Emerging concept of Climate finance in Nepal

Shristi Tandukar

Climate change is uncertain due to the multifaceted nature of environment. The climate change affects the biological system which is evident that it impacts the economy of country. Nepal being a landlocked country is extremely vulnerable to climate change with climate induced disasters. This makes Climate finance a centerpiece for development of Nepal. This study describes the importance and scope of Climate finance, the modes of financing and implementation of the policy to the extent of transfer of public and private funds from the developed to developing countries from the national to local levels. The study showed that the efforts are gradually expanding from all level of financers from public and private actors' development financing institutions to government. Private sector investors and project developers should shift and scale-up their investments in sustainable, low-carbon and climate-resilient development; besides, the effort from international level, to furnish an independent economy. Nepal requires a new economic model and the strong implementation to make it a success**.** Different international organizations work on financing climate change action focusing on developing frameworks, tools and analysis to provide guidance to countries in this transition. The study concludes that there needs to be full transparency in the way the resources are used for mitigation and adaptation activities.

Key Words: climate, Climate Change, Climate Finance, development, economy, environment, Nepal

1 Introduction

Nepal is rich for its biodiversity, cultural diversity and geographic diversity. The climate of Nepal varies with its topography, ranging from snowy mountains to hot, dry, windy and heavy rainfall. However, Nepal's unique agricultural and wild biodiversity is threatened by unprepared fierce climate change. Nepal is extremely vulnerable to climate change with climate induced disasters. People die by floods and landslides in rainy season, by frigid air in winter season and boiling temperature in summer. In spite of the fact that people have leveraged their capacity to combat the worst climate change but due to their economic level, people are compelled to face the consequences without executing proper plans and actions to deal with the fierce environment change.

Besides unexpected climate change, one of the global problem is Anthropogenic climate change which means the climate change due to the human made factors which is accelerated by the emission of greenhouse gases, primarily from industrialization, deforestation and increased use of fossil fuels for transportation. There have been changes in rainfall patterns (high/low/intensive rainfall) and seasons due to climate change. These have direct and indirect impacts on environment, water resources, agriculture, forests, biodiversity, health, infrastructures development and livelihoods. It has been an urgent necessity to address the issue of climate change**,** as economy shift towards low-carbon and climate-resilient infrastructure investments by formulating a policy and implementing relevant programs to minimize the existing effects and likely impacts in different ecological regions—from the Southern plains of Terai to the middle hills and to the high Himalayan mountains in the north (Climate Change Policy 2011).

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In addition, the country has a worst experience with devastating earthquake and the frequent aftershocks after April 25, 2015 besides other yearly natural disasters like floods, droughts and landslides. "These climatic disasters are responsible for stressing the livelihoods of people and exacerbating the vicious cycle of poverty, food insecurity and malnutrition that lower Nepal's human development achievements". (Dixit, A., Subedi, Y., Aryal, N., Wenju, R. and Shrestha, A. 2016).

In this context, this paper prioritizes the study of climate finance in Nepal with respect to the role of financing through international aid and assistance, private sectors and other public sectors besides government effort to mitigate the risk of climate change **that involves** linking issues of climate with corporate and investment strategy, risk and opportunity analysis of **unprecedented economic, social and technological transformation**. Establishing a climate change fund helps mobilize the financial resources from public and private, internal and external sources to address the issues of climate change and reducing poverty and promoting sustainable development.

2. Objectives of the study and Research questions

Study area

With the growing importance worldwide, the concept of climate finance is in its initiation phase in Nepal, where the climate change has a relevant impact on the economy and livelihood of the country and the promulgation of regulations in this aspect has started very recently in 2011, so no substantial academic study on this issue is performed in Nepal.

Nepal as a developing country, it is necessary to understand the scope for uplifting our economy. Climate finance being one of the priority area, the paper focuses on understanding the climate change, climate planning and budgeting with climate fund flow mechanisms in Nepal and its financing with respect to contribution by government, stimulating the public and private sectors and fulfilling the resource constraint by facilitating the required technologies through the support of international organization, aid and assistance and thus understanding the role of Climate finance in Macroeconomic Framework.

The scope of the study comprises of vulnerability of climate change, extent of effort made by Government of Nepal, International organizations' aid and assistance and the role of private and public sectors on climate finance. To broaden the concept of climate finance from the concept of flow of fund from developed countries to developing countries, this study analyzes the mobilization of country resources as a major tool of climate finance.

The main purpose of this study is to analyze the scope, importance and effectiveness of climate finance in Nepal. And, the adjoining research questions are as follows:

- What are the mode of financing for climate change in Nepal?
- How the climate finance influences the economy of Nepal?
- Is the policy for climate finance in Nepal clear, effective and sufficient for good governance?

3. Literature Review

Climate Change

The intergovernmental Panel on Climate Change (IPCC) - world's most authoritative body of climate scientist has assessed the extent to which the recent observed change in natural biological system has been caused by the climate change. According to its third report, it has ensured that every activity of human has a contribution in increasing the six greenhouse gases. US national academy agreed with the IPCC report though they have been rejected by the US government for the Kyoto Protocol. The reduction of carbon dioxide level should be below 5% by 2010-12. Human produces carbon dioxide by burning fossil fuels for 80% to 85% which shows that the effect in environment, society and economy due to climate change is disastrous.

(A. Aaron, Tenggren S. 2019) wrote on their paper on how much adaptation practitioners and funders are focusing on the problem of how species other than humans will adapt to climate change. Adaptation funds are limited; developing countries need far more funds than currently available, raising questions about how priorities are set and defined. There seems to be a high risk that, in a contest for limited resources, planners could ignore the plight of non-human species and instead prioritizes actions that target specific human risks or vulnerabilities, thus leaving other species imperiled.

Climate finance means more than transfer of public and private funds from the developed to developing countries and from the national to subnational and local levels, (Dixit, A., Subedi, Y., Aryal, N., Wenju, R. and Shrestha, A., 2016).

(Carrozza I. 2015) wrote on her paper entitled, 'Climate Finance in The Asia-Pacific Region: Trends and Innovative Approaches', focusing on Asia pacific region as the most Disaster prone region with extreme weather events which is a real and extensive threat to progress made towards achieving sustainable development goal. So, in order to secure sustainable development gains and build resilience in the region, the paper has suggested an urgent need to undertake climate mitigation and adapt to unavoidable impacts of climate change. Further, the paper offers an overview of the climate finance landscape with a focus on the Asia-Pacific region and finance flows from international climate funds, multilateral development banks and sub-regional and national climate finance initiatives. The ultimate goal of the discussion is to provide policymakers with an understanding of the state of climate finance prevalent in the region and recommendations on the approaches for mobilizing climate finance in the light of global efforts, regional trends and successful initiatives.

Another paper discusses on the approach developed in Nepal to depict the public expenditure is directed at climate change related actions in contributing to either mitigation or adaptation activities. Climate change adaptation activities received little attention from local governments and departmental line agencies because the concerned bodies have multiple responsibilities and sectoral interests. (Dixit, A., Subedi, Y., Aryal, N., Wenju, R. and Shrestha, A., 2016)

Government coordination between climate change policy and expenditure to expand criteria further to sub criteria enabling deeper look into the vulnerable issues. In addition, review of policies, legal framework and processes, Assessment of budget allocation, feasibility of incentive mechanism to assess the contribution of climate budget in Sectoral Ministries' goals. (Baikuntha Aryal 2017)

4. Research Methodology

4.1 Research Design

The study is based on secondary data. The data was collected from the Ministry of Finance, Ministry of Home Affairs and various booklets and reports published by national and international bodies. Literature review and subjective analysis of the collected information was carried out.

Research attributes	*Research methods*

Research questions	Exploratory study
The method of data collection	case studies and interviews in different time periods and desk reviews
The purpose and type of the study	Reporting & Descriptive
The topical scope – breadth and depth – of the study	Case, interpretive and exploratory studies

5. Results and Discussion

5.1 Climate Change

Nepal observed changes in the annual rainfall cycle with intense rainfall and longer droughts which directly affects the immunity power and the life expectancy of humans with outcome of new diseases and virus. Similarly, both days and nights are relatively becoming warmer due to rapid global warming. The glaciers recede from rapid snow and ice melting; glacier lakes are expanding. The adverse impacts of climate change results in loss of human and non-human resources. Climate induced disasters cause damages and losses to life, property, and livelihoods. Nepalese tend to be at risk to climate change especially in the rural and urban areas. "In the past 90 years, a glacier in the Mount Everest region has receded 330 feet vertically. Because of glacier melting, new glacier lakes have formed"- (Climate Change Policy, 2011).

5.2 Modes of Financing in Climate Finance

Governmental Bodies: Government started mainstreaming climate change in regular development planning process. With close analysis on budget for upcoming fiscal year (16 July 2017-15 July 2018), it can be observed that government has increased the budget for climate finance to 393.33 million on annual budget of NPR 1278.99 billion which is equivalent to approximately 31% of total budget for Fiscal year 2017/18. Government tend to realize the need of climate finance. This is further elaborated in the annual budget below:

Table 1: Proportion of Climate Finance on Total budget

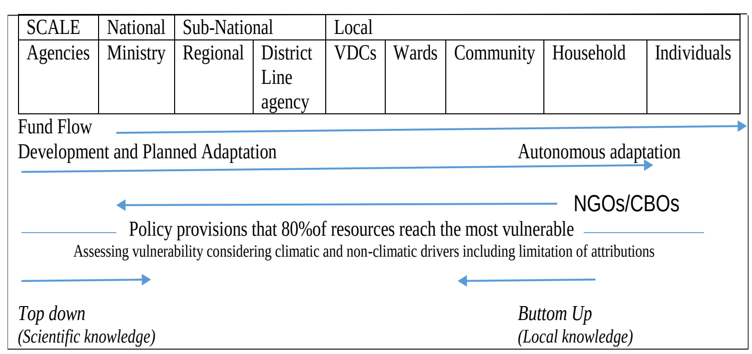
Fiscal Year	13/14	14/15	15/16	16/17	17/18
Annual Budget	517.24	618.10	819.46	1048.92	1278.99
Percentage of total budget relevant to climate change (rounded to nearest decimal)	10%	11%	19%	19%	31%
Total amount in budget relevant to climate change	53.5	66.4	159.3	201.6	393.4

Source: Fiscal year budget (Ministry of Finance, Nepal)

The above figure shows the increasing trend of budget allocated in climate finance in Nepal. The Climate Change Budget Code (CCBC) introduced in the national budget in fiscal year 2012/2013 aims to track climate change finance at the national and sub-national levels, where the proper budget utilization is still questionable.

Other efforts from Government include: Nepal being an alternate Council member of Global Environment Facility and also a member of other Climate Investment Fund like Climate Trust Fund, Scaling Up Renewable Energy Program and Forest Investment Program respectively. With respect to Green Climate Fund, Ministry of Finance being a National designated authority appointed AEPC (Alternate Energy Promotion Centre) and National Trust for Nature Conservation as 'National Implementing Entities (NIE)'. In addition, Government coordination between climate change policy and expenditure to expand criteria and sub criteria enabling deeper look into the vulnerable issues along with 'review of policies, legal framework and processes, assessment of budget allocation, feasibility of incentive mechanism to assess the contribution of climate budget in Sectoral Ministries' goals', (Baikuntha Aryal 2017)

Public Bodies: Public climate finance providers include government and their agencies and development finance institutions. The approach developed in Nepal at how public expenditure is directed at climate change related actions in contributing to either (i) mitigation or (ii) adaptation. 'Two main areas of climate change mitigation activity identified are Reducing Emission from Deforestation and Degradation of Forests and clean energy investments', (Effective Governance of Climate Finance for Local Delivery in Nepal, Country Brief 2014).



Source: ISET-Nepal (2015)

Fig. 1: Fund flow system and conceptual framework

The above diagram represents the fund flow from national and international level to sub national level with regional and district agencies to the local community which includes VDC, ward, community, households and individuals.

International assistance: In addition to government effort, the awareness of drastic climate change in Nepal and its huge loss of around NPR 28-38 billion per year in the economy of Nepal diverts the attention of international organization on ways to mitigate the loss where climate finance plays a significant role. As per the Global Climate Risk Index 2014, Nepal is identified as the 14th most vulnerable country to the risk of changing global weather patterns. Accordingly, Nepal hopes to receive substantial amount of climate aid for mitigation and adaptation projects. So, its high time that Nepal create a separate National Climate Change Fund from the developing nation's national budget for developing nations to switch to renewable energy, research and developments and other initiatives. A vivid example of such fund created is Bangladesh Climate Change Resilience Fund (BCCRF) which was created by Bangladesh government allocating USD340 million between 2009-2013 and similarly, Indonesia Climate Change Trust Fund (ICTF) is also well supported. Nepal also has the similar kind of national trust or fund as a consolidated repository for national and international grants and finance but is yet to ensure that this facility is both integrated and accountable. This kind of initiative strengthens the climate governance in the national level.

'Between 2000 and 2010, Nepal received nearly USD 650 million (NPC 2011) to support climate change-related programs', (Neil Bird 2011). The assistance came from bilateral and multilateral funding agencies, dedicated climate funds under UNFCCC, the LDCF, the Global Climate Change Alliance (GCCA) and the Climate Investment Fund (CIF). The activities supported by these funds are spread across different sectors and are implemented by both government departments and nongovernment organizations. Multilateral development banks (MDBs) and their national counterparts (NDBs) are an important source of finance for climate-related investment.

Private sectors: Private sector is an important source of climate finance. 'Private finance flows include financial commitments by corporations and project developers implementing new renewable energy projects, commercial bank project lending, institutional investors' direct infrastructure investment, and households investing savings', (Barbara K. Buchner, 2017). It merely supports the adaptation specially the large institutional investors willing to invest in right investment products and financial institutions which help to direct the climate finance as one of the priority sector for investors. Besides the growing concept of profit with purpose where the purpose refers to society more often as Corporate Social Responsibility, private sectors involvement in climate finance is minimal. However, a tax advantage has been provided to profit making entities which is provision of deduction of 50% of adjusted taxable income from all business conducted by the person or actual commitment of expenses on pollution control whichever is lower (Income Tax Act 2058(2002)). This is an initiation to prevent the environment from pollutants which is however indirectly related to climate finance. Foreign Direct Investment, local, regional and global commercial banks, non-bank financial institutions, leasing companies, private equity investors and institutional investors are some of the modes of private financing. The private sectors always have financial interest on its goals, so to align climate finance with its goals another option can be the Public Private Partnership.

Table 2: Risks Faced by Private Sector Investors

	Risk	Investor Needs	Existing Instruments
PROJECT RISK	Costs – capex & opex Revenue volatility Resource risks Technology risk (higher if limited performance track record or limited market penetration)	Risk assessment Returns commensurate with risk	Due diligence, feasibility studies Commercial insurance Creditworthy off-take agreements Turnkey construction contracts
COUNTRY RISK	Regulatory risk Pricing policy – market distortions Tax and subsidy regimes Contract enforcement Foreign exchange rate stability Sovereign risk Nationalization and appropriation Economic and political situation of country	Policy certainty, clarity Rule of law Repatriation of capital Macroeconomic stability Political stability Political risk cover	Partial risk guarantees covering public performance Hedge, swap markets MDBs
FINANCING RISK	Debt availability Adequate debt tenors Reasonable debt terms (limited recourse/ collateral/leverage ratios) Equity availability	Access to financing on terms that provide for adequate returns to sponsor equity	MDBs NDBs Bilateral development banks IFIs Capital markets

Source: Climate Finance, IFC

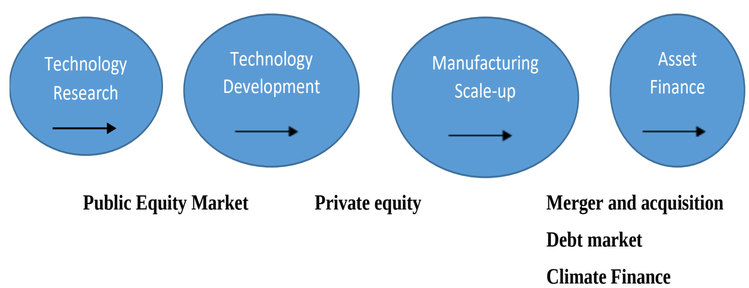
3.3 Equity and Debt Financing in Climate Finance

There are numerous business opportunities to reduce the climate risk. Both Equity as well debt financing can be used with new products and new investment strategies by informed investors as an important method of climate financing.

'For equity the project must have some fixed asset component and generate financial returns that can be captured through ownership, either a revenue stream or an increasing ownership value', (Persson A., Klein R., Siebert C., Atteridge A., Müller B., Hoffmaister J., Lazarus M. and Takama T., 2009). Equity is needed to support projects that have viable business plans but where sponsors either do not have the financial wherewithal to implement the project alone, cannot persuade institutional investors to participate due to the over layering of sector specific risk, or because project sponsors are unwilling to shoulder the full risks associated with entering a new and unproven market. 'The risk profile of some early stage, highly innovative companies (e.g., cleantech companies) makes the use of even concessional debt inappropriate due to the uncertainty of the size and timing of cash flows', (Climate Finance, IFC). This is the reason that many adaptation activities such as flood prevention infrastructure, health programs and programs focusing on national disaster planning are not able to impress equity investors. They do yield economic benefits, but these accrue to the wider community and cannot be captured within the project itself. Some projects in the agriculture or water sectors might be suitable targets for equity, although supporting adaptation through equity is otherwise difficult. Private finance to the developing world is concentrated in a small number of countries. In 2004, roughly 90 per cent of private investment flow into Asia went to China (67 per cent), India (14 per cent) and Malaysia (9 per cent) combined. This means many of the developing countries may not see significant private finance. However, commercial lending opportunities in larger emerging economies can be stimulated by private sector engagement and better public finance can be promoted to countries with a lower capacity to access debt ((Persson A., Klein R., Siebert C., Atteridge A., Müller B., Hoffmaister J., Lazarus M. and Takama T., 2009).

Debt, however, can support a much wider range of activities especially in the developing country like Nepal. Viable lending entails that the recipient has substantial access to a revenue stream so that the loan can be repaid. This is the most important financial instrument used to channel climate finance flows. One of the instance is the donation by government agency- Nepal Reconstruction Authority (NRA) in installments for reconstruction of damaged houses from the earthquake of 2015 depending on the stage of completion of house is a major start by Nepal government realizing the need of type of support required by community. NRA is the legally mandated agency for leading and managing the earthquake recovery and reconstruction in Nepal to promptly complete the reconstruction works of the structures damaged by the devastating natural disasters, in a sustainable, resilient and planned manner and provide social justice by making resettlement and translocation of the persons and families displaced. (Adapted from the NRA Act). Additionally, government has declared loan for these communities in a very low interest rate to support them. This Community driven model of support makes the community liable to make good houses to utilize the loan effectively.

Also, from a public authority's perspective as borrower, where the potential costs of not financing flood prevention infrastructure or not undertaking disaster preparedness planning outweigh the costs of the project, it necessitates to seek loan finance. Whether loans to public authorities are attractive investments for the private sector varies on case-to-case basis. However, its scope is minimal in case of Nepal due to the sub structures of government and its unmanaged power distribution and cooperation. Besides, it tends to influence the perceived ability of the recipient government to raise funds from its tax base to repay the loan. In the case of adaptation actions initiated privately, for instance a farmer deciding to switch crops or upgrade an irrigation system, potential borrowers in developing countries generally have less financial capacity, so private finance institutions are accustomed to provide credit lines to local finance institutions, including microfinance institutions. Amongst poorer communities, the borrower's creditworthiness is likely to be the major limiting factor. Private finance could conceivably be delivered at concessional, affordable rates ('soft loans') where investors are seeking social and/or environmental outcomes as well as financial outcomes. Concessional finance can also be created by blending public and private finance through multilateral or bilateral finance institutions. However, structuring lending to offer concessional finance may not always be attractive to the private sector (Aaron Atteridge A. 2012). Introduction of Green Bonds by IBRD and IFC allowing them to reach new investors and to provide traditional investors with a new asset class is the first taste that these investors have had of climate related investment.



SOURCE: *Bloomberg New Energy Finance*

Fig 2. Euity and Debt financinh in climate finance in private and public markets

3.4 Climate Policy formation and implementation for Good Governance

The Nepalese Climate Change Policy of 2011 does not define the climate finance framework of Nepal. In broader sense, with respect to climate policy, climate finance encompasses climate specific support mechanisms and financial aid for mitigation and adaptation activities seeking to enable the transition towards low carbon and climate resilient development.

The extent of contribution by private and public companies to climate finance are limited to tax benefits on pollution control cost with certain criteria with least organization realizing climate finance as CSR (Corporate Social Responsibility) besides foreign aid and Climate Change Fund. Good governance is essential to enhance the efficiency and effectiveness of climate change adaptation funds. The government possess the fund tracking system but lacks the system of regular tracking and reporting on fund use against agreed benchmarks required to strengthen accountability and governance. Yet, the objective of fund tracking should not simply be monitoring the flow of funds across organizations and expenditure on activities, but also local-level impact resulting from transparency, ownership, responsiveness and equity in program implementation.

The developed countries commit to provide, according to Article 4 of the United Nation Framework Convention on Climate Change (UNFCCC), new and additional financial and technological support to developing countries to help meet their mitigation and adaptation needs. Though the national priority is on adaptation, but mitigating the adverse impacts of climate change and the adoption of a low carbon development path are also well articulated in the national Climate Change Policy (2011). This policy, approved by the Government of Nepal, appears as a significant landmark, although remains to be seen as to whether it will catalyze a major mainstreaming across all sectors of the economy development plans.

6. Conclusion

While there is one statistical system in place that tracks international public and private climate finance, most data sources track investment for renewable energy and energy efficiency with some including low-carbon transport. Furthermore, investments are not tracked consistently and separately for public and private sectors or for emerging or developed markets. In addition, the study reveals that private climate finance data is limited as it tends to be commercial and available only upon subscription.

Nepal being landlocked country is highly exposed to vulnerabilities on climate change. One of the major reason being global warming which has been faster due to human activities and the other is the natural disasters and high pollution. Climate change adaptation activities received little attention from local governments and departmental line agencies because the concerned bodies have multiple responsibilities and sectoral interests. With respect to multifaceted challenge of environment, the climate change affects the biological system which is evident, it obviously impacts the economy of country. Public and private actors—development financing institutions, governments, and private sector investors, including financiers and project developers should shift and scale-up their investments in sustainable, low-carbon and climate-resilient development. These investments can create new markets, address long-term opportunities and assess risks emerging from climate change and promote wider socio-economic benefits. Thus, it is necessary for all organizations in any sector to provide relevant, forward-looking information to investors, lenders and insurance underwriters on the potential financial impacts of climate-related risks and opportunities, as well as their management. To secure sustainable development gains and build resilience, there is an urgent need to undertake relevant measures on climate mitigation and adapt to unavoidable impacts of climate change.

Public finance, financial assistance from international organizations shall never be enough for the investment needed for transitioning to low-carbon, resilient economies. Green growth requires increased finance from mainstream private investors. There is capital available and many investors looking for opportunities. Innovative financial instruments that blend public and private finance can definitely assist but simplicity, scale and speed are also essential. However, the effort from other South Asian countries are taken as a vivid example to compare and analyze the extent of mobilization of resources set out for climate change and the scope of climate finance in Nepal.

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