State of Conflict on Water Resources and Benefit Sharing in Marsyangdi River Basin

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Disclaimer

The findings, interpretations and conclusions expressed herein are those of the author (s) and do not necessarily reflect the views of the institutions

Foreword

This research was part of Water and Climate Resilience Program (WACREP) activity of Jalsrot Vikas Sanstha (JVS)/GWP Nepal. JVS/GWP Nepal highly appreciates the contribution of the study team Mr. Surya Nath Upadhyay, Mr. Prakash Gaudel and Ms. Monica Maharjan. JVS/GWP Nepal also acknowledges the contribution from Mr. Tejendra G.C and Ms. Neha Basnet during the preparation of this publication.

Jalsrot Vikas Sanstha/GWP Nepal

Executive Summary

The link between water and conflict is complex and real. Water with its property as a common pool resources and economic good has been the ground for the disputes arising in terms of its accessibility and uses. There has been a case where water dispute has stimulated civil defiance, various acts of sabotage, and even violent protest. Water has no substitute. For that reason, the tension arises with the increasing economic growth and urbanization. The conflict regarding the use of water has materialized over different industries and communities at the National and Sub-national level. In this backdrop, study was carried out by JVS/ GWP Nepal to access the state of conflict on water resources and benefit sharing in Marsyangdi River Basin. It has also attempted to evaluate cooperative relationship between developers and local communities in relation to benefit sharing.

To carry out the study, primary information was collected mainly through the stakeholder consultations and the site observation. Secondary data collection method included the desk study of the different publications and water related legal documents. It was found from the study that the water from Marsyangdi River have not been directly used for the drinking purpose so, at the recent time conflict related with the drinking water and irrigation was not observed. However, there are a number of hydropower development projects in pipeline along the Marsyangdi River Basin that when coupled with the impacts of sedimentation and climate change might create conflict in the future days. The grievance of the people is associated with the benefit sharing of the hydropower projects. Lack of proper information on royalty sharing and transparency is the concern of the people over there. Similarly, there have also been issues of the mitigation of the impacts from the construction of the dams and its location at the seismically active zone.

In context of the rolling out of the federal system to the provincial and local one, there are many confusions regarding the jurisdiction of state and local level in sharing the benefit in a just manner. This calls for the proper establishment of the guideline at the institutional level. In addition to these, lack of awareness among the people regarding the financial risk of investing in hydropower project, demanding of shares at public owned or privately owned hydropower project is also problem there. So, the information dissemination and awareness campaign is crucial for the people.

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Chapter 1
INTRODUCTION

1.1 Background

Access to natural resources such as water, oils, minerals, forests, fish etc. is the economic backbone for many states. The conflicts resulting from the scarcity of such resources are becoming more evident, especially water because of its nature. Many studies suggest that water is a potential source of conflict (Wolf 2005; Hensel & Brochman 2007; Evans 2010). According to Wolf (2005), water disputes can stimulate civil defiance, various acts of sabotage, and even violent protest. Water has no substitute. For that reason, the tension arises with the increasing economic growth and urbanization. Water has numerous uses and thus, the conflict can arise between different users such as industry, hydropower and agriculture, or between rural and urban communities or even between states, provinces, districts and tribes (Wolf 1998). Water is also a stress multiplier, especially in poor nations like Nepal with institutional and political weaknesses. Its scarcity can deprive farmers, fishermen and other disadvantaged groups from accessing the resources and affects their livelihood. Upreti (2004) finds natural resources in Nepal vulnerable to conflicts as they are politicized.

In the last five decades, Nepal's population and urban population had increased by 2.8 and 16 times respectively (Sharma 2014, p. 382). These have resulted in increase in demand for energy and a competition between domestic and industrial uses leading to conflicts. Hydropower development in Nepal is taking fast pace in recent times in order to meet the energy requirements of the country. Nevertheless, mega hydropower projects have certain costs on society and environment which give rise to disputes of various sorts. For instance, the inequitable distribution of its costs and benefits has become a burning issue in this context. A recent study by Shrestha et al. (2016) on benefit sharing mechanism in hydropower sector of Nepal has pointed out the issues that spark local conflicts and has underscored the need to improve benefit sharing policies and practices in the country. Among other sources of water conflict, Tandukar (2012) points out confusions and inconsistencies in policies.

In this premises, this study on "Assessing the State of Conflict on Water Resources in Marsyangdi River Basin" analyzes different dimensions of conflicts surrounding water, its use and sharing of benefits. There are multiple users of water at the basin. Moreover, existing large hydropower projects and more under construction are likely to develop disputes among various stakeholders due to their conflict of interests and priorities. Water, which has not only economic

but also environmental and social values, needs an integrated management for a sustainable development. Discovering the water-related contentious issues and their sources is deemed necessary to protect the shared environment of the basin. It will also help to gain lessons for policy improvement. The study also sees through the lens of benefit sharing while analyzing the upstream and downstream conflicts and hence, it is relevant for the upcoming large dam projects.

1.2 Objective

The major objective of this study is to find out the dynamics of water use related conflicts in Marsyangdi basin. It also aims to evaluate relationship between developers and local communities in relation to benefit sharing. By identifying the existing as well as potential areas of conflicts on Marsyangdi River and its water, this research aims to indicate the conflict resolution measures and/or required precautions for avoiding the future conflicts.

Chapter 2
METHODOLOGY

2.1 Data Collection

Both primary and secondary data have been used for the study. Secondary sources include the Environmental Impact Assessment (EIA) reports of hydropower projects developed in the basin, past literatures and other journal articles while stakeholder consultation was held to gather primary data. The stakeholders include local government officials, hydropower project officials, politicians, farmers, fishermen and other local people.

2.1 Locale

Marsyangdi River is a snow-fed river that flows along round Annapurna Trek in the Annapurna Conservation Area receiving additional flow from seven major tributaries, namely Khangsar, Jharsang, Dordi, Pauli, Chapa, Chundi and Daraudi. The 150 km long Marsyangdi River is an important tributary of Sapta Gandaki River with a drainage area of 4787 km^2 lying between 27°50’42”N to 28°54’11”N latitudes and 83°47’24”E to 84°48’04”E longitudes(Khadka & Pathak 2016). About 45% of it is above 4,000 msl (ibid). The Marsyangdi basin covers four districts of Western Nepal, viz. Manang, Lamjung, Tanahu and Gorkha.

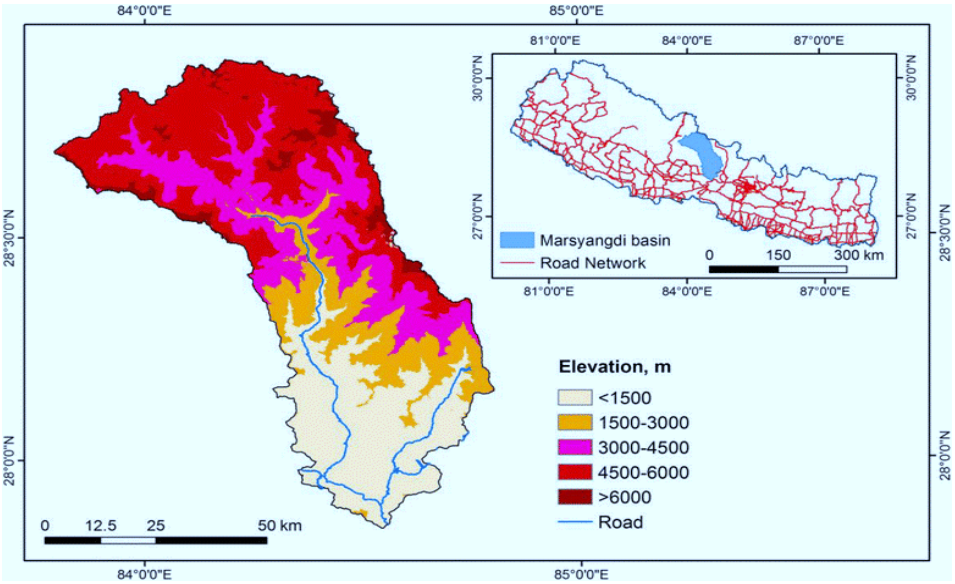


Figure 2. 1: Map showing Marsyangdi River basin (*Source: Khadka & Pathak 2016*)

Hydropower Potential

Gandaki River Basin has an economic potential of producing 5.27 GW of hydropower (IPPAN 2006). Most of the mega-hydropower projects of Nepal have been developed in this basin, particularly in Marsyangdi. Marsyangdi basin is largely being utilized for hydropower generation due to its high potential relief energy attributed to its steep slope, which on an average is 29.42^{O} (Parajuli et al. 2015). Marsyangdi hydropower project with installed capacity of 69 MW is the first megahydropower project constructed in the basin, which was commissioned in 1989. Information on hydropower projects in the Marsyangdi basin are given in the following tables.

Table 2. 1 : Projects under operation

S.N.	Name	Capacity (MW)	District	Promoter	Location	Remarks
1	Marsyangdi (Also called Lower Marsyangdi)	69	Tanahu	NEA	$27^{O}52'25"N$ to $27^{O}56'53"N$/ $84^{O}25'40"E$ to $84^{O}32'42"E$	Commercial Operation Date (COD): 1989-11-5
2	Madhya Marsyangdi	70	Lamjung	NEA	$28^{O}08'20"N$ to $28^{O}11'50"N$/ $84^{O}24'18"E$ to $84^{O}26'51"E$	COD: 2008-11-1
3	Upper Marsyangdi A	50	Bhulbhule, Bahundanda, Khudi (Lamjung)	Sinohydro-Sagarmatha Power Company Pvt. Ltd.	$28^{O}17'07"N$ to $28^{O}19'28"N$/ $84^{O}21'55"E$ to $84^{O}24'10"E$	COD: 2012-03-30
	Total	189				

Source: Department of Electricity Development (DoED), GoN (2017)

Table 2. 2: Planned projects

S.N.	Project	Capacity (MW)	Promoter	District/VDC	Lat/Long	Remarks
Applications for survey license						

1	Upper Marsyangdi 2	600	Himtal Hydropower Company Pvt. Ltd	Manang	28^{O}22’04”N to 28^{O}30’00”N/ 84O21’30”E to 84O25’03”E	
2	Manang Marsyangdi	282	Manang Marsyangdi Hydropower Company Pvt. Ltd.	Manang	28^{O}31’27”N to 28^{O}33’37”N/ 84^{O}15’38”E to 84^{O}20’00”E	Survey license Date: 2065-03-19
3	Upper Marsyangdi 1	138	Upper Marsyangdi Hydropower Company Pvt. Ltd.	Lamjung	28^{O}18’50”N to 28^{O}22’47”N/ 84^{O}23’30”E to 84^{O}25’00”E	2065-04-15
5	Lower Manang Marsyangdi	140	Butwal Power Company	Manang	28^{O}30’00”N to 28^{O}32’30”N/ 84^{O}20’00”E to 84^{O}21’55”E	2066-02-11
Issued survey license						
1	Marsyangdi 7	54	Himal Energy Venture Pvt. Ltd	Chame, Pisng (Manang)	28^{O}32’33”N to 28^{O}36’31”N/ 84^{O}10’26”E to 84^{O}16’00”E	2074-05-09
Issued construction license						
2	Marsyangdi Besi	50	Divyajyoti Hydropower Pvt.. Ltd.	Besisahar, Chandisthan, Bhulbhule, Gaunsahar, Bajhakhet, Hiletaxar (Lamjung)	28^{O}12’00”N to 28^{O}16’00”N/ 84^{O}21’15”E to 84^{O}24’40”E	2074-06-01
Government Reserved Projects						
1	Marsyangdi 3	42		Dhamilikuwa, Tarkughat	28^{O}05’27”N to	

				(Lamjung)	$28^{O}08'09"N$/ $84^{O}25'39"E$ to $84^{O}27'30"E$	
	Total					

Source: DoED, GoN (2017)

For this study, that area is selected where three mega-hydropower projects, Upper Marsyangdi (50 MW), Middle Marsyangdi (70 MW) and Lower Marsyangdi (69 MW) have been constructed. Projects under construction generally have some issues or conflicts that are short termed in nature. Hence, instead of such projects, the ones which are already under operation, have been considered to encompass a greater range of conflicts. Relevant stakeholders from those areas were invited during the stakeholders' consultation. The Upper Marsyangdi HPP is promoted by a private organization while Nepal Electricity Authority (NEA) owns the rest two. This allows the research to explore if the conflicts vary according to project ownership modalities (Public or Private).

Chapter 3
FINDINGS AND DISCUSSION

Hydropower generation is the primary use of the Marsyangdi River. Water from the River has not yet been directly tapped for drinking water or irrigation schemes. The tributaries of the River are utilized for those purposes. Basically, the current major use of the River is hydropower production and it is likely to continue in future as well due to its immense potential. Three mega hydropower projects of Nepal have already come to operation (See Table 2.1). Hence, most of the issues that involve conflicts or that are likely to invite one are around existing and future hydropower projects. The identified issues are described below:

3.1 Geographical risks

An area of about 508 km^2 is under the glacier cover in the basin (Parajuli et al. 2015). There are more than 20 glaciers in the basin of which, Thulagi glacier, located in Upper Marsyangdi Basin, has been identified as one of the potentially dangerous lake. According to the Environmental Impact Assessment (EIA) reports of the HPPs in the basin, the entire Marsyangdi basin is undergoing through a phase of tectonic movement while glacier and ice erosion is active in addition to monsoon-enhanced erosion. Erosion in river basin is many times higher than transport of sediment. The EIA report of Middle Marsyangdi HPP has mentioned that the watershed above its dam includes Tibetan marginal ranges and high Himalayan mountains with only a small portion lying in Midland Mountain region. The natural factors along with human activities such as topographic steepness, high intensity rainfall and declining vegetation cover etc. have been accelerating land degradation. On top of that, the construction activities of numerous planned projects are likely to enhance the process of erosion in future.

Local stakeholders stated that landslides in Dumre-Besisahar area are frequent due to both geology as well as rural road construction. It is getting problematic but no measures have been taken. There is growing sedimentation in the tributaries of Marsyangdi. Initiatives from the local government to manage the sedimentation in the tributaries and landslides are required. Locals believe that the deposited soil/silt can be harvested and utilized in some economic activities. But their question is who will decide what is to be done with the silt.

3.2Existing conflicts

3.2.1 Water uses

Some existing and potential areas of conflict related to the use of water from Marsyangdi River as described hereunder.

Drinking: Marsyangdi River is not used for drinking water. The tributaries of Marsyangdi are serving the purpose. Thus, there is no visible conflict regarding drinking water. Nevertheless, some people reported that the damming of river for hydropower production has led to drying of some sources. Locals have noticed drying of water sources where the blasting was done during construction phase of the projects. Although the EIA reports mention that tunneling might affect the spring sources or ground water but the assessment of impacts of such activities has not been carried out. Middle Marsyangdi Basin has rocky mountains where many blasting activities were carried out. Dudh Pokhari VDC is one of the examples where a spring source dried as a result of blasting. With numerous planned projects, there is room for potential conflict if water has to be diverted from the River for the population in future.

Irrigation: Water from the tributaries of Marsyangdi is being diverted to irrigation canals. There is Dordi Dudh Khola Small Hydropower project (20.8 MW) in one of the tributaries called Dordi. Irrigation system downstream of that project has been suffering since the project does not release sufficient water. One of the farmers complained that the project only considers the capacity of adjacent irrigation canal while estimating the water but ignores other systems and canals downstream.

Tourism: Rafting was once a popular tourism business in Marsyangdi River. The river stretch from Ngadi to Bimalnagar is best suited for rafting. But nowadays, there are no rafting activities. The locals accused HPPs for plummeting the business.

3.2.2 Project versus Project

There are several hydropower projects being constructed in the basin. Issuance of license for construction lacks good planning. For instance, Middle Marsyangdi HPP was commissioned (2008) before Upper Marsyangdi HPP (2012).

The dumping of soil and other debris by Upper Marsyangdi HPP during construction had caused sedimentation problem to the Middle Marsyangdi HPP, which is located downstream. Similarly, there are other smaller projects being planned in the area between these megaprojects, which

represent the potential areas of conflict. Hence, the proper plan to mitigate the soil erosion should be in place.

3.2.3 Project versus Development

Hydropower projects have brought development activities in the project area. According to locals, they would not have seen the bridge in Bhulbhule and the road to Nyadi if there were no Upper Marsyangdi HPP (Shrestha et al. 2016). Similarly the locals also acknowledge the projects for construction of health posts , opening track of road (Upper and Middle Marsyangdi HPPs), acquisition of ambulance (Middle Marsyangdi HPP), maintenance of school building (Upper Marsyangdi HPP), construction of cremation sites, One-house One–tap programme (Upper Marsyangdi HPP) and construction of water supply lines (Upper, Middle and Lower Marsyangdi). However, there is a concern about how the development activities are being carried out. It is the fact that until the roads are constructed, local people will be less bothered about conservation activities in the watershed. Hence, road construction has been getting the priority over other developmental activities. Unfortunately, the heavy equipment such as bulldozer is used during the construction, which triggers erosion in the project areas. This might not be desirable for the project. The communities feel that tributaries of Marsyangdi require check dams or other watershed conservation measures for reducing erosion and sedimentation. This is essential in order to balance both project and local development.

3.2.4 Project versus Public

***Cultural practice*:** There are cemetery grounds of local people on the River banks. Some locals who practice last rituals there had a couple of instances of either too much water which washes away the cemetery ground (during monsoon) or lack of adequate water to perform the rituals (sometimes in lean season). However, those people have not taken this as serious issue because it does not happen every time. Also, not all communities depend on river banks for the last rituals. Apparently, these cultural practices have not been affected much by water diversion for existing HPPs.

Livelihood: The existing fishing communities in the downstream areas have been negatively affected by the projects, especially during dry season when the projects do not release water downstream. This has halted the economic activities of fishermen leaving them unemployed. Although the Water Resources Act, 1992 has prioritized irrigation over hydropower, the project related people are obliged to retain the water to meet the demand of electricity for the nation.

Struggle with outsiders: Many local people seem to be annoyed by the behavior of outsiders, especially Chinese laborers in Upper Marsyangdi HPP. The laborers turn deaf ear to the locals if they complain about anything. They think that Chinese are not cooperative. Locals wish that the Chinese use local agricultural produce and help to boost the local economy but they arrange food for themselves. This is one of the reasons which have created grudges between these two. Lack of cooperation is evident in other instances too. Shrestha et al. (2016) has stated that the project had to stop for several days due to disagreement between local and Chinese laborers. Locals find it difficult to work with the Chinese contractors who are high demanding about the working schedules and performance (ibid). This forced them to leave the work.

3.3 Benefit Sharing

Hydropower is unanimous solution for the growing energy demand of the country. Despite an enormous potential for hydropower generation, Nepal has been able to produce only 973.3 MW through the HPPs under operation (As of 5 January 2018, DoED). In recent times, hydropower development is picking up some pace spreading some rays of hope for energy security. Hydropower development is known for a cleaner solution for energy demand but its impacts on environment and society cannot be overlooked. Dam construction for power generation has never been undisputed around the world and Nepal is not an exception. Benefit sharing has become a burning discourse in the context of hydropower development. One of the emerging issues in this regard is inequitable distribution of its benefits. Disputes arise at the local level where local people have to bear the brunt of dam construction.

Both monetary and non-monetary benefits sharing mechanisms across multiple stakeholders are currently being used in Nepal. A recent study by Shrestha et al. (2016) points out the issues that trigger local conflicts such as lack of transparency in royalty flow, uninformed locals, political exploitation by local elites and so on (p. 39). The study also acknowledges the need to improve the benefit sharing policies and practices in the country so that an appropriate mechanism to balance the competing interests of various stakeholders can be devised (p. 43).

Local peoples' perception and understanding of benefit sharing of hydropower is important for local acceptance of the project and necessary cooperation. If they do not perceive benefits from the projects for local development or their livelihood improvement, the project might not receive support from them.

Forms of benefit sharing

i) Royalty sharing

In Lamjung, the monetary benefit sharing mechanism exists. The royalty is paid by Marsyangdi and Middle Marsyangdi HPPs to the Government of Nepal as per the law (shown in Figure 3.1). Department of Electricity Development has made the information on royalty money received by the GoN from HPPs through its Royalty Management and Distribution System (RMS) in its website. Information on royalty received from Marsyangdi HPP and Middle Marsyangdi HPP is given in Table 3.1below. However, no information on royalty sharing of Upper Marsyangdi is available.

Table 3. 1 : Royalty received from the HPPs in different fiscal years for different districts

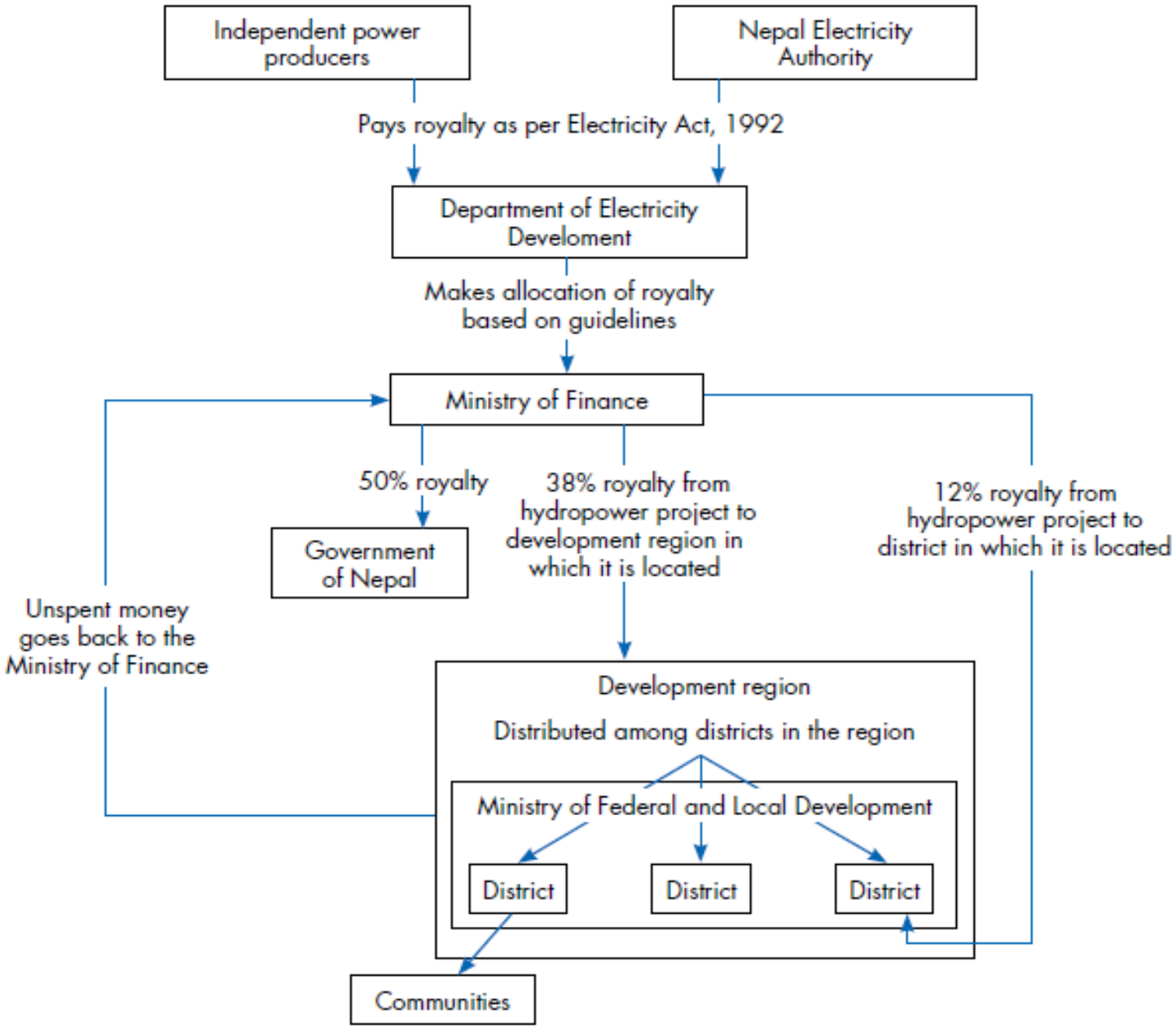
District: Lamjung				
Year		**12% (district share)**	**38% (Regional share)**	Total
2071/72	Marsyangdi HPP	0	9590927.79	9590927.79
	Middle Marsyangdi HPP	6978673.8	1675114.33	8653788.13
2070/71	Marsyangdi HPP	0	9078493.31	9078493.31
	Middle Marsyangdi HPP	6433284.48	1544202.72	7977487.2
2069/70	Marsyangdi HPP	0	9978489.67	9978489.67
	Middle Marsyangdi HPP	7476410.04	1794587.62	9270997.66
2068/69	Marsyangdi HPP	0	22045382.98	22045383
	Middle Marsyangdi HPP	21041303.52	5050614.22	22091917.7

District: Tanahu				
Year		**12% (district share)**	**38% (Regional share)**	Total
2071/72	Marsyangdi HPP	19978324.80	2935481.86	22913806.7
	Middle Marsyangdi HPP	0	512699.9	512699.9
2070/71	Marsyangdi HPP	18910901.2	2778641.75	21689542.97
	Middle Marsyangdi HPP	0	472631.92	472631.92
2069/70	Marsyangdi HPP	20785633.3	3054102.38	23839753.6
	Middle Marsyangdi HPP	0	549266.92	549266.92
2068/69	Marsyangdi HPP	45921503.2	6747399.54	52668902.8

	Middle Marsyangdi HPP	**District: Gorkha** 0	1545834.43	1545834.43
Year		**12% (district share)**	**38% (Regional share)**	Total
2071/72	Marsyangdi HPP	19978324.8	14272515.2	34250840.04
	Middle Marsyangdi HPP	0	2492582.28	2492582.28
2070/71	Marsyangdi HPP	18910901.22	13509947.8	32420849.05
	Middle Marsyangdi HPP	0	2297969.22	2297969.22
2069/70	Marsyangdi HPP	20785633.26	14849256.4	35634889.66
	Middle Marsyangdi HPP	0	2670573.67	2670573.67
2068/69	Marsyangdi HPP	45921503.22	32806321.9	78727825.12
	Middle Marsyangdi HPP	0	7515953.62	7515953.62

The distribution of royalty money was based on the Hydropower Development Policy, 2001 and Local Self Governance Act (LSGA) and its Regulations 1999 until Nepal enters Federalism in 2015. The aim of the Policy, 2001 is to facilitate development of hydropower projects while that of LSGA is to boost the local development. This shows the contradiction of the outlook of these two legal documents. The regional royalty share comprises a big share of royalty (38%), which is distributed among all districts of the development region where the project is located. This is conflicting with the aspiration of Hydropower Development Policy while on the other hand, the Policy itself has not been translated into the legislation and hence, its compliance is not guaranteed (JVS 2013).

When the project affected districts are two or more, royalty distribution is not consistent. Gorkha and Tanahu districts where Marsyangdi hydropower project is located gets 12% of the royalties distributed equally among themselves, regardless of the location of powerhouse whereas in some other projects such as Khimti, 12% is divided between Dolakha and Ramechhap districts in 3:1 ratio based on mutual consent (Shrestha et al., 2016). Similarly, the regional royalty share is divided equally among districts in Eastern and Mid-Western Development Region while unequally in Western and Central Regions (ibid). People in Lamjung had stated during the consultation that the most affected district deserves more share of royalty. Such non-uniform practices of royalty sharing in the country will provoke the conflicts among the affected districts and communities.



Adopted from: Shrestha et al. 2016

Figure 3. 1: Distribution of royalty revenue by the Government of Nepal

Revenue sharing in Federal Nepal

Currently, Nepal is governed by the Constitution of Nepal, 2015 that had declared the country as a “Federal Democratic Republic” where the federal, province and local government share the powers. Article 60 of the constitution mentions that the Government of Nepal shall make necessary arrangements to equitably distribute the revenue generated from its sources and the amount of fiscal transfer receivable by the State and Local level shall be as recommended by the National Natural Resources and Fiscal Commission (NNRFC).

National Natural Resources and Fiscal Commission Act 2017has been formulated to provide necessary arrangements regarding the functions, duties and powers of the Commission as per the provisions of Article 250 and 251 of the Constitution. One of the duties of NNRFC as in Article 251 of the Constitution is “to set bases for the determination of shares of the Government of Nepal, State Government and Local level in investments and returns, in the mobilization of natural resources”. Similarly, facilitating and assisting for resolving the dispute that arises during the distribution of revenues among the Government of Nepal, State and Local level as necessary is one of the stated duties of the Commission further described in the NNRFC Act, 2017.

Intergovernmental Fiscal Management Act 2017 has been endorsed and implemented to manage the issues related to, inter-alia, revenue rights, revenue sharing and budget management among three tiers of government. The Commission puts all the royalty money collected from the revenue generating sectors such as hydropower generation, mountaineering, forests, mine and minerals, water and other natural resources in 'Federal Divisible Fund' and allocates the amount to three tiers of the government based on a formula which takes location and affected community as key factors. As per the Act,the federal, state and local governments receive 50%, 25% and 25% royalties respectively in their corresponding Consolidated Funds following the principle of equitable distribution of benefits derived from natural resources, including hydropower.

Table 3. 2 : Legal provisions relevant to royalty sharing

Constitution of Nepal, 2015	Article 251	Recommends the natural resources distribution, identifies the share of investment and benefits for natural resource utilization
		Develops the dispute resolution mechanism
NNRFC Act, 2017	Clause 14	Provides the criteria for investment and benefits sharing

	Clause 7 and subsequent Schedule 4	Identifies the percentage of royalties

Criteria for benefit sharing as per NNRFC Act, 2017

- Location of natural resources
- Affected areas from natural resources mobilization
- Dependency on natural resources
- Population to be benefitted
- Dependent population
- Participation in protection and sustainable management of resources

Main points:

Natural resources are distributed unequally among the seven provinces.According to the report entitled *Federal Nepal: The Provinces – Comparative Analysis of Economic and Administrative Data and Challenges* published by The Governance Facility (GF), Provinces 1, 3, 4, 5 and 7 are endowed with rich water resources while Province 2 lacks hydropower potential (Nepali et. al. 2018).Besides having abundant natural resources, socio-economic development in Provinces 6 and 7 is still lagging behind other provinces. Local levels and provinces rich in natural resources are likely to get bigger share of revenue collected from the use of natural resources. This is against the principle of equitable distribution of benefits derived from natural resources.

1. People can get really confused with the jurisdiction of the three levels of government demarcated by the Constitution of Nepal, 2015, Intergovernmental Fiscal Transfer Act, 2017 and Local Government Operations Act, 2017 as there are many inconsistencies, ambiguities and uncertainties. For instance, Schedules 7 the constitution contains the list of Concurrent Powers of Federation and State and while 9 gives the list of Concurrent Powers of Federation, State and Local Level. This concurrency and interdependence in the jurisdiction has led to duplication and confusion.

2. Non-tax revenues are expected to increase because of royalties from new hydropower projects.The overlapping jurisdiction of the three levels of government and lack of structure and expertise at the local level is likely to create the tax disputes which in turn makes the collection and distribution of hydropower royalty a messy business.

3. The Commission is still at its infancy with severe capacity constraint. It poses challenges to carry out necessary tasks/preparations required for the developing the bases for benefit

sharing of the natural resource utilization such as preparation of natural resources inventories, determination of affected communities, studies on possible disputes and conflicting matters and so on.

i) Corporate Social Responsibility

Marsyangdi and Middle Marsyangdi HPPs owned by NEA have dedicated CSR programmes but the Upper Marsyangdi which is owned by a private company does not have such arrangement. The HPPs need to have CSR irrespective of government or private owned. As mentioned above, the royalty is being paid by Marsyangdi and Middle Marsyangdi HPPs to the Government of Nepal. Although every HPP above 1 MW capacity is obliged to pay royalty to the government, there is no information/record on royalty payment by Upper Marsyangdi HPP in the RMS of Department of Electricity Development. The Corporate Social Responsibility (CSR) in Nepal seems to be limited to compensation and mitigation measures particularly during the construction phase of hydropower projects (Shrestha et al., 2016). In Marsyangdi River, the activities which directly benefit the local communities' livelihood in project district would represent the CSR of the developers.

ii) Other forms of benefits for local communities

Other than royalty sharing, the projects in Marsyangdi River are also benefitting the local and affected communities through other activities as shown in Table 3.1 and Table 3.2. Local communities in Lamjung were disappointed because no shares have been issued. The local seem to be unaware about the fact that there is no provision for public share from the government/NEA owned HPP. Their trust on the projects is diminishing as the projects have carried out local development activities and environmental protection measures as committed in the EIA. They also complained about the lack of monitoring of the implementation of the measures from relevant agencies.

Local job opportunities from the project is a tangible form of benefit sharing according to the communities. All three projects have provided employment to the locals, prioritizing the most affected ones during the construction. However, employment after the construction have not been ensured. Some have got the job on contractual basis after following the NEA recruitment process. As mentioned in above, locals did not feel comfortable working with Chinese contractors which might have discouraged them to ask for jobs later on. Similarly, the projects have provided livelihood related trainings but some training seem to be unplanned. For instance, Middle Marsyangdi HPP trained people on herb identification but without a refinery centre in the local area, they have not utilized the skills they developed through training.

Table 3. 3 : Major benefits provided by hydropower projects in Marsyangdi River

S.N.	Project	Royalty	Local project shares	Community Development Fund	Local livelihoods programme	Electricity support	Water and environment benefits
1	Marsyangdi	Pays	N/A	Yes	Local jobs, trainings	Access through regular NEA connection	Drinking, Irrigation
2	Middle Marsyangdi	Pays	N/A	No	Local jobs, trainings	Infrastructure support provided through neighborhood development programme, complementing electrification policy of Lamjung District	Drinking, Cultural, Environment
3	Upper Marsyangdi	N/A	N/A	No	Provided	N/A	Drinking

Source: Shrestha et al. 2016

Table 3. 4: Local employment provided by hydropower projects

S.N.	Hydropower Projects	Local jobs	Employment during construction	Employment after construction
1	Marsyangdi	Yes	Preference to people who lost more than 70% of land	Some locals in contract later NEA recruiting process
2	Middle Marsyangdi	Yes	Priority to locals	NEA recruiting process
3	Upper Marsyangdi	Yes	About 800 locals from affected district	TBD
S.N.	**Hydropower**	**Trainings**	**Types**	**Remarks**

1	Marsyangdi	Yes	House wiring and plumbing	
2	Middle Marsyangdi	Yes	Agriculture training (bee keeping and herb identification)	Herb training has not been of much help as there is not refinery centre in the local area.
3	Upper Marsyangdi	Yes	Construction works (carpentry and bar bending) at Technical Campus	

Source: Shrestha et al. 2016

Although the hydropower projects have benefitted locals in some ways but the process of benefit sharing is prickly. Major issues with regards to benefit sharing is summarized on Table 3.4.

Table 3. 5: Issues with benefit sharing

Issues	Description
Lack of policies	Nepal still lacks formal laws with regards to benefit sharing of hydropower projects. Royalty sharing is based on Hydropower Development Policy while its distribution to the locals is based on Local Self Governance Act and Regulations.
Delineation of affected areas and population	Generally, the affected populations are categorized according to village development committees (now called gaunpalika) and districts. However, there is no scientific way or procedures for defining the affected areas and population and found to differ from project to project. There are instances of villages claiming to be affected to enjoy the benefits. In Upper Marsyangdi HPP, one village which was not mentioned in EIA later claimed to be affected and received the community development budget (Shrestha et al. 2016). Such issues related to entitlements of impacted areas and population may bring conflicts among the communities.
Inadequate developmental activities	The EIA reports show that the region does not have adequate number of healthcare services, transportation and communication facilities. The royalty distributed in the districts is mainly used for local electrification and road construction. Many locals demand that the money should be spent in other infrastructure development too.
Transparency of royalty	Lack of transparency of royalty sharing has not only dissatisfied the communities but also local government. The local government officials are not communicated well about the details of royalty calculations and distribution. Hence, the information is even less with the public.

Difficulty in assessing the benefits of royalty money	The royalty money is generally scattered across various gaunpalika (Rural Municipality) and municipalities in a given district. There is no clear indication or guidelines for utilizing the money. *(In Kulekhani hydropower project, Royalty Distribution and Utilization Procedures have been developed but it has not been followed as directed).*For this reason, it is difficult to assess the benefits received by the people. Moreover, the benefits are not discernible to the locals which give them impression that the royalty money is not being utilized for the upliftment of their living standard.
Compliance with EIA	One of the resentments that people have is the non-compliance of developers with mitigation measures stated in EIA reports. Panday (2005) has stated that the Environmental Management Action Plan (EMAP) of Middle Marsyangdi was not followed as effectively as expected. The efforts to minimize the impacts caused during construction should be visible to the public which is lacking as evident through their complaints against the projects.
Shares for local ownership	Generally the hydropower companies allocate 10%share to locals in Nepal as per Securities Board of Nepal (SEBON) Rules 2064. There was a demand of local shares during construction phase of Middle Marsyangdi HPP but locals feel aggrieved as no shares have been issued till date. They are still expectant about the shares. However, Middle Marsyangdi HPP is owned by NEA and thus, there will be no provisions of public shares.

Transmission line*:* The public were dissatisfied about the low compensation they receive for letting their land go for transmission lines. The market price of land near the transmission lines plummets easily and they have to suffer because of this. The locals think that the government should consider the long term repercussions of this and provides alternative livelihood options for those whose land is grabbed for the purpose.

Monitoring: During EIA, the locals were consulted on many environmental and socio-economic issues to prepare the EMAP. The developers also committed various activities for environmental impact mitigation and project affected communities but locals said that all agreed activities are confined to the reports. They have not seen any governmental agencies monitoring the implementation status of EIA. Most of the locals unanimously voiced that if the developers stick with their commitment and plans as stated in EIA and if the government monitors their activities, there will be no conflicts between public and developers.

3.4 Project versus Environment

Environmental Flow (E-flow): The national policies such as Hydropower Development Policy 2001 and Irrigation Policy 2014 as well as National Water Plan 2005 have emphasized the need of maintaining a minimum river flow downstream of a hydro-project for minimizing of impacts on natural environment. The Hydropower Development Policy in particular has specified the quantum of water to be released which is at least 10% of the minimum monthly average discharge of the river/stream or the minimum required quantum as identified in the EIA study report. All hydropower projects which are licensed after 2001 are abided by this policy provision (Gaudel 2016).

Since there are series of projects being planned in the basin, the issue of environmental flow is likely to come forefront. Both the public and project officials agree that there is virtually no environmental flow downstream of hydropower projects. The only water available as E-flow is the flushed out water from de-silting basin. So, apparently there is some water but no one has measured it. Till date, there is no complaints made by locals regarding E-flow. The aquatic life is however affected due to inadequate water. On the other hand, the developers stated that they are forced to hold back water in order to meet the energy demand of the country, especially in lean season. Water Resources Act 1992 of Nepal has set the priority order of water utilization but Nepal lacks water allocation authority that allocates feasible amount of water for a use based on the character of water availability in the basin and priority identified. Other use level conflict may follow this fundamental level conflict.

River morphology and Hydrology: Diversion of water by dams has implications on river morphology and hydrology that not only impacts the livelihood and health of downstream communities (fishing communities) but also impacts aquatic ecology. Similarly, groundwater is also affected by damming of river. The locals speculate that there could be alteration in the quantity of groundwater in reservoir area and dewatered area. However, no quantitative data is available as there is no measurement or monitoring of groundwater quantity by the relevant agencies.

Water quality: No reports were found regarding the deteriorating quality of water in the River. Some locals stated that the erosion and sedimentation might alter the quality of water in the reservoir and in between dam and tailrace.

Chapter 4
CONCLUSION

Hydropower generation is a dominating use of Marsyangdi River. There are several large hydropower projects, already constructed and many on the pipeline. Mega hydropower projects are usually problematic to local communities because they affect a large number of people during construction of dams, access road, power-house and transmission lines. The effect is not only limited to people and their livelihood but also the environment. Therefore, it takes cooperation of all stakeholders, from government and developers to local people to mitigate the socio-economic and environmental issues and to resolve associated conflicts.

The hydropower projects in Marsyangdi River are also not free of issues, some of which are minor while some are major and require attention. Since the water from Marsyangdi is not directly used for drinking and irrigation, no significant conflicts were present in the basin. However, water from the tributaries are important for local livelihood. There is already some complaints about holding the water in dam when the farmers downstream need water. The growing trend of developing hydropower projects in Marsyangdi and its tributaries might pose some problems for drinking water and irrigation schemes in future.

The geography related seismic risks and erosion prone areas have been found in Marsyangdi Basin. Therefore, careful examination of the site before developing large projects is important. Managing the eroded soil in the River and its tributaries is desirable, particularly for the projects as it could be problematic for equipment such as turbines. Even the locals are interested in creating monetary value of the deposited silt. Initiatives from the local government to manage the sedimentation in the tributaries and landslides are required.

One of the biggest issues identified was related to benefit sharing of the projects. Locals were very concerned about the amount of money being paid by the projects and other impact mitigation as well as developmental activities committed by projects. One can obtain information on royalty amount received by different districts from different hydropower through RMS in the website of DoED. However, local people and even some governmental officials seem unaware about it which makes them hold grudges against the government for not being transparent enough. However, local people and even some governmental officials seem unaware about it which makes them hold grudges against the government for not being transparent enough.

Benefit sharing of hydropower projects is still evolving in Nepal. Nepal lacks legal arrangement/mechanism which clearly states the process of benefit sharing among the local stakeholders. Hence, the hydropower projects had to rely on Hydropower Development Policy and Local Self Governance Act and Regulations, the objectives of which differ from each other. Such contradictions in the objectives had been triggering the conflicts.
Based on these two laws, Marsyangdi and Middle Marsyangdi were paying royalty to the government of Nepal. Locals were in the view that more money should be diverted to their district as they bear the impacts of the projects. They believed that the royalty money must bring positive changes to their livelihood. Similarly, they demanded the immediate implementation of the environmental conservation activities written in EIAs of the projects as it has not happened. For that, a strong monitoring and evaluation mechanism should be in place from the government sector.

In the present context of federalism, royalty sharing is in the domain of NNRFC and the legal arrangements such as Constitution of Nepal, 2015, Intergovernmental Fiscal Transfer Act, 2017 and Local Government Operations Act, 2017 are expected to help in sharing the benefit in a just manner. However, challenges arise as there are many confusions regarding the jurisdiction of federation, state and local level. On one hand, the Commission itself is constrained by the human resource while on the other hand, the communities at the local level have not been enabled to understand the changes in the governance system and still expect the benefit sharing would be done as it had been practiced in the past. Hence, changing the mindset of the people poses a great challenge for the developers as well as Government of Nepal.

Shareholder model of benefit sharing is slowly gaining popularity in Nepalese context. Local shares create local ownership of the projects which is clearly visible in Chilime hydropower. Issuing shares therehad helped the project to develop its subsidiary projects such as Sanjen, Upper Sanjen and Rasuwagadhi in an uninterrupted manner (Shrestha et al. 2016). Share offer to local is an investment opportunity for locals while a tool to gain the trust for developers. So, it is a win-win situation for both. In Marsyangdi basin, local expectations for shares has gone high but financial awareness on risks and benefits of purchasing shares seems to be lacking with general community. Issuing local shares is mandatory only to public limited companies and not the private ones according to the current laws in Nepal. Locals do not have knowledge about this and expects shares from all hydropower developers, be it privately or publicly owned. This calls for education and awareness campaigns for local people to understand both benefits and risks in order to promote the informed decision making for the local people.

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Annex

Annex 1. Participants of Stakeholders' Consultation

S.N.	Name	Organization
1	Monika Gurung	Besisahar Municipality
2	Sabitri Poudel	Marsyangdi Rural Municipality
3	Khagisara Regmi	Sundarbazar Municipality
4	Hari Chandra Acharya	Raines
5	Bishnu Prasad Neupane	Drinking water Federation
6	Bhagwan Kumar Pandit	Sundarbazar Municipality
7	Nirmala Poudel	Sundarbazar Municipality
8	Dhan Kumari Dura	Marsyangdi Municipality
9	Jivan Shrama	Besisahar Municipality
10	Netra Bahadur Gurung	Marsyangdi Municipality
11	Yubraj Mainali	District Administration Office
12	Krishna Paudel	DADO
13	Bhola Guragain	Sundarbazar Municipality
14	Meghendra Pokharel	DCC
15	Banshi Hari Krishna	FDD
16	Shobha Kauta Pokhrel	Taghring
17	Purna Bahadur Bholan	Besishahar Municipality
18	Santosh Kumar Shah	Besisahar Municipality
19	Bhesh Bahadur Poudel	Hydro Coordination Committee
20	Shiba Regmi	DEC (PO)
21	Shyam Lal Lamichhane	Besisahar Municipality
22	Ramji Bhattarai	CDO Office
23	Parameshwor Adhikari	CDO Office
24	Rohit Shrestha	DCC
25	Pashupati Raj Gautam	Station Manager

26	Bal Ram Shrestha	Besisahar Municipality
27	Bhavesh Sharma	Seva Development
28	Ram Chandra Regmi	FECOFUN
29	Bal Krishna Khanal	District Forest Office
30	Djam Prasad Pokhrel	Ward Secretary
31	Bamdev Paudel	Water Supply Division Office
32	Rajan KC	DWIDM
33	Sarita Bastola	Besisahar Municipality

Annex 2. Some snaps from the Stakeholders' Consultation