economic incentives through non-consumptive values of wildlife. The community forest hinges on protecting forest with equity sharing of resources on a sustainable basis has been outstanding since the last 30 years. However, equity sharing in communities is a far-fetched scheme[5].

As Nepal is digitally connected with the outside world, many economic avenues - open markets, education, banking, human labor, capacity building and opportunities is on the rise, a paradigm shift is on the making where reforms and new innovative technologies are taken up and

[1] Rajan Bhattarai. 'The Concept of Human Security and Changing Security Dynamics in Nepal' (Pages 13-38) ed. Bhattarai R and R. Cave in Changing Security Dynamics in Nepal.
[2] June 4, 2014. Republica. Khatri, R. City at Risk.

[3] "FESS: Foundation for Environmental Security & Sustainability." *FESS: Foundation for Environmental* Security & Sustainability. Web. 8 June 2011. <http://www.fess-global.org/about.cfm>.
[4] Bollinger. K., June 2011. Environmental Security in Nepal: Background and Analysis , in Asian Studies Center for Peace and Conflict Transformation
[5] Conflict over natural resources at the community level in Nepal including its relation to armed Conflict. Jim Schweithelm, Ph.D., Senior Associate ARD, Inc, Ramzy Kanaan, Associate, ARD, Inc, Pralad Yonzon, Ph.D., Chairman, Board of Directors, Resources Himalaya)

implemented for a better tomorrow. Amidst all this, Nepal is seeking alliances with International Organizations and Countries to protect environment and secure biodiversity.

The climate change in recent times indicate that biodiversity, livelihood and farmers with small land holdings will bear the brunt and the way out is to adapt innovative techniques to cope up and mitigate the problems by using less energy to reduce the effect of climate change[6]. With global warming, natural disaster and flash floods will be more pronounced resulting in loss of life and property. For some bird species, with limited distribution, climate change could be a blessing as their habitat will increase along with the riparian and aquatic fauna.

Environmental carrying capacity of land-use is limited and with repeated high-intensity use the chances of irreversible damage to the environment is high and when people are displaced within the country, the impact to the environment is detrimental. Depleting resources are directly related to human interventions, such as extractions of gravel, stones, sand, over cropping and overgrazing. And as population grows, the land use is more intense and that results in deforestation, soil degradation and erosion.

Five areas will be discussed on how Nepal faces challenges in environment security:

A. Water

Most headwaters come from the Himalayas melting ice and few from Tibet feeding the Brahmaputra and the Ganges in India. Most treaties regarding water resources in international borders between Nepal and India in the past accommodated equal sharing and benefitted both nations. However, as time passed by, the sharing of water favored the southern neighbor. All International Water treaties done with India have a distinct flavor to benefit Nepal's partner. As for example, the first water treaty between India and Nepal held in 1910 and 1920 to harness Mahakali River was not at par with Nepal for mutual benefit[7].

[6] Wildlife Conservation Nepal is working in four districts to address climate change through 900,000 sapling plantation, 500 innovative improved cooking stoves to reduce fuelwood consumption and improve health of rural communities, improve livelihood situation by conducting research and surveying the best models from other areas to improve the quality of life.

[7] www.internationalrivers.org/files/attached-files/treaties_between_nepal-india.pdf

Similarly, India have benefitted from all water treaties. For example, Kosi and Gandak treaties (1954 and 1959), leading to the construction of dams for irrigating and protecting Indian lands[8] while inundating Nepal territories in monsoon. To aggravate the mutual trust of understanding, maintenance were assigned to Indian engineers who only had access to the dam. This meant that Indian territories would have access to water resource in winter. Prominent examples of inundation problems at international border are Laxmanpur, Lotan Rasaiwal Khurda and Mahalisager.[9] The Laxmanpur barrage is 300 meters way from the Nepal-India border and inundates 2247 hectares of land, affecting more than 2600 houses and a population of more than 15,174 in Nepal. Similarly, Lotan Rasiawal Khurda dam is located 200 meters away from the border and inundates 33000 hectares of agricultural lands and 13 sq. km of land and affects 100 thousand. While the Mahali Sagar dam inundates 460 hectares of land and affects 1000 families.

1. Monsoon and Flash floods

The frequent bursting of glacier lakes and increasing landslides and flash floods in the mid-mountains are challenging issues. Lessons are to be learnt from the Kosi flooding of August 18, 2008. In Nepal 527 lives were lost, 116,000 hectare of land inundated and 234 thousand people were made homeless[10]. While in India, approximately 493 lives were lost and 3,500 reported missing - about 1,500 sq km of farmland was turned barren. The flood triggered one of the largest evacuation operations with over 1 million people being evacuated and about 460,000 people accommodated in 360 relief camps in India[11].

Similarly, the flashflood of Seti River of 2012 claimed 72 lives and left dozens homeless formed by an 'artificial reservoir' formed due to the damming of snow and ice melt, later aggravated by

[8] http://cseindia.org/challenge_balance/lectures/water_sharing_south_asiaHT.pdf)

[9] Dixit, A., Adhikari, P. Thapa, R.R.(2004), Ground Realities for Himalayan Water Management in: Panos Institute South Asia (2004), Disputes Over the Ganges: A Look at Potential Water Related Conflicts in South Asia. Kathmandu: Panos Institute South Asia. Pp. 158-191

[10] Regmi B. (2011). "Long-term management of Kosi River basin in Nepal" River, Coastal and Estuarine Morphodynamics: RCEM2011, Tsinghua Unversity Press, Beijing.

[11] Bihar Kosi Flood (2008) Needs Assessment Report, Government of Bihar World Bank
Global Facility for Disaster Reduction & Recovery.

avalanche on Annapurna IV. The Seti River originates from the Seti Gorge situated between Mount Annapurna and Dhaulagiri range of Kaski district[12].

2. Hydro Energy

Generating hydro-energy in Nepal has been Nepal's goal since the last 40 years. A small hydro-project called Chilime, with total indigenous technology and local investments is a success Nepali story but has been eclipsed by social and political issues. Mega hydro projects are allowed to make inroads because of lucrative investment. The problem with hydro project is aggravated by un-necessary committees, lot of paper work and legalities at the behest of different Ministries who at the end nullify most projects.

Today scarcity of drinking water for people in Kathmandu is the most daunting problem and will not be resolved any time soon. The Melamchi water project when complete will be insufficient for the ever-growing population of Kathmandu. Due to insufficient water supply, deep boring is on the rise in Kathmandu valley, this may cause the water level in surrounding areas to dry up. The Kathmandu Valley Water Supply Management Board has a notice that if people would like to do boring, they must get approval from the Board (annex 2).

B. Churia Range

Today, Churia is the President project and listed in the top 21 priority list in Nepal.

The Churia, stretching from Assam in east India, through Nepal to Pakistan, is the youngest and southernmost mountain chain of the Himalaya with an average summit of less than 1500 meters and width of 8 to 50 km. It is a ravine landscape consisting of tertiary unconsolidated and highly erodible, fluviatile sediments[13]. The Churia is rugged and unstable, and its river systems are the storehouses for the fertile land in Terai. It is estimated that the erosion rate in the Nepal Churia ranges between 780 and 20,000 tonnes/km2/yr depending upon land use type[14].

[12]http://www.ekantipur.com/the-kathmandu-post/2014/01/28/news/avalanche-caused-seti-flash-flood-nasa/258632.html, Kathmandu Post, 2014-01-29 09:22

[13] Carson,B. 1985. Erosion and sedimentation processes in the Nepal Himalaya. *ICIMOD* Occasional Paper 1. International Centre for Integrated Mountain Development, Kathmandu.

[14] Mishra, S.B. and S. Bista. 1998. *Soil erosion*. A compendium on environment statistics 1998 Nepal. His Majesty's Government, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu. Pg 349-358

Being the southernmost chain of the Himalaya in Nepal, they bridge the Gangetic subtropics in the south and the temperate Himalayan forests in the north. Today, there is a growing concern about the Churia in Nepal whose sphere of influence are realistic for three environment reasons: 1) contiguous Terai forests have fragmented beyond restoration; 2) excessive boulders, rocks, gravel and sand mining and extraction and 3) human settlements in the Churia have increased[15]. Rapid deterioration of the Churia needs to be addressed properly as they are the only land bridge for environment conservation.

1. Past Studies

Gathering and conducting in-depth ecology-based research and information collection of Churia, has never been a priority, except for a few ancillary surveys in support of development activities that would support projects to be implemented. For example, the Bibliography on Biodiversity clearly confirms this deduction as less than 4% of all published papers on Nepal's biodiversity, is attributed to the Churiya[16].

The Churia has the highest forest cover amongst the Himalayan Range and is a region of significant biodiversity currently under threat from illegal tree felling, sand and gravel mining[17] and timber extraction.

2. Gravel and Sand Extraction

With over 700 registered crusher industries[18] which have threatened the ecological integrity of Churia range by gravel, sand and boulder extraction that generates 80 billion Nepali Rupees have direct impact on environment security. Around 6.5 million cubic meters of gravel, stones and sands are legally extracted every year from the region and the illegal extractions are expected to be twice as much[19].

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[15] Bhuju, D.R. 2000. Nepal's Last Hope for Landscape Level Conservation. *Habitat Himalaya, 8(2), 1.*

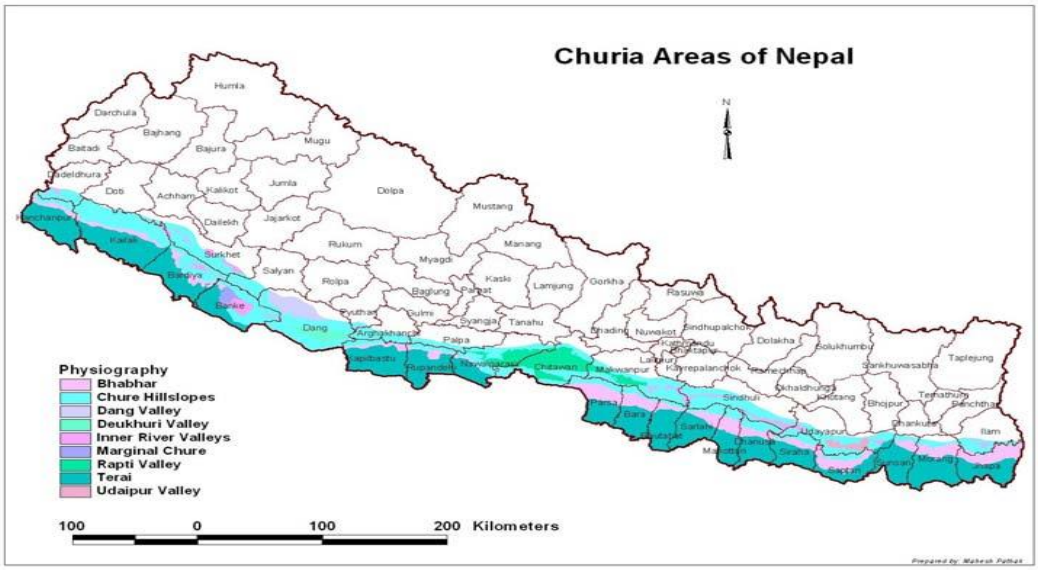
[16]ICIMOD. 1996. Bibliography on Biodiversity. International Centre for Integrated Mountain Development, Kathmandu.

[17] The crusher industries began a crusade against the government that they would stop delivering stones, gravels and sand to the government infrastructure this May because the Government adamantly said that they would not register any new crusher companies till June where new rules and regulation would come into effect. After two weeks of stopping the sand, gravel and stones reaching the govt site, a dialogue ensued between the Union and the Government bodies. The outcome was that a small truckload of sand which costs 4,500 now is available at Rs.6,500 and so are other commodities. The worst effect of this outcome was the local communities.

[18] Republica May 21, 2014 Crusher Operators press government to withdraw new rules

[19] Kantipur 2013-02-17

It is found that hundreds of truckloads of sand and gravel from Churia in Nepal are daily transported to India to build the 1460 km long 6 lane Delhi-Assam Highway[20]. There is a growing concern on over-exploitation of resources because its inhabitants are vulnerable to impacts of flash floods and climate change. Mitigation of a disaster risk and human induced climate change are far from reality as resource extraction continues. For example, the area suffers from erratic rainfall pattern, landslides and floods where there was no recorded history of floods before. Therefore, it is expected that with the increase in annual frequency of natural disasters, human tragedy is inevitable compounded with loss of biodiversity.



C. Nepal's Forest and Protected Areas

Nepal's forests are the mainstay of livelihood resources for many. It provides food, fodder, medicine and building materials. The lowlands contain commercially valuable tree species. The latest physiographic data shows that Nepal harbors 29% forest area[21]. Forest survey project carried out from 2010-2014 in 18 districts of Terai region showed forest area decreased by approximately 4 percent. A total of 32,000 hectares of forest area have decreased compared to total forest area data shown by 1991-2010/11. The forest area is decreasing by 0.44 percent annually. Former study had shown the forest area is decreasing by 1.3 percent annually[22].

[20] Despite the Government enforcing to stop the export of rocks, gravel and sand from Churia, till June 2, 2014, hundreds of trucks loaded with these products leave Nepal to India, Rajdhani, Jestha 19, 2071.
[21] Fourth National Report to the Convention on Biological Diversity, 2009. Govt. of Nepal
[22] Kantipur Daily, 8 April 2014

1. Community Forest

The establishment of community forest in Nepal is an exemplary example how communities can manage, protect and use its resources by serving communities is to be appreciated. There are 17,685 community forest groups with 1,652,654 hectares of National Forest handed over as Community Forest benefitting 2,177,858 households[23]. CFUGs are among the few functioning democratic institutions in Nepal.

2. Protected Areas

With the enactment of the National Parks and Wildlife Conservation Act 1973. Today, Nepal has 32 protected areas (10 National Parks, 6 Conservation Areas, 3 Wildlife Reserves, 1 Hunting Reserve and 12 Buffer Zones) that accounts for 23.23 percent of mass area. The Himalayan protected areas are particularly extensive. Seven of Nepal's ten national parks are in the Himalayan region. Four of these have substantial areas above 3500 meters that includes Sagarmatha, Makalu-Barun, Langtang, and Shey-Phoksundo with over 1000 sq.km[24]. Together they constitute 73% of Nepal's national parks system. As the highland protected areas are unproductive with snows and boulders; this could be one of the reasons of proclaiming them as national parks.

3. Conflict

The conflict in protected area is always on resource use by local community who had access to these resources when the park was not established. Today, the conflict between protected areas and communities is on grazing-rights, access to fuel-wood and fodder collection. One of the worst conflicts is human, wildlife and livestock; when livestock and human life is lost, the government provides a compensation package to the bereaved family. Frequent conflicts between livestock and wildlife takes place in buffer zone areas. When livestock are lost inside the protected area, people try to take advantage of the situation by sprinkling pesticides over the carcass. Most tiger skin seized near protected areas bear no bullet injuries[25]. Poaching of

[23] http://dof.gov.np/dof_community_forest_division/community_forestry_dof

[24] 2013. Stevens, S. National Parks and and ICCAs in the High Himalayan Region of Nepal: Challenges and Opportunities, Conservation and Society 11(1): Pg 29-45.

[25] Wildlife Conservation Nepal, a national non-governmental organization working on stopping illegal wildlife trade have in their record that most tiger skin seized closed to protected area do not have bullet holes in them. On May 22,

herbivores for meat purposes have been limited by army patrol and the park personnel. With strict legal measures and effective patrolling, poaching of large and endangered mammals such as rhinos, tigers and others have been limited. Supporting and motivating marginalized communities and mainstreaming them towards conservation by creating jobs can secure the protection of endangered mammals from local extinction.

D. Food Security

Climatic factors affect food production, destroys livelihood and brings social instability and with less land for agriculture conflict is inevitable. It is often the poorest segments of society that are most vulnerable[26]. The impacts of climate change and the availability of natural resources, weak governance and migration of youth for better jobs have affected food security and increased competition over scarce natural resources – most notably fertile land and water[27]. Decrease in food production is threat to livelihood that can lead to the environment security problems in the country.

E. Climate Change

Nepal is one of the lowest greenhouse gases emitters in the world. It is responsible for just 0.025 percent of global greenhouse emissions. Yet Nepal ranks fourth among the 170 countries rated for vulnerability to climate change in Maple croft's Climate Change Vulnerability Index. Atmospheric temperature in Nepal is rising at a rate higher than the global average, with a 1.8°C increase between 1975 and 2006. Precipitation has become increasingly unpredictable, while biodiversity depletion, deforestation, and increased frequency of extreme weather events have negatively impacted agricultural production. This has directly affected a great portion of Nepalese citizens who are engaged in small hold farming which is particularly susceptible to weather volatility.

The impact of climate change on Nepal's landscape is significant. The erratic change in weather pattern brings in flash floods, draught are major concern for social security. This is a serious

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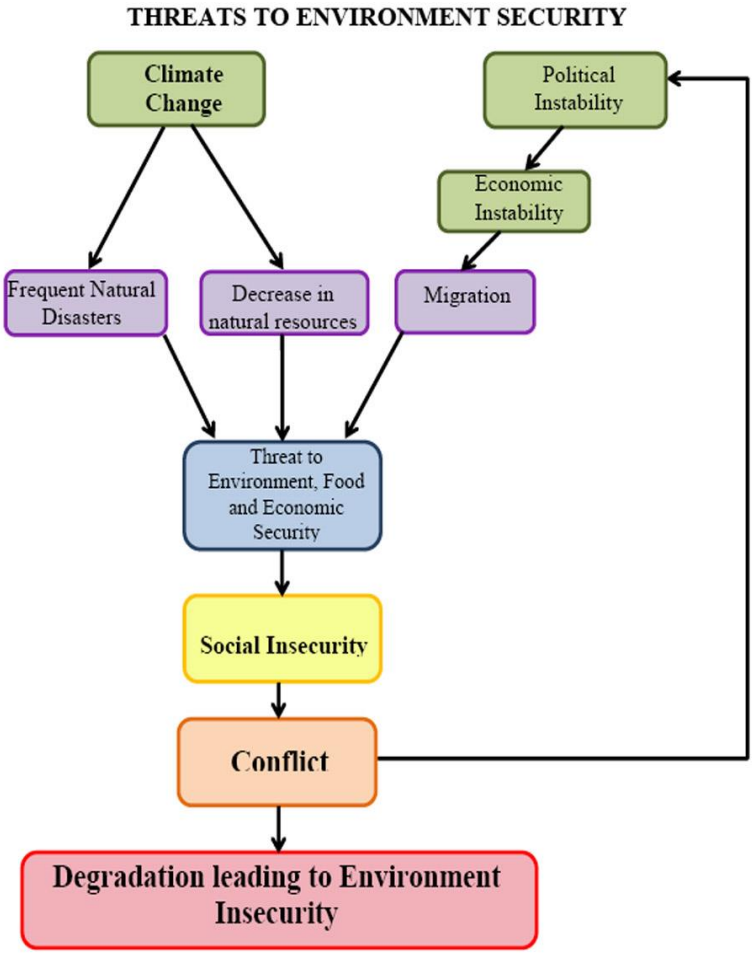
2014, five leopard skins were seized at Dang with WCN intelligence by the local Police and WCN unit. All skins did not have bullet holes in them. This indicates the wide use of pesticides to kill leopards and tigers.

[26] 2012. Synnott. P. Climate Change, Agriculture, & Food Security in Nepal - Developing Adaptation Strategies and Cultivating Resilience, Report prepared for Mercy Corps Nepal

[27] 2009, Kathmandu, Keshav Prasad Sharma. Climate Change Trends and Impacts on Livelihood of People; Jalsrot Vikas Sanstha/Nepal Water Partnership

concern for human as it will displace them that loss of life, displacement and related to climate change in Nepal. Climate models predict intensified monsoon rains, thereby increasing the chances of flash floods. Glacier lake outbursts in Himalayan regions are another major concern. Retreating glaciers leave pools of water that become trapped behind moraine dams. When dams break, flooding occurs which has serious consequences for downhill populations. Increasing temperatures at higher altitudes is another serious result of climate change in Nepal.

Adaptation is, hence, the only strategy to become climate change resilient. Efficient use of water and energy; and promoting local resources and indigenous knowledge can be the bases for developing adaptation strategies to climatic changes.



The figure above indicates the threats to environment security. Key threats are political instability, coupled with migration and climate change. When resources dwindle and social structure breakdown for resource competition coupled with population increment and disparity

between “have and have not” a conflict follows where the nation becomes vulnerable and in such situation environment security can be breached. “According to the World Bank, climate change can: Decrease the amount of water available or its quality; lead to more floods or droughts; cut water regulation in mountains; make hydropower less reliable and limit biomass production; and the destruction they cause; hurt fisheries and damage ecosystems[28].”

Conclusion

To protect the fragile ecosystem and secure environment - quantify all natural resources, both non-renewable and renewable. Make policies that suit the ecological situation, promote food security with adequate planning to incorporate climate change resilience, natural disaster and harness energy from water.

Mitigate and adapt to climate change by using clean energy and recharge the soil through plantation and advocate the effects of climate change to those who are worst hit by it. Bring in policies that improve the quality of life and secure their environment.

All relevant stakeholders, from government officials, local leaders to grassroots people in its activities should be informed about the status of environment security. A set of policy recommendations should be developed through the State and Non State Actors. The government will be encouraged to implement and use it in framing environment security policy document for the future.

[28] Too hot to grow. China Daily, Asia Weekly, May 23-29, 2014.

Annexes

Annex 1:

Nepal Environmental Policy and Action Plan (NEPAP) analyses the country's environmental issues in multi-sectoral framework and sets forth a strategy for maintaining the country's natural environment, the health and safety of its population and its cultural heritage as economic development occurs. NEPAP was prepared in response to growing awareness about importance of maintaining a balance between economic development and environmental conservation which culminated in United Nations Conference on Environment and Development in 1992.

Policy

Policy, Act, Rules, Regulations and Guidelines related to the DoF

The Master Plan for the Forestry Sector, 1989 is considered as a basic policy document. The following are the major documents related to the Forest policy, Act, Rules and Regulations.

- National Conservation Strategy 1988
- Master Plan for the Forestry Sector Nepal 1989
- Forest Act 1993
- Community Forestry Directives 1994
- Forest rules 1995
- Revised Forestry sector Policy 2000
- Leasehold Forest Policy 2002
- Five- year Periodic Plans (Current 10th: 2002- 07)
- Operational Guidelines (revised) 2002
- National Biodiversity Strategy 2002
- Monitoring and Evaluation concept and strategies 2002
- Collaborative Forest Management Guideline 2003
- Forest Products Auctioning Procedure 2003
- Non-Governmental Service Providers Guideline 2003
- Terai Arc Landscape-Broad Strategies 2004
- Forest Nationalization Act 2013 Bikram Sambat (B.S.)
- Plant Protection Act 2029 B.S.
- Environment Protection Act 2053 B.S.
- National Parks and Wildlife Protection Act 2029 B.S.
- Local Self Government Act 2055 B.S.
- Land Act 2019 B.S.
- Plant Protection Rules 2031 B.S.
- Environment Protection Rules 2054 B.S.

- Local Government Rules 2056 B.S.
- Forest Inventory Guidelines 2057 B.S.
- Land Revenue Act 2034 B.S.
- Procedural Guidelines for the sale of Forest Products 2060 B.S.
- Non-Government Service Provider's Service and Procurement Guidelines, MFSC, 2004
- Wetland Policy 2059 B.S.
- IEE/EIA Review Guidelines for Forestry Sector 2060 B.S.

Salient Features of the Forestry Sector Policy 2000

- Forests in Terai and Inner- Terai will be categorized, delineated and published in the Gazette;
- Terai and Inner Terai forests will be managed in Blocks and each block will be further divided into Compartments for Sustainable Forest Management;
- A Collaborative Forest Management Approach would be applied to improve forest and bio-diversity largely following natural processes;
- As existing stocks of timber together with fallen trees can meet the present demand of timber, green trees from such forest blocks will not be felled for commercial purpose at least for 5 years;
- The open forest land and shrub land detached from large blocks of forests of Terai, Inner-Terai and Siwaliks would be gradually handed over as Community Forests. Forest products will be harvested on annual increment;
- Siwaliks (Churia Range) will be managed as protected forest as these areas are geologically fragile and absorb rainwater to recharge ground water of Terai. An Integrated Watershed Conservation Program will also be continued in the Siwalik.
- A legal measure will be taken up so that 25% of the income of government managed forests would go to Village Development Committee (VDC) and District Development Committee (DDC);
- The surplus Timber(Sal and Khair) in the Terai districts from Community Forest after fulfilling communities demand will be sold and the 15% of the revenue would be collected by Government of Nepal for program implementation in the F.Y. 2061/62 (Amended in 2061/4/1)
- Forest User Group will be formed from among the households residing nearby forests and community development programs will be initiated. Fuel wood and fodder would be easily available to such groups free of costs. Opportunities of income generation will also be provided.

Annex 2:

Since groundwater comes under the definition of water resources, the ownership over all groundwater resources within the country also lies with the State (Water Resources Act (WRA); section 3). Through licensing process, right to utilize groundwater may be exercised (WRA 2049 AD; section 4). This right is protected or guaranteed against third party intervention or any other outside interference and is enforceable by law. A license to use a water resource can be sold or transferred (WRA 2049 BS; section 8.6). Individual or collective rights over groundwater resource for such purposes as drinking water and domestic uses and irrigation are protected by means of waiver form the licensing requirement (WRA 2049 BS; section 4.2)

The Kathmandu Valley Water Supply Management Board, under the Water Supply Management Board Act 2063 BS (2006) (Section 7.c) has begun to issue license to deep water tubewells operators in the valley, irrespective of whether the extracted groundwater is used for drinking water or other purposes. Using well depth as criteria, license fee has been fixed at R.s10,000 for wells that have less than 100m depth and Rs. 20,000 for those wells that are more than 100m deep.

There is another problem with the present license procedure. Among those who are required to or who have already obtained license form KVWSMB, some wells are in use for domestic water supply in the housing complexes. This use falls into the category of "collective use of water resources for prescribed uses". Since the Water Resources Act 2049 BS has waived such users and uses form license requirement (WRA 2049 BS; section 4.2), the license issue to them are in contradiction to the WRA 2049 BS.

(Extracted from: Dr. Dibya Ratna Kansakar. Regulating Common Pool Groundwater under Fugitive Surface Water Law: Limitations on Lawa and Regulations in Nepal. 2011. Global Water Partnership Nepal)