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Abstract: The vulnerability of the communities to the climate change effect is expected to increase and concerted effort from all concerned at all levels has become important. Policy, plans and programs and their implementation are important in addressing the issues and effects of climate change. This paper looks into the policy, legal and institutional mechanisms and their effectiveness and weaknesses in addressing climate change adaptation through the review of the three major policies and strategies of the Nepal Government, which have bearing on the climate change issues.

Key words: Policy, plans, institution, climate change, adaptation, natural resource management (NRM), Nepal

Introduction

Nepal being vulnerable to climate change effect, the stakeholders at various levels – government, donors, International NGOs and communities are implementing various policies, plans and programs to address the climate change issue. However, the effective implementation of them very much depends on their efficacy in designing appropriate institutional mechanism from the central to local levels, to address the needs of local communities. The local communities are at the forefront of bearing the impact of climate variability and are adapting to changing scenarios through response mechanism developed at the local level. Appropriate policy support backed by strong institutional mechanism is needed to support the local initiatives. In this context, this paper looks into the policy and institutional mechanism for the Master Plan for Forestry Sector (MPFS 1989), Water Resources strategy (WRS 2002)/National Water Plan (NWP 2005) and National Action Plan Adaptation (NAPA 2010), as these programs each have a bearing at climate change adaptation at the local level.

Master Plan for Forestry Sector: Policy, Legal and Institutional Dimensions

The Master Plan for Forestry Sector (MPFS) was prepared with the long term objective of conserving ecosystems and genetic resources. The provisions in MPFS were made to check rapid degradation of the forest resulting in fragile watershed management due to lack of ownership feeling among the users, although climate change was not an issue at that time. Thus, in order to involve the users in the forest and watershed managements, the plan envisaged granting user rights to forest products with the retention of the right of ownership by the state. Community forestry (CF) is an important component in eliciting users' participation in resource management for the protection of the environment and providing forest product for the benefit of the communities.

The Forest Policy (FP 1989) was instrumental in introducing radical changes in the management of the forest by delineating roles and responsibilities of District Forest Office and Forest User Groups in respect to the proper management of the forest. The Forest Policy, 1989 was revised in 2000 to include the issues related to forest management in the Terai by proposing the Collaborative Forest Management (CFM) to manage forests in the

Churia (Siwalik) hills, Terai and Inner Terai regions in consideration of the recommendation of the Nepal Environmental Policy and Action Plan (NEPAP) and the Agricultural Perspective Plan (APP), as the environment of these regions required special attention. The Siwalik Hills are considered to be a fragile region and the recharge zone for the groundwater resources, which is the lifeline of agriculture in the Terai. In that respect, FP and MPFS took into account the existing problems in the forestry sector and proposed practical solutions for the implementation, through clear objectives of the policy, legal and institutional reforms. This was in essence different from other government policy documents most of which seldom come into implementation.

The improvement in the legal framework was also needed for the effective implementation of the policy. Therefore the Forest Act, 1993 revoked all previous forest related acts and the Forest Regulations, 1995 was introduced to facilitate the implementation of MPFS. The Act classified the forest into two categories: national and private. The government has the responsibility of managing these forests and also the use and management of other natural resources, such as soil, water, stone and sand in designated forest areas. Because of this, there are overlaps of the authority among the different government agencies who are also overseeing the management of natural resources other than forest through separate acts and regulations.

The management of forests from an institutional perspective can be looked at three levels: central, district and community, and they are organized either at the politico-administrative boundary or at the geographical boundary. The existing institutional provisions for the management of forests have implications in the delineation of authority among the government agencies, local elected institutions and the communities. The management responsibility of the national forests is with the Department of Forest (DOF) through its regional and district offices with the aim of meeting country's needs for forest products and services. The collection and disposition of the forest products from these forests is done through the government permission and no one is allowed to collect on their own. However, government is introducing participatory management in the government managed forests by introducing the CFM in the Terai. The Directives (CFM 2003) has provisions for the involvement of District Development Committees (DDCs), Village Development Committees (VDCs), and

Forest User Groups (FUGs) to manage the distribution of timber, fuelwood and other forest products for their use by developing certain norms and code of conduct.

The Forest Act, 1993 recognized the use rights of local communities by handing over the forest management to the users through Community Forest User Groups (CFUGs) organized locally from among the users. The main objective of CF is to involve local communities to develop, conserve, use and manage the forest handed over to them. The Forest Act, 1993 provided the legal framework and guidelines by delineating roles and responsibilities of the government agency and the local users for community forestry. The authority to handover part of the National Forest to the local users has been devolved to the District Forest Officer (DFO). Providing easy access to forest products for fulfilling household needs, income from the forest based enterprise for improvement in livelihoods, and mobilization of income from the forest for community development activities are the main incentive for the users.

Water Resources Strategy (WRS) 2002 and National Water Plan (NWP) 2005: Policy, Legal and Institutional Dimensions

The goal of water resources development in the country is to tap and utilize water resources for gaining economic and social benefits by ensuring the participation of all the stakeholders including the private sector. It is believed that developing the huge water resource potential of the country will not only meet the country's energy demands but also greatly help to develop agriculture and industrial sectors, facilitate socio-economic development, and contribute to poverty alleviation towards which the Water Resources Act (WRA 1992) is directed. The Act has vested ownership rights of water resources to the government and only the use rights are given to the users. However, water right concerning the inter-sector allocation and use is yet to be made clear, although the WRA has prioritized the inter-sectoral allocation by assigning first and second priority to drinking water and irrigation respectively. This is not binding, however, when it comes to implementation at local level due to the existence of customary right of the users, where prior use rights prevail over all other rights. The local level objectives are to encourage consumers and private sector's participation in developing, managing and utilization of water resources in achieving multipurpose objectives in a complementary way as far as possible.

Due to lack of overall policy for the development of water resources, however, the implementation of the various activities followed the sector approach. The implementation of the various water use activities at the district level have been directed towards achieving the sector target as specified in the annual plan of the sectoral ministries. Consequently, integrated water use planning at the basin and sub-basin levels was lacking. In this connection, the government in the Ninth Five-year Plan (1997-2002) emphasized the development of overall water resource policy and put forth the necessity of discouraging earlier sector or sub-sector policies to move towards managing the growing inter-sector water use competition. Therefore, the Water Resources Strategy and the NWP were formulated with a goal of significantly improving the living conditions of Nepali people in a sustainable manner.

The Strategy has identified the issues in different sub-sectors and has set verifiable targets for short-term (up to 2007), medium-term (up to 2017) and long-term (up to 2027).

Another feature of the WRS is that it assumes Integrated Water Resources Management (IWRM) as the approach to the development of water sector. Ensuring adequate quantity and quality of water has been specified as one of the principles for sustainable water resource development. Therefore, ensuring availability of water and its use to fulfill basic needs of the people is important in the context of climate change, which will have significant effect in fulfilling the objectives. The National Water Plan was finalized in 2005, which is indicative of slow process, as it took three years in drafting the plan after the formulation of the Strategy in 2002. The Plan has come up with a set of activities (programs and projects) that are being or will be implemented to achieve the strategic targets set in the Strategy. The major doctrines are integration, coordination, decentralization, popular participation, and implementation of water-related programs within the framework of good governance, equitable distribution and sustainable development.

'Appropriate and Efficient Irrigation' through increased area coverage and year-round irrigation is emphasized in the document. This is aimed at maintaining food security of the country in the long run and to reduce food import. This could be achieved through the irrigation efficiency however; this is unlikely to be achieved in absence of continuous flow of water in the existing surface irrigation systems. Providing year-round irrigation for intensification and diversification of the agriculture is to be achieved by strengthening the planning, implementation and management capability of the local users and their organizations. Fragmented land holding has been the major constraining factor for the optimization of benefit from irrigation investment. Therefore, land consolidation is encouraged to expand the irrigation facilities. Beside, the promotion of ground-water in the Terai is emphasized. Taking into view the availability of human and financial resources as well as the trend of progress achieved during the past periodic plans, targets for the irrigation sub-sector have been revised in NWP based on the objective of attaining food security during the plan period. The revised targets are lower than those set in WRS.

The growing energy demand of both the domestic and industrial sectors has been a major challenge for hydropower development in the country. In order to address the existing problem, WRS has proposed integration of irrigation system with river basin plans; i.e., where irrigation development becomes part of overall water development plan of the basin. This will take into account all the available sources of water and its use for various purposes so that the need of each sector is fulfilled. Another important activity proposed is water storage projects and inter-basin transfer, the development of which will provide regulated water for irrigation, generation of electricity through hydropower, and recreation. The storage projects are important for mitigating the adverse effects of climate change and will provide a natural adaptation mechanism. However, technical capability, availability of financial resources and appropriate institutional mechanism is lacking to address the complexity of the storage project.

Establishing the water related information system in Water Energy Commission Secretariat (WECS) and strengthening the institutional capability of all the related institutions has been identified in the Strategy.

In view of the growing competition of water uses within and across the sectors, the introduction of statutory law has become important in delineating the use rights of various sectors and users by replacing existing customary law. This has become important also to attract private sector and foreign investments, as the water resources development requires huge investments. Guaranteeing the return from investment and security, it is vital for attracting these investments. Therefore, design of a comprehensive legal framework by harmonizing and amending the existing laws and its enactment is the priority of the Strategy to be implemented in the first five years. Likewise, periodic review and strengthening the capability of the regulative bodies by delineating their roles and responsibilities is also visualized. Thus, the Strategy has acknowledged that the existing policy and legal frameworks are not adequate to facilitate the integrated water resources development and has proposed major reforms in them.

Water resources development in the past was centralized and the government sector was the major player. Users, private sector and NGO participation in the water resources development has been major focus since early 1990s, when the multi-party governance structure was introduced in Nepal. Recognition of the roles of various stakeholders at the local level, in the private sector and among the elected institutions in the development and management of water resources was made through the WRA of 1992. This has been further strengthened through the enactment of Local Self-Governance Act (LSGA 1999). Nevertheless, the desired results have not been achieved due to sector focus of government planning and program, lack of harmonization of related laws, in some cases even contradictory provisions in the laws and lack of co-ordination in planning and implementation of development programs. The lead agency identified for the implementation of these activities from the government sector is WECS. The document envisages eliciting the involvement and participation of government lead agencies, academic institutions, NGOs, communities and private sectors in above activities. The establishment of appropriate institutions at all levels to assess capabilities of organizations involved in water resource development and to assist them (five years), implementation of integrated water resources management both at central and local level (10 years), and enabling these institutions to effectively functioning for water resources development (25 years) is targeted.

National Action Plan for Adaptation (NAPA): Policy, Legal and Institutional Dimensions

Nepal signed the UN Framework Convention on Climate Change (UNFCCC) on 12 June 1992 and became party to it in 1994. The Nepal Government priority in environmental issues is reflected through the establishment of an Environment and Science Council within the National Planning Commission followed by establishment of the Ministry of Population and Environment (MOPE) in 1995, which now is Ministry of Environment (MOEnv) looking also after climate change issues. The impacts of

climate change are vivid in least developed, landlocked, and mountainous countries like Nepal. Therefore, climate change policy formulation and its implementation to minimize the existing effects and likely impacts, mainly on peoples' livelihoods and their ecosystems in different ecological regions from the southern plains to the middle hills to the high Himalayas in the north, has become important.

In July 2009, a 25-member Climate Change Council, including eight experts, was constituted in Nepal under the chairmanship of the Right Honourable Prime Minister. Since 2009, climate change has become a national agenda by including it to the Interim Constitution of Nepal (2007) and Three Year Plan (2010-2013). Thus, NAPA was prepared and approved by the government in 2010, which is the main policy document designed to address climate change issues for climate change adaptation. The document laid emphasis on reviewing the activities for climate change adaptation, processes to be followed in priority identification, modalities and guidance for the design and implementation of identified adaptation measures and challenges and barriers to implementing these measures besides proposing measures for the implementation of NAPA.

The Adaptation Program of Action has proposed to form a steering committee at the central level involving Thematic Working Group Members that already exist within the ministry. The Nepal NAPA development model has envisaged the involvement of both state and non-state actors and experts in adaptation planning at district level along with involvement of some nationally recognized NGOs for program implementation. The public sector is expected to play the role of facilitator besides ensuring a stake, resolving policy issues, streamlining and scaling up the outcomes. At present the implementation of NAPA is through the government, private sector, NGOs (non-government organizations), CBOs (community based organizations) and local governments. In this regard, the MOEnv calls for proposals from interested parties and after reviewing them awards the contract for implementation. Various measures were proposed for reforms in the existing policy, legal and institutional provisions as they were not adequate; besides supportive programs covering human resource development, research and extension, management planning, and monitoring and evaluation.

Institutional Effectiveness and Weaknesses in Policy and Program *Community Forest (CF) Management*

The organization of community forest user groups (CFUGs) began in 1995 primary focus of the program on the mid-hill regions of Nepal. As of January 2011, a total of 15,256 CFUGs have been formed comprising 40% of the total population, managing 22% (more than 1.3 million hectares) of the total forest area in the country (Poudyal 2011). Within a short period of time CF activities have left a tremendous impact in the forest protection as evidenced from the coverage of the forest area. Forest cover has helped in maintaining the bio-diversity of the fragile mid-hill areas, in addition to fulfilling the forest product need of the households. In the context of climate change, the contribution of CF in the maintenance of ecosystem is unquestionable. There is the possibility of using

CF resources for carbon trade in the context of emerging climate change scenario. In this respect, it is important to note that one community forest in Dhading District is to be rewarded US\$ 100,000 from the Carbon Trust under Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+), for contributing to reduction in carbon emission (news published e-Kantipur.com, June 14, 2011). This has great implication in terms of climate change adaptation through mobilization of the local level institutions. This type of initiative is increasing and CF from other districts may participate in future as well.

Community Forestry is also a good example of linking livelihood strategy to climate change adaptation. An estimate based on the study of 1,788 CFUGs in 2060-61 BS (2003-2004 AD) by the Community Forestry Division of the DOF revealed that the total costs of the subsidized forest products provided to the households amounted to a little less than US\$ 30 million (NRs. 2.0 billion @ US\$ 1=NRs. 71) (*ibid.*). The study also showed that CFUGs have been able to collect more than US\$ 10 million (NRs. 74 million) through fee collection, penalties and grants. Most of these resources have been spent in the community in the construction and operation of schools, health-posts, roads and other social infrastructure and activities.

Empowerment of local communities and strengthening the institutional base at the local level should be considered a major achievement of Nepal's community forestry program. Forest user groups in Nepal have developed a national network federation able to influence major policy measures and to be politically active both at local and national level. The community forestry user groups provide a strong legal institutional base for the management of forest resources, initiation and implementation of the development work at local level beside the DDC/VDC.

Contradictions between Local Self-Governance Act (LSGA) 1997 and CF Act of 1993 has implications for climate change adaptation strategy as these are the two legally recognized local level entities having major say in natural resource management. For example, the Water Resources Act, 1992 and the LSGA, 1999, authorizes the Ministry of Water Resources (MORW) and Ministry of Local Development (MOLD) to formulate policies and enact necessary law for the management of water resources and manage natural resources within the jurisdiction of administrative and geographical boundaries of DDC/VDC that contradicts with Forest Act, 1993. The contradictions in existing policies, law and institutional provisions are among the constraints in the management of natural resources at the local level and overcoming them is important for effective local level management.

Poverty alleviation has been the main thrust of the government development plans and various programs are in implementation in this respect. Climatic variability may negatively affect the household livelihood strategy mainly based on the agriculture. Community forest resources could contribute to improving household income. However, very few CF have embarked on income generating activities through forest based enterprises. Either due to lack of required knowledge and expertise or because of lack of resources, CFUG members have not initiated income generating activities that can contribute to household income. CFUGs are providing only non-cash benefits to the forest users, whereas the users also require

support in income generating activities especially for the landless and the poor.

Forest management is also not separate from the existing political scenario of the country. Forest is the only resource that is easily accessible and used for making money illegally. There have been reported cases of massive illegal logging due to the nexus of the local loggers, forest based industries, users, government officials and the political leaders in 2010, due to unstable political situation and weak administration. The environmental implication of the forest depletion is enormous, ranging from the household level to the watershed level affecting larger macro-economic situation of the country. These types of activities therefore need to be checked through appropriate legal and institutional measures. The government has proposed amendment to the existing Forest Act, 1993 in this context. The rationale for amendment has specifically mentioned that there is a need to correct shortcomings and weaknesses in the existing act with reference to CF. The proposed amendment is aimed at curtailing power of CFUGs and this may create confrontation between the government and the Federation of Community Forest Users, Nepal (FECOFUN).

Water Resources Strategy (WRS) and National Water Plan (NWP)

There has already been delay in the implementation of the National Water Plan. Some work from the government side for the implementation of the NWP started in 2005 when the International Water Management Institute (IWMI) in collaboration with WECS and Department of Irrigation (DOI) implemented action research (2005-2008) in Begnas catchment of Gandaki Zone in the Western part of Nepal. The main objective of the action research was to explore and develop methodology for the formation of sub-basin committee as envisaged in NWP. The sub-basin committee was envisaged to act as the lower level unit for Integrated River Basin Planning. The action research identified a mechanism for the formation of sub-basin committee that was identified as a 'platform' with representation of stakeholders in the catchment (Pant and Sharma, in press). The process could not be continued after the research project, however, due to lack of initiative from WECS, the lead agency, to take it further.

The WECS in collaboration with World Wildlife Fund (WWF/Nepal) implemented a project to facilitate the IWRM in Okhaldunga District of the Eastern Region of Nepal in 2009. The focus of this project, however, is mainly at the village and ward levels, on income generating activities. In 2010, the project was expanded to Indrawati River basin, where IWMI and WECS had conducted joint research from 1999-2001 for the drafting of the Water Resources Strategy (WRS).

The WECS with assistance from the World Bank (WB) has initiated the establishment of Water Resource Information Center (proposed name). The first phase in developing the modalities for the establishment of the center has been completed. The first phase of activities has focused on collecting information on data availability and developing framework for the center. According to WECS officials, the second phase of activities will focus on detailing the activities of the center. Priority is in water assessment at the river basin level through modeling and

optimization of available water use. Beside, these field level activities, WECS has initiated the establishment of River Basin Offices (RBOs) to facilitate river basin planning activities. The establishment of RBOs in Bharatpur in the Central Region, Nepalgunj in the Mid-Western Region, and Biratnagar in the Eastern Region of Nepal has been already initiated in 2011, according to WECS officials, with a mandate to collect data and information at sub-basin level for river basin planning, facilitation of the formation of sub-basin committees and providing technical support to the concerned line agencies. The RBOs will have representation from the sector line agencies at the regional and district levels, which are formed on administrative and geographical boundaries. The functioning of RBOs will have significant implications in the planning and management of water resources in view of the climate change adaptation from basin perspective.

Nevertheless, there are some weaknesses to make NWP operational. The lack of reliable and adequate data has been a major constraint in the planning and management of water resources. Both institutional and financial inadequacy is present in this respect. Lack of information is not conducive to the institution and users who are involved and interested in water resources development. The issues identified for the institutional aspects are: lack of a central level planning organization, blurred responsibilities both vertically and horizontally between the institutions, and lack of a coordinated and integrated approach for water resources development. The WECS, although mandated for the implementation of NWP, is limited in influencing the workings of sectoral ministries. The efficiency in the irrigation sector is the key to increasing production/productivity and economic benefits and releasing water for other sectors. But lack of resources for improvement in irrigation infrastructure and institutional weaknesses in implementation are the impediment for basin level planning for climate change adaptation.

The WRS calls for supporting the District Water Resources Committees (DWRCs) for their active role in planning and regulating the water resources in the districts through provisions for adequate human resources and necessary budgets. However, the Irrigation Regulations does not grant any authority to DWRC. District boundaries form the main basis for decentralized administration and governance. The hydrological boundary of the river basin may pass through two or more administrative districts. This indicates a need for institutional arrangement for managing river basin water. Traditionally, sector development, rather than integrated management of water has been the emphasis. This is mainly because of the absence of an appropriate institutional framework to give effect to such an arrangement. The WRS document has not specifically mentioned the role of local elected institutions, but they play an important role at local level, especially in mobilizing community participation and resources.

National Action Plan for Adaptation

The challenges and barriers to implementing climate change (CC) adaptation as identified in the National Action Plan for Adaptation (NAPA) includes weak governance due mainly to an extended political transition and the non-existence of elected local bodies. Lowest coverage of infrastructure facilities, huge burden of accumulated and

additional costs required for climate change activities is not factored in development aids approved for Millennium Development Goals (MDGs) and harmonization of climate change activities within the national policy and operational frame work is lacking. In addition to these macro-level barriers, inadequate financial, technological and human resources have also been identified as critical problems in relation to adaptation activities.

Barriers identified in NAPA are the inadequate implementation of sector plan, and policies and strategies, mainly in the agriculture, forestry, water, health and sanitation sectors (MOEST 2008). These are the key sectors relating to the livelihood of the poor, whose vulnerability is increased by ineffective implementation of plans and programs. Ineffective implementation is caused mainly by reduced budget allocation (in the agriculture sector), poor service delivery from the existing infrastructures (irrigation), lack of clear guidelines and mandate to the local offices (health), lack of public awareness on climate-related disasters, inadequate required infrastructures to cope with climate induced disasters. Considering the implementation of NAPA, which is the responsibility of the respective sector agencies, there is a need to bring harmony in related policy and legal provisions. Therefore, there is need to review related acts and rules to remove existing bottlenecks.

The development programs in the country are implemented by agencies responsible for respective sector activities. In absence of the fully functional DDC/VDC, the implementation of NAPA at the local level is likely to suffer. The DDC is the district level co-coordinating agency for the development programs of the sector line agencies. The local level climate change adaptation strategies are to be incorporated in annual district development plans and are to be implemented through users' institution in resource management apart from the elected institution.

Conclusions

The Master Plan for Forestry Sector, 1989 and the Forest Act, 1993 are milestones in promoting decentralized management of forest resources in Nepal. The provisions in the Act have dramatically changed the forest management practices in the country by guaranteeing the user rights. The expansion and coverage of community forest activity is indicative of the successful adaptive strategy employed by the government for climate change implications at the local level, although this was not intended. In absence of scientific study, it becomes rather vague to establish what contribution the forest cover makes in mitigating climate change, but certainly CFUG is a successful strategy.

The combined Water Resources Strategy (WRS) and National Water Plan (NWP) is successful in identifying the issues in the water sector and also in providing a framework for water resources development in future. It has failed, however, to take resource availability into account, as well as the existing bureaucratic culture of sectoral orientation and, foremost of all, the required political commitment for policy and institutional reform for its effective implementation. Because of these, the provisions in the documents have not been implemented except for a few isolated activities; rather, the very focus on an integrated approach is challenged through the splitting of the Water Resources Ministry (MOWR) into two parts

in 2010, with the creation of the Ministry of Irrigation (MOI) and Ministry of Energy (MOE). These documents rather have to be reviewed and need changes incorporated in view of the time lag between its preparation and implementation and changing context of the preparation of new constitution with federal structure.

The National Adaptation Programme of Action is to be implemented through the private sector, NGOs, CBOs and local governments, though the sectoral agencies are institutionally responsible for program formulation and implementation. All these mechanisms have their own merits and demerits, but they lack recognition of their comparative advantages leading to uncoordinated implementation of the activities, which in turn results in a lack of effective service delivery. Donor agency/NGO partnerships are comparatively effective in terms of services and outputs delivery. But issues of ownership and stakes have always been a question on scaling up and scaling out of project outcomes. Foremost of all policy, legal and institutional contradictions across the sectors need to be removed for optimum utilization of the resources to adapt to the climate change scenario for the benefit of the local communities who are at the forefront of bearing the impact.

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