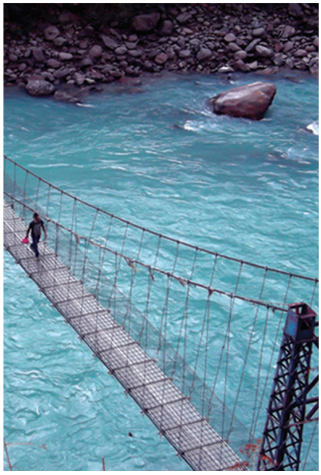
BENEFIT SHARING IN HYDROPOWER PROJECTS IN NEPAL

The cost of unclear rules of the game

Dr. Dhruba Bhandari



Published by
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Supported by
Friedrich Naumann Foundation for Freedom

Photo credits
Anil Parajuli
Sarita Sapkota

ISBN: 978-9937-8947-4-6

First edition: December 2015

Price: NRs. 200/-

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About the Author

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Dr. Dhruba Bhandari is a Research Fellow at Samriddhi, The Prosperity Foundation. He joined the Foundation in July 2015. He completed PhD in Development Economics from Oklahoma State University (USA) in 2013. Prior to joining The Foundation, he worked as Research Associate at Oklahoma State University.

Acknowledgements

I am grateful to some key individuals who offered guidance and information in completing this paper. I would like to thank Suman Basnet for his guidance at all stages of this paper - survey design, sample selection, holding consultation meetings and finally editing the draft. I would also like to thank Independent Power Producers' Association, Nepal (IPPAN) for the feedback on the survey questionnaire. I am grateful to the developers of hydropower projects for taking time to fill up the survey and talking to me based on their experiences. The discussions really helped me frame the structure of the paper. The paper would not have been possible without all the developers trusting us to give the information on budget, cost and revenue of their projects. I believe this is a first step in resolveing hazy interpretations of benefit sharing which have been costing private developers dearly. This paper would not have been possible without the generous support of the Friedrich Naumann Foundation. Finally, my sincere thank you to my colleagues at Samriddhi who offered advice and guidance during the study phase and also helped with final editing and proofreading.

Dhruba Bhandari
December 2015

Context

Acute electricity shortages have created pressure to rapidly develop hydropower projects in Nepal, which boasts enormous hydropower production potential. However, construction of hydropower projects has not picked adequate pace owing to several regulatory challenges. Samriddhi Foundation ventured into studying the hydropower sector first in 2011 while developing the Nepal Economic Growth Agenda, 2012. In the subsequent years, Samriddhi has focused on specific challenges keeping the sector from realizing its potential. In 2013, we analyzed the sector from the perspective of competition laws and Doing Business, which brought out issues related to licensing for power developers and monopsony of Nepal Electricity Authority. In 2014, we focused on a prominent challenge impeding the growth of the sector – transmission. We produced "Policy Options for Improved Transmission System in Nepal" in 2014. In 2015, we are focusing on the provision of benefit sharing. Difficulty in resolving benefit sharing issues with local communitis at construction sites have caused many projects to halt. The Power Trade Agreement with India in 2014 and the decision taken by the Council of Ministers in February 2015 to form a separate transmission company (National Transmission Grid Company) in an effort to initiate unbundling of the Nepal Electricity Authority were significant steps towards speeding up hydropower development. While these moves helped address some key challenges, benefit sharing (which is a prominent challenge) awaits attention from policymakers.

Our observation through this paper in short is that hazy interpretations of benefit sharing (in lack of adequate legal provisions) have been costing the private developers dearly. Thus, benefit sharing in Nepal begs for a clear rule of law. For this, the process has to begin from the very start, which is setting up clear 'rules of the game'. The opportunity is to bring all stakeholders together and build 'rules of the game' in a way that one party does not unjustly benefit at the expense of the other.

Paper at a glance

Over the past decade, many hydropower projects in Nepal have faced obstructions in construction and operation owing to benefit sharing demands from locals. The demands range from equity ownership in the company to building infrastructure (such as roads, schools, etc.) to employment. Hydropower projects of size greater than 1 MW pay energy royalty to the Government, a certain percentage of which is expected to go back to the district by legal provisions. However, implementation is weak. This adds pressure on hydropower developers to supply what the government has not been able to deliver (such as roads, hospitals, schools, employment, etc.). While some demands could be deemed reasonable and feasible for projects, there have also been cases where developers find demands outrageous and well beyond the ability of the projects to deliver. This stems from the lack of adequate legal provisions defining the scope and basis of benefit sharing. This renders an unpredictable business environment and increased project cost for private developers, which might also threaten the feasibility of the project at times.

Cost associated with benefit sharing involves direct cost of providing what the locals demand, loss in revenue due to repeated halts in the project and remobilization cost to get back to schedule after the halt. Since there is no way for developers to make a real estimate of benefit sharing costs and budget for it, fulfilling most benefit sharing demands in the current context is extra cost. Had there been clear legal provisions, such unpredictability and extra cost could have been avoided.

In this paper, we use data from a survey we conducted with ten hydropower projects to estimate the cost associated with benefit sharing. The paper, however, does not incorporate the cost of lost investment owing to the uncertainty faced by developers. It concentrates on generating estimated cost to developers due to the lack of a clear and enforceable regulatory framework.

This paper recommends setting up clear policy guidelines defining the scope and basis of benefit sharing with locals. This should take into account the size, budget, source of funding, and financial feasibility of the project. Based on the survey data from this study, we have concluded that it is financially feasible for small projects, less than 10 MW, to spend 2% of total cost on benefit sharing. For medium projects, greater than 20 MW and less than 60 MW, it is financially feasible to spend less than 0.5% of total cost on benefit sharing.

Abbreviations & Acronyms

BKPC	Bhotekoshi Power Company
DoED	Department of Electricity Development
EDC	Electricity Development Center
INPS	Integrated Nepal Power System
IPP	Independent Power Producers
IPPAN	Independent Power Producers Association of Nepal
KREC	Khimti Rural Electric Cooperative
KW	Kilo Watt
MoE	Ministry of Energy
MoWR	Ministry of Water Resources
MW	Mega Watt
NEA	Nepal Electric Authority
NRs.	Nepalese Rupees
PDA	Project Development Agreement
PPA	Power Purchase Agreement
USD	United States Dollar
VDC	Village Development Committee
WCD	World Commission on Dams

The Nepali year is based on the Bikram Sambat Calendar and is approximately 57 years ahead of the Gregogrian calendar (2062/1/1 = 2005/4/14)

The paper uses an exchange rate (buying) for USD 1 = NRs. 100
The average exchange rate for the Fiscal Year 2013/2014 was USD 1 = NRs. 97.95 (buying rate) *(Source: Nepal Rastra Bank)*

List of Tables

1. Introduction

According to Nepal Electric Authority's annual report, 2014, Nepal has approximately 40,000 MW of economically feasible hydropower potential, of which only less than 1.5% has been developed (about 791 MW). The peak power demand of the Integrated Nepal Power System (INPS) in fiscal year 2013/14 was estimated to be 1,201 MW with 410 MW power estimated to have been shed. Out of the 791 MW of power actually supplied, 436.4 MW was contributed by Nepal Electric Authority (NEA) hydro, 22 MW by NEA thermal, 216.4 MW by independent power produces hydro and the rest (116.2 MW) by import. Compared to the preceding fiscal year's figure of 1,094.6 MW, the annual peak power demand of the INPS registered a growth of 9.7 % (NEA, 2014). According to NEA's report the energy demand is going to continue to increase and peak load demand will reach 2200 MW by year 2020 (NEA, 2014).

Why is there electricity shortage and underutilization of hydropower potential in Nepal despite the abundance of water resource as well as increasing demand for electricity? Sovacool et al. (2011) summarize socio-technical barriers to developing hydropower in Nepal as: technical/environmental, economic/financial, political/regulatory, and social/cultural.This paper will focus on political/regulatory barrier to the development of hydropower in Nepal. More specifically, we look at the cost imposed on the private developers due to the lack of clear legal provisions on benefit sharing in Nepal.

Hydropower projects can generate substantial benefits, including electricity generation, flood control, irrigation, industrial and domestic water supply and tax revenue. There could be cases where beneficiaries of the projects live very far while the local communities bear the risk of

the project and give up their land and their way of life (farming, fishing etc.) for the project. Local communities often bear the cost of project due to relocation (stemming from land acquisition, risk of flood and other geological risks) (WCD, 2000). The idea of benefit sharing is to compensate the locals who face the risk and/or economic loss in the long term from the hydropower project. There is general consensus that locals who bear the risk and give up their way of life should be part of a long term benefit plan from the project. Private developers of hydropower projects in Nepal are aware of this and willing to share benefits with locals. The root of the problem (which this paper investigates) is absence of clear legal provisions on benefit sharing whereby, demands from the locals balloon and failing to meet thease demands results in repeated halts to the projects.

Due to lack of a clear policy framework on what developers are required to provide to locals as benefit sharing[1], problems arise when locals make demands ranging from employment, infrastructure, to equity ownership in the company from the developers regardless of size, budget and financial feasibility of the project. Here is an excerpt from an article illustrating the mindset of locals regarding the expectation from the projects :

> *Tilak Adhikari from Salkot, Surkhet recently bought 1.5 ropanis[2] of land in Dab, which is proposed area for the 900 MW Upper Karnali Hydropower Project. He says: "I purchased the land that cost Rs. 500,000 in total with the expectation of getting employment, good compensation and shares in the project" (Nepal Energy Forum, 2015).*

1 Existing regulations impose royalty on energy produced. This royalty amount is supposed to cover the benefit-sharing aspect of the hydropower project with the locally affected communities. However, in absence of local government in Nepal (the last local elections were held 17 years ago), the royalty gets lost in the bureaucracy. This has resulted in local people placing their demands for infrastructure and basic services to the private hydropower developers coming to their area.

2 19.96 Ropani= 1 Hectre

This paper looks into the actual cost associated with benefit sharing to private developers operating in Nepal at the moment. These costs are the expenses incurred beyond what is required by the Project Development Agreement and/or obliged by law. Additional costs to developers are: direct costs of providing infrastructure to locals, loss in revenue due to obstruction in operation and cost of remobilization after halt to get back to schedule.

The workers at Upper Tamakosi Project (456 MW) have been demanding at least 500 unit of shares while the locals have their own demands. As a result, the project is incurring a loss of around Rs 30 million every day due to the delay and the compensation to be paid to the contractors for the halt in the construction work (Arko Network 2015).

In order to get an idea of where benefit sharing fits among other factors that cause time and cost ovverrun in projects, quantify the cost of benefit sharing, and understand financial feasibility, we surveyed private developers of hydropower projects for this study. We studied ten hydropower projects of which six were small projects of less than 10 MW and remaining were greater than 20 MW and less than 60 MW. ***All the projects we studied in our sample had faced benefit sharing demands from the locals.*** Some common demands from the locals, and also the most common benefit sharing provided by the projects, were: health clinics, road, schools, employment, irrigation infrastructure, preferential rate or free electricity, establishment of and contribution to community development fund and equity ownership in the company. Most popular among these was the equity ownership (ranging from 5-10%) in the company. When asked whether they had faced halts during construction or operation of project, seven out of ten respondents answered 'yes'. One answered 'not yet' as the project was in planning phase and remaining two answered 'no'.

The remainder of the paper is organized as follows: the proceeding section discusses the concept of benefit sharing and some mechanisms. This is followed by provision of benefit sharing in Nepal and lessons from other countries. The paper then presents estimated cost of benefit sharing and financial feasibility to private developers. Ranking of factors that cause time and cost overrun in hydropower projects is also done. Finally, the paper makes some policy recommendations based on the findings.

2. Concept and mechanisms of benefit sharing

The idea of benefit sharing is to provide long term benefit to affected locals in addition to the one time compensation for what they have to give up. For example: land, access to water, access to forest and their livelihood like farming, fishing, and environmental and geological safety. The locals may be relocated during land acquisition for the project. Benefit sharing also becomes a tool to establish partnership between locals and developers. Benefit sharing stems from a premise that hydropower projects can generate economic rent over the duration of the project and that can be shared with the affected population. These rents can be captured through royalties, fees, competitive auction, taxes etc. and channeled back to public through efficient and equitable delivery mechanism (Égré, 2007).

There is a general consensus that the local community has to be part of long-term benefit along with the developers for what they give up for the hydropower project. World Commission on Dams (WCD) (2000) also emphasizes long term commitment for development of communities affected by projects based on principal of equity, efficiency, participatory decision making, sustainability and accountability. The report states,

> Dams have made an important and significant contribution to human development, and the benefits derived from them have been considerable. However, in too many cases, an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment.

An example of such a case in Nepal is of Jhimruk Hydropower Plant in Pyuthan where a river had to be diverted for the project and people downstream were affected due to lack of sufficient irrigation water for their paddy fields (Dixit et. al, 2005). Benefit sharing can be both monetary and non-monetary.

Table 1: Monetary and non-monetary benefit sharing

Monetary	**Non-monetary**
Revenue Sharing	Employment Creation
Preferential electricity rates	Improved infrastructure
Payment for environmental services	Support for Health and Education Program
Community Development Fund	Improving access to land and forests
Equity Sharing	Improved water management

Source: A guide for local benefit sharing in hydropower projects. (Wang, 2012)

Wang (2012) outlines the following steps for designing effective benefit sharing with local communities:

- Understanding the impacts of a hydropower project on local communities
- Analyzing the legal and regulatory basis and local development context
- Carrying out consultations with stakeholders
- Designing the objectives of benefit sharing programs
- Defining the beneficiaries of benefit sharing programs
- Designing the types and mechanisms of benefit sharing
- Exploring benefit sharing arrangements through multiple entry points
- Setting up the implementation arrangements of benefit sharing programs

3. Benefit sharing provisions in Nepal and examples from other countries

Article 11 of the Electricity Act (1992) requires projects larger than 1 MW to obtain license and pay royalty to the government. Department of Energy Development (DoED) under Ministry of Energy (MoE) issues licenses and manages royalty currently (It used to be done by Electricity Development Center under Ministry of Water Resources (MoWR) earlier.). Types of licenses issued are: survey license (valid for five years), generation license (valid for thirty five years), transmission and distribution license (both valid for twenty five years).

Article 11 of the Electricity Act (1992)

11. Royalty to be Paid: *(1) The licensee shall have to pay royalty to Government of Nepal at a rate of Rs. 100 for each installed kilowatt of electricity per year plus 2 percent of the average tariff per unit (per kilowatt hour) for a term of up to fifteen years from the date of generation of electricity for commercial purpose.*

(2) After the term specified in Sub-section (1), the licensee shall have to pay royalty to Government of Nepal at a rate of Rs.1000 for each installed kilowatt of electricity per year plus 10 percent of the average tariff per unit (per kilowatt hour).

In 1999, Local Self Governance Act (LSGA) and Local Self Governance Regulation required central government to allocate 10 % of the royalty received to be used in districts where the projects are located (Égré, 2007).

In 2004, the second amendment of the Self-Governance Regulations increased the district's share of the royalty to 12%. It also required the central government to distribute another 38% of the hydropower royalty among districts of the development region where the hydropower project is located. Additionally, the 2001 Hydropower Policy specifies that 1% of the royalty shall be provided to the Village Development Committees (VDC) that are directly affected by the hydropower infrastructure with the sole purpose of expanding electrification of these VDC (Égré, 2007).

Cernea (2008) argues that a one-time compensation alone cannot restore their livelihood, and offers benefit sharing as better alternative to one-time compensation and shares some examples of their implementation in various countries like: Japan (leasing of land from locals till the life of project), Norway (benefit sharing through taxation mechanism), Brazil (benefit sharing through energy royalty) and Canada (equity sharing with indigenous population)

Brazil has adopted benefit sharing through royalty distribution. Brazilian parliament in 1998 made a decision to re-invest certain percentage of royalties from hydropower in resettlement areas. Since Brazil is a federation of states, the Federal Government enforces the laws. The policy decision was made to direct roughly 90% of all royalties from public hydropower plants to the states and municipalities and only 10% to federal agencies (Cernea, 2008).

Though the provision is in place in Nepal and a similar mechanism has worked in Brazil, the incidence of local demands and local halts (this is discussed in detail in next section) indicate that the effectiveness of royalty distribution is dismal, especially in light of the absence of locally elected officials.

The Department of Electricity Development (DoED) collected Rs. 2.54 billion in royalty from power producers in fiscal year 2011/12. […] "There is a problem in DoED´s royalty distribution mechanism," an official of the Independent Power Producers´ Association Nepal (IPPAN) said on the condition of anonymity. The royalty distribution process is slow and inefficient. "This angers locals," the IPPAN official said. (Nepal Energy Forum, 2013).

On the other hand, the trend of growing demand for infrastructure, equity etc. is not showing any sign of slowing down. This also indicates that there is a need for a policy framework that is comprehensive, defines the basis and scope of benefit sharing clearly, and provides clear guidelines that takes into account the size, budget, source of funding, and feasibility of the project. There is also a need for a clear disbursement mechanism that ensures that the benefits reach the local communities so that further disruptions can be eliminated once the developers provide benefit sharing to the local community as defined by the law.

4. Demand from locals and halt of projects in Nepal

Local communities perceiving the developer as a proxy of local government and expecting the hydropower project to provide all basic infrastructures and services (including basic services such as health and education that is typically expected to be provided by local governments) is the root cause of the ballooning of demands from the locals. Local governments are not only failing to provide the basic services but also security in the area. Lack of strong local government gives locals confidence to group together to halt and obstruct the hydropower project until their demands are met.

Methods of resistance and obstruction of work at the projects involve forming local struggle committees, worker strikes, vandalizing property, blocking roads and vehicle that carry supplies for the project and obstructions from local as well as ruling political leaders. We asked developers for the top five agents that cause halt in construction and operation of the hydropower project in the survey and following were the responses.

Top five agents causing obstruction in construction

- Local People
- Local opinion leaders/ Local Struggle Committee/ Local youths with frequently changing party loyalty
- Political leaders and their Cadre
- Hooligans (to get the contracts)/ Local Dons/Goons
- Employee/Contractors

Local politics also has a great role in projects facing repeated halts and obstructions. Politicians have an incentive to encourage and back the locals to halt projects and encourage them to demand either infrastructure or equity. This political backing to local resistance is a form of garnering votes at the local level. During elections, politicians can then claim that the 'development' in the community was a result of their political backing.

Local political leaders and cadres of the ruling parties have been at the forefront of the movement to extract shares and contracts from hydro projects by preventing them from continuing work. Political party members have been demanding shares from the 45 MW Bhotekoshi Hydropower Project and supply contracts from the 102 MW Madhya Bhotekoshi Hydropower Project. Likewise, the 50 MW Upper Balefi, 22 MW Upper Chaku and 3.2 MW Gelun Khola hydropower projects have encountered similar problems (The Kathmandu Post, 2014).

Similarly, energy generation of the 45MW Bhotekoshi Hydropower Project has stopped after locals obstructed reinstallation of transmission line towers, demanding shares in the project. The project is incurring a daily loss of Rs 8.6 million (The Kathmandu Post, 2014).

Examples of other obstruction as well as demands from locals are presented in Table 2. What is clear from the examples presented in Table 2 is that projects of all sizes are facing the same problem: demand from locals and obstruction in construction and operation of project, until the demands are met. This all translates into added cost to developers.

Table 2: Halted hydropower projects in Nepal

Project name	Capacity	Source of halt and demand from locals
West Seti	750 MW	Local resistance
Upper Trisuli 3A	90 MW	Land acquisition, forest clearance, local resistance. Project is willing to work on health, education, and road. Locals demanded that the project work on 12 sectors and also let them control fund/responsibility to execute those works financed by the project.
Upper Tamakoshi	456 MW	Workers halt, locals demanded more equity ownership than the company was willing to provied earlier (10%)
Mid Bhote-Koshi	102 MW	Project will ruin tourism. Local leaders vandalized a tanker supplying petroleum products to Mid Bhotekoshi Hydropower project, for the contractor's failure to award fuel supply contract to local firms.
Tanahun Electricity Project	140MW	Locals demanded road, drinking water and management of forest
Eastern Hydropower Project		Halt due to protest. Locals demanded infrastructure and 10% equity
Khimti Hydro Power	60 MW	Locals demanded share (the project did provide schools/irrigation/electricity etc. to local community)
Naurgh Gad Hydropower	8.5 MW	Locals demanded compensation and obstructed the construction of transmission lines to connect to national grid
Upper Bhotekoshi/ Bhotekoshi	45 MW	Local resistance (agreement at 6% equity)
Upper Madi Project	25 MW	Local workers demanded pay as per ILO specification/ Villagers have other demands
Upper Mayrsangdi	50 MW	Dispute between contractor and local workers
Lahare Khola	4.2 MW	Locals demanded 10% equity after project provided compensation and fullfilled other demands

Chilime	22MW	Locals demanded equity ownership
Drari Khola	3.75 MW	Locals demanded 10% equity after project provided compensation and other demands
Khimdi Dhalkebar Transmission Line		Local demanded huge compensation for their land. Obstructed construction for two years.

Source: : Author's compilation from various sources including newspaper reports and reporting available at nepalenergyforum.com

We also asked the developers to rank the top five causes of obstruction and/or halt to their project. Following are the top causes:

- Compensation for private and public land/ relocation and compensation
- Cutting down forest trees/ environmental damage
- Right of way for transmission lines
- **Local politics**
- **Unreasonable expectation and benefit sharing issues**
- Low standard of living and lack of alternative means of wealth increments

The examples presented in Table 2 and projects discussed in the next section illustrate that different projects have provided different packages as benefits to the locals. The example of Khimti and Bhotekohsi also illustrate that demand can come from locals even after years in operation. From the example of Khimti, it can be seen that the demand for more can come even after sharing benefits during construction of the project. In the absence of a predictable regulatory environment, developers are unable to budget for benefit sharing and therefore, are uncertain about their project's profitability. This kind of a system is likely to deter further investment from the private sector in hydropower sector.

Complications in benefit sharing – few examples from Nepal

Butwal Power Company built ***Aadhikhola Hydropower Project*** (started in 1982 and came in commercial operation in 1991, originally a 5.1 MW project and upgraded to 9.4 MW) with technical and financial support from United Mission to Nepal. The project has provided irrigation that can supply water to 330 hectares of land. The irrigation has helped farmers harvest 3 crops per year. The project has also provided community electrification: 29 VDCs from Syangja district, 10 VDCs from Palpa district and Waling Municipality. In addition to irrigation and electrification, the project funded a new hospital; financially supported schools, a road, a temple, and a bridge; provided several skill development trainings; and allocated one million Nepali Rupees annually towards corporate social responsibility. Though the project has shared its benefit with the community in the form of these infrastructures and services, it is still facing additional demands from the communities including investing in the maintenance of infrastructures built.

Khimti Hydropower Project is a 60 MW run-of-river project constructed in partnership with Norwegian companies (completed in 2000). Some of local development programs funded and supported by the project as benefit sharing are: electrification of 9000 house with two mini hydro power of 635 kW and 400 kW owned, managed and operated by a local electric cooperative KREC (Khimti Rural Electric Cooperative). The project also funded programs for health, education and irrigation. Despite benefits provided by the project, locals demanded equity in Khimti Hydro Power influenced by the campaign by locals demanding equity in Bhote Koshi Project (Ekantipur, 2014).

Upper Bhotekoshi Hydroelectric Project was built by Bhotekoshi Power Company (BKPC) Private Limited and had decided to provide a six percent share of the Upper Bhotekoshi Hydroelectric Project to the locals after 13 years of operation. The 45-MW project was developed with a majority foreign investment of $90 million in partnership with companies

from Nepal and USA. The project started generation in 2001. BKPC agreed to this term because of protest from local political leaders obstructing building the transmission lines (MyRepublica, 2014).

Is it just locals that are causing trouble? Following is a response from one of the respondents in our survey. The response is from a developer of a small hydropower project in our sample.

One of the most painful benefits sharing issue for the project has been the clause to give certain percent of revenue to the District Forest Office for what is termed as 'watershed management'. It is really a pity that government organizations like the forest department, health centers are putting demands for certain percentage of revenue on top of the taxes and royalty being paid by the projects. It is important to note that the developer has no choice but to enter into agreement with forest department for executing the project even though the clauses are not justifiable.

From our experience, benefit sharing issue with locals can be settled amicably by honest, fair and open minded discussion. The biggest problem is when the government agencies for forest, police, schools, health centers, VDCs, start hounding and ask for significant percent of the income or favor.

5. Cost of benefit sharing in the current environment

The approach used to estimate the cost of benefit sharing in an unpredictable business environment, as the current one, will be very close to the approach used to estimate the cost of regulatory compliance. For example, business cost of complying with environmental regulations. (See Use of Survey of Pollution-Abatement Cost and Expenditures (PACE) in Joshi and Krishnan (2001) for example). The method in this study differs to the extent that this study estimates the cost of absence of a clear and enforceable regulatory framework. The cost of absence of a clear regulatory framework is going to be the cost associated with benefit sharing imposed upon developers of hydropower projects in Nepal to meet the local demands. Such costs involve the cost of providing what locals have demanded (for example: roads, schools, equity) and also dealing with repeated halts in the construction and operation of projects due to resistance by locals. The halt also pushes the completion date of project and this adds to the cost to developers in form of loss of revenue.

Cost to the Developer= Direct Cost of Benefit Sharing + Cost of remobilization after halt+ Forgone revenue due to delay of project

In the above equation, the forgone revenue will be calculated as:

Forgone Revenue= Duration of halt related to benefit sharing issues x Average of expected or actual revenue

Cost of remobilization after halt will depend on the information received from the survey. In our sample, only small projects have provided information on cost or remobilization after halt to meet the schedule.

Estimated cost of benefit sharing

Table 3. summarizes the average duration of completing the projects and average cost of construction per MW (Both average are based on the number provided in the survey conducted for this study). Average duration and average cost of construction per MW of developing medium hydropower project is almost twice the average duration and almost twice the average cost per MW of developing small hydropower project. The estimated cost of benefit sharing will be presented as a percentage of average cost of construction per MW.

Table 3. Average cost of construction in NRs. and duration of completion of project

Project type	Average cost of construction per MW	Average duration
Small (less than 10 MW)	130.03 Million	2 Years 2 months
Medium (20 MW to 60 MW)	226 Million	4 Years

As stated earlier, the cost of sharing benefits includes the direct cost of building infrastructure demanded by the community and also the direct cost of providing electricity, employment and community development fund. From the information from the survey, it is not clear whether the mitigation cost is included in the amount that is provided as cost of benefit sharing or not. However the questions in the survey leading up to the direct cost of benefit sharing asks what they have built (for example: schools, roads, temples etc.). Hence, it is likely that this amount represents the cost of benefit sharing.

Besides these costs, the cost of benefit sharing is also the loss of revenue that the project had to incur due to halt. The reasoning behind this is: had the project been completed sooner without halt, the project could

have been in operation and could have started generating revenue. Because of the halt, the project is pushed back and hence will go into operation late. Thus, loss of potential revenue is also the cost of benefit sharing. Table 4 summarizes the cost of benefit sharing. It is important to note that private developers are spending this on top of the energy royalty they have to pay to the government.

Table 4. Direct cost of benefit sharing[3] and loss of revenue[4] in NRs.(in 10 survey samples) (All costs in NRs.)

Project type	Average direct cost of benefit sharing (A)	Average direct cost (as % of average cost/ MW)	Average forgone revenue (B)	Average forgone revenue as % of average cost/ MW	Cost of remobilization (C)	Total (A+B+C)
Small (less than 10 MW)	4.96 Million	3.80%	17.61 Million	13.84 %	6.72 million	29.29 Million
Medium (20 MW to 60 MW)	18 Million	7.96 %	166.04 Million	73.46 %	Not available	184.04 Million

The cost of benefit sharing in terms of forgone revenue is greater than the direct cost. Forgone revenue is calculated as average revenue (one average for small project and another for medium project) times the average number of days of halt. Average number of days of halt is calculated by averaging the number of days of halt regardless of the size of the project.

3 Projects have also committed certain amount per year to development committees as part of corporate social responsibility, for the life of the project. However, committed amount may not necessarily be actually spent on the development activities of the areas where the project is located. The amount ranges from 0.2 to o.5 million NRs. for small project. For medium the amount is 1.8 million NRs.

4 The difference comes from the difference in average monthly revenue and not from the difference in number of days of halt.

On an average, the projects in our sample were halted for 1.12 months. The survey asked to separate halts related to benefit sharing from other halts but the response did not clarify this. So for estimation of the forgone revenue and cost of remobilization after the halt, the average halt is assumed to be related to benefit sharing. This is one limitation of the estimation. **Forgone revenue is about three times the average direct cost for small projects. For medium projects, the forgone revenue is about nine times higher than the average direct cost.**

Besides direct costs and forgone revenue, there is also another component to the cost of benefit sharing, which is the cost of re-mobilization after halt to get back to schedule. More workers and more capital must be used than average for daily operational amount required to complete the project on time. For small projects in our sample, one day of halt on average required three days of daily operation costs to get back to schedule. So using this information for small projects, average monthly operation cost from the information provided in survey came as NRs. 2 million. So the additional cost of benefit sharing due to halt comes to NRs. 6.72 million as a result of 1.12-month (this is the average duration of halt in the sample) halt for small projects in our sample.

No information related to operational cost or remobilization cost was provided for medium projects in our sample. Cost of remobilization is greater than the direct cost of benefit sharing for small projects. When accounted for forgone revenue and cost of remobilization, the cost of benefit sharing is much higher relative to the average direct cost of benefit sharing. For both small and medium projects, when accounting for forgone revenue and remobilization cost, the cost of benefit sharing is far higher than the financially feasible amount. For small projects the total cost of benefit sharing from our estimates comes to NRs. 29.29 Million, whereas the feasible amount (based on typical total cost for small projects) for small projects to spend on benefit sharing is NRs. 10 Million. For medium projects the total cost of benefit sharing comes to NRs. 184.04 Million (without the addition of remobilization cost). This is also higher than feasible amount of NRs. 50 Million (discussed in the next section).

6. Financial feasibility

When asked what percentage of total cost of project is financially feasible for private developers to provide as benefit sharing, the survey presented following conclusion:

For small projects (size less than or equal to 10 MW in our sample), 2% of the total project cost was said to be financially feasible whereas for medium (20 MW to 60 MW) close to 0.5% of total project cost was said to be financially feasible. Some respondents answered the question differently. For example: an amount of NRs. 50,000/MW to NRs. 200,000/MW (depending on the size of the project) was also said to be be financially feasible for developers to spend on benefit sharing.

Table 5. Financial feasibility and total cost of benefit sharing

Type of Project	Feasible amount as percentage of budget	Feasible amount[5]	Total cost of benefit sharing
Small (less than 10 MW)	2 %	NRs. 10 Million	NRs. 29.29 Million
Medium (20 MW to 60 MW)	0.5 %	NRs. 50 Million	NRs. 184.4 Million

It is important to note that both calculations of the feasible amount and total cost of benefit sharing can be different if typical total cost of the project and the average duration of halt change even if the average revenue, average operational cost, and average direct cost of the project stay the same.

5 Amount is calculated as percentage of typical total budget of the project. For small projects, the budget was NRs. 500 Million and for medium projects, the budget was NRs. 10 Billion.

There is also an additional cost besides the estimated direct cost, loss of revenue and cost of remobilization after the halt. Due to lack of clear regulations and due to obstructions from locals, this can result in projects not coming to fruition and investors not wanting to invest in hydropower sector. This cost is not estimated in the paper, but the sector being less attractive to invest in is also a huge cost.

After having invested NRs. 320 million, an Indian investor decided not to build the 50MW Upper Balefi Hydropower Project. The decision followed several interventions from local residents (The Kathmandu, Post 2014).

7. Who is responsible for this uncertainty?

The survey asked respondents to assign responsibility to each of the following parties for delays and cost over-run in their projects. The question had options: developers, contractors, government etc. and the respondents had to assign the percentage value for each of the party according to their role and responsibility in time and cost overrun of the project as perceived by the developer filling up the survey. The total percentage had to come to 100. Following are the responsibilities assigned for various parties, for cost and time overrun in their project. The result is averaged over the number of samples.

- Developer:19.82%
- Contractor: 23.02 %
- Consultant: 5.76 %
- Management: 13.05%
- Government: 12.51%
- Local Community: 16.85 %
- Other (road condition, supplies, political interference, financial institutions etc.): 8.97 %

From the responses of assigning the responsibility in percentage, contractors and their activities were assigned top responsibility for the time and cost overrun. Local community and their demands and halts ranked third.

Where does benefit sharing fit among other factors?

In order to get more insight on the role of benefit sharing among other factors that cause time and cost overrun in the project, we asked developers to rank them. This question could be either filled up with an experience on recent projects they faced or with their general experiences of developing hydropower projects in Nepal as private developers.

The list of factors that we asked the developers is long. Therefore, this paper only lists those factors that were consistently ranked on top in terms of both severity and frequency ranks.

(Severity rank: 1= extremely severe, 2= very severe, 3= moderately severe, 4= slightly severe and 5= not severe)

(Frequency rank: 1= always, 2= often, 3= sometimes, 4= occasionally and 5= never)

Factors those were consistently responded with severity rank 1 are:

- Unrealistic contract duration
- Poor contractor performance
- Unforeseen ground condition
- Lack of transmission lines
- Co-ordination and communication among parties (political/ management)
- PPA (Power Purchase Agreement)
- Labor shortage and labor disputes
- Design and size changes

Factors those were consistently responded with frequency rank 1 are:

- Unrealistic contract duration
- Poor contractor performance
- Co-ordination and communication among parties (political/ management)
- PPA (Power Purchase Agreement)
- Labor shortage (shortage of site workers) and labor disputes

So where does benefit sharing rank among these factors?

In terms of factors that cause time and cost overrun for the project, benefit sharing was ranked consistently 2 and 3 for both severity and frequency factors by the respondents. This implies that although benefit sharing may not be the top ranked factor that affects time and cost overruns, it is still an important factor that contributes to delays and is costly to the developer.

8. Conclusion

On principle, all the stakeholders involved agree that benefit sharing should be conducted in an equitable manner. Developers are willing to contribute to the development of the area affected by their projects. However, due to the lack of a clear and enforceable regulatory framework, developers are facing additional costs both in terms of direct cost incurred in benefit sharing activities and indirect costs owing to delays in projects due to endless negotiation with the local communities and non-feasible demands.

A way forward

The developers are willing to spend certain percentage of their budget (ranging from 0.5% to 2% depending on the size and budget of the project). What the developers want is a clear mechanism that will let them know what they have to provide and after they provide them, they will be able to plan, construct and operate their project without any interference. Any policy effort seeking to address this should take into account that projects differ in their size and budget and with that they also differ in what they are able to offer to locals as benefit sharing.

Currently, developers have devised a way forward ingeniously. They usually form a stakeholder committee comprised of local political leaders and other members of the local community, who then negotiate with the developers on what the locals want as benefit sharing in the area. However, enforcement of these verbal contracts is problematic since these stakeholder committees are not necessarily recognizable legal entities. In the absence of a clear distribution mechanism of royalties provided to the

government by the projects, it is clear that the trend of local demands will only increase. Therefore, there is an urgent need of a clear and enforceable regulatory framework on benefit sharing that also takes into account the size, budget and source of funding of project.

Policy Recommendations

Simply based on the calculation of this paper, which is based on the information provided by survey respondent developers, NRs. 29.29 Million for small projects and NRs. 184.04 Million for medium projects of additional transaction cost could be saved by simply having a clear and enforceable benefit-sharing framework for hydropower developers.

- *Formulate a clear policy provision for benefit sharing that is comprehensive, defines the basis and scope of benefit sharing clearly, and can provide clear guidelines that takes into account the size, budget, source of funding, and feasibility of the projects.*
- *The respondents of the survey for this study have revealed that for small projects (size less than or equal to 10 MW in our sample), 2% of the total project cost is financially feasible whereas for medium (greater than or equal to 22 MW), close to 0.5% of total project cost is financially feasible to spend on benefit sharing.*
- *Local governments should be empowered to handle and co-ordinate all matters regarding benefit sharing in the vicinity of the project. Private developers should be able to clearly contribute towards one agency, which is then responsible for equitable distribution. After all, the local government's responsibilities should not fall on the shoulders of the private developers.*

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Annexes

Annex I: Survey Questionnaire for Benefit Sharing in Hydro Power Projects in Nepal

Purpose: This survey will collect data on regulatory (or lack of regulatory) costs in meeting the demands of locals to provide benefit sharing. This survey will also collect information on other causes of time and cost overrun of projects in hydro power sector in Nepal and how benefit sharing compares or ranks among those factors.

Confidential information will not be disclosed during analysis or during presentation of result of this study.

Section 1: Survey contact information

Please complete the following information.

- Date of Survey/Interview:
- Title of respondent (Developer/Contractor/Consultant/Engineer/ Management/Government Employee/ Other specify):
- Years of experience of Respondent
- Telephone number:
- E-mail address:
- Nationality of Respondent:

Section 2: Business and Project Demographic

- Business name (Company Name):
- District/ City/Village of location of Company:
- District/ City/Village of location of Project:
- Duration of License of the Project: _____ Since :_____
- Name of the Project:
- Size/Capacity of Project (in MW):
- Type of company (private/government/foreign/ mixed partnership):
- Source of Funding for Project (Private/Government/Foreign/Mixed/ Other specify):
- Stage of Project (Planning phase/ Construction/ Operational):
- Estimated total Cost of the Project (In NRs.):
- Actual total cost of the project (in NRs.):
- Estimated duration of completion of project (in years):
- Actual time taken to complete the project (in years):

Section 3: Benefit Sharing

- What do local demand from your project as part of benefit sharing package?

a) Health Clinic/School/Road/Bridge
b) Equity in the company
c) Employment
d) Irrigation/Drinking Water infrastructure
e) Community Development fund
f) Preferential rates/Free Electricity
g) Other:

- Is this demand as benefit sharing from local community, financially feasible for your project?

a) Yes b) No c) No, but have to provide anyway

• What **percentage of total project cost** is financially feasible for your project to spend on locals as part of benefit sharing package? (range of percentage will work)

• What benefit sharing package have this project **provided** to the local community?

a) Health Clinic/School/Road
b) Equity in the company
c) Employment
d) Irrigation infrastructure
e) Community Development fund
f) Preferential rates/Free Electricity
g) Other:

• What is cost to your project to **provide benefit sharing to locals**? (Please specify whether cost is per month or per year where it applies. If there is no break-down of costs by category listed below, just put total estimated cost at the bottom)

Category	**Actual cost (In NRs.)**
Overhead Cost (e.g. Administrative cost)	
Cost of Infrastructure	
Cost of providing equity to locals	
Cost of providing employment to locals	
Cost of providing free electricity to locals	
Other Costs to provide benefit sharing to locals:	
Total cost to provide benefit sharing	

• Has there been incidence that your project was halted due to local resistance/obstruction?

a) Yes b) No

- Based on your experience what are top 5 **causes of resistance/obstruction from local community in your hydro power project?** (for example: relocation, compensation, environmental danger to community, benefit sharing issues,)

1:
2:
3:
4:
5:

- Based on your experience who are top 5 **actors/agents** of resistance/ obstruction in your hydro power project (for example: affected locals, local youth, local struggling committee, political leaders/cadres, workers, vandals)

1:
2:
3:
4:
5:

- What was the **duration of halt** in your project? (rough estimates in weeks or months will work)

Halts related to locals demanding benefit sharing package and dealing with them _____

Halts related to vandals (for example: to get contract for supplies) _____

Halts related to national political environment (Nepal Bandh etc.)_____

- Is stake holder committee formed by this project to deal with local issues?

a) Yes b) No

- Have you extended deadline for this project?

a) Yes b) No

- If answered yes to deadline, by how much? (Specify months/years)

- What is the average/estimated operational cost and revenue for this project? (in NRs.)

Description	**Amount in NRs.**
Average monthly Cost (for project on planning and construction)	
Average monthly Cost (for operational project)	
Estimated monthly revenue (for project on planning and construction phase)	
Actual monthly Revenue (for operational projects)	
Cost associated with remobilization and getting back to speed after halt (rough estimate will work)	

How would you assign responsibility to each of the following parties for delays and cost overrun in this hydropower project? (total must come to 100)

Developer _____

Contractor _____

Consultant _____

Management _____

Government _____

Local community _____

Other (specify:) _____

- How would you rank following factors that cause time and cost overrun in your hydropower projects? (1 indicating most frequent and most severe; and 5 indicating least frequent and least severe. Please indicate the ranks by placing numbers in the bracket)

Factors/Cause	Severity Rank	Frequency Rank
Preparation and Approval of Plans		
Project Development Agreement		
Major negotiation and Contract Disputes		
Inflation		
Cash flow and monthly payment		
Fluctuations in Exchange rates		
Availability of Materials		
Labor Disputes		
Unrealistic contract duration and requirement		
Benefit sharing package to locals		
Design and Size Changes		
Project Size		
Inadequate modern equipment		
Laws and regulatory frame work		
Fluctuation in interest rates		
Political Complexities (co-ordination among ministries)		
Weather and geographic Conditions		
Heritage site		
Poor Cost Estimation		
Poor site management and supervision		
Poor Contractor Performance		
Shortage of site workers		

License issues		
Land Acquisition		
Lack of Transmission Lines		
Lack of Communication among involved parties		
Unforeseen ground Conditions		
PPA		
Other (specify)		

- What would you like to add:

Annex 2: List of sample projects for the survey

S.N	Name of Project	Size of Project	Type of Company	Stage of Project
1.	Aadhikhola Hydropower Project	9.4 MW	Private	Operational
2.	Baramchgi HP Project	4.2 MW	Private	Operational
3.	Kabeli-A Hydroelectricity Project	37.6 MW	Private	Planning
4.	Khimti Hydropower Project	60 MW	Private	Operational
5.	Mai Cascade Hydropower Project	7 MW	Private	Construction
6.	Mai Hydropower Project	22 MW	Private	Operational
7.	Piluwakhola Small Hydropower	3 MW	Private	Operational
8.	Upper Bhotekoshi HEP	45 MW	Private	Operational
9.	Upper Hugdi Hydropower Project	5 MW	Private	Operational
10.	Project Name Undisclosed	5 MW	Private	Planning

Samriddhi, The Prosperity Foundation
An introduction

Samriddhi, The Prosperity Foundation is an independent economic policy think tank that facilitates a discourse on pragmatic market based solutions for a free and prosperous Nepal. Samriddhi is based in Kathmandu, Nepal and was established in 2007. Samriddhi believes in the power of private entrepreneurs as key to economic development and engages in fostering democracy and building a more conducive environment for economic growth.

All of Samriddhi's research and advocacy efforts are focused on:

1. Enabling market mechanism and entrepreneurship
2. Improving governance
3. Fostering values for a free society

Some of Samriddhi's highly successful efforts include the annual economic policy reform initiative named "Nepal Economic Growth Agenda (NEGA)", a sharing platform for entrepreneurs named "Last Thursdays with an entrepreneur" and a regular discussion forum on contemporary political economic agendas named "Econ-ity". Samriddhi also hosts the secretariat of 'Campaign for a Livable Nepal', popularly known as Gari Khana Deu campaign. One of Samriddhi's award winning programs is a five-day residential workshop on economics and entrepreneurship named Arthalya, which has produced over 400 graduates over the past few years, among which more than two-dozen run their own enterprises now. Samriddhi was the recipient of the Templeton Freedom Award in 2011 and the CIPE Global Leading Practice Award in 2012.

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More from Samriddhi...

1. "Towards Enterprise Building in Nepal", Vol. I (2009) and Vol. II (2010) (Handbook) (Reprint in Nepali, 2012)
2. The Role of Rule of Law in Enterprise Building (2011) (Pocketbook)
3. The Facilitating Role of Government in Enterprise Building, Vol. I (2011) (Pocketbook)
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5. The Virtue of Markets (2011) (Pocketbook) (in Nepali)
6. Economic Freedom: An Introduction (2011) (pocketbook) (in Nepali)
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8. Economic Growth and the Private Sector of Nepal (2011) (Compendium of a dozen articles from experts on various important economic issues of Nepal)
9. Critical Constraints to Economic Growth of Nepal: Analysis and recommendations on five sectors (2012) (Compendium of ten articles from experts)
10. The Road to Serfdom (2012) (translation) (in Nepali)
11. Nepal Economic Growth Agenda Report (2012) (Report) (in Nepali and English)
12. Investment Prospects and Challenges for Hydropower Development in Nepal (2012)
13. Review & Overview of Economic Contribution of Education in Nepal (2012)
14. Private Sector Participation in Transport Infrastructure Development in Nepal (2012)
15. Review & Overview of Economic Contribution of Tourism Sector in Nepal (2012)
16. Review of Agriculture Sector & Policy Measures for Economic Development in Nepal (2012)
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18. Ideas for a Free Society (2013) (in Nepali) (translation of 10 articles from classical liberal thinkers)
19. Contract Enforcement: The Practicalities of Dealing with Commercial Disputes in Nepal (2013) (in Nepali also)

20. Foreign Direct Investment: Towards Second Generation of Reforms (2013) (in Nepali also)
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All the publications are available at Samriddhi, The Prosperity Foundation.

This book discusses one of the major challenges being faced by Nepal's hydropower sector–sharing benefits with locals. Over the past decade, many hydropower projects in Nepal have faced obstructions in construction and operation owing to benefit sharing demands from locals. The demands range from equity ownership in the company to building of infrastructure (such as roads, schools, etc.) to employment.

As explained in the paper, not having adequate legal provisions defining the scope and basis of benefit sharing is at the root of the problem. Based on a survey with hydropower developers, the paper quantifies the cost of not setting clear rules of the game for benefit sharing. The study also provides a set of policy recommendations based on the observations and findings.

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