

Benefit Sharing and Sustainable Hydropower: Lessons from Nepal

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Benefit Sharing and Sustainable Hydropower: Lessons from Nepal

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Acronyms and Abbreviations

ADB	Asian Development Bank	KFW	Kreditanstalt für Wiederaufbau (means 'Reconstruction Credit Institute')
BPC	Butwal Power Company	N/A	not applicable
BOOT	build operate own transfer	NORAD	Norwegian Agency for Development Cooperation
BS	Bikram Sambat	MHP	micro hydro plant
CEO	chief executive officer	MW	mega watt
CIA	cumulative impact assessment	NEA	Nepal Electricity Authority
CSR	corporate social responsibility	NGO	non-government organization
DDC	district development committee	NIMBY	not in my back yard
DFAT	Department of Foreign Affairs and Trade, government of Australia	NPR	Nepali rupee
EIA	environmental impact assessment	NWCF	Nepal Water Conservation Foundation
ESIA	environmental and social impact assessment	PES	payment for ecosystem services
GMR	Grandhi Mallikarjuna Rao	PPP	public-private partnership
HI-NEX	Hydropower Irrigation Nexus	RoR	run-of-river
ICIMOD	International Centre for Integrated Mountain Development	TBD	to be decided
IEE	initial environmental examination	UNEP	United Nation Environment Programme
IFC	International Financial Corporation	SSCP	Sanima Support and Coordination Programme
IPO	initial public offering	USAID	United States Aid Agency
IPP	independent power producer	USD	United States dollar
IPPAN	Independent Power Producer Association' Nepal	VDC	village development committee
IWRM	integrated water resource management	WCD	World Commission on Dam
JIDCO	Jhimruk Integrated Development Corporation	YIMBY	yes in my backyard

Glossary

Atiprabhabit	Severely affected population
Bikram Sambat	Nepali Calendar
Bisthapit	Displaced
Bote	Indigenous fishing community
Crore	1 crore = 10 million
Kamprabhabit	Least affected population
Lakh	1 lakh = 100,000
Prabhabit	Affected population

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Executive Summary

Mountains offer ideal conditions for the development of hydropower, but the uneven distribution of benefits from project development often create friction and development disputes between communities and project developers. How can hydropower projects be designed and implemented in such a way that affected communities derive benefits beyond mere compensation and mitigation? Is there any evidence that benefits can be shared fairly and equitably with mountain communities? These questions are particularly important for Nepal, which has an estimated technically and economically-feasible hydropower potential of over 40,000 MW, of which only a fraction has been developed so far. The purpose of this report is to document the various facets of benefit-sharing practices in Nepal. In doing so, this report develops a comprehensive typology of the benefit-sharing mechanisms that have evolved in Nepal over the last four decades and critically analyses each of these mechanisms in terms of what works and what doesn't and what can be done to fine tune these mechanisms to better suit mountain communities?

In the global context, the topic of 'benefit sharing', understood as a core concept related to the implementation of principles of sustainability (SWECO 2011; Wang 2012), has become an increasingly common theme in debates surrounding sustainable hydropower development and the management of water resources. In Nepal, despite the slow pace of hydropower development (Gyawali 2001; Rest 2012), a diverse array of benefit-sharing modalities have emerged alongside a 'constructive dialogue on dams' that is perhaps unique to the Nepali context (Dixit and Gyawali 2010). This research attempts to distil this complexity into an empirically-based framework that can be used to understand the contemporary dimensions of benefit sharing in Nepal's hydropower sector, as well as the historical patterns, policy frameworks, and discursive factors that drive the ongoing evolution of these mechanisms.

Importantly, this report represents the first comprehensive study of the modalities for benefit sharing in Nepal (although a few isolated studies have been conducted, none were on a national scale). The research conducted for this study focuses on 18 hydropower projects distributed across Nepal, of which 13 projects are operational and were constructed over a period of 30 years (representing about 70% of Nepal's total generation capacity as of January 2016) and five projects are currently under construction. The methodology used for data collection focuses on the principle of triangulation between differently-positioned stakeholders – with data collected from 317 unique respondents, representing hydropower developers and government officials, as well as local beneficiaries and project-affected populations, in order to capture the diversity of perspectives that exist and accurately depict the processes of negotiation that shape the design and implementation of benefit-sharing programmes.

For the purposes of this study, we have grouped the diverse models and practices used to share the benefits from hydropower development in Nepal into five main mechanism types:

- The royalty mechanism
- Equity investment: Local share offers in hydropower projects
- Support for local livelihoods: Employment and training
- Investment in community development and local infrastructure (including rural electrification and irrigation/water-related benefits)
- Environmental enhancement activities

Drawing on the empirical research conducted for this study, this report examines each of these benefit types in terms of the: existing policies that shape larger patterns of benefit distribution; various modalities that different hydropower projects use to promote and share benefits; spatial and temporal considerations that shape these benefit-sharing programmes; range of impressions, reactions, and critiques voiced by relevant project stakeholders; and policy gaps that affect the effective negotiation and implementation of each type of benefit-sharing programme. Lastly, specific recommendations are provided for each type of benefit-sharing mechanism based on the analysis of the empirical findings.

In the final section of this report, we examine several cross-cutting issues and thematic concerns that affect both the effective implementation of benefit-sharing programmes and the overall process of hydropower development in Nepal, highlighting important opportunities for policy intervention. In conclusion, we attempt to situate these findings within the contemporary discourse on hydropower development in Nepal, to reflect on what the rapid evolution of benefit-sharing programmes means for the future of hydropower development in Nepal, and to consider how lessons learnt from Nepal might be applied in the broader context of hydropower development in the Hindu Kush Himalayan region.

Why Benefit Sharing in Hydropower?

In the last decade or so, after many years' hiatus as a result of acrimonious protests against dams, hydropower is back on the international donor agenda (Dixit and Gyawali 2010; Moore et al. 2010; Nüsser 2014; Ahlers et al. 2015). The World Bank, which was a world leader in funding hydropower since the 1960s, drastically cut down its investment in the 1990s due to protests against large dams on environmental and social grounds. In 1999, the World Bank did not approve any new investments in hydropower, but between 2003 and 2008, it approved 67 hydropower projects amounting to USD 3.7 billion (World Bank 2009). With international financial institutions such as the World Bank and Asian Development Bank (ADB) renewing their investments in hydropower, some of the old debates on environmental impact are being revisited, while new debates on mechanisms for benefit sharing at the community level are being initiated. Reeling under 10–16 hours of load shedding a day, Nepal declared an 'Energy Emergency' for the second time in 2016, and hydropower development has again emerged as a priority in the country. These debates are of special significance to the Hindu Kush Himalayan region where there is immense, yet under-developed, hydropower potential. There is a perception that mountain communities do not receive commensurate benefits from these hydropower projects, hence, many projects are disrupted by dissatisfied local communities. Is it possible to have a win-win solution where the benefits derived from hydropower projects are shared with mountain communities in a fair and equitable manner? We need to answer this question with robust data and evidence if we are to reach the goal of sustainable energy for all in the mountains and areas downstream.

The contemporary discourse on 'benefit sharing' parallels a broader reframing of hydropower development as an important vector for sustainable development and an increasing focus on resolving embedded issues of social and environmental equity. The 2000 World Commission on Dams (WCD 2000), the 2010 Hydropower Sustainability Assessment Protocol (IHA 2010) and the emergence of the concept of integrated water resources management (IWRM), for example, are all evidence of this increasing interest in sustainability standards and the idea that the requirements and goals of sustainability have evolved over the years. Increasing requirements for 'social and environmental mitigation' and new expectations for 'corporate social responsibility (CSR)' indicate a similar shift in the social dimensions of development projects. For hydropower developers, benefit sharing with local communities is also seen as a means of earning legitimacy and hence 'social licence to operate' (SWECO 2011). As a result, benefit sharing is increasingly being viewed as a vital component of sustainable hydropower development and project management, as well as a practical method for promoting cooperation among differently-positioned stakeholders.

Hydropower development occupies a unique niche in the current mode of environmental governance – as a 'low-carbon' solution to rising energy demand in low and middle income countries whose growth has historically been constrained by lack of infrastructure (Ahlers et al. 2015). In the context of South Asia, specifically countries such as Bhutan, India, and Nepal with abundant water resources and the hydraulic head offered by the Himalayas, hydropower has emerged as an economically viable and sustainable energy option (PWC 2014). In addition to energy generation, the multitude of benefits that are provided by hydropower dams, such as flood control and irrigation, which significantly contribute to poverty alleviation and the broader goals of sustainable development, have led to increased support for hydropower by country governments, as well as donor agencies. Moving beyond national boundaries, identifying and understanding the range of benefits derived from international rivers also increases cooperation among co-riparian states (Sadoff and Grey 2002) and can prevent conflict (Philips et al. 2006). Yet, despite these wider benefits, hydropower development often has a large social and ecological footprint on river basins, and adverse socio-environmental impacts are particularly common at the local level. To address such concerns, it is important for national and local governments to develop policies and regulations that promote more equitable benefit-sharing mechanisms with the affected parties, as well as the wider community.

In the past, however, hydropower projects have primarily focused on national and regional economic priorities, while paying little attention to the adverse impacts on affected local populations (mostly mountain communities) and

surrounding mountain environments. This has resulted in the inequitable distribution of hydropower-related benefits and costs, in which the key beneficiaries of hydropower projects are generally located in distant areas, while mostly mountain people are affected by project-induced negative externalities, but do not derive commensurate benefits (Egré 2007; WCD 2000). The 2000 World Commission on Dams, for example, highlights the fact that dam construction can pose a threat to the natural resources that sustain the livelihoods of indigenous and other local populations and urged a policy shift in which state governments and project developers recognize the adversely-impacted parties in order to develop mutually-agreeable and legally-binding benefit-sharing mechanisms.

Our review of the benefit-sharing practices of 18 different hydropower projects in Nepal implemented over a period of roughly 40 years reflects the evolution of the hydropower sector as well as the recent history of development activities in Nepal. In the period prior to 1992 during the Panchayat regime, only the Nepal Electricity Authority was allowed to construct hydropower projects and the decisions made by the government were final. In the 1990s, following the return of multi-party democracy and the promulgation of new liberal policies, the hydropower sector opened up space for private and international investors to construct hydropower projects in Nepal. With these changes came practices of social mitigation and benefit-sharing mechanisms, which were influenced by international trends (Dixit and Gyawali 2010). Following the World Commission on Dams in 2000, the rise of awareness about sustainability, benefit sharing, and participatory development roughly coincided with the peak of Nepal's Maoist insurgency and the People's War (Hutt 2004; Adhikari and Hobley 2011) giving voice to a new rights-based discourse that fundamentally altered the conversation about benefit sharing. In the post-conflict era (after 2006), Nepal saw a concomitant rise in movements focused on citizen's rights paralleled by a trend of increasing demands for personal and community benefits from hydropower projects. Dixit and Gyawali (2010) refer to this phase as 'a productive dialogue' about hydropower development focused on 'next generation' problems. As the hydropower sector undergoes a global renaissance – fuelled by new narratives on sustainability and 'green' investment resulting from concerns about carbon and climate (Ahlers et al. 2015; Erlewein 2014), the global expansion of the private hydropower sector led by Chinese transnationals like Sino Hydro and the Three Gorges Corporation, Indian companies like GMR Group and Sutlej Jal Vidyut Nigam, and the renewed commitment of institutions like World Bank to large-scale hydropower development – it is time for benefit-sharing debates in Nepal to be revisited. This is particularly important considering the Government of Nepal's plan to generate 10,000 MW through hydropower plants in the next ten years (Government of Nepal, Ministry of Energy 2016) and in a context where the current total installed capacity is only 776 MW, despite the century-long history of hydropower development in Nepal.

The shifting discourse on development, the resurgence of hydropower development, and a concurrent increase in the quality of social and environmental data on the effects of hydropower development have provided an incentive for governments and institutions to become sensitized to these issues. In the present context, benefit sharing has become an increasingly common theme in debates surrounding hydropower and the management of water resources in the Hindu Kush Himalayan region – a result perhaps of the evolving discourse on sustainable development, as well as a response to shifting expectations among project stakeholders and different kinds of project-affected people.

The purpose of this report is to provide an empirically-based framework and evidence for understanding the evolution and current status of benefit-sharing policies and practices in Nepal's hydropower sector. This report systematically and empirically investigates the different models of benefit sharing that exist in Nepal's hydropower sector; the processes by which the structure and constitution of benefit-sharing programmes are determined; and the different ways that the concept of benefit sharing is interpreted and understood across Nepal.

Methodology and Field Sites

To understand the current landscape of benefit sharing in Nepal, the study team conducted field-based research at 18 different hydropower project sites across Nepal between January 2015 and February 2016. These 18 ‘case studies’ were carefully chosen to create a representative sample that accounts for differences in project size, variation in institutional structures, the diversity of physical and human geographies in Nepal, and the evolution of benefit-sharing practices within the broader hydropower sector in Nepal over time. During the study, data was collected from project representatives, government representatives, and local beneficiaries and project-affected people using a research method based on triangulation, which allowed us to check and validate the information received from different sources, to ‘ground-truth’ received knowledge about project benefits and capture the diverse range of opinions and beliefs about hydropower development and benefit-sharing practices. To situate this Nepal-focused study within the broader field of benefit-sharing practices, an in-depth literature review was conducted on international standards, practices, and theories of benefit sharing to inform our analysis and theoretical framework.

In this report, we present the diversity of solutions emerging from a ‘pluralistic policy terrain’ (Dixit 2008) and distil them into the five types of benefit-sharing mechanisms:

- The royalty mechanism
- Equity investment: Local share offers in hydropower projects
- Support for local livelihoods: Employment and training
- Investment in community development and local infrastructure (including rural electrification and irrigation/water-related benefits)
- Environmental enhancement activities

In practice, the majority of benefit-sharing programmes include several of these types of benefits, reflecting a diverse mix of strategies to comply with existing policies and a pragmatic approach to negotiating the terms of benefit sharing with differently-positioned stakeholders within the specific context of each hydropower project. Therefore, for the purposes of our analysis, we also highlight the ways that benefit-sharing programmes are shaped by different claims to benefits and rights-based contestations linked to three major types of issues:

- **Spatial issues** linked to the definition of beneficiaries and the delineation of entitlements for differently-impacted populations within the project-affected area, which vary depending on project scale or site and which may be contested
- **Temporal issues** related to the shifting time value of different monetary and non-monetary benefits, the sequence of benefit-sharing programmes that seek to encourage the alignment of different stakeholder incentives, the corresponding investment by the hydropower project developer, and changing stakeholder expectations in different phases of the project
- **Issues of governance** related to the specific institutional configuration and capital structure of each hydropower project (public/government, private sector, public-private partnership, etc.), a widespread failure to create adequate mechanisms for monitoring and evaluation, and larger policy-level issues of governance endemic to Nepal (i.e., political volatility, lack of elected local governments, the new federal structure), which increase the uncertainty of Nepal’s future hydropower plans

Methodology

The research was conducted using a comparative and deductive methodology that builds on both intensive empirical observation and a review of the existing literature to establish an analytical framework that can describe the major trends and practices of benefit sharing in Nepal. For data collection, a ‘grounded theory’ approach was used, based on the following two methodological strategies:

- **A comprehensive review of the existing literature** on benefit sharing conducted at national, sectoral, and international scales, complemented by a review of the specific literature on hydropower development in Nepal
- **Field-based research conducted at 18 different hydropower projects** across Nepal between January 2015 and February 2016, which we refer to as ‘case studies’; data was collected across these location using semi-structured interviews, focus group discussions, and participant observation as follows:
 - **Interviews** conducted with 317 different stakeholders based on the principle of triangulation to ensure a balance between differently-positioned stakeholders from the hydropower sector, the Government of Nepal, and local populations in each of the hydropower project areas
 - **Focus group discussions** with local stakeholders at many of the hydropower project sites, as an additional tool for determining public opinion and method of triangulation within stakeholder groups (during field-based research, we also routinely conducted informal interviews with local populations who were perhaps outside of the formally-defined ‘project-affected populations’, but who nonetheless participate in local economies surrounding the hydropower projects, which added to the richness of the data collected; see Annex 1 for details)
 - **Participant observation** at a variety of professional and academic events related to water resources management and hydropower development in Nepal (see Annex 2 for list of such events)

Importantly, data collected using this methodology reflect not only the design and implementation of benefit-sharing programmes, but also the diverse and evolving array of interpretations and beliefs about benefit sharing that shape the current discourse about hydropower development in Nepal. Accordingly, the research method also relied on triangulation, which allowed us to check and validate information received from three different functional groups of project stakeholders, as follows:

- **The hydropower sector/power producers (71 respondents)**, consisting of project management staff (i.e., CEOs and project managers), CSR managers, environmental and social safeguard officers, engineers, and so forth; to prepare for and follow up on these interviews, data was also reviewed and collected from company publications and reports when available
- **Government officials (30 respondents)**, including representatives from the Department of Electricity Development, Nepal Electricity Authority (NEA), and Ministry of Environment, Science and Technology, as well as officials within the relevant district development committees (DDCs), a district forest office, and district administration offices in the project areas
- **Local stakeholders (216 respondents)**, by which we mean local people identified as either project beneficiaries or ‘project-affected people’, who are differently implicated in the process of hydropower development (i.e., members of local project-concerned committees, project employees, people who have received compensation related to the use of land, local shareholders, teachers at project-supported schools, and members of electricity and irrigation user groups); these stakeholders were selected using snowball sampling so as to reflect: different spatial, political, and economic orientations to the project; the varied experiences of project impacts (benefit and harm); and heterogeneity across categories such as gender, ethnicity, caste, and class (so as to include the voices of marginalized groups)

By triangulating information between the different sources, we were able to ground-truth various information about project benefits and provide a more balanced view of benefit sharing in the hydropower sector in Nepal. The analysis of the interviews and focus group discussion data was carried out using ‘open coding’. The first level of coding was done based on the types of benefits being shared by each of the hydropower projects in the study, and the second level was done to identify emerging themes from each of the benefits being shared.

Hydropower project sites

The 18 different hydropower projects were carefully chosen as case studies to create a representative sample that accounts for differences in project size, variation in institutional structures, the diversity of physical and human geographies in Nepal, and the evolution of benefit-sharing practices within the broader hydropower sector in Nepal over time. The main purpose of this study is to document the different types of benefit-sharing mechanisms that have evolved over time in Nepal’s hydropower landscape. In order to do that, an important criteria for choosing

case study sites was that they were either already operational and, hence, have various benefit-sharing mechanisms in place, or are under construction and have initiated some benefit-sharing protocols. This criteria meant that only those projects where power is generated for domestic consumption were included as none of the export oriented hydropower projects (e.g. Upper Karnali, West Seti, Arun 3, etc.) are under construction, let alone operation.

These case studies collectively represent 1,181.5 MW of generation capacity, and the 13 completed projects in the sample represent 546.5 MW of total generation capacity, or roughly 70% of the total installed hydropower generation capacity of Nepal, which stands at 780 MW as of early 2016 (Nepal Electricity Authority 2015). The sample is, therefore, highly representative of the contemporary landscape of hydropower development in Nepal, as described by the following summary statistics on the 18 hydropower projects studied:

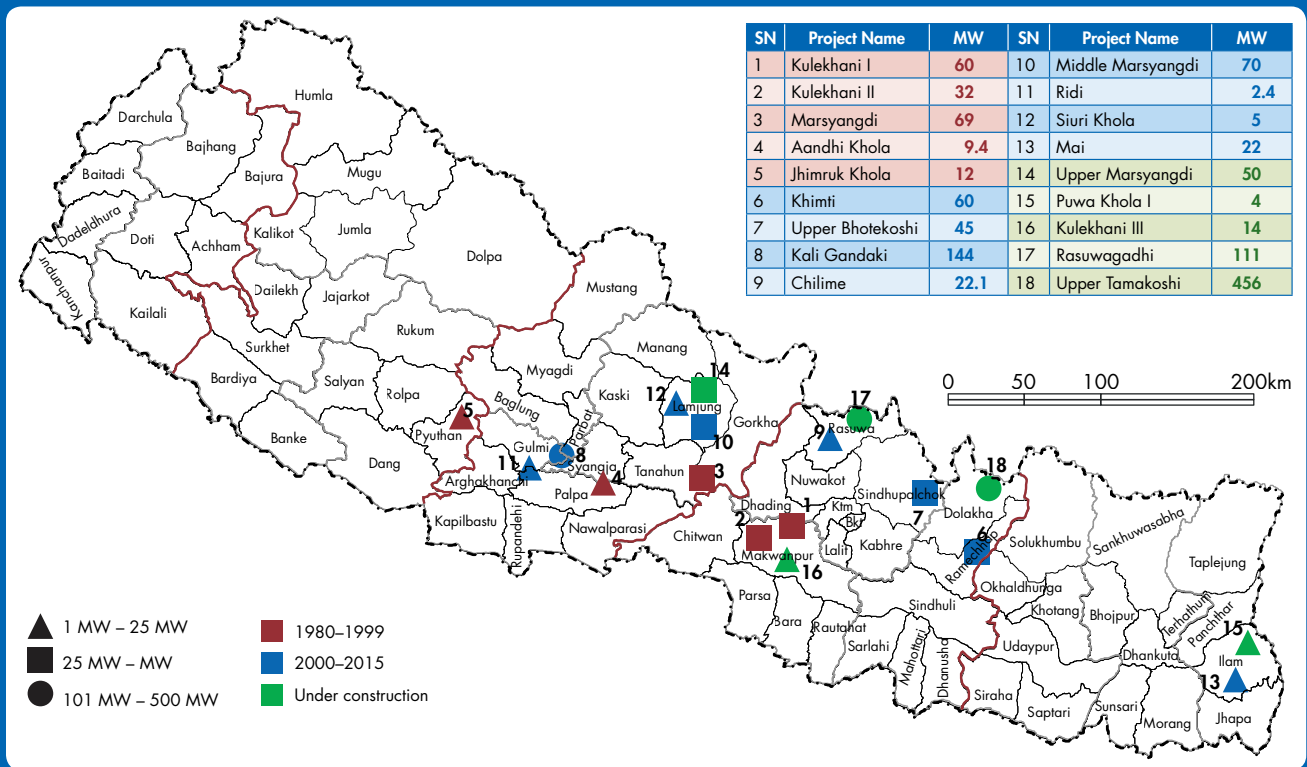
- **Geography:** The 18 hydropower projects are distributed across 12 different districts and four of Nepal’s five development regions.
- **Project size:** ranged from 2.4 MW (Ridi) to 456 MW (Tamakoshi – under construction). The average generation capacity of projects within the sample was 69.5 MW, including eight small-scale projects (below 25 MW), seven mid-scale projects (between 25 and 100 MW), and three large-scale projects (over 100 MW).
- **Project type:** Nine projects were ‘run-of-river (RoR)’ projects, six were ‘peaking run-of-river’ projects, two were ‘cascade’ projects, and one was a storage or reservoir project (reflecting the current lack of storage capacity in Nepal).
- **Project ownership:** In terms of ownership structure, 33% of projects were government operated, 17% were subsidiary companies of the NEA, and 50% were operated by the private sector.
- **Historical development:** In terms of history, 39% of the projects studied (representing 287.4 MW) were built before 2000, 33% (representing 259.1 MW) were built after the 2000 World Commission on Dams (a turning point in global discourse about sustainable hydropower development and benefit sharing; see below), and 28% (representing 635 MW) are currently under construction. In addition, the first project in the sample was completed in 1982 and the final project in the sample is expected to be completed in 2018, a period spanning 36 years.

Table 1: Key attributes of hydropower projects selected as case studies

SN	Project name	Commercial operation date	Project capacity (MW)	River basin	Principal district	Project ownership	Ownership type	Project type
1	Kulekhani I	1982	60	Bagmati	Makawanpur	NEA	Public	Storage
2	Kulekhani II	1986	32	Bagmati	Makawanpur	NEA	Public	Cascade
3	Marsyangdi	1989	69	Gandaki	Tanahu	NEA	Public	Peaking RoR
4	Aadhi Khola	1991	9.4	Gandaki	Syanja	BPC	IPP	RoR
5	Jhimruk	1994	12	West Rapti	Pyuthan	BPC	IPP	RoR
6	Khimti	2000	60	Koshi	Dolakha	HPL	IPP	RoR
7	Upper Bhotekoshi	2000	45	Koshi	Sindhupalchowk	BPCPL	IPP	RoR
8	Kali Gandaki A	2002	144	Gandaki	Syanja	NEA	Public	Peaking RoR
9	Chilime	2003	22.1	Gandaki	Rasuwa	CHCL	NEA subsidiary	Peaking RoR
10	Middle Marsyangdi	2008	70	Gandaki	Lamjung	NEA	Public	Peaking RoR
11	Ridi	2009	2.4	Gandaki	Gulmi	RHDC	IPP	RoR
12	Siyuri Khola	2012	5	Gandaki	Lamjung	NGPL	IPP	RoR
13	Mai	2015	22	Kankai	Ilam	SMHL	IPP	RoR
14	Upper Marsyangdi	UC	50	Gandaki	Lamjung	SSHL	Public	RoR
15	Puwa Khola I	UC	4	Kankai	Ilam	PKHPL	IPP	RoR
16	Kulekhani III	UC	14	Bagmati	Makawanpur	NEA	Public	Cascade
17	Rasuwadadi	UC	111	Gandaki	Rasuwa	RHCL	NEA subsidiary	Peaking RoR
18	Upper Tamakoshi	UC	456	Koshi	Dolakha	UTHL	NEA subsidiary	Peaking RoR

Note: BPC = Butwal Power Company; BPCPL = Bhotekoshi Power Co. Pvt. Ltd.; CHCL = Chilime Hydropower Company Ltd.; HPL = Himal Power Ltd.; IPP = Independent power producer; NEA = Nepal Electricity Authority; NGPL = Ngadi Group Power Ltd.; PKHPL = Puwa Khola 1 Hydropower Pvt. Ltd.; RHCL = Rasuwagadhi Hydropower Co. Ltd.; RHDC = Ridi Hydropower Development Co.; SMHL = Sanima Mai Hydropower Ltd.; SSHL = Sino-Sagarmatha Hydropower Ltd.; UC = Under construction; UTHL = Upper Tamakoshi Hydropower Ltd.

Figure 1: Geographic location of hydropower Projects Selected as Case Studies



What is and Isn't Benefit Sharing?

Sadoff and Grey (2002) provide an influential framework for benefit sharing in international rivers – a framework that lends itself well to the current debates around benefit sharing in hydropower projects. They categorize benefits of cooperation into four types – benefits to the river (resulting from better ecosystem management); benefits from the river (through increased food and energy production); reducing costs because of the river (due to reduced tension among co-riparian states) and finally, benefits beyond the river (through better regional and economic integration). The early practice of benefit sharing started with the acknowledgement of 'trickle-down' benefits to local communities, whereby broader national and regional economic development was expected to bring the dividends of development to local citizens. To use Sadoff and Grey's terminology, the focus was on 'benefits from the river' or in this case benefits from the hydropower. Later, the practice moved on to mitigation and compensation to minimize the negative impacts of projects – these mechanisms were designed to ensure that individuals and communities adversely impacted by hydropower development were compensated for any losses sustained. However, recent thinking emphasizes sustainable development, which requires moving beyond mitigation and compensation to maximize development benefits and more equitable outcomes, and working directly with local communities to increase investment effectiveness. Skinner et al. (2009) describes the evolution of benefit-sharing paradigms from simply notify and compensate prior to the 1980s to all-inclusive partnership approaches with long-term benefit sharing with local communities in the post-2000s. This shift in paradigm means that benefit sharing as a concept is no longer narrowly defined under which communities are supposed to benefit from nationally benign hydropower development, but also includes the benefits derived from less conflict and greater voice, better ecosystem services, and the greater opportunities generated through economic integration with the rest of the country and region.

Besides understanding the shift in practices of benefit sharing in hydropower development, it is equally important to define what is not benefit sharing. One common point of confusion in Nepal concerns whether or not practices designed to mitigate the negative impacts and costs of hydropower development, such as compensation payments or resettlement, should be considered benefit sharing. Although these kinds of practices seek to promote and restore the wellbeing of impacted communities and displaced individuals based on a mix of international standards and the laws of Nepal (Cernea 2007), it is not clear that they qualify as benefit-sharing activities. According to framework of Sadoff and Grey (2002), this will indeed be counted as a benefit for the river, but from the perspective of the affected community, it will merely count as compensation and mitigation.

The environmental and social impact assessment (ESIA) process, in general, enshrines three principles: avoidance of harm whenever possible; if harm cannot be avoided, then mitigation measures that minimize impact within the site boundary; and, finally, compensation measures taken beyond the site boundary that offset the residual detrimental impacts on local communities and the environment. The existing literature defines 'benefit sharing' as separate from compensation and social mitigation and comprised of "measures which go beyond their expected obligatory limits in quality and time" (SWECO 2011, p 12). For example, the resettlement and relocation of involuntarily displaced people is not considered a 'benefit' of hydropower development, nor is compensation awarded for the loss of private property. In short, compensation and mitigation are zero-sum activities as people are only compensated for their loss, whereas benefit sharing is increasingly defined as going beyond the mitigation of project impacts and beyond compliance to a situation where the local affected population directly benefits from the project.

Early classifications by the World Commission on Dams (WCD 2000) and Wang (2012) distinguished between benefit-sharing measures and compensation or mitigation on two grounds. First, benefit-sharing measures are spread over the project's areas of influence and are not limited to the directly affected population, whereas compensation and mitigation are targeted at specific individuals or stakeholders. Second, based on the source of financing, compensation and mitigation, for example, are included in the investment budget of a given project, whereas benefit-sharing programmes are almost always financed by the operating income of a hydropower project.

A more recent report by the International Institute for Environment and Development (IIED 2014) classified benefit-sharing measures according to the objectives of the proposed scheme. While acknowledging potential overlaps, the report identified the following four categories of benefit sharing: compensation – provisions for restoring the lost assets of affected populations and any degraded environments in the locality or district to a status equivalent to that before the project; enhancement – measures to fund local development by creating jobs and financing infrastructure and activities that aid in improving livelihoods; benefit-sharing redistribution – contributing a share of the project’s revenue to a government institution or an independent fund (i.e., the royalty mechanism); and benefit-sharing partnership – allowing the local population an equity stake (i.e., shares). As mentioned previously, current thinking emphasizes ‘sustainable development’, which requires moving beyond mitigation and compensation to work with communities to maximize development benefits and engender more equitable outcomes.

Similarly, the United Nations Environmental Programme (UNEP) compendium entitled ‘Dams and Development’ (2007) made a further distinction between different kinds of ‘monetary’ and ‘non-monetary’ benefits, reframing the scope of benefit sharing beyond financial flows. The 2011 World Bank report by SWECO productively differentiated between compensation/mitigation measures as mechanisms developed early on during the environmental impact assessment (EIA) or licensing process and benefit-sharing mechanisms as programmes linked to broader development-oriented goals that exceed requirements for compensation or mitigation. However, from a pragmatic perspective, benefit sharing is often used to obtain a ‘social licence to operate’ in project areas (SWECO 2011) in order to mitigate potential social and political risks that arise from failure to address the concerns or needs of local project-affected communities.

It is, therefore, important to distinguish benefit-sharing programmes from other compensation and mitigation measures, which represent a related, yet separate, group of financial considerations and procedural issues. That said, the success or failure of compensation and mitigation activities can greatly inform local understanding of the ‘benefits’ of hydropower development and shape both the trajectory and outcome of each benefit-sharing programme. In practice, however, it may be difficult to draw a clear line between mitigation measures and benefit-sharing programmes, as some benefit-sharing programmes are an extension of mitigation measures (Wang 2012; WCD 2000). It is, therefore, important to consider the shifting dimensions of mitigation practices so as to understand: where benefit-sharing programmes begin; how these practices can complement benefit-sharing programmes; and how the success and failure of compensation and mitigation activities can inform local understanding of the ‘benefits’ of hydropower development. Establishing consensus within the hydropower industry on the basic tenets of stakeholder engagement and equitable mitigation itself took decades. The complexities are further compounded when moving beyond the compensation criterion towards wider goals associated with sustainable development. For the purpose of this study, we call only those efforts that go beyond the obligatory requirements of compensation and mitigation measures adopted by the hydropower projects as benefit sharing.

Benefit Sharing Mechanisms in Nepal's Hydropower Sector

Using empirical data collected through rigorous fieldwork spanning almost a year, this section of the report examines the different practices, programmes, and models of benefit sharing currently used in the hydropower sector in Nepal. In doing so, it categorizes benefit-sharing mechanisms in Nepal into five main types:

- The royalty mechanism
- Equity investment: Local share offers in hydropower projects
- Support for local livelihoods: Employment and training
- Investment in community development and local infrastructure (including rural electrification and irrigation/water related benefits)
- Environmental enhancement activities

Overall, there are two types of benefits: royalty type benefits, which are legally binding, and all others, which are more or less at the discretion of the hydropower developer. In the following sub-sections we examine these benefit types in terms of the: existing policies that shape the distribution of each type of benefit; different methods for promoting and sharing each type of benefit used by different hydropower projects; spatial and temporal dimensions of each benefit-sharing programme; impressions, reactions and critiques voiced by relevant project stakeholders; and policy gaps that affect the formation and negotiation of benefit-sharing programmes, project governance, and programme implementation. Lastly, based on our findings, specific recommendations are provided for each type of benefit sharing defined in our typology. Table 2 provides a summary of the different types of benefit-sharing mechanisms implemented in the case study areas.

The royalty mechanism

The royalty mechanism is the single most formalized benefit-sharing policy in the hydropower sector and is applied uniformly across all projects generating electricity in Nepal. The underlying principle behind the payment of royalties is that the Government of Nepal, which has the ultimate ownership rights over water resources in Nepal, gives prescriptive rights (Pant et al. 2014, p 150) to water users, in this case, the hydropower projects. Based on this principle, the government collects royalties for the use of water resources from the hydropower projects and distributes some of these to the communities (affected and non-affected) through local governments.

Policies and legal provisions

Nepal's Electricity Act 1992 provides a basis for the Government of Nepal to collect royalties from hydropower generation plants in Nepal based on: the installed capacity of the hydropower plant and the annual generation of electricity, as per the template given in Table 3.

The annual capacity royalty amount increases ten times after 15 years and the energy royalty increases by five times after 15 years. To provide an example of the relative scale of these royalty payments, Table 4 shows a summary of royalty amounts to be collected by the Government of Nepal based on the capacity of the hydropower plant and energy generated in the fiscal year 2068/69 BS (2012 AD).

Nepal's Hydropower Policy 2001 has revised the above table with different rates based on the capacity of hydropower plants. But to implement this policy, it must be legislated into appropriate laws in the form of an 'act'. In the absence of such laws, despite the approval of the policy, the policy cannot be implemented. Hence, the rate of collection of royalties from hydropower plants continues to be based on the Electricity Act of 1992 and not on the Hydropower Policy 2001, except for those hydropower projects whose licences were awarded on a competitive

Table 2: Main types of benefits provided by the hydropower projects studied

SN	Project name	Royalty	Local project shares	Community development fund	Local livelihoods programme	Electricity support	Water and environment benefits
1	Kulekhani I	Pays	N/A	No	Local jobs, trainings	Infrastructure provided and no load shedding	Drinking, fisheries
2	Kulekhani II	Pays	N/A	No	Local jobs, trainings	Infrastructure provided	Drinking
3	Marsyangdi	Pays	N/A	Yes	Local jobs, trainings	N/A	Drinking, irrigation
4	Aadhi Khola	Pays	N/A	Yes	Local jobs, trainings	BPC grid distribution	Drinking, irrigation
5	Jhimruk	Pays	N/A	Yes	Local jobs, trainings	BPC grid distribution	Drinking, irrigation
6	Khimti	Pays	N/A	Yes	Local jobs, trainings, local union	MHP plant built and local cooperative established	Drinking, irrigation
7	Upper Bhotekoshi	Pays	6% private pending	Yes	Local jobs, trainings	Infrastructure provided	Drinking
8	Kali Gandaki A	Pays	N/A	No	Local jobs, trainings	Connections to some houses	Drinking, irrigation, fisheries
9	Chilime	Pays	10% issued	Yes	Local jobs, trainings	Infrastructure provided	Drinking
10	Middle Marsyangdi	Pays	N/A	No	Local jobs, trainings	Infrastructure provided	Drinking, cultural, environment data
11	Ridi	Pays	10% issued	Yes	Provided	Preferential tariff and no load shedding	Drinking, irrigation
12	Siuri Khola	Pays	10% issued	No	Provided	Infrastructure provided	None
13	Mai	Pays	10% issued	Yes	Provided	Infrastructure provided	Drinking
14	Upper Marsyangdi	N/A	N/A	No	Provided	N/A	Drinking
15	Puwa Khola I	N/A	10% planned	No	Provided	N/A	TBD
16	Kulekhani III	N/A	N/A	No	Provided	N/A	Drinking, attempted environment scheme
17	Rasuwagadhi	N/A	10% planned	No	Provided	Infrastructure provided	Cultural, environment data
18	Upper Tamakoshi	N/A	10% pending	No	Provided	Infrastructure provided	Drinking, environment data

Note: BPC = Butwal Power Company; MHP = micro hydro plant; N/A = not applicable; TBD = to be decided

basis (i.e., the ‘super-six’ hydropower projects, Upper Karnali, Arun 3, etc.) by the government.

As the rate and scale of hydropower development begins to accelerate in Nepal, these royalties represent an increasingly significant resource for the Government of Nepal. A recent study points out that annual revenue collection from the hydropower sector (adjusted for historical prices) increased threefold between 1993 (when the practice of royalty collection began) and 2010 (Balasubramanya et al. 2014).

For distribution of the collected royalty, the introduction of new rules for revenue-sharing from royalties was first set forth in the Local Self Governance Act and Rules of 1999. Initially only 30% of royalties collected were distributed to regional governments, but new rules implemented in 2004 (Magh 2060 BS) increased the amount shared to 50% (Balasubramanya et al. 2014). According to the rules, royalties are distributed to different levels of government as per the following table.

The royalty mechanism is intended to promote development on a district and regional scale by distributing benefits to local government institutions rather than individual beneficiaries. As the money is directly paid to district

Table 3: Royalty rates for hydropower in Nepal

Up to 15 years of commercial operation		After 15 years of commercial operation	
Annual capacity royalty per kilowatt	Energy royalty per kilowatt hour	Annual capacity royalty per kilowatt	Energy royalty per kilowatt hour
NPR 100	2%	NPR 1,000	10%

Source: Electricity Act, 1992

Table 4: Royalties collected by the Government of Nepal from hydropower projects in the fiscal year 2068/69 BS (2012 AD)

SN	Project name	Capacity royalty	Generation royalty	Total
1	Kulekhani I (60 MW)	NPR 60,000,000	NPR 77,136,754	NPR 1,37,136,754
2	Kulekhani II (32 MW)	NPR 32,000,000	NPR 38,531,556	NPR 70,531,556
3	Marsyangdi (69 MW)	NPR 69,000,000	NPR 240,457,529	NPR 309,457,529
4	Aadhi Khola (5.1 MW)	NPR 5,100,000	NPR 14,227,684	NPR 19,327,684
5	Jhimruk (12 MW)	NPR 12,000,000	NPR 34,054,469	NPR 46,054,469
6	Khimti (60 MW)	NPR 6,000,000	NPR 56,293,747	NPR 62,293,747
7	Upper Bhotekoshi (45 MW)	NPR 4,500,000	NPR 35,601,380	NPR 40,101,380
8	Kali Gandaki A (144 MW)	NPR 14,400,000	NPR 92,953,213	NPR 107,353,213
9	Chilime (22.1 MW)	NPR 2,210,000	NPR 17,843,078	NPR 20,053,078
10	Middle Marsyangdi (72 MW)	NPR 7,200,000	NPR 45,906,287	NPR 53,106,287
11	Ridi Khola (2.4 MW)	NPR 240,000	NPR 1,082,686	NPR 1,322,686

Note: Project numbers 1–5 have been in operation for more than 15 years and pay higher royalties as per the Electricity Act, 1992; USD 1 = NPR 107 as in June 2016

Source: Department of Electricity Development, Government of Nepal

development committees (DDCs), the DDC council decides how the funds are used.

Once a project begins commercial operation, royalties flow from the hydropower project to the Department of Electricity Development based on the specific royalty payment criteria set forth in the Electricity Act, 1992 and then through the Ministry of Finance to DDCs across Nepal based on the Local Self Governance Act and Rules, 1999. Royalties are paid to the government only once the hydropower project reaches the commercial operation phase and, by all accounts, it takes at least a year for these funds to begin flowing back to the district level.

Figure 2 depicts the process of collecting and distributing royalties in terms of flows, indicating the complexity of these transactions.

Table 5: Distribution of royalties across different administrative units in Nepal

Government units receiving royalties	Percentage of total royalty
Central government	50%
Development region (ultimately distributed across districts within the region)	38%
District development committee	12%

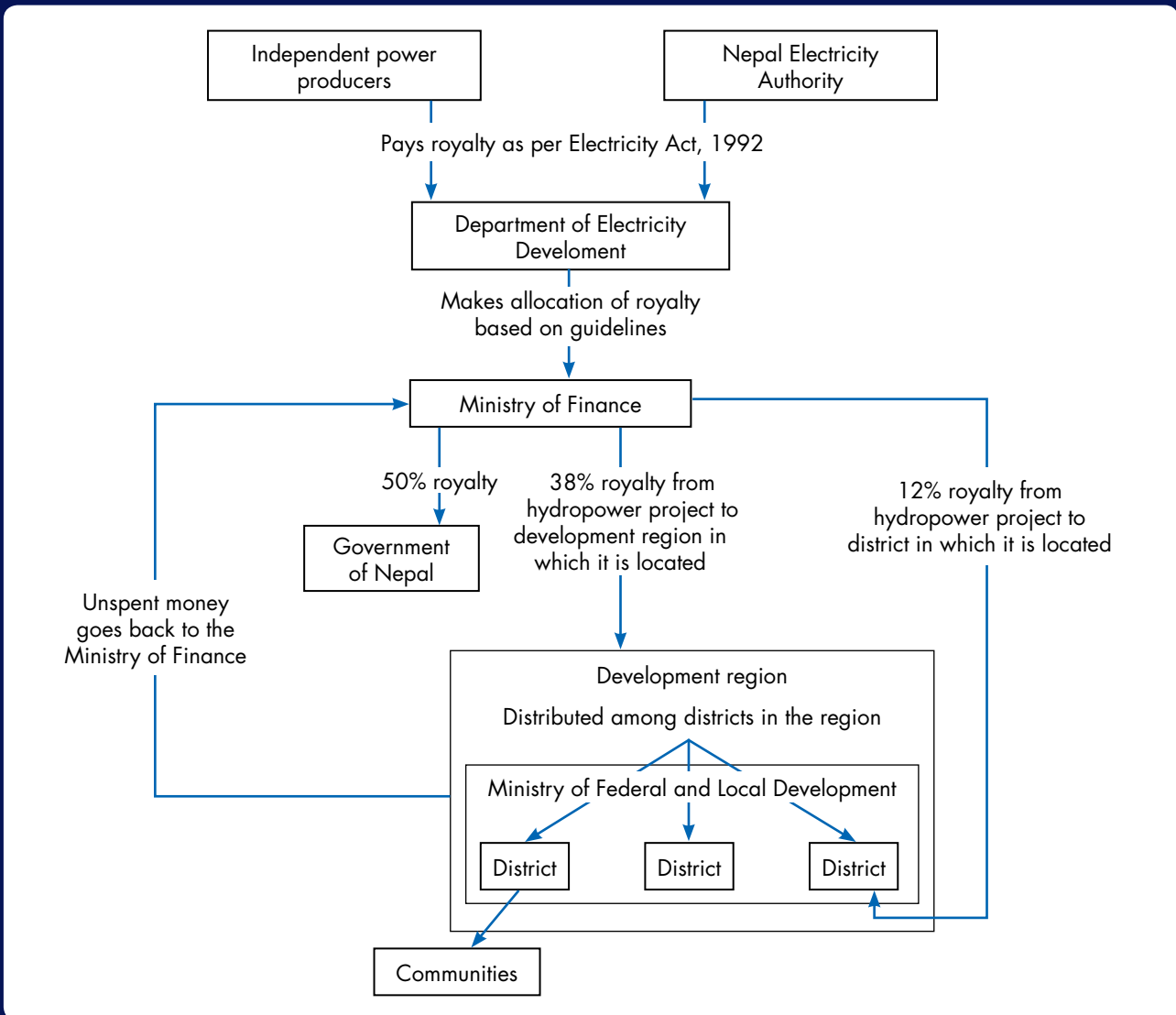
Source: Local Self Governance Rules 2056 BS (1999), third amendment

How royalties are actually distributed: Lack of clarity and transparency lead to dissatisfaction at multiple levels

Most stakeholders perceive that there is limited transparency in terms of information about the flow of royalty payments from hydropower projects to the central government and on to the districts. When the Department of Electricity Development, makes the royalty amount public, it only mentions the total amount that goes to the district. Staff of district development offices (local government) informed us that royalty payments arrive from the central government irregularly and in lump sums, without detailed information about the exact source of the revenue. Even government actors complain about the lack of transparency, stating that the central government mechanism for determining and delivering royalty payments is essentially a ‘black box’, which few understand.

The first issue that the limited transparency brings about is concern with the timing of the collection and distribution of royalties and the way that royalties are calculated. During the field research, a few staff of district offices mentioned that the payment of royalties was often delayed and that sometimes they would receive outstanding royalty amounts from several years prior. As the government only mentions the total amount that districts should receive, it is not clear whether or not the amount received as electricity royalty is correctly calculated and to which year(s) it relates.

Figure 2: Flow of royalty payments



In the history of the DDC, last year we received a high amount as royalty, 5 crore 78 lakhs. In the previous year we got 2 crore 5 lakh, a year before that around 1.5 crore. When we asked about its fluctuation they said that Middle Marsyangdi was on hold at that time...

– Government official, Lamjung District

These uncertainties limit the ability of the DDC to budget for multi-year projects and prevent them from earmarking certain funds for specific project-affected areas.

While there is confusion regarding the allocation of royalties among district officials, our research indicates that the majority of local stakeholders are poorly informed about the royalty mechanism as a whole and largely unaware of the projects that it supports in their district. This finding in many projects parallels that of a previous ICIMOD study, which found that “the majority of Kulekhani respondents (81%) did not know about the royalty benefit sharing arrangements” (Pant et al. 2014, p 153). During the field research, we found that only a few people had any knowledge about district funds from the royalty mechanism.

I know that this hydropower is paying royalties and that money comes to the district, but I don't know the exact amount that the DDC gets, or how much our VDC [village development committee] gets.

– Local resident, Mai (22 MW, IPP, completed 2015)

We do not know anything about the royalties. The project should have told us.

– Local resident, Aadhi Khola (9.4 MW, IPP, completed 1991)

Despite the existence of a mechanism to distribute royalties to the district level, there is no clear mechanism for distributing royalties at the village level, the spatial/administrative unit on which the definition of affected areas is based. “This policy is one institutional vehicle for sharing benefits. Though, at this stage, it does not yet cater to the directly affected people” (Dixit and Basnet 2005, p 13). Additionally, because these funds are typically pooled and spread across a given district rather than assigned to specific uses in project-affected VDCs, it is difficult to assess the level of benefits received by the targeted populations. The absence of local government in Nepal since 2002 is a major barrier to creating a more direct mechanism.

Our VDC is one of the affected VDCs, but we have not received any royalties here since the beginning of the operation of the hydropower plant [for the last 15 years]. We would not have protested for shares if our VDC had received regular royalty money.

– Local resident, Upper Bhotekoshi (45 MW, IPP, completed 2000)

Royalties not reaching the affected VDCs has been a major issue for power developers as local affected citizens disrupt the project and demand community benefits, which could have easily been provided through the royalties paid to the government.

The royalties that the project pays are supposed to trickle down to the VDC level. It is itself in the structure of benefit sharing. But it is the lack of structure for percolating royalties from the DDC to VDC level that is the vacuum that the general public are feeling.

– Project official, Upper Bhotekoshi (45 MW, IPP, completed 2000)

One of the few exceptions to this state of affairs is Makawanpur District, where the DDC has adopted a separate guideline that states that up to 50% (revised later from a fixed 50%) of the royalties received by the district shall be reserved for project-affected VDCs of the Kulekhani I and II hydropower projects. Similarly, the Dolakha DDC recently committed to prioritizing project-affected areas when allocating future royalty payments from the Upper Tamakoshi project. Yet even in Makwanpur, problems of governance exist, as demonstrated by recent findings that people living near the Kulekhani project “have only a minimal say in the administration of royalty payments. In order to improve transparency, local communities demand the establishment of a clear benefit-sharing mechanism and a role for local elected institutions in the administration and monitoring of royalty expenditure” (Pant et al. 2014, p 158).

Decisions regarding the distribution of royalties in hydropower projects adjoining two or more project-affected districts are complicated as royalties are not always equally distributed among affected districts and distribution mechanisms vary. In the case of the Khimti hydropower project, the percentage of distribution was decided based on negotiation between the political representatives of the two adjoining districts – Dolakha and Ramechhap. Based on the agreement, 12% of the royalties submitted by the Khimti hydropower project were divided among Dolakha and Ramechhap districts on a ratio of 3:1. Dolakha District received the higher share as it is the location of the powerhouse, whereas Ramechhap District, where the dewatered area and other project infrastructure are located, receives the smaller share. In the Marsyangdi hydropower project, which is situated in Gorkha and Tanahu districts, 12% of the royalties paid by the project are divided equally among the two districts, without reference to the location of the powerhouse. However, in the Kali Gandaki A hydropower project, a political committee comprised of local development officers and district representatives was created to devise a clear rubric-based method for dividing the 12% royalty between the four project-affected districts (Dixit and Basnet 2005, p 16): based on relative

impact, Syangja receives 48% of the royalty, Gulmi 27%, Palpa 15%, and Parbat 10%. This variety of modalities and configurations reflects spatial differences related to the site of the different projects as well as differences in political orientation.

Although two of the five development regions (Eastern and Mid Western development regions) in Nepal divide the revenue received by the regions equally among the districts, the Western and Central development regions (where the majority of generation capacity and revenue is currently generated) distribute revenue unevenly among districts. The Far Western Development Region only recently had a hydropower project in operation and is not reflected in the current royalty distribution mechanism, but will be included in future distributions. Although some royalty data has been made publicly available, the lack of standardization creates a potentially unstable situation that may warrant further investigation. For example, Gorkha receives 11.28% of the royalties going to the Western Development Region from the Middle Marsyangdi project, whereas Lamjung District, where the entire project is located, receives only 7.58% of the regional royalty share. A summary of the royalty distribution mechanism is available on the Department of Electricity Development website (<http://doed.gov.np/notices/Royalty-Management-2071-09-20.pdf>); however, this information is not communicated to local government offices.

I am surprised how Parsa District in the Terai gets 2 crore royalty as 2% share from the part of 38% for remaining districts in the region. Whereas we, Makwanpur District, get 7 crore as 12% share. If we do the correct calculations, then Makwanpur District should receive 12 crore instead of 7. So it is not transparent.

– Government official, Makwanpur District

According to the Hydropower Royalty Distribution and Utilization Directive, 2063 BS, the district with the hydropower project that receives 12% of royalty has to spend half of that money (that is 50% of the 12%) for environmental restoration work in upstream areas (20%); for supporting work in surrounding areas impacted by project's infrastructure like the dam, powerhouse, reservoir, transmission lines, tunnel, etc. (15%); and for work in downstream dry areas below the dam (15%). However, in practice, except for Makwanpur District, no other district has followed this directive. For the remaining 50% of the 12% royalty and the contribution from the 38% royalty distributed within districts of the development region, DDCs have to give higher priority to electrification, alternate energy, and community electrification in affected areas. But again, as the local development officers have to deal with multiple needs in a district, they often allocate budgets for purposes other than electricity and beyond the affected areas.

Policy recommendations: Improving the royalty mechanism

Based on our research findings, we recommend the following:

- **Transparency:** The Government of Nepal should publicly declare the amount of royalty collected every year from each hydropower project and clearly outline the mechanism for distributing royalties to each district. This data is absolutely necessary to ensure that citizens understand the amount their district receives and from which project.
- **Mechanisms for resolving spatial disputes:** Clarity in policy is needed in distributing royalties from hydropower projects that adjoin two or more districts and span two or more development regions (provinces after Nepal is federalized). This recommendation is particularly relevant for large-scale projects that span multiple districts and development regions.
- **Distribution to project-affected VDCs:** Individual districts and DDCs should develop policies to comply with the requirement that some portion of the royalty be allocated specifically to project-affected areas at the VDC-level, as is the case in Makwanpur. Appropriateness of the distribution should be determined based on the size of the project (corresponding to the scale of royalty payments) and the context-based classification of differently affected VDCs.
- **Implications of federalism:** As Nepal transitions to a collection of federal provinces, the Natural Resources and Financial Management Committee (to be formed, as stipulated by the 2015 Constitution of Nepal) needs to form new policies for the distribution of royalties based on the federal system, taking into consideration international precedents as well as lessons learnt from current experiences with royalty distribution. However,

significant differences of opinion still exist over the appropriate way of ‘spreading the wealth’ across the diverse geographies and political constituencies of Nepal and should be well deliberated in public before promulgation of such policies.

- **Complementarity with benefit-sharing programmes:** Currently, the royalty mechanism is the only formal policy that governs benefit sharing in the hydropower sector. As other policies are established, it will be important to consider, and perhaps revise, policies on royalty distribution to more effectively complement other benefit-sharing policies and programmes.

Equity investment: Local share offers in hydropower projects

In recent years, several hydropower companies have conducted equity or ‘share’ offers on both the public and private markets, and many of these offers have allocated a percentage of these shares to local stakeholders. This market-based strategy of benefit sharing provides local shareholders with a direct financial claim to profits generated by the projects that impact them. Although similar to the royalty mechanism in that the value of financial transfers to project beneficiaries is linked to project performance (in the form of dividends, bonus shares, or increased equity value), this benefit-sharing strategy is different in three important ways:

- ‘Shares’ deliver benefits directly to individual shareholders rather than local institutions charged with spending royalties within their constituencies.
- This strategy functions predominantly in private markets, requiring no or little government mediation or intervention.
- Equity instruments can depreciate in value resulting in investment losses, which means that this form of benefit sharing is also a form of cost- and risk-sharing and this is not yet well understood by local people).

Share offers in hydropower projects are commonly presented in Nepal as a win-win scenario: a strategy of project capitalization that also provides financial benefits for local populations and a means of aligning the incentives of power producers and local stakeholders so as to avoid costly conflicts and contestations. As per the amended Securities Registration and Issuance Regulation 2008, only a hydropower company that is registered as a public limited company, not a private company, can float a minimum of 30% of its shares to public, out of which 5% must be for company staff, 10% for locals, and the remainder for the general public. Although the practice is not mandatory for all projects, shares are still widely offered by many power producers as public companies in order to harness domestic or ‘local’ capital and to obtain the ‘social licence to operate’ (SWECO 2011). The popularity of hydropower shares in Nepal must also be understood in the context of ongoing anxieties about the need to increase foreign-direct investment. In addition, shares are commonly framed within the hopeful narrative of energy sovereignty, as an indicator that Nepal can finance its own hydropower future by mobilizing indigenous capital.

Equity share in hydropower projects for local residents is fairly unique and innovative mechanism designed in response to the particular Nepali reality of contested nature of foreign investment in hydropower on the one hand and the pronounced demand from the local residents to own shares in hydropower on the other hand. It is counted as a benefit because hydropower shares are coveted by local populations and so far, share prices have outperformed most other forms of investment opportunities available to local residents, like banks and cooperatives. For example, till June 2016, shares from only eight hydropower projects have been traded in the market and all of them have been traded at 1.8 to 17 times their base value. This is very high compared to interest rates offered by banks and other financial institutions. Shares, as we will note in sections below, are often issued after construction of the project, hence the risk to the investor is further reduced. However, what is not well understood is that share prices can collapse in the future and what is currently seen as a benefit may turn into a loss. The national regulatory body, Securities Board of Nepal (SEBON) has already issued notifications to the general public to this effect.

Shares are also considered a benefit for the local community as they no longer constitute passive recipients of benefits derived from hydropower in their region, but are active co-investors with direct stakes in hydropower. Equity shares are also win-win for the hydropower investors – they can raise capital, align their interest with the locals, and earn ‘social license to operate’.

Contemporary share offers

Signalling the popularity of the share offers in hydropower projects, four of the 18 hydropower projects featured in this study (Chilime, Mai, Ridi, and Siuri) have already completed share offers, and another three (Upper Tamakoshi, Puwa Khola 1, and Rasuwagadhi) have committed to issuing publicly-traded equity, while the Bhotekoshi project is in the process of issuing privately-traded shares (an anomalous precedent). Given the lack of clearly established precedents and policy directives, each of these offers was conducted in a one-off manner, using a slightly different modality, reflecting the specific project circumstances and negotiations. Table 6 summarizes the salient features of the share offers till now.

Table 6: Share offers by hydropower projects

Hydropower project, offering status, and offering year	Allocation of 'local shares'	Share offer details
Chilime (completed 2008–2010)	10% to local affected district and 15% to general public	The general initial public offering (IPO) was completed seven years after the completion of the project, post-profitability. The local share offer was conducted in 2010, following the resolution of a court case in which the percentage of shares allocated to the local population was revised from 5% to 10%. Due to this delay in the local offer, shares were offered at par with the IPO price (@ NPR 100) to 'highly-affected' locals in three VDCs and at a backdated share price premium (@ NPR 323) to affected locals. As a result, the company was able to pay dividends to locals immediately following the offer.
Mai (completed 2013–2014)	10% to local affected district and 20% to general public	The general IPO was completed in 2013 and the local share offer was conducted in 2014, both during the construction phase prior to the completion of the project in 2015. The project initially planned to allocate 40% of local shares to affected VDCs, but due to insufficient local demand the project allocated the remaining local shares to other residents of Ilam District. The general IPO was oversubscribed by 29 times.
Ridi (completed 2013–2014)	10% to local affected VDCs and 39% to general public, plus 50% promoter shares to locals	The construction of the project was completed in 2009. The local share offer to affected VDCs was done in October 2013 and the general IPO was done in February 2014. For both the offers, the IPO price was NPR 100 per share. Out of 300 promoters, about 50% are from local affected VDCs.
Siuri Khola (2015–2016)	10% to locals and 20% to general public	The construction was completed in September 2012. Ngadi Power Group completed the local share offer to affected districts in November 2015 and the general IPO in April 2016.
Upper Bhotekoshi (in progress/agreement reached)	6% private-market shares to locals only	Shares were demanded 14 years into commercial operation as a result of local protests following a landslide in August 2014. Following negotiations, project developers committed to provide 6% of 'private-market' shares to locals (distribution still pending).
Upper Tamakoshi (pending 2016–2017; delayed)	10% to local affected district and 15% to general public	The general IPO and local share offer was initiated in early 2015, after roughly 70% of the construction work had been completed. Concerns about eligibility criteria and uneven allocations to different affected areas led to protests and strikes in Dolakha District. Nepali employees of project contractor Sinohydro also organized a labour strike, demanding that workers be allowed to purchase shares in the project. The construction of the project and the share offer have been delayed due to earthquake-related damage.
Rasuwagadhi (planned 2018)	10% to local affected district and 15% to general public	There are plans to offer local shares before completion of construction.
Puwa Khola 1 (planned)	10% to local affected district	There are plans to offer local shares before completion of construction.
Khimti (demanded)	N/A	Local demands for shares emerged 14 years into commercial operation (partially a reaction to Bhotekoshi and Upper Tamakoshi protests/demands), but the project has not agreed to any share offer.
Upper Marsyangdi (demanded)	N/A	Local demands for shares emerged during the construction phase, but no shares have been issued.
Aadhi Khola and Jhimruk projects (demanded)	N/A	Project developer Butwal Power Company (BPC) is a publicly traded company on the Nepal Stock Exchange and, therefore, has not issued shares for its subsidiary projects in the past (although BPC is currently changing its policy by establishing a new project-specific company for its new undertakings). Local people from Aadhi Khola and Jhimruk have demanded shares.

Several strategies for allocating shares to interested investors exist, such as: even-allocation by number of shares (i.e., the Upper Tamakoshi Hydropower Project will provide an estimated 55 shares to each local who registers to purchase shares in Dolakha District; this is dependent on the size of the population and requires an estimated minimum buy-in to participate); even-allocation by percentage (i.e., if a share offer is oversubscribed by 20 times, each prospective shareholder will receive 1/20 of the shares requested, as in most share offers); and bottom-up allocation, such as that used by the Chilime Hydropower Company, which uses a market-based bid-allocation process that starts with the smallest bids first (i.e., all those who request ten shares receive ten shares, after which 20 share bids are considered, and so on), thereby ensuring an equitable distribution of shares across the economic spectrum. Similarly, establishing a maximum allocation can help protect small shareholders from problems of elite capture and crowding-out by individuals or organizations with more buying power. In the absence of clear policies or a specific methodology, the onus is on the hydropower producers to be transparent about their allocation method.

What ails the current practice of share offers?

Non-uniformity in laws for private and public hydropower companies

Most of the current ambiguities in requirements for taking up share offers in hydropower projects is due to non-uniformity in company ownership modalities (i.e., private or public). According to current law, only hydropower companies registered as public limited companies are required to issue local shares, whereas demands for shares are also made of private hydropower companies. Firstly, locals do not understand that all hydropower companies do not have the same ownership modality and there are no laws requiring private companies to issue shares. However, even if private companies (e.g., Upper Bhotekoshi) decide to issue shares, the challenge is the lack of modalities (in policy) by which to issue shares without the private company having to turn itself into a public company.

When the Power Purchase Agreement was established, there was no provision for shares and locals also did not demand any. After the landslide occurred in Jure [in August 2014], our four transmission towers were destroyed and during the restoration period the issue of shares was raised by a Struggle Committee. Due to multiple pressures on us, we decided to give shares, otherwise our law [rules and regulations] do not make such provision....

– Project official, Upper Bhotekoshi (45 MW, IPP, completed 2002)

Defining the 'local' and 'affected' population

In Nepal, there are several ways in which 'local' and 'affected' are defined in the context of hydropower projects. The most common way is to divide communities into severely affected ('atiprabhabit), affected ('prabhabit), and less-affected ('kamprabhabit). But some projects, like the Upper Tamakoshi, have further categorized 'severely affected' into classes A-D so as to grant certain privileges to specific sub-groups. In the case of Kali Gandaki A, a family that lost more than 50% of its land and a house were called a severely project affected family (SPAF), whereas a family that lost less than 50% of its land was called a project affected family (PAF). Though individual households or families can be considered directly-affected or 'bisthapit' (displaced), most 'affected populations' are typically classified in terms of village development committees and districts. However, defining the spatial boundaries of benefits resulting from hydropower development is perhaps just as difficult as determining the spatial impacts of hydropower development, and are often just as contested.

As presented in Table 6, the affected populations are given priority for local shares, but there are differences among hydropower projects in what they consider 'local' when defining the 'affected' population, as well as the criteria for setting priorities among affected citizens. Defining the affected population can sometimes be different for shares than the traditional definition mentioned above. For shares, some projects define locals as affected citizens from affected VDCs (e.g., as in Ridi), while others define locals as residents of affected districts (e.g., as in Chilime), where affected citizens received shares at par of NPR 100 compared to other Rasuwa District residents who received the same shares at a premium rate of NPR 323. Some give a higher number of assured shares to affected VDCs (e.g., Chilime, Upper Tamakoshi etc.). The logic here is that communities that experience greater impacts of the project should receive a greater number of shares. Subsequently, with the promulgation of the new constitution,

there is also a question about whether the existing administrative units used for defining local and affected populations will remain valid in the new federal structure.

The scale of the hydropower project affects the dimensions of the share offer and the definitions of 'local' and 'project-affected' populations. Small projects (e.g., Ridi, 2.4 MW) can easily raise equity from affected VDCs, whereas larger projects (e.g., Mai, 22 MW) with higher capital needs may have difficulty in raising the allocated shares for affected VDCs and have to rely on higher spatial scales (like district scale) to raise 10% equity. So, if 10% is fixed for all hydropower projects, the only way to define 'local' is to vary the spatial scale depending on the size of the project.

The question of how to identify whether or not someone is a resident of a particular district or VDC for the purpose of offering shares remains contested. Often claims of affectedness increase as people perceive shares as a rewarding benefit. Recent mobilizations for recognition at the Upper Tamakoshi project used overlapping methods to verify 'affected identities' – such as citizenship papers, birth certificates, landholding deeds, marriage certificates, etc. Eligibility criteria are not standardized. It is crucial to clearly define the criteria used to determine who is eligible to purchase shares and to delineate the hierarchy among local investors with claims to project benefits. This has to be done to avoid problems like fraud (of which there have been several precedent cases), redundancy, invalid registration, proxy ownership, and the capture of benefits, as well as to limit conflicts between locals with competing claims to eligibility.

Who is a real Dolakhali? Who from Dolakha has a right to purchase shares? [...] The first criteria is citizenship, second is a birth certificate, and the third is a migration certificate issued before 2064/10/15 BS.

– Project official, Upper Tamakoshi (456 MW, NEA subsidiary, under construction)

The Chilime offer used both citizenship cards and birth registration certificates. Shares were given only to those who migrated to Rasuwa District before the case was filed in the Supreme Court.

– Local resident, Chilime (22.1 MW, NEA subsidiary, built 2003)

Ensuring participation by marginalized and indigenous communities

For many local people, the financial decisions required to buy shares are new and many of the poorest families struggled to raise even small amounts of savings to purchase shares. Lack of financial education and the proper documentation to open a bank account are also issues. Data collected during field visits to Rasuwa, Dolakha, Lamjung, and Gulmi districts show that people from socially-excluded groups and poor, landless individuals often do not participate in buying shares, indicating a micro-politics of exclusion:

We did not know much about shares and we did not have much money to buy more shares. Now when my neighbours are enjoying dividends, I wish I had bought more shares even if by borrowing money.

– Local woman, Gulmi, Ridi (2.4 MW, IPP, built 2009)

We were afraid that we would lose our money, so we didn't participate.

– Local resident, Rasuwa, Chilime (22.1 MW, NEA subsidiary, built 2003) and Rasuwagadhi (111 MW, NEA subsidiary, under construction)

We did not have land so we could not buy shares.

– Local resident, Gulmi, Ridi (2.4 MW, IPP, built 2009)

We don't know how to buy shares, but we would sell even our jewellery to buy shares.

– Local woman, Dolakha, Upper Tamakoshi (456 MW, NEA subsidiary, under construction)

We did not know about shares. We thought we have to invest hundreds of thousands for shares and we do not have that kind of money.

– Local teacher, Lamjung, Siuri (5 MW, IPP, built 2012)

For those who cannot afford to buy shares, some projects, such as Chilime, arranged loans through various banks. This was possible as shares were issued after construction with minimum risk to investors, but similar practices are rare if the share offer is made during the construction phase of the project.

Mega Bank came to finance the cost of shares; it contributed 80% and we contributed 20%. We agreed to pay interest for three years... Also, we signed an agreement that we cannot sell the shares immediately after we buy them. If allowed, poor people would sell all their shares.

– Local resident, Chilime (22.1 MW, NEA subsidiary, built 2003)

Community financial education programmes (as in Chilime and Mai) are crucial to the success of share offers for several reasons : to promote participation, limit misunderstandings arising from lack of information, and help local beneficiaries make an educated decision about participation. However, after the completion of the three year lock-in period in Chilime, brokers beguiled uneducated locals to sell their shares at prices significantly below the market rate. The project then executed a follow-up financial education programme and halted such illegal trading, building significant goodwill with local shareholders. This illustrates the need for financial education, not only before the share offer, but also later.

Related to the exclusion of marginalized people from affected communities is the issue of elite capture of shares by a few. In Dolakha District, many people claimed that rich people from Dolakha will acquire most of the Upper Tamakoshi shares from poor people after the lock-in period is over, a concern that seems to have played out to some extent in Rasuwa, where long-term patterns of Chilime share ownership have begun to concentrate in the hands of a few. Although project developers have indicated a major interest in promoting long-term ownership in project areas, local shareholders will inevitably make their own decisions about buying and selling, as per their need. Again, the focus should be on providing financial education and promoting informed local choice.

What is the right time to offer shares?

The timing of share offers relative to project development (i.e., before, during, or after the commercial operation date) can significantly affect both participation in the offer and the mitigation of risk. In the case studies, three projects (Chilime, Ridi, and Siuri) offered shares after the completion of construction work, allowing local affected citizens to invest without any risk and, in many cases, to receive dividends immediately. However, this is a paradox, as the core idea of equity sharing is to raise funds for building the project.

Different approaches to the timing of share offers also raise issues related to pricing, (i.e., whether the shares should be issued at par value or at premium value). The case studies show that there is no uniformity in this regard, as Chilime offered shares at a premium value of NPR 323.70 and Ridi and Siuri offered shares at par value of NPR 100. In comparison to the offering of shares after completion of construction, other projects like the Mai, Upper Tamakoshi, Puwa Khola 1, and Rasuwagadhi plan to offer shares 70-80% of the way through the construction period, years before profitability – which can put investors (both institutional and local) at risk. This also creates a significant dilemma for projects like the Upper Bhotekoshi, which has recently committed to issue 6% of shares to locals 14 years into operation and has to determine their fair market value now, as there are no pre-existing publicly-traded shares.

Conflicts and contestations around shares

For the purpose of this study, it is also important to recognize recent controversies surrounding the proliferation of the shareholder model. In 2014 and 2015, the popularity of the shareholder model (as evidenced by the recent IPO of Ridi being oversubscribed by 60 times and Siuri being oversubscribed by 90 times) began to create problems in the hydropower sector, as financial demand for shares materialized quite literally in political demands

and obstructions. For example: demands for shares in the Upper Bhotekoshi by locals, including local cadre of political parties, manifested in the obstruction of the construction of the four transmission towers that were buried in the massive landslide at Jure on 2 August 2014; construction was obstructed in the Upper Tamakoshi by a group of local leaders from villages slated to be affected by the future construction of transmission lines demanding extra shares citing their official status as residents of 'prabhait' (project-affected) areas, as determined by the EIA; and a labour strike initiated by Nepali employees of the project contractor in Upper Tamakoshi protesting the fact that they were not given the opportunity to purchase project shares. Lack of official clarity on the 'share' issue is likely to exacerbate such political contestations in the future.

What happens after transfer of ownership to the government?

Problematically, there is currently no established policy that clarifies what will happen to shares and shareholders when project ownership is transferred back to the government at the termination of the licensure period (which varies as per the project agreement, but is generally between 25 and 35 years), as per the build-operate-own-transfer (BOOT) model currently used for the majority of private-sector hydropower projects in Nepal. Although the government is currently considering this issue in the drafting of the new Electricity Act, this uncertainty raises significant questions among potential investors and policy makers about the long-term viability of the shareholder model in Nepal.

Policy recommendations: Improving share practices

The offering of shares in hydropower development can be an effective tool for promoting 'ownership' among local project-affected populations, and many developers view this as a helpful strategy for mitigating risks to the project posed by potential local conflicts. However, there are several policy issues that need to be addressed to clarify the issue around shares:

- **Percentage of local shares:** Due to variation in the investment capital required for different sized projects, a fixed percentage of local shares means that projects will have to adjust their definition of local to mean either the VDC or the district where it is being constructed in order to collect the required equity depending on the size of the project. Hence, it would be helpful to formally establish a set of mixed criteria to come up with an appropriate percentage of local shares for each project (such as project size and offer size, classification of project areas and size of local populations, estimated purchasing capacity of the locals, etc.). This criteria would serve as a guide for project developers and ultimately limit local conflict.
- **Defining 'local' and 'affected' populations:** Because different classifications and categories of locals are used to determine the allocation of shares (and because several disputes over these classifications have arisen in the context of share allocations) it is important to formulate clear and consistent policies in order to prioritize share allocations to project-affected people in different project-affected areas.
- **Eligibility criteria:** Clear guidelines should be formulated to define eligibility criteria for purchasing shares by local affected citizens, based on a portfolio of overlapping methods to ensure both accountability and the inclusion of marginalized populations. Recent protests indicate that it may also be necessary to make formal policy decisions about the eligibility of project employees, so as to mitigate operational risks.
- **Offer timing:** Making share offers upon the completion of project construction limits the opportunity cost borne by potential investors and helps to protect against local disputes and mobilizations over shares, which can obstruct the construction process and escalate project costs. Another view, however, holds that, in order to do justice to the principle of financial equity (sharing both profit and risk), shares should be issued prior to the completion of the hydropower project, but only after a significant amount of investment by the power producer. If clear policies can be devised to minimize local disputes, shares can be offered after completion of 70% of construction to ensure that the equity raised is used for construction.
- **Financial education and awareness:** Because the concept of shares is new in Nepal, and because financial education remains highly uneven across rural regions of Nepal, it is crucial to ensure that people understand the principles of equity investment as well as the associated risks. If the current trend of share offers continues, then it may be necessary to create a series of formal procedures that will help provide a common financial education for potential shareholders across Nepal.

- **Social inclusion:** Our research indicates that there is a need for special efforts to help facilitate the participation of differently educated populations and the inclusion of indigenous and marginalized groups, which are subject to patterns of social and spatial exclusion that limit their ability to ‘prove’ their claims (such as landless Dalits or people without identity cards), by offering them support and information throughout the process of stakeholder consultation and financial education. Again the focus should be on providing financial education and promoting informed local choice.
- **Protecting unsophisticated buyers:** Equity sharing demonstrates a complex financial system in which even a well-educated person might have difficulty understanding the risks associated with the share market. While financial education and social inclusion are necessary to ensure proper understanding of share markets and increase wider participation, further study may be needed to devise policies to protect unsophisticated buyers from falling into investment risks associated with shares.

Support for local livelihoods: Employment and trainings

Employment as a benefit

Because hydropower projects are inherently labour intensive during the construction phase, hundreds if not thousands of jobs are created during the early life cycle of the project. Although local hiring is a common practice, there are no common rules or policies regulating working conditions or wages in the hydropower sector. Hence, a mix of different company regulations for pay standards and workplace safety exist. Overall, hydropower companies and their contractors are responsible for managing their own workforce.

Typically, the majority of local hiring is unskilled and casual labour, hired formally or informally through the project contractor(s), while the project developer hires a smaller group of locals as drivers or entry-level office staff. Our analysis indicates that the allocation of these jobs is often dependent on existing socio-political hierarchies: the children of community leaders get an office job, while the children of marginalized families work the night shift in the tunnels. Obtaining desirable employment is often a function of one’s social capital. In parallel, hydropower developers may hire ‘local’ subcontractors for projects like road construction, which can be an indirect source of income. Again, these opportunities arrive unevenly and are typically only available to those with financial or political capital (Rai 2008; Lord 2014). As construction work progresses, the nature of the work shifts toward electro-mechanical work (i.e., powerhouse construction) and the total number of workers decreases.

Given widespread underemployment in Nepal, ubiquitous patterns of labor migration (Adhikari and Hobley 2011), and a complex system of labor contracting, the unskilled labor force of the hydropower sector has very little bargaining power, despite periodic attempts to mobilize (Lord 2014). Further, the desire to minimize project costs in a competitive business environment and a lack of effective regulation regarding hiring practices provide (some but not all) developers with further economic disincentives to follow-up on certain commitments to local employment or pay standard local wages. All of these factors affect local interest in working within the hydropower sector.

When the project is complete, the daily operations of the hydropower project require much less labour input. Hence, most of the jobs directly created by hydropower development are not durable in the long term. For this reason, the quality and duration of project employment are key variables affecting the distribution of benefits from employment.

Preferential hiring programmes that promote ‘local’ employment are important tools to ensure that locals realize a ‘fair’ portion of economic benefits during project development – typically a redistributive mechanism based on reservations, rather than additional hiring. But problems arise when there are too many demands for work, as it is difficult to give jobs to everyone.

It is difficult... about 3,000 persons’ lands were used for the project. But, how can we provide jobs to all 3,000 people? As of now, we have a total of 800 jobs for locals as well as outsiders.

– Project official, Upper Tamakoshi (456 MW, NEA subsidiary, under construction)

Table 7: Local employment and priority hiring programmes provided by hydropower projects

SN	Project name	Local jobs	Employment during construction	Employment after construction
1	Kulekhani I	Yes	Not known	35 locals NEA recruiting process
2	Kulekhani II	Yes	Not known	Some locals NEA recruiting process
3	Marsyangdi	Yes	Preference to people who lost more than 70% of land	Some locals in contract later NEA recruiting process
4	Aadhi Khola	Yes	Priority to locals	85 locals
5	Jhimruk	Yes	Priority to locals	Priority given to locals by Jhimruk Industrial Development Company (JIDCO) – previously established by the project, but later turned into a non-government organization (NGO)
6	Khimti	Yes	Priority to locals	Priority to affected district
7	Upper Bhotekoshi	Yes	17 displaced people Priority to affected VDC	26 out of 53 are locals Priority to affected VDC
8	Kali Gandaki A	Yes	Priority to local affected people (especially Bote)	7 locals in contract
9	Chilime	Yes	50/60 people from district	12–15 local staff
10	Middle Marsyangdi	Yes	Priority to locals	NEA recruiting process
11	Ridi Khola	Yes	Priority to affected VDC	8 local staff
12	Siuri Khola	Yes	Local contractor for buildings and 8 local workers	6–7 locals
13	Mai	Yes	15–16 locals after training Selected through concerned committee	10–15 locals Priority to affected VDCs for employment
14	Upper Marsyangdi	Yes	About 800 locals from affected district	TBD
15	Puwa Khola I	Yes	20–25 locals Priority displaced people	TBD
16	Kulekhani III	Yes	Priority to displaced people	TBD
17	Rasuwadaghi	Yes	Priority to people from most-affected VDCs	TBD (verbal commitment)
18	Upper Tamakoshi	Yes	Priority to 'local hiring' of people from Dolakha district, stated preference to hire from most-affected VDCs where possible	TBD (verbal commitment)

Note: TBD = to be decided

Overall, jobs in hydropower construction are rarely sustainable in the long run. However, looking beyond the single hydropower project, the work experience and training provided to employees of the project can help locals gain access to new job opportunities in other places, including other hydropower projects and abroad.

Many of our locals went to Himjal hydropower for work. They also went to other big projects. All skilled workers are doing jobs in various projects.

– Project official, Mai (22 MW, IPP, completed 2015)

Some of the people here gained skills from the project and then got jobs in Qatar or Dubai.

– Local resident, Kulekhani I (60 MW, public, completed 1982)

For the Mai and Rasuwadaghi projects, we found that hiring was based largely on recommendations from project-concerned committees, which work with project contractors to hire from local areas. This ensured that the claims of employment were borne by the concerned committee and any wrong-doing related to local labour during project work was controlled by the concerned committee itself.

We provided jobs on the basis of the recommendation of the concerned committee. If there were any issues, then locals went to the concerned committee with their problems. Jobs were given on the basis of capacity, priority, recommendation, and necessity... Those who lost their land were given priority for jobs. There are six to seven locals working in head work and another six to seven in the powerhouse. About 10 to 15 locals got jobs.

– Project official, Mai (22 MW, IPP, built 2015)

Despite the framing of possible employment as a project benefit, it must also be added that local hiring is not always attractive to the developer or locals. Further, recent trends of labour strikes and other mobilizations, especially by local labourers, have generated costly delays for hydropower projects, making project officials reluctant to depend on local labour. In addition, local interest in working for hydropower projects can be extremely uneven across different social groups.

After the locals protested about the project not giving excess land back, the NEA was not very interested in hiring locals. Also people were not interested to work for the project.

– Project official, Kulekhani I (60 MW, public, built 1982)

The project had to stop for several days due to a disagreement between the Chinese labourers and local labourers.

– Project official, Upper Marsyangdi (50 MW, IPP, under construction)

We give preference to local people during construction but they are lazy compared to the labourers who come from outside the affected district.

– Project official, Ridi (2.4 MW, IPP, built 2009)

It is not easy to work with the Chinese contractor. They are very hardworking. They have no consideration for us, and we are not used to this kind of working environment.

– Local worker, Upper Marsyangdi (50 MW, IPP, under construction)

Who is 'local'?

As in the case of equity sharing, differences also exist in the way that each programme defines 'local' when promoting local employment. For example, the priority hiring programme for the Upper Bhotekoshi, Kulekhani III, and Kaligandaki A projects targeted locals from 'displaced' or 'directly affected' households, whereas the Mai project targeted locals from 'project-affected' VDCs. In contrast, the Upper Tamakoshi, Khimti, Upper Tamakoshi, and Upper Marsyangdi considered the overall district to be 'local'.

The general trend is to first prioritize displaced families, then those whose livelihoods have been dislocated in some way by project development, and then people from project-affected VDCs (typically organized as most to least affected), and lastly 'local' hires from elsewhere in the district. There are different variations, however, in the ways that projects approach local hiring, as indicated by the following anecdotes and examples:

As per the recommendation of the working committee formed by the Government of Nepal, persons from families who lost more than 75% of their land during acquisition were recommended for jobs... At that time, 17 were appointed on contract and employed on a daily basis as PAF [project affected families]. A few of them became permanent employees [post-construction] and a few later retired.

– Project official, Lower Marsyangdi (69 MW, NEA, completed 1989)

Our first priority is land owners [whose lands have been acquired], then affected community forest user groups and so on but if there are no skilled persons among local land owners then we have to go to the district level. We have a guideline for that.

– Project official, Puwa Khola I (4 MW, IPP, under construction)

Livelihood trainings

Trainings are another important feature of benefit-sharing programmes that can help support local livelihoods over the long term, when the boom cycle of hydropower construction has subsided. By ‘upskilling’ the local workforce, trainings can prepare locals for more skilled jobs with the hydropower project, promote new kinds of economic opportunities within the local economy, and allow trainees to enter new markets beyond the project area. This is further encouraged by the formal delivery of certificates, which are intended to guarantee the value of trainings. Table 8 shows samples of the types of trainings conducted in the selected hydropower cases studied.

Below are examples of training programmes conducted by different projects.

Seventy labourers from four project-affected VDCs were given training as welders, carpenters, and steel fixers at a technical campus. Ten or twelve of those who completed the training passed the trial phase and got a job, and the rest continued as labourers. They all got certificates though, so they may use it in another project.

– Project official, Upper Marsyangdi (50MW, IPP, under construction)

During the project period, different types of skill enhancement trainings were provided. One was a general type of electro-mechanical training, another was for the Chepang community on knitting and making doko, namlo, and dhaki.... We also provided carpentry training for four or five people, and they used to get NPR 300 per month during the six-month training.

– Project official, Kulekhani II (32 MW, public, built 1986)

Some projects seemed to be aware that their own presence shifts the viability of pre-existing local livelihoods. For example, in Kulekhani III and Puwa Khola I, the projects have tried to respond to technical trainings to address the issues of reduced water for irrigation in dewatered zones.

We asked for their choice and there is high demand for cardamom farming... We have a budget for future training when irrigation will be affected.

– Project official, Puwa Khola I (4 MW, IPP, under construction)

Table 8: Trainings provided by hydropower projects

SN	Project name	Sample trainings to project-affected people
1	Kulekhani I	Watershed management and soil erosion prevention training for women
2	Kulekhani II	Skill enhancement training on electro-mechanical and ‘doko’ knitting (for Chepang community)
3	Marsyangdi	House wiring and plumbing training
4	Aadhi Khola	Vegetable farming training
5	Jhimruk	Construction work (welding, plumbing), mobile repair, fruit support programme training
6	Khimti	Skill development and non-formal education programmes
7	Upper Bhotekoshi	Income generating training programme for disabled and backward communities
8	Kali Gandaki A	Fish farming training
9	Chilime	Women’s empowerment, cooking, knitting training
10	Middle Marsyangdi	Agriculture training (e.g., in beekeeping and herb identification)
11	Ridi Khola	Converting semi-skilled workers to skilled workers through construction-related training
12	Siuri Khola	None
13	Mai	Construction training to 60 workers (later jobs), knitting training to women
14	Upper Marsyangdi	70 labours trained in construction works (carpentry and bar bending) at Technical Campus
15	Puwa Khola I	Agriculture training
16	Kulekhani III	Driving, computer, stitching, agriculture training
17	Rasuwagadhi	Culinary training
18	Upper Tamakoshi	Electrical and plumbing training, driving, agriculture training

In some cases, however, the appropriateness of certain trainings was brought into question. In some projects the trainings are designed as per the request of the affected communities, whereas in other projects trainings are merely run to check off this activity in the social and environmental mitigation plan.

We are getting agriculture training. We don't have water so there is no use for agriculture training. We have not taken part.

– Local resident, Kulekhani III (14 MW, NEA, under construction)

We received herbs trainings, but to put it into practice we need a refinery centre, but there is no such centre here. So now we are doing beekeeping.

– Local resident, Middle Marsyangdi (70 MW, NEA, built 2008)

These kinds of mismatches point to the importance of community consultation and dialogue when determining what kinds of livelihood projects would be most helpful and appropriate in a given area.

Gendered patterns of employment and livelihood support

Our research indicates that patterns of employment reflect a significant gender imbalance. Despite a handful of recent efforts and increasing support for alternative forms of livelihood for women in project-affected areas, overall women seem to receive substantially fewer direct benefits from project construction, as the majority of jobs (i.e., skilled and unskilled labour, transport roles) are given to men, offset by a handful of service-oriented jobs (i.e., cooking, clerical, janitorial roles) for local women. Most livelihood programmes targeted at women are separate from the process of project development, focused on creating new niches in local economies or on broader issues of women's empowerment. These issues reflect a larger problem with gender inequity: that the collective voice of women is routinely subjugated in local processes of decision-making about hydropower projects.

We have given women's empowerment training, training on gender equality and inclusion... [and] women participate in cooking trainings, knitting trainings, weaving trainings.

– Project official, Chilime (22.1 MW, NEA subsidiary, built 2003)

Women are busy in household chores. They do not have time to participate in the meetings. And first of all, they do not know what is going on.

– Local man, Upper Marsyangdi (50 MW, IPP, under construction)

There are a few exceptions to the rule, indicating a trend toward improvement in this area. Some examples include: computer skills classes and agricultural productivity training for women in Kulekhani III; seed investment of NPR 50,000 for a local women's cooperative in Mai; culinary training classes in Rasuwagadhi; and a building for the women's cooperative in Khimiti.

Thus, while it is important to provide women in project-affected areas with equal economic opportunities and greater choice in project employment (particularly women from marginalized groups with limited economic opportunities), it is also important to design livelihood programmes that attempt to empower women in other ways. Recognizing and accounting for gendered differences in local livelihoods is important to ensure the equitable sharing of benefits from hydropower development and to promote sustainable local economic development.

Policy recommendations: Improving benefits from local employment and training

The design and implementation of livelihood programmes focused on job creation and trainings depends on the specific community needs and demands, which change according to a variety of geographic, economic, and social factors. As a result, there may not be one single programmatic approach that applies to the different local economies and demographic groups. Further, in many places, it is not only about the content of the livelihood

programmes, but also about the process of involving communities, building good relationships and spreading goodwill among people. Generally, all of the hydropower projects have prioritized local affected citizens for potential jobs during and after construction. However, there are several overarching principles related to promoting equitable opportunities for participation that can be applied uniformly:

- **Defining local populations:** Uniform priority criteria for ‘local hiring’ can be developed for all projects with preference for displaced people, followed by people from affected VDCs, and then people from the affected district.
- **Fair selection process:** Just defining priority is not enough; the project may not get the right person for the job, or they may receive too many demands for local jobs. Hence, every project should develop selection criteria and recruit locals through a fair selection process.
- **Emphasis on training and capacity building:** Trainings focused on skills development and income diversification provide perhaps the most durable form of livelihood benefits. They can be conducted during the early stages of project development to produce a skilled local workforce for construction. Consultations with different social subgroups are needed to determine what kinds of training best fit different societal needs.
- **Social inclusion:** Programmes are needed to provide jobs and trainings to the most vulnerable population groups, e.g., marginalized communities, people with disabilities, and others who have been traditionally marginalized from the development process. Maintaining some kind of gender balance and providing training to women should be a top priority across all social groups.
- **Sustainability:** Livelihood programmes should not create useless jobs or provide trainings that simply satisfy a requirement or appease certain local populations, but should instead focus on creating sustainable local economies.

Community development and local infrastructure

The practice of investing in community development and local infrastructure is the most commonly cited example of benefit sharing discussed by hydropower developers and local beneficiaries alike, perhaps due to the tangible and material quality of these contributions. Yet, none of these are obligatory on the part of the hydropower developers, but they invest in these as a means of gaining social acceptability. In nearly all of the 18 hydropower case studies, respondents identified the construction of new roads, material contributions to local schools, or the construction of new health posts as evidence of the benefits of hydropower development. Although less frequently, the creation of local women’s groups, savings cooperatives, and community forestry user groups were also mentioned as benefits.

However, in Nepal, it is often difficult to distinguish between corporate social responsibility (CSR) activities and the community development activities mentioned in the EIA, especially during the construction phase. Power producers generally tend to claim all community development activities budgeted for under compensation or mitigation measures as CSR, especially during construction. However, there are also projects that have genuinely used funds beyond compensation and mitigation to meet additional community demands. More precisely, CSR can be considered benefit sharing only when the financing for these activities comes voluntarily, often as a reinvestment of project profits generated. The following examples indicate good practices of creating a CSR budget that is separate from mitigation activities.

We have two kinds of budget. As per the EIA, we do environment mitigation. Then we have the Sanima Support and Coordination Program (SSCP) as a different package, through which we do other developmental work, mainly in the project-affected VDCs.

– Project official, Mai (22 MW, IPP, built 2015)

We allocate a total of 25 lakhs under the CSR budget every year. We address all the demands of local people under this budget.

– Project official, Aadhi Khola (9.4 MW, IPP, built 1991)

Overall, eight of the 13 completed projects within the sample have explicitly created a separate annual budget (reinvested from profit) for CSR activities, as summarized in Table 9.

The presence of CSR programmes is closely related to two factors: whether the project is private (including public limited companies) versus public ownership, with NEA-owned projects (other than subsidiaries with private investment like Chilime and Upper Tamakoshi) less likely to conduct CSR activities, and, to a lesser extent, the budgetary limitations of the project due to its size.

Table 9: CSR programmes provided by hydropower projects

	In commercial operation	Under construction
Projects with a dedicated CSR programme	Marsyangdi 69 MW (1989) Aadhi Khola 9.4 MW (1991) Jhimruk 12 MW (1994) Khimti 60 MW (2000) Upper Bhotekoshi 45 MW (2000) Chilime 22.1 MW (2003) Middle Marsyangdi 70 MW (2008) Ridi 2.4 MW (2009) Mai 22 MW (2015)	Rasuwagadhi 111 MW (est. 2017–2018) Upper Tamakoshi 456 MW (est. 2018)
Projects without a CSR programme	Kulekhani I 60 MW (1982) Kulekhani II 32 MW (1986) Kali Gandaki 144 MW (2002) Siuri Khola 5 MW (2012)	Kulekhani III 14 MW (est. 2017) Puwa Khola 4 MW (est. 2018)

Community development and local infrastructure

The first local improvement or benefit coming from hydropower development is almost always infrastructure. During the process of hydropower development, local stakeholders routinely benefit from the construction or improvement of local infrastructure, such as roads or bridges, particularly in areas that were previously without road access.

The project has built a concrete bridge over the Rapti River, which is a great relief for us. There is now easy access to the market. Now we can sell vegetables products in Vaise and Hetauda.

– Local woman, Makwanpur, Kulekhani III (14 MW, public, under construction)

The bridge in Bhulbhule and the road to Nyadi would never had been built if the Upper Marsyangdi project was not constructed. We have now seen the development of this place, which we would not otherwise have seen for another 50 years.

– Local resident, Lamjung, Upper Marsyangdi (60 MW, private, under construction)

In some cases, the initial project infrastructure is elaborated once the project has gained momentum, at which time secondary facilities (such as health posts, water taps, and mobile phone towers) are constructed to support both the local community and local staff members of the hydropower project. In this way, early investments in project infrastructure and operations are later incorporated into community development programmes. In the case of the Khimti project, for example, locals were allowed to live in the company residences and the local school that was constructed for the children of staff members was turned over to the community after the construction phase. In many cases, these kinds of infrastructure and ancillary benefits can be enhanced so as to build local goodwill and gain support for the project.

Table 10 summarizes some of the representative activities related to community development undertaken by the different hydropower projects in the sample.

The concept of ‘corporate social responsibility’ (CSR) is relatively new in Nepal, yet is increasingly common practice within the private sector. Though the term CSR can technically refer to risk management efforts (i.e., the need to adequately address mitigation needs so as to reduce social and political risk), it is more properly understood as an ongoing investment in community development that goes beyond initial efforts to remediate project intrusions or as “actions that appear to further some social good, beyond the interests of the firm and that which is required by law.” (McWilliams and Segal 2001). In Nepal, it is often difficult to distinguish between CSR activities and community development activities mentioned in the EIA, especially during the construction phase. Although hydropower project developers tend to claim all community development activities as CSR, many of these are in fact budgeted as compensation or mitigation measures.

Table 10: **Community development areas and activities in hydropower projects**

Priority areas	Representative activities
Health care	Funding management of health care (e.g., Khimti, Upper Bhotekoshi) Construction of health posts (e.g., Kulekhani III, Middle Marsyangdi, Aandhikhola, Upper Marsyangdi, Upper Tamakoshi) Acquisition of ambulances (e.g., Middle Marsyangdi, Chilime, Rasuwaghadi, Puwa Khola I) Organization of health camps (e.g., Mai, Aandhikhola, Middle Marsyangdi)
Education	In-kind and cash support to schools (e.g., Khimti, Aandhikhola, Kaligandaki, Upper Tamakoshi) Maintenance of school buildings (e.g., Aandhikhola, Upper Marsyangdi, Kaligandaki) Construction of new school buildings (e.g., Middle Marsyangdi, Khimti, Mai, Kulekhani II, Upper Bhotekoshi) Provision of school bus (e.g., Kulekhani II) Support for teachers' salaries (e.g., Upper Bhotekoshi, Khimti, Aandhikhola) Merit-based scholarships and awards (e.g., Upper Bhotekoshi, Khimti) Tuition fee waivers (e.g., Khimti) Literacy programmes (e.g., Khimti, Aandhikhola)
Roads	Opening track of road (e.g., Middle Marsyangdi, Jhimruk, Upper Marsyangdi, Puwa Khola I, Siuri)
Cultural sites	Construction of cremation sites (e.g., Kaligandaki, Upper Marsyangdi, Puwa Khola I) Construction/reconstruction of temples (e.g., Aandhikhola, Kaligandaki, Upper Bhotekoshi)
Mother's group	Financial support (e.g., Upper Marsyangdi, Aandhikhola, Jhimruk) Literacy classes (Khimti)
Drinking water	One house, one tap programme (e.g., Upper Marsyangdi) Construction of water supply lines (e.g., Middle Marsyangdi, Lower Marsyangdi, Upper Marsyangdi, Jhimruk, Ridi, Kaligandaki)
Irrigation	Expansion and improvement of irrigation systems (e.g., Ridi, Aandhikhola, Jhimruk, Khimti) Irrigation canal maintenance (e.g., Ridi, Aandhikhola, Jhimruk) River works and river bank stabilization (Jhimruk)
Other	Support for fisheries development (Kulekhani I, Kali Gandaki A)

Importantly, hydropower projects developed by the Nepal Electricity Authority generally do not use the term 'corporate social responsibility' as they are a government entity, beholden only to legal strictures that predate the concept.

Community development is done mostly during the construction phase.

– Project official, Kulekhani III (14 MW, public, under construction)

In contrast, community development programmes implemented by donor-funded projects are different from regular community development programmes, which makes it difficult for other projects without additional donor support to emulate. Middle Marsyangdi (KfW and other donors), Jhimruk (United Mission to Nepal), and Khimti (Norad, World Bank) are good examples in this regard.

Demand for fixing CSR budgets and area of 'affectedness'

In the current context, many developers feel that project-affected citizens are making too many demands on the power producers and that it is difficult to manage overlapping demands related to mitigation, compensation, CSR, and community development. Many project developers indicate that they would rather allocate funds to the local government or any other institution to carry out community development activities to avoid problems related to community demands. Therefore, there is debate about whether or not the power producers should allocate a fixed CSR budget to appease local communities and establish clear boundaries. These issues are being discussed by the Government of Nepal in terms of the Energy Crisis Mitigation Plan 2072 BS (2016 AD), which tentatively specifies that a certain fixed amount of project budgets be officially allocated to CSR activities (0.75% of the project cost for projects up to 100 MW and 0.5% of the project cost for projects greater than 100 MW). In theory, these funds would be used for CSR activities and additional environmental management and community support programmes beyond those mentioned in the initial environmental examination (IEE) or environmental impact assessment (EIA). However, unlike some of the CSR programmes, which have ongoing budgets linked to project revenues, these funds will be capped at the outset of the project. Project developers would then be responsible for determining if other community investments and CSR programmes will be undertaken in addition to this minimum budget.

There are limits as to what the power producers can do financially to benefit local affected communities and address local expectations. All projects use the affected area as a spatial boundary for spending their CSR or community development budget. As projects give CSR money for community development and local infrastructure, claims of ‘affectedness’ may come in from adjoining villages who wish to obtain a share of the CSR amount. For example, in the Upper Marsyangdi, in addition to the affected VDCs mentioned in the ESIA, one more VDC claimed that it was affected and received a small share of the community development budget.

People nowadays do not say – ‘Not in my back yard (NIMBY)’ in hydropower projects. Because of the money that comes into their villages, they now say ‘Yes in my back yard (YIMBY)’.

– Project official, Khimti (60 MW, IPP, built 2000)

Electrification

Electrification remains a major need in Nepal due to a widespread lack of infrastructure and endemic geographic challenges to new construction. The recent Energy Crisis Mitigation Plan (2016) mentions that only 58% of households in Nepal have access to grid electricity. Understandably, requests by locals for free or subsidized electricity are common in hydropower project areas.

In this study the power producers have responded to this need by expanding access to electricity in project-affected areas in Nepal in a variety of ways. Table 11 sets out the approaches used by the hydropower project case studies for community electrification.

Due to the sparse nature of settlements in areas where hydropower projects are constructed, the preferred strategy for bringing electricity to project-affected communities is ‘community rural electrification’, a model whereby any group, company, association, committee, cooperative or user association – with their constitutions suitably amended to enable them to distribute electricity to members (Community Electrification Distribution Bylaw 2003) – purchases bulk electricity from the NEA and manages its own distribution system, including the collection of tariffs from local users. In this model, the community buys electricity at a bulk rate and sells it to its members at general NEA consumer rates, producing a profit margin, which covers retail and repair/maintenance costs. Typically, the

Table 11: Support for rural electrification provided by hydropower projects

SN	Project name	Rural electrification support
1	Kulekhani I	Infrastructure support for electrification; no load shedding
2	Kulekhani II	No load shedding
3	Marsyangdi	Access through regular NEA connection
4	Aadhi Khola	Electricity connection through BPC distribution at subsidized rate
5	Jhimruk	Electricity connection through BPC distribution at NEA rates
6	Khimti	Free electricity (about 1 MW) to rural electricity cooperative through separate micro hydro plan
7	Upper Bhotekoshi	Some infrastructure support for electrification
8	Kali Gandaki A	Electricity connection to Bote community houses
9	Chilime	Infrastructure support for electrification
10	Middle Marsyangdi	Infrastructure support provided through neighbourhood development programme, complementing electrification policy of Lamjung District
11	Ridi Khola	Distributed electricity to 60 households at subsidized rate; no load shedding
12	Siyuri Khola	Infrastructure support for electrification
13	Mai	Infrastructure support for electrification
14	Upper Marsyangdi	N/A
15	Puwa Khola I	N/A
16	Kulekhani III	N/A
17	Rasuwegadhi	Infrastructure support for electrification (proposed)
18	Upper Tamakoshi	Infrastructure support for electrification (proposed)

government or developer advances 90% (previously 80%) of the cost of infrastructure, with the final 10% coming from potential members as a 'community contribution'. Such distribution systems handled by communities have made them self-reliant and greatly reduced the incidence of electricity theft and leakages (Batra 2010; Niti Foundation 2012). Some hydropower projects (e.g., Mai and Upper Tamakoshi) only provide infrastructure support. Others (e.g., Khimti) have supported this type of community rural electrification with a slightly different model, in which communities only manage the distribution of free electricity and free infrastructure provided by the project. When communities receive free electricity, demands for electrification also come from other adjoining villages.

Preferential tariffs can only be provided to local citizens if the company that owns the hydropower project also has the distribution licence. Although communities expect preferential tariffs, only two out of the 13 operational projects studied actually provide preferential tariffs to locals. As mentioned earlier, in the case study areas, only Butwal Power Company (BPC) and NEA have a distribution licence. NEA does not provide any preferential tariffs to project-affected citizens, BPC provides a subsidized tariff to local affected citizens in Aadhi Khola, and in Jhimruk the consumers pay the normal consumer tariff rates of NEA.

Water which flows from Kulekhani is generating electricity in I, II and III hydropower projects, but we locals are paying tariff at the same rate as those living in Kathmandu. There should be a difference in price.

– Local resident, Kulekhani I (60 MW, public, 1982)

In somewhat of an exception, the Ridi hydropower project has been providing electricity at the cheap rate of NPR 60 for 40 units, even though they do not have any distribution licence.

NEA has not taken the handover of the substation built by the Ridi hydropower project. We are distributing electricity to 65 households at a subsidized price. If the substation is with us, then we have to do the maintenance and care of this infrastructure, which the NEA should have done.

– Project official, Ridi (2.4 MW, IPP, completed 2014)

Guaranteed power supply, or the promise of 'no load shedding', features high on communities' lists of demands from hydropower companies. In projects with a distribution licence owned by the NEA or BPC, project-affected areas get the benefit of no load shedding. The demand for guaranteed power supply is so strong that people sometimes resort to violence if their demands are unmet. For example, in Jhimruk, locals demanded no load shedding in project-affected areas and, when the power was cut, they vandalized all office properties except the powerhouse – they and even burnt houses in the office areas.

We have compromised our agricultural harvest from three crops a year to two crops due to the diversion of water for generating power, therefore, we should get 24-hour electricity.

– Local resident, Jhimruk (12 MW, IPP, completed 1994)

We got electricity, which is main benefit: no load shedding.

– Local resident, Kulekhani I (60 MW, public, completed 1982)

Institutional and policy barriers for community rural electrification

A major policy barrier to community rural electrification is the institutional structure for the promotion of community rural electrification in Nepal. As the community rural electrification unit is housed within the NEA, there is no added incentive for the NEA, being a profit-oriented utility company, to promote a subsidy requiring rural electrification through the community route. If feasible, the NEA prefers to connect the electricity lines to individual houses, rather than allow communities to manage the distribution system through community rural electrification. The existence of this institutional structure provides a disincentive to many power producers to support community rural electrification. Hence, the majority of power producers are of the opinion that community rural electrification is not their responsibility.

Another issue is the lack of distribution licences in the hands of most power producers. Project officials routinely state that their contractual agreement is based only on the sale of electricity to NEA as per the power purchase agreement, and that the developer's responsibility is not to provide other infrastructure or subsidized electricity because power producers cannot distribute electricity, as per the current rules. The only institutions that had a distribution licence in the case study areas were the NEA and BPC.

At one point during the preparation of the draft Electricity Bill after the formation of the first Constituent Assembly, there were also discussions regarding the role of power producers in electrifying the area up to a certain radius of the generation infrastructure. However, this bill did not go through parliament.

During project establishment there was no such rule. Only in the new [electricity] bill is this provision included, but the modality for such distribution has not been decided: whether the distribution should be on the basis of a certain radius or unit... Moreover we do not have a distribution licence. Only the NEA has a distribution licence. It has not been decided whether or not NEA will provide free distribution once we provide electricity. In our case there is no provision for the distribution of electricity to communities.

– Project official, Bhotekoshi (45 MW, IPP, built 2000)

Irrigation, water and water rights

Hydropower development leads to short-term and long-term changes in the hydrology of project-affected areas and often impinges on local formal and informal water rights. Hydropower projects are required to mitigate or compensate local people for losses related to the reduction of flow in project-affected areas that are either partially or completely dewatered. However, the water-related benefits that are described in this subsection go beyond mitigation and compensation and, as such, can be defined as 'benefits'.

The expansion and improvement of irrigation systems and fisheries

Agriculture is the main source of livelihood for the majority of rural people. Hence, there is often a high demand for making sure that irrigation sources are not harmed or are restored when harmed. Going beyond the general mitigation measures, some projects also invest in upgrading and improving irrigation systems in the project-affected areas (see Table 12).

One often-quoted example of an irrigation benefit is investment in the upgrading of traditional farmer managed irrigation systems. Several hydropower projects support local farmers in the construction of check dams and irrigation canals and, in some cases, support the regular maintenance of these facilities. Among these, Ridi and Aadhi Khola hydropower projects have been exemplary in showing how small hydropower projects can meet the energy and food security demands of project-affected communities.

We used to work laboriously to make temporary small check dams with tree branches and bamboo to divert water into the earthen irrigation canals. During the monsoon, these temporary check dams would be wiped away by the swollen rivers. But now, due to the project, we have concrete check dams and canals.

– Local farmer, Ridi (2.4 MW, private, 2014)

However, in most cases, there is unresolved conflict between hydropower projects and local communities' vis-à-vis irrigation issues. In Kulekhani I, Jhimruk and Khimti, farmers have complained of less water for irrigation due to diversion or being in the dewatered zone and low productivity due to the hydropower project.

Due to less water in the river, we have to raise the height of the dam for the whole day, but still it is difficult to achieve the level required in the canals. On top of that, the project releases water suddenly and wipes out the temporary check dams, and so our irrigation is affected by the project.

– Local farmer, Khimti (60 MW, IPP, 2000)

Table 12: Irrigation benefits provided by hydropower projects

Project	Benefits related to irrigation
Marsyangdi	Pumped water for irrigation to limited lands in Gorkha district
Aandhikhola	Irrigation for 282 hectares of land through the Aandhikhola Irrigation System
Jhimruk	Lift irrigation, annual renovation of canals, in addition to the Jhimruk Downstream Mitigation Project, which has renovated 25 canals and provided river training in dewatered areas
Ridi	Two concrete irrigation canals built for the VDCs in Palpa and three for Ruru VDC in Gulmi District; regulated water provided from the desilting basin for the irrigation canals
Kaligandaki	New irrigation schemes built
Khimti	New irrigation system built

Similarly, some hydropower projects have provided benefits to fishermen. Kali Gandaki A has recognized local fishing rights of the 'Bote' indigenous fishing community, trained them in new fishing technology, and provided them with access to government hatchery services. These activities began as a mitigation programme, but continued as a benefit-sharing programme. Though not envisaged as a benefit during the construction of the project, the locals have managed to ensure these streams of benefits through repeated conflicts and negotiation with the hydropower producer (Gyawali 2015). Currently, a local fishery cooperative called Indrasarovar Fisheries Development Centre manages the lake created as a result of impounding. The centre sells fish in the local market and shares the profit among shareholders of the cooperative, who are from project-affected communities. This unintended benefit arising out of need for mitigating adverse impact on communities exemplify the evolving paradigm of benefit sharing in Nepal.

With the increasing number of hydropower projects being planned, conflicts over the use of water resources for hydropower and irrigation will undoubtedly rise. Due to Nepal's Water Resources Act, 2042 (1992), which explicitly prioritize irrigation for food production over hydroelectric generation (Water Resources Act 1992), future hydropower projects will have to come up with innovative solutions to mitigate irrigation-related losses suffered by the farmers and also support local communities in properly utilizing water resources for irrigation.

Construction of drinking water infrastructure

Many hydropower projects have made the provision of drinking water to project-affected citizens a benefit of the project. Water supply lines provided by the power producers have not only reduced the time needed to fetch water from distant sources, especially for women, but also provide clean and reliable water sources to households.

The project has supported a water supply project in our community and now we have better water supply.

– Local woman, Upper Marsyangdi (50 MW, private, under construction)

Before, it used to take a lot of our time to fetch water from distant springs, but now, due to the Aadhi Khola project, every community has a water supply.

– Local woman, Aadhi Khola (9.4 MW, private, upgraded 2015)

Drinking water projects are, therefore, widely cited as successful examples of the benefits of hydropower development at the local level, and the majority of project beneficiaries claim that drinking water supply has improved in their locality. Table 13 sums up the benefits related to drinking water in the case study sites.

Water for cultural and religious purposes

Rivers have many cultural uses in Nepal and are implicated in a variety of religious practices – especially in the Hindu religion, which considers rivers as holy and prescribes the use of water for various ceremonies from birth to death. Besides mitigating the adverse impacts on cultural and religious use (e.g., by releasing adequate water for cremation purposes), projects like Kaligandaki, Upper Marsyangdi, Puwa Khola, and Mai hydropower have also created cremation piers for locals. In the case of the Rasuwagadhi project, the developer has committed to building

Table 13: **Drinking water infrastructure provided by hydropower projects**

Project	Benefits related to drinking water supply
Upper Marsyangdi	Provision of 'one house one tap' in Nayagaon and Tarachowk in Bhulbhule VDC, Lamjung
Upper Tamakoshi	Drinking water projects in two most-affected VDCs, extending beyond dewatered areas
Ridi	12,000 litre tank constructed
Kulekhani I and II	The piped water to staff colony was shared with Dhorsingh VDC (through 1 inch pipe) and Sisneri VDC (through ½ inch pipe)
Middle Marsyangdi	Piped water for schools and communities under neighbourhood programme
Marsyangdi	Water source was initially only for staff colony, but later, after protests by the locals, the project had to compensate for the use of water and provided water supply lines to local villages.
Khimti	Drinking water provided to local affected areas
Kulekhani III	Water supply provided beyond affected areas, especially to schools

improved structures at the site of a local hot spring that was used for religious purposes and has helped locals to create a committee that will maintain the holy site by collecting funds from tourists.

At times, the entire project design may have to be compromised because of the potential harm to religious sites along the river. This was the case in Kali Gandaki A, where the dam height was restricted in order to protect a 'shila' (special stone which is thought of as Lord Vishnu in Hindu religion). Even the project official recognized the cultural value of this site:

If there was no shila, then 500 MW could be produced from this dam. This river is perfect for hydropower development due to its narrow gorge, and there are no inhabitants in the downstream of the river. However, the local people will never agree to inundate the shila.

– Project official, Kali Gandaki A (144 MW, NEA, built 2002)

Policy recommendations: Strengthening community development, electricity, and water related benefits

The abovementioned issues indicate the difficulty of creating blanket policies that regulate the role of hydropower developers in supporting community development. The major policy questions that arise are:

- **Governance:** Should the amount of funds dedicated to CSR or community development be specified by the government or the power producer? Can the amount of funds set aside be different (or extravagant) if supported by some donor agencies?
- **Budgeting:** Should budgets for CSR activities be fixed as a percentage of the project cost or of the project profit? If a CSR budget is allocated from the profit stream of a project that is financially struggling, then it could place an additional burden on the project and produce inconsistencies in the amount of CSR funds available, negatively affecting the sustainability or continuity of CSR activities.
- **Planning/forecasting:** What percentage of community development activities should be forecast during the early stages of the project (i.e., during the assessment phase) and what percentage should be developed ad hoc based on community needs? In the current context, CSR goes beyond mitigation, hence, should it be part of the ESIA or should it be dealt with separately?
- **Timing:** The timing of the disbursement of funds for community development is important. When during the project life cycle should these funds be given? Are they considered differently (i.e., as mitigation vs. CSR) if they are allocated before, during, or after the construction period?
- **Spatial orientation:** With CSR funds going to villages, there will be claims from adjoining villages for some of the CSR funds. A proper mechanism for defining affectedness is necessary to avoid conflict.
- **Project scale:** As the amount that hydropower projects can spend on CSR varies with the size of the project, what should be the size criteria for deciding the CSR amount of the project (e.g., 100 MW or below and over 100 MW)?

- **Project ownership:** In this study, only private power producers have provided CSR benefits, as similar benefits cannot be provided by the NEA. The policy question here is how to make CSR benefit policies uniform across different forms of project ownership.

In addition, there are differences of opinion concerning the specific modalities for spending community development/CSR funds and choosing community development/CSR projects. As different communities have different needs, the priority areas for spending CSR budgets cannot be uniform for all communities in Nepal and should be decided during the planning process with participation from different cross-sections of society, including women, indigenous ethnic groups, and historically marginalized communities. The process should include well-designed communication strategies to enable the power producer to build good relationships with local affected citizens.

In regards electricity related benefits, common policy issues that need to be addressed are as follows:

- **Provide power producers with a licence to distribute in affected areas:** The government should allow power producers to distribute electricity in the project-affected areas through a community rural cooperative model. This not only establishes a good relationship between the power producer and the community, but also addresses a major concern of communities, that of access to electricity. The current model of community rural electrification (where the NEA supplies electricity to consumers) needs to change so that the power producers are allowed to connect electricity directly to community cooperatives in project-affected areas. This will also increase the participation of power producers in expanding access to rural communities through rural electrification.
- **Potential opportunities with NEA unbundling:** In the future, the Government of Nepal may 'unbundle' the national grid system, breaking the monopsony structure in which the NEA acts as the sole buyer to allow other private market players to manage transmission and distribution assets. If and when this transition occurs, new policy guidelines would be helpful in interpreting the implications for the provision of benefits related to electrification.
- **Formation of a rural electrification board:** Due to the conflicting roles of the NEA (profit making) and the rural electrification unit (subsidy requiring) within NEA, it would be better to form a separate rural electrification board, external to NEA, to promote wider access to electricity through rural electrification.
- **Spatial limits:** It is important to clearly define the spatial extent to which power producers should carry out rural electrification, as the demand for community rural electrification often extends beyond the project-affected area. Currently, there is an expectation that royalty revenues accruing to the district government will be spent on electrification programmes, but the provision of royalties only begins after the commercial generation phase, years after the project enters the area and receives these demands. A variety of different opinions exist about whether the power producers or the government should assume responsibility for these areas and when, and using what modality. To address these issues, clear policy guidance is needed.

A major challenge in the hydropower sector is balancing the multiple uses of water, without significantly compromising the uses of water for other purposes. According to Nepal's Water Resources Act (2042), 1992, use of water for drinking, irrigation, livestock, and fisheries receives priority over hydropower, but, in reality, maintaining that priority is a huge challenge. In the current context, as long as water developers provide compensation and mitigate the loss and damage caused by the project, they are not explicitly obliged to restore prior patterns of water use. This policy regime blurs the boundary between mitigation and benefit-sharing programmes when it comes to the restoration of multiple patterns of water use, such as drinking water, irrigation, fisheries, and cultural use. Benefits related to water use can be enhanced by:

- **Recognizing and monitoring multiple uses of water:** Although policy exists for water use priority, mechanisms to achieve this at the grassroots level are needed to ensure that such priorities are well negotiated for productive and cultural uses of water. This is especially true for larger storage type systems where conflicts related to the multiple uses of water are likely to surface.
- **Improving irrigation:** Aadhi Khola and Ridi have shown that even small hydropower projects can bring water, energy, and food security to project-affected communities. Thus, multipurpose hydropower projects should be promoted and encouraged across different project scales.

Environmental enhancement related benefits

All hydropower projects constructed in Nepal following the promulgation of the Environmental Protection Act of 1997 and Environmental Protection Rules of 1998 are required to prepare an environmental impact assessment (EIA) report that clearly sets out the project's environmental mitigation plan to control or offset environmental impacts. Currently, most hydropower projects in Nepal focus only on compliance with formal requirements and do not go beyond environmental mitigation efforts to improve or enhance environmental conditions to the point where they could be classified as benefits.

Our research indicates significant variation in the classification of project activities related to the environment, reflecting a lack of agreement on what is 'necessary' from an environmental perspective and what qualifies as an environmental benefit. Despite the fact that environmental mitigation programmes cannot technically be considered as project benefits, power producers often claim that the environmental condition of project-affected areas has improved as a result of the implementation of the environmental mitigation plan (for example, by planting more trees than were cut) and cite this as a benefit to local communities.

To qualify as environmental enhancement, however, these efforts need to verifiably demonstrate that they go 'beyond mitigation'. This in turn requires the accurate collection of environmental baseline information and systematic monitoring procedures. Unfortunately, the process of conducting EIAs has often become a mere 'tick-the-box' exercise in Nepal: these reports are rarely subjected to high-quality review and feedback. These reports are also not easily accessible to the general public. In addition, most hydropower projects do not employ staff for environmental monitoring purposes. There are a few exceptions to this – for example, the Upper Tamakoshi, Chilime, Upper Marsyangdi, and Rasuwagadhi projects have full-time staff working on environmental issues and the Upper Tamakoshi and Khimti projects have consistently been collecting good quality data. The study team found that very little environmental monitoring happens once project construction begins, because there is no specific government body at the local level entrusted with monitoring and ensuring compliance with environmental and social mitigation plans.

We have allocated funds for the cost of government officers to monitor the project, however, no one has come – even after repeated requests.

– Project official (anonymous)

Environmental flows and water for other productive uses seems to be the biggest victim of lack of proper monitoring. Although standards for the guaranteed release of minimum environmental flows in the dewatered diversion reach have been agreed on in theory (typically defined as 10% of the mean monthly flow), in practice these standards are largely disregarded. Locals in several project-affected areas have complained about the effects of limited water supply on agricultural livelihoods, as well as increased mosquitoes and health problems for humans and livestock due to poor water quality. As the scope and scale of hydropower development in Nepal increases and several power projects come up in the same basin, a framework for the development of cumulative impact assessments (CIAs) is urgently needed. Currently, only a few hydropower developers (i.e., the 216 MW Upper Trishuli 1, Upper Karnali – ongoing) have undertaken a CIA.

Payment for ecosystem services

While much of the environment-related investments made by hydropower projects are a part of compensation and mitigation programmes and, hence, do not qualify as benefit sharing, payment for ecosystem services (PES), which aims to pay upstream communities for maintaining good environmental conditions in the upstream part of the catchment, can be counted as a benefit-sharing mechanism. In the past, a mechanism that resembled a PES-scheme was established in the Kulekhani I hydropower project – the only reservoir project in this present study. Under this system, created at the behest of donor agencies (i.e., Winrock International), the Government of Nepal introduced a benefit-sharing mechanism that would use a percentage of project royalties to compensate upstream users to curtail certain 'bad' land management practices and support efforts to conserve the physical environment (Upadhyay 2005). However, a study by Pant et al. (2014) highlights the fact that 64% of locals in the project area



preferred to invest hydropower-generated royalties in 'local development' such as road construction and electrification instead of "fulfilling environmental obligations" (Pant et al. 2014, p 154).

In 2012, a policy directive was passed to collect 2% of net profits from hydropower plants as payment for ecosystem services, which are to be deposited in the Forest Development Fund and applied to forest-management projects in project-affected districts. However, the hydropower sector is opposed to such a high rate of payment, citing inappropriateness given the current energy crisis in the country and claims that it provides a disincentive for investing in the hydropower sector. Following the declaration of a national 'Energy Crisis Reduction and Electricity Development Decade Plan' in early 2016, hydropower developers and government officials are discussing the need to eliminate the provision for this additional 2% to finance the PES system, as it is seen as an additional barrier to development (The Corporate Weekly 2012).

Policy recommendations: Enhancing environment-related benefits

Environmental issues are viewed largely as a barrier to development in Nepal, and many actors within the hydropower sector are calling for the weakening

of environmental safeguards and the acceleration of environmental review so as to help resolve the energy crisis in Nepal. However, given the high level of environmental uncertainty in the Hindu Kush Himalayan region and the weak level of environmental monitoring in Nepal, it is important to collect better environmental data to improve collective understanding of environmental issues and inform decision making about environmental resources. With these principles in mind, we make the following recommendations:

- **Data collection, management, and sharing for strategic river basin planning:** Comprehensive environmental data should be collected throughout the life cycle of the project, from the initial feasibility study until (and beyond) decommissioning, to gain a better understanding of long-term changes to the structure and function of riverine environments in the Hindu Kush Himalayan region. Policies are needed to promote basin-wide cumulative impact assessments, given the region's climatic volatility and increasing environmental uncertainty.
- **Undertaking cumulative/integrated impact assessment:** In cases where multiple hydropower projects are planned or under construction along the same river, it is important to assess the cumulative or integrated impact of these projects on various uses of water in the basin, especially concerning the rights over water use between upstream and downstream populations, to better manage both multiple water uses and the water/environment nexus.
- **Monitoring and evaluation:** Overall, in the hydropower sector in Nepal, there is a strong need for monitoring by the state or an authorized department of the implementation of environment management plans.
- **Transparency:** Environmental impact assessments need to be made easily accessible to all stakeholders, including local people and should be available in the public domain.

Because environmental conditions are linked to local livelihoods and community development, failure to correctly mitigate environmental impacts and environmental risk will undermine other forms of benefit sharing.

Commonalities and Concerns around Current Benefit-Sharing Practices

This report provides an empirical review of the existing programmes and policies for benefit sharing currently being used in Nepal’s hydropower sector. Our research shows that benefit sharing has rapidly evolved into a broad and diverse set of programmes and practices and is a central issue that shapes the success and failure of hydropower projects in Nepal. Nonetheless, there are significant policy gaps that can lead to conflicts. At the same time, innovative ways have been developed to solve such conflicts. In the final section of this report, we focus on some of the key thematic concerns that should be considered when creating benefit-sharing policies in Nepal. These concerns are driven by competing interests among multiple stakeholders, and address them requires deeper understanding of the underlying political economy of hydropower development in Nepal.

What qualifies as a benefit?

The first step towards establishing best practices in the field of benefit sharing should be to come up with a mutually-agreed upon definition of what is and what is not benefit sharing that clearly distinguishes these from compensation and mitigation measures. Uncertainty surrounding what qualifies as a benefit versus an entitlement for a project-affected person limits the ability of policy makers to effectively promote best practices and creates a great deal of confusion among local stakeholders. Despite its rising significance, clear consensus seems to be lacking on how benefit sharing is defined and understood.

Defining ‘affectedness’: The spatial scales of benefit sharing

As hydropower projects proliferate across Nepal, an increasing number of Nepalese are being classified as both local stakeholders and ‘project-affected populations’. Even though defining ‘affectedness’ would entail identifying those who will have to bear the costs of adverse impacts, this terminology takes on new meaning in the context of benefit sharing, particularly when these classifications are linked to eligibility for preferential rights or claims to project benefits (such as a greater equity stake in the project’s share offer). Given recent conflicts based on competing claims of affectedness, it is important to create precise definitions of who exactly may qualify as ‘project affected’. As these systems change and evolve, it is extremely important to pay attention to the interactions between scales as this will ultimately determine the success of any given benefit-sharing programme. Table 14 highlights some of the spatial scales used for different types of benefits.

Table 14: Spatial scales of benefit sharing

Affectedness scale	Role in benefit sharing
Individual and families (mainly within affected area)	Direct beneficiary: employment, shares, electricity Indirect beneficiary: community benefits, such as roads
Project-concerned committee	Committee formed (generally non-elected) to represent affected citizens to hold the project accountable for implementation of its environmental mitigation plan as well as the project’s commitment to benefit sharing with the project-affected communities; many local benefit sharing decisions are made by this committee.
Community user groups	Beneficiary group formed to implement community development benefits, such as construction of roads, water supply, plantation of trees, etc.
Village development committee (VDC)	Common spatial unit based on government’s administrative boundary for defining affected areas – ‘atiprabhabit’ (most-affected), ‘prabhabit’ (affected), and ‘kamprabhabit’ (less-affected); area where community development or CSR funds are spent and residents are prioritized for employment, electrification, and shares
District	Spatial unit based on the government’s administrative boundary for distribution of royalties (through district development committee); also commonly used to identify residents that qualify to buy shares

The shifting temporal value of benefits

The benefits from hydropower development accrue unevenly over the life of the project, and the relative value of benefits can change over time. Many of these benefits are tied to the project cycle: some benefits are provided during the initial stages of project design and construction (e.g., employment benefits) and will likely cease once the project commences operation, whereas other benefits can only be realized once the project is fully operational (i.e., royalties or shares). Some benefits last only during the construction period while others may continue in perpetuity. Accordingly, a different ‘time value’ is attached to each of the benefits shared by hydropower projects, which often depend on stakeholder preferences and decision making.

Importantly, as each project develops, the orientation of different stakeholder claims can shift, and the opportunity for differently-positioned stakeholders to claim or receive benefits from the project may change. Perceptions of ‘appropriateness’ and ‘fairness’ may also change. To account for changing preferences and the possibility of disputes among stakeholders based on temporal unevenness, project developers must design benefit-sharing programmes that:

- **Ensure** that benefits continue to accrue over the lifespan of the project
- **Implement** a variety of benefit-sharing sub-programmes that overlap in terms of time horizons, creating programmes that are contemporaneous and complementary
- **Provide** stakeholders with choices between different benefit-sharing programmes, to accommodate the diversity of preferences that exist
- **Maintain** flexibility in both the programming and implementation phases to allow the benefit-sharing programme to change as needed
- **Promote** open lines of communication, so that the time horizon of benefit-sharing programmes and the temporal value of benefits is clearly understood by local people

In Nepal, where hydropower development projects are routinely delayed and project timelines are subject to significant logistical, environmental, and political risks, project managers also space out benefit-sharing programmes at different times to mitigate operational risks. Table 15 looks at the type of benefits shared to mitigate operational risks at different phases of a hydropower project.

Although earlier conventions on ‘benefit sharing’ focused on the distribution of project profits (realized after the project recovers its costs), recent experience suggests that benefit sharing must begin early in the process of project development in order to promote positive patterns of public relations and more substantive forms of community development. This presents a challenge to hydropower developers and investors who have to borrow from projected future revenue to finance current benefit-sharing programmes. However, this has proven necessary in Nepal to maintain a positive working environment. Recent conflicts have highlighted the fact that temporal equity is as important as spatial equity – a balance must be struck.

Table 15: **Shifting temporal values of benefits**

Time period	Type of benefits shared to mitigate operational risks
Before construction	Some hydropower projects support target communities during this phase by investing in local institutions such as schools or announcing plans for longer-term community development to reinforce efforts to mitigate the adverse environmental and social impacts of the project and, second, to build relationships with local communities so that there is strong support and minimal obstruction of the project during the construction phase.
During construction	During this phase, there is a very thin definitional line separating the environmental and social mitigation measures mentioned in the environmental impact assessment report and the benefit sharing activities carried out by projects. To reduce the negative perception of local communities and to ensure that they feel engaged in benefit sharing, the most common benefits that projects share during this phase are: employment, training, community development activities, rural electrification, and, in some projects, the offering of shares after completion of about 70% of construction.
After construction	After completion of environmental and social mitigation, projects start investing in long-term benefits and relation building. At this time, benefits such as employment (although limited in number), royalties, equity sharing (in some projects) and CSR are realized.

Size of project and community expectations

Differences in project size greatly affect the distribution of impacts and benefits from hydropower development – large projects have more wide-reaching social and environmental effects and are expected to share project benefits over a broader area, whereas small projects impact a smaller area, in relative terms. Further, differences in project revenues generated by small and large projects often make it difficult for small projects to pursue the same strategies for benefit sharing as large projects. The objective, however, is to evenly distribute the benefits at a proportionate value and on the relevant project scale.

Our research confirms that a general misunderstanding exists among local populations in project-affected areas concerning the ability of hydropower projects to finance benefit-sharing programmes. The general perception is that all projects have similar benefit-sharing programmes, but this perception does not distinguish between the capacities of different-sized projects.

Now we cannot afford to make small projects as the demand from the people is same for a 3 MW project as a 100 MW project.

– Project official, Chilime (22.1 MW, NEA subsidiary, completed 2003)

This brings out the issue of ‘unreasonable expectations’, which is frequently referred to by power producers as a major challenge and a prohibitively expensive uncertainty that constrains project viability.

Lack of monitoring mechanisms

The systemic lack of monitoring and evaluation mechanisms makes it extremely difficult to determine the success of past and current benefit-sharing programmes; limits the ability to compare between programmes conducted by different projects; and severely constrains the adaptive process of learning that would facilitate the identification of ‘best practices’ in the sector. There is a significant need to improve the current mechanism for monitoring and evaluation after the ESIA report is approved by the government, and there is a need to create a more comprehensive information management framework for reporting and sharing the data collected by hydropower projects. Although several hydropower projects are following best practices in the collection of data on social and environmental indicators and the monitoring of their own CSR and benefit-sharing activities, this data is underutilized and fragmented.

Awareness, communication failure, and conflict

For all hydropower projects, it is necessary to promote awareness by clearly communicating with local stakeholders regarding the dimensions and intentions of benefit-sharing programmes – to inform local stakeholders about what benefits to expect from the project and when, and who exactly is eligible to participate in which components of the benefit-sharing programme. Unfortunately, the current situation in Nepal has become polarized, following certain entrenched patterns of negotiation that repeat the same mistakes and reproduce the same contested asymmetries of information. Project developers limit the flow of information due to concerns about local politics, fearing that by releasing information they will raise local expectations to unrealistic levels and promote ‘extractive behaviour’. While recent trends of politicization prove that this concern is not unwarranted, it is suggested that clear communication and dialogue with local stakeholders can help minimize conflict.

Our research indicates that the current pattern of local conflict and development disputes is driven by a variety of factors related to failures of governance – e.g., citizens feeling ignored by the government (indicated by low budgets in rural areas) and interest groups generally ignoring formal political channels for negotiation (e.g., the strike by labourers demanding shares in the Upper Tamakoshi hydropower project). While recognizing the validity of these concerns and the need to reduce conflict, our findings indicate that the majority of these conflicts (i.e., Upper Bhotekoshi and Upper Tamakoshi) also stem from information asymmetries that create latent anxiety, which is then exploited by local political interests. In short, additional efforts related to stakeholder engagement and information campaigns would be a sound investment.

Issues of governance

Our research indicates that the benefits shared by hydropower projects also differ with the type of ownership of projects. For decades, types of institutional ownership in Nepal were limited to public and private, with private divided into national power producers and power producers with shares or affiliations with international companies. Recently, new models of public-private partnership have emerged in hydropower development, with government and private owners both having shares in hydropower companies. In the cases selected for this study, the benefit-sharing practices can be distinguished between four types of institutional ownership structures (Table 16).

Among the hydropower projects studied, two projects have created their own high-level governance mechanism for making project-related decisions, a response in part to coordination problems between scales. The first of these entities to be formed was the Taskforce Committee in the Khimti hydropower project in the early 2000s and the second was the District Coordination Committee in the Upper Tamakoshi hydropower project. These are different from local project-concerned committees because they are formed by and include project officials and they include district-level political leaders and key government officials from the district in addition to local citizen representatives. Such hybrid and innovative governance systems have come into place due to the lack of a legitimate and elected local government. Research shows that elected local government could help to resolve the current governance problems at the local level, as well as create an important avenue for communication and information sharing.

One big unresolved question of governance concerns the eventual transfer of ownership for all licensed hydropower projects back to the Government of Nepal after a certain number of years (depending on the project), based on the standard build-operate-own-transfer (BOOT) model currently used for the majority of private sector projects in Nepal. This transfer of ownership from the private to the public sector has huge implications in terms of the current benefit-sharing practices, especially for the royalty mechanism and the shareholder model, but also for community development activities based on CSR budgets and the maintenance of environment enhancement programmes.

The implications of federalism and state restructuring

The distribution of benefits, especially royalties, from hydropower development is currently structured at the sub-national scale based on the five development regions and 75 districts in Nepal. With the promulgation of the Constitution of Nepal 2015, Nepal is officially divided into seven proposed provinces – resulting in the recombination of districts into new administrative zones as per a federalist three tier model of governance. It is still unclear how benefits will be shared under the new federal structure and clear policies on this are urgently needed.

Table 16: **Benefit sharing practices used in different institutional ownership structures**

Ownership structure	Significant practices of benefit sharing
Publicly owned companies operated by the Nepal Electricity Authority (e.g., Kulekhani I and II, Kulekhani III, Marsyangdi, Middle Marsyangdi, Kali Gandaki)	Many projects funded by multilateral banks follow the lender's safeguard policies (e.g., the neighbourhood and resettlement programme in Middle Marsyangdi). No or very little CSR budget after completion of construction. Practice of PES in Kulekhani I and II (due to reservoir project).
Nepali independent power producers (e.g., Mai, Puwa Khola I, Ridi, Siuri)	Small-scale hydropower projects (maximum size in this study is the 22 MW Mai project) with limited capacity to share benefits compared to large projects or international power producers.
Independent power producers with shares or affiliations with international companies (e.g., Khimti, Bhotekoshi, Upper Marsyangdi, Jhimruk, Aandhikhola)	High budgets for CSR (Upper Bhotekoshi – USD 200,000/year and Khimti – USD 100,000 distributed among ten affected VDCs), partly due to dollar; power purchase agreement
NEA subsidiaries – new models of hydropower projects promoted using public-private partnerships (PPPs) with the involvement of both public institutions such as the Nepal Electricity Authority and private investors (e.g., Chilime, Upper Tamakoshi, Rasuwagadhi)	Promotes Nepali investment; pioneers models of local equity sharing/ share offering (e.g., Chilime)

Issues of gender and social inclusion

Patterns of social exclusion based on gender, caste, ethnicity, and class were apparent throughout the research. Rooted in patterns of structural inequality inherent in traditional Nepali society, these systemic inequities manifest themselves in multiple ways during the process of hydropower development, such as:

- Uneven patterns of awareness and information about stakeholder rights
- Unequal participation in community consultations and decision making about hydropower development, leading to the prioritization of some agenda and the subjugation of others
- Uneven distribution of impacts related to hydropower development, as certain sub-populations and social groups are disproportionately affected or economically dislocated
- Unequal ability to mobilize for individual benefits (i.e., seeking employment, participating in training programmes, or purchasing project shares)
- Informal inequalities in the distribution of benefits notionally shared by communities (i.e., community development programmes, royalties) due to unequal access to public facilities and patterns of social hierarchy

Thus, while benefit-sharing programmes generally seek to share benefits equally across project-affected populations, the research indicates that certain kinds of people have less access to the benefits of hydropower development than others. Firstly, women are under-represented in the process of hydropower development, across the board (in terms of stakeholder consultation, local hiring, establishing local development priorities and local governance). In addition, there are many social factors that reproduce disadvantages for women from marginalized groups (i.e., Janajati, Dalit, ultra poor, and disabled women) who are subject to multiple layers of social exclusion and have limited livelihood choices, yet remain extremely underserved. Unfortunately, it seems that many projects are simply 'ticking-the-box' with regard to gender-sensitive activities, which is symptomatic of larger problems of accountability and monitoring.

More concretely, additional and targeted efforts are needed to engage local women (especially women from socially disadvantaged groups) in processes of stakeholder consultation and to ensure their participation in benefit-sharing programmes. Recognizing and accounting for gendered differences is important to ensuring the equitable sharing of benefits from hydropower development and to promote sustainable local economic development.



Benefit Sharing as an Ongoing 'Process' in Nepal and Lessons for other Hindu Kush Himalayan Countries

Although 'benefit sharing' as a formal concept is relatively new in Nepal, our analysis of the hydropower sector in Nepal indicates that a variety of models and practices of benefit sharing have co-evolved with efforts to promote hydropower development over time. These patterns reflect broader patterns of success and failure in Nepal's hydropower sector, but also a series of unique innovations and solutions emerging from the process of negotiation with the different stakeholders seeking benefits. In parallel, a variety of overlapping definitions of what benefit sharing is and what it should be have also arisen, creating a robust and dynamic discourse that places Nepal at the leading edge of the global conversation on benefit sharing in the hydropower sector.

Throughout this report, we have presented the diversity of solutions emerging from this pluralistic policy terrain (cf. Dixit 2008) as a resource: firstly, because multiple strategies and vectors of benefit sharing are necessary to engage multiple kinds of stakeholders at different spatial and temporal scales and, secondly, because the process of negotiation by which new models and practices are tried and tested in a variety of contexts, however awkward, continues to yield new perspectives and innovative solutions. In this way, the broad landscape of negotiations about benefit sharing occurring across Nepal, successful or not, shape what Dixit and Gyawali (2010) refer to as a "constructive dialogue about dams and development in Nepal" that drives co-evolutionary processes.

Despite this complexity, however, our comprehensive review of practices and policies of benefit sharing by 18 different hydropower projects across Nepal suggests that the field of benefit-sharing practices is trending toward coherence. Thus, although it would be inappropriate to try to create a 'one-size fits all' policy, the time has come to establish a more comprehensive policy framework that can guide project developers seeking to establish benefit-sharing programmes and frame the process of negotiation in a way that might yield more effective solutions to conflicts over hydropower development.

At this point in the specific evolution of benefit sharing in Nepal, it is important to establish a clear definition of 'benefit sharing' as a concept and a shared system of classification for the diverse benefits arising from hydropower development – an effort which we have partially undertaken in this report. This effort will undoubtedly require considerable iteration and debate between different stakeholders, but the goal here is to establish dialogue that promotes a process of learning, rather than establishing an immediate consensus. We cannot overemphasize the importance of communication in this process – in managing expectations and in resolving conflicts and moving towards a harmonious relationship with local communities. Communication is important at all scales. For example, recent trends of protest and politicization indicate that awareness about benefit-sharing programmes in Nepal is spreading rapidly via informal channels, and not all of that information is necessarily accurate. There is now a need for commensurate policies related to investment in communication and information sharing programmes to minimize confusion. On a related note, there is a significant need to improve the current mechanism for monitoring and evaluation in the hydropower sector.

Chronic failures of governance remain a significant impediment to the implementation of benefit sharing and other policies related to hydropower development. In the current vacuum of local governance, the hydropower developers who have pressed on despite ongoing political volatility in Nepal are subject to the just and unjust demands of local populations who feel that their voices have long been ignored. The current situation is thus distorted, leading to a situation in which the responsibility for local development has been outsourced to the hydropower sector and where innovations in benefit sharing and laudable efforts to promote community development risk exposing hydropower projects to increased and unnecessary risks leading to a perverse incentive problem. Although the hydropower sector has already proven itself quite capable of finding innovative resolutions to these conflicts, the Government of Nepal has to take responsibility for making decisions about benefit sharing at the national scale. Recent dialogue about policy reform at the central level that seek to create an enabling environment for hydropower development

(i.e., discussions about an updated Electricity Act and the formation of Electricity Crisis Management Plan) represent progress in this regard, but also risk overshooting their goal – to completely suppress local voices or completely ignore environmental risks would be a major mistake.

Further, environmental issues must be considered within larger decision making about water resources management and within the global paradigm of the water, food, and energy nexus. In the current political and economic climate, many people consider environmental safeguards to be an additional barrier to hydropower development and an additional cost preventing the realization of Nepal's hydropower possibilities – a perspective that reflects an imbalance between short-term and long-term needs. Resolving the current energy crisis in Nepal is indeed important, and environmental impacts are inevitable in this process, but it is important to establish clear standards for the management of environmental risks, especially long-term risks related to environmental degradation, natural disasters, and the uncertain effects of climate change in the Hindu Kush Himalayan region.

Lastly, it must be acknowledged that benefit sharing is not a panacea for all of the issues that frustrate hydropower development in Nepal. Finding the appropriate mechanism for sharing benefits requires balancing the competing interests and agendas of differently-positioned project stakeholders – from the project developer, to government actors and policy makers, to institutional investors and donor agencies, to consumers and electricity users and project-affected populations. Although legal and regulatory frameworks are key factors affecting the benefit-sharing arrangements, the design and realization of any benefit-sharing programme in Nepal rests on a process of negotiation. It is important to acknowledge that the values and claims of differently positioned stakeholders may in fact shift during the life cycle of the project, requiring a renegotiation of a prior solution. In this sense, overlap and redundancy within a portfolio of differently oriented benefit-sharing programmes can be strategically valuable. Again, because optimality is highly contextual and changes over time, benefit sharing must be understood as an evolutionary process.

In harnessing its considerable hydropower resources, Nepal must also consider the ways in which the distribution of risks and benefits are shared across different physical and human geographies. Benefit sharing programmes can and should be used to redefine historical patterns of structural inequality and extractive centre-periphery dynamics – restructuring contentious relationships between the imagined hydropower nation and its citizens (Lord 2016). As programmes and policies for benefit sharing continue to evolve within the hydropower sector, it is important to remain committed to principles of equity and fairness throughout the intermittent periods of success and failure, and to remain focused on the patterns of long-term progress that are emerging. There is a possibility to introduce a new paradigm of development; however, the central question remains: What kind of hydropower development and for whom?

This leads us to the question of what other countries in the Hindu Kush Himalayas, which have similar hydropower potential and where hydropower companies are also often embroiled in similar conflicts with local communities on the issue of benefit sharing, can learn from Nepal's experience. A lot actually, is our answer. Our findings and the global literature show that Nepal is, in many ways, at the forefront of developing new and workable benefit-sharing mechanisms in the region. Similar in-depth studies on benefit sharing could not be discovered elsewhere in the region. And whatever limited literature is available shows that benefit-sharing mechanisms are not as extensive as in Nepal. So, what could be the possible lessons that Nepal has to offer to other countries in the region and beyond?

For one, in Nepal it is clearly enunciated in various policies (e.g., royalty) and practices (e.g., equity shares, community development) that benefit sharing is beyond mere compensation and mitigation. This clarity is often lacking in other countries in the region, where benefits and compensations and corporate social responsibility are all lumped together. Second, a 'royalty mechanism' is enshrined in the laws of Nepal and, while it may not work perfectly, serves as a basic legal framework that can be improved upon. In other countries, such as India and Pakistan, each state or province has its own royalty programme (and some have none) and all of them are implemented differently leading to different outcomes. Based on Nepal's experience, a case can perhaps be made for more uniform royalty policies in other countries in the region. Third, the practice of executing equity or share offers is a unique Nepali contribution in the field benefit sharing, as, to the best of our knowledge, none of the other countries in the region have similar instruments for allowing local people to participate in hydropower programmes as equity investors. Although several questions remain, this is an instrument that other hydropower producers in

the region may find useful – both to raise capital and to earn the goodwill of the local people. Finally, while most projects in the region include community development efforts and infrastructural benefits, what is unique about Nepal is its rich history of distributing these benefits over space and time and to ensure that a steady stream of benefits flows throughout the course of the project.

All of this is not to say that the way benefit sharing happens in Nepal is without flaws; indeed, in this report, we point out the several ways in which these benefits could be further enhanced. Rather, we want to conclude by saying that the Nepali context has given rise to a rich tapestry of benefit-sharing policies and practices, and that some of these may be just as applicable outside Nepal, keeping in mind that policies and practices, to be successful, have to be contextualized.



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Annex 1: Details of interviews and FGDs

Projects (Field visit month, year)	Government Officials	Local community members (number of people who participated in discussions)	Hydropower Developers
Kulekhani I (August, 2015)	(In Makawanpur District) Local Development Officer Program Officer Social Development Officer	Focus Group discussion near inundation area (6) Chairman, Fisheries Development Center (1) Focus group discussion near dam site (4) Irrigation affected farmer (1)	Project Manager Operation In charge at dam site Operation In charge at powerhouse
Kulekhani II (August, 2015)		Individual interviews with locals (2)	Project Manager Accounts Officer Engineer (2) Maintenance In charge
Kulekhani III (August, 2015)		Forest User group (3) Local Employed youth (6) Focus group discussion with women near power house (6)	Environment Officer Consultant Project Manager Engineer (3)
Marsyangdi (September, 2015)	None	Individual interviews with locals (2)	Project Manager Engineer (2) Maintenance In charge
Aadhi Khola (February, 2016)	(in Syangja District) Local Development Officer, Accounts officer, Social Development Officer, Other DDC staff (2)	Focus Group discussion in dam site (15) Focus Group discussion near power house(8)	Distribution Head, Project Officer, Environment Officer, Accountant Office staff
Jhimruk (February, 2016)	(In Pyuthan District) Chief District Officer, Local Development Officer, Ranger(District Forest Office)	Focus group discussion near upstream (7) Focus group discussion near downstream (6)	Plant Manager, Accountant, Engineer, Distribution Head, Office Staff
Khimti (January, 2015)	(In Ramechhap District) Energy and Environment Officer Engineer (2) Accounts Officer Social Development Officer	Focus group with women's cooperative (4) Representative of rural electrification School teachers (2) Focus group discussion with locals from Project affected area (20) Focus group discussion (3)	Project and Liaison Manager Operations and CSR Manager
Upper Bhotekoshi (February, 2015)	None	Focus group discussion near dam site (8) School teachers (5) Health Center staff (2) Local Businessmen (2)	Chief Executive Officer, Plant Manager Finance and Administration Manager
Kali Gandaki A (February, 2016)	Same as in Aandhi khola	Focus group discussion with fishermen (4) Local resident	Plant in charge, civil engineer, environment officer Office staff (2)
Chilime (March, 2015)	(In Rasuwa District) Social Development Officer	Local woman Tibetan Refugee Local resident Focus group discussion (6)	Chief Executive Officer
Middle Marsyangdi (September, 2015)	(In Lamjung District) Local Development Officer Social Development Officer	Resettled family member Local Resident	Project Manager Engineer Project staff
Ridi (February, 2016)	Local Development Officer, Social Development Officer One DDC office staff	Focus group discussion near power house(15) Focus group discussion with cooperative(5) One and one conversation with five local people in different location from weir side to power house. (5)	Project Manager, Accountant, Plant foreman Project Staff
Siuri Khola (September, 2015)	Same as Middle Marsyangdi	Focus group discussion (10)	Plant Manager
Mai (July, 2015)	(In Illam District) Local Development Officer Accounts Officer Social Development Officer Office staff	Family benefitted by the project (2) Local forest user group member Local employed by the project	Executive Director Public Relation officer

Upper Marsyangdi (September, 2015)	Same as Middle Marshyangdi	Focus group discussion with women (10) Focus group discussion near dam site (20)	Public relation officer Environmental monitoring consultant
Puwa Khola I (July, 2015)	Same as Mai	Local whose land was acquired Local working with the project District Free Prior Informed Consent (FPIC) coordinator	Managing Director Project Engineer Public Relation Officer
Rasuwadadi (March, 2015)	Same as Chilime	Focus group discussion (5) Individual meetings (4)	Project official (2)
Upper Tamakoshi (January, 2015)	In Dolakha District Chief District Officer Social Audit Officer Program Officer	Local leader School teacher Labor strike leader Focus group discussion labors (3)	Public Relation Officer Environment Officer Project staff (2)



Annex 2: Professional and academic events related to water and hydropower in the Hindu Kush Himalayas

As part of the research, ICIMOD and Niti Foundation co-authors attended the following professional and academic events related to hydropower development in Nepal and the greater Himalayan region:

- Workshop on 'The Water-Energy-Food Nexus in South Asia' in February 2015 (Fulbright, ICIMOD, World Bank, Nepal Water Conservation Foundation)
- Workshop on 'Hydropower Sustainability in Nepal' in December 2015 (International Hydropower Association)
- Workshop on 'The Shares Question in Hydropower Development' in April 2015 (Niti Foundation and Social Science Baha)
- 'India HI-NEX Workshop' in June 2015 (ICIMOD)
- Workshop on 'Impact of Disaster on Hydropower Development in Nepal' in July 2015 (Niti Foundation and Investment Board of Nepal);
- Workshop on 'Promoting Sustainable Hydropower Development in Nepal' in December 2015 (Nepal Hydropower Association);
- Discussion programme on 'Topics to be Considered for Energy Emergency' in January 2016 (IPPAN and Niti Foundation)
- Workshop on 'Advancing Sustainable Hydropower' (United States Agency for International Development/ International Finance Corporation) in April 2016







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