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## A Guide for Local Benefit Sharing in Hydropower Projects

Chaogang Wang

A Guide for Local Benefit Sharing in  
Hydropower Projects

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## List of Acronyms

AFR	Africa Region
CDD	Community driven development
CSR	Corporate social responsibility
EAP	East Asia and Pacific Region
EMP	Environmental management plan
ESIA	Environmental and social impact assessment
ESMP	Environmental and social management plan
HPP	Hydropower project
ICR	Implementation completion and results report
IPP	Independent power project
LADF	Local area development fund
LHRF	Lesotho Highlands Revenue Fund
LHWP	Lesotho Highlands Water Project
NGOs	Nongovernmental organizations
NT2	Nam Theun 2 Hydroelectric Project
PAD	Project appraisal document
PPPs	Public-private partnership projects
RAP	Resettlement action plan
SAR	South Asia Region
SWECO	Sweco Norge AS
WCD	World Commission on Dams

Note: All dollars are U.S. dollars unless otherwise indicated.

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## Executive Summary

Local benefit sharing in hydropower projects can be defined as the systematic efforts by project proponents to sustainably benefit local communities affected by hydropower investments. Benefit sharing is a promising approach for implementing hydropower projects sustainably, and is emerging as a supplement to the requirements of compensation and mitigation. Benefit sharing can provide equitable development, sustainability, and smooth project implementation for hydropower development.

For benefit sharing mechanisms to work, the key enabling conditions are government policies, the legal and regulatory framework, corporate social responsibility strategies of development companies, and the capacity of local communities. Stakeholder engagement is essential in initiating and designing benefit sharing programs.

Monetary benefit sharing and non-monetary mechanisms are commonly used in benefit sharing in hydropower projects. Monetary benefit sharing means sharing part of the monetary flows generated by the operation of the hydropower projects with local communities. Commonly used monetary benefit sharing mechanisms include:

- Direct payments/revenue sharing
- Preferential electricity rates
- Payments for environmental or ecosystem services
- A community development fund
- Equity sharing

Non-monetary benefit sharing refers to the approaches adopted by the project entity for ensuring that local communities benefit from construction and operation of a hydropower project in non-monetary terms. A hydropower project can share benefits with local communities in non-monetary terms, such as improved infrastructure, support for health and education programs, improved access to fisheries and forests, and legal title to land. Examples of non-monetary benefit sharing mechanisms include:

- Modifying project design and operation
- Watershed management
- Associated infrastructure and public service investment
- Employment creation

To ensure that local communities share the social and economic benefits of hydropower projects, benefit sharing arrangements need to be carefully planned and designed as part of the project. A well-designed benefit sharing program should (a) have clear objectives; (b) carefully define the target population; (c) include benefit sharing mechanisms; and (d) identify responsible agencies, as well as implementation arrangements. Generally, the design of a benefit sharing program needs to be consistent with other studies and assessments, such as social and environmental impact assessments, socioeconomic studies in the project areas, and a resettlement action plan. It normally includes the following steps:

- Understanding the impacts of a hydropower project on local communities
- Analyzing the legal and regulatory framework and local development context

- Carrying out consultations with stakeholders
- Designing the objectives of benefit sharing programs
- Determining the beneficiaries of benefit sharing programs
- Designing the types and mechanisms of benefit sharing
- Exploring benefit sharing arrangements through multiple entry points
- Setting up the implementation arrangements of benefit sharing programs

Some of the Bank’s safeguard policies require sharing benefits with project-affected people. For instance, the policy on Indigenous People (OP 4.10) requires that “the borrower includes in the IPP arrangements to enable the Indigenous Peoples to share equitably in the benefits” when a project involves “the commercial development of natural resources on land or territories that Indigenous Peoples traditionally owned.” The policy on Involuntary Resettlement (OP 4.12) requires that “resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits” when involuntary resettlement is unavoidable. The policy on Environmental Assessment (OP 4.01) requires that EA takes into account the natural environment and social aspects, and “explores opportunities for environmental enhancement.”

This guide provides some advice to task teams on how to design effective local benefit sharing mechanisms in hydropower projects. Benefit sharing arrangements would ensure that local communities have the opportunity to benefit directly from hydropower development, which will make hydropower projects more environmentally and socially sustainable. As a long-term arrangement, benefit sharing can facilitate local development. It can respond to unexpected environmental circumstances in the operation of dams to ensure local communities receive adequate benefits. Arrangements for the equitable sharing of benefits can offer scope for local communities and all other stakeholders to avoid conflicts and focus on creating synergies to maximize local development opportunities.

## I. Introduction

**The World Bank has committed to reengage in hydropower project investments.** The World Bank had significant investments in hydropower projects at an early stage, but it dramatically scaled down its investments in new hydropower projects in the late 1990s and early 2000s, partly due to concerns about the environmental and social impacts of dams. After a hiatus of roughly a decade, the World Bank is scaling up its investments in hydropower. In 1999, no new lending was approved for hydropower. Between 2002 and 2004, the amount of investment approved was less than \$250 million a year; from 2005 to 2007, it went up to \$550 million a year. In 2008, approved lending reached \$950 million in hydropower projects and another \$150 million in hydropower-related technical assistance and carbon finance. The Bank approved 67 hydropower projects between fiscal 2003 and fiscal 2008, amounting to \$3.7 billion in WBG contributions (World Bank 2009a).

**The World Bank's renewed vision for hydropower** recognizes that hydropower projects can offer important opportunities for poverty alleviation and sustainable development beyond its traditional role in providing electricity access (World Bank 2009a). The Bank's Water Sector Strategy emphasizes the role that hydropower can play in poverty reduction in developing countries (World Bank 2004). The changed global recognition of the role of hydropower and the strong demand from clients require a major reengagement by the Bank in the hydropower sector. However, in terms of social development, one of the main criticisms of hydropower projects is that in many cases local communities are often the most adversely impacted by projects, while benefiting the least. Expected macro benefits were not necessarily trickling down to the local community level; in many cases, those most affected were poor rural or vulnerable groups.

**New paradigms to share the benefits of hydropower projects emerged in the 1990s** and several monetary and non-monetary mechanisms were applied in different projects across the world. The focus of these projects increasingly widened from electricity generation to multiple purposes such as integrated water, land, and resource management. One of the key challenges is the need to equitably distribute both monetary and non-monetary benefits across multiple groups and stakeholders.

This guide seeks to provide practical guidance to Bank task teams on the working steps and procedures in designing benefit sharing programs for hydropower projects that enhance development benefits to local communities. It could also be used as a reference by hydropower proponents to improve the institutions and systems needed to better incorporate benefit sharing with local communities in their policies, laws, plans, and project management activities.

## II. Why is Benefit Sharing Important for Hydropower Projects?

**Hydropower projects can generate substantial benefits**, including electricity generation, flood control, irrigation, fisheries, industrial and domestic water supply, navigation, recreation, tourism, taxes, royalties, and profits to companies. However, these benefits are viewed differently among stakeholders, particularly governments, communities, and companies. While the primary beneficiaries of hydropower projects can live far away from the dam sites, other groups in the project-affected areas may sustain most of the negative impacts (Egre 2007) and generally do not have access to electricity produced by the project. Local communities often bear the brunt of project-related economic and social losses (WCD 2000).

**Hydropower projects may result in a wide range of adverse impacts on local communities depending on their size and location**, such as involuntary displacement of significant numbers of people, loss of livelihoods, damage to species and habitats, and altered aquatic and riparian ecosystems. The adverse impacts of hydropower projects are often different from other large-scale infrastructure projects. In addition to involuntary displacement, hydropower projects can have significant adverse social, economic, environmental, and ecological impacts on downstream and upstream communities. In many cases, the productive skills of affected people may no longer be applicable because of changes in production condition and economic activities as a result of physical and/or economic displacement. Hydropower projects often appear to generate severe impacts that seem to be the most difficult to mitigate.

**The traditional compensation alone is usually not sufficient to mitigate all the adverse impacts** (Van Wicklin 1999). The commonly used compensation-based approach includes payments to those people directly affected due to involuntary displacement. In many cases, the people compensated often encountered difficulties adapting to different and unfamiliar circumstances. Furthermore, the compensation-based approach generally did not cover the indirectly affected downstream and upstream communities.

**The equitable distribution of benefits is often a contentious issue**, as local and vulnerable people tend to receive the least benefits unless governments and companies make some provisions in this area. According to the World Commission on Dams report in 2000: "In too many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers, and by the natural environment."

**Benefit sharing arrangements could ensure that local communities have the opportunity to benefit directly from hydropower development and enhance sustainability.** Benefit sharing as a long-term arrangement can facilitate local development. It can respond to unexpected environmental circumstances in the operation of dams to ensure local communities receive adequate benefits. Arrangements for the equitable sharing of benefits can offer scope for local communities and all other stakeholders to avoid conflicts and focus on creating synergies to maximize local development opportunities and eventually to enhance sustainability.

**Sharing benefits with local communities could help relevant stakeholders.** Since the publication of a report favoring benefit sharing by the World Commission on Dams (WCD 2000), some hydropower

projects have been experimenting with this approach. Going beyond normative justification, benefit sharing approaches are helpful in gaining local support for hydropower development. From the perspective of investors, the presence of an explicit policy framework with a realistic provision for local benefit sharing is an indicator that local communities and the public are likely to support the project. As a consequence, the investors' risk exposure is reduced. From the perspective of operators, benefit sharing increases the capacity to work effectively with local communities. Good community relations are important for various reasons, such as improved local cooperation and reduced risk of project delays. From a government perspective, benefit sharing is a practical policy tool to achieve greater social inclusion and balance social, economic, and environmental factors in the planning, design, implementation, and operation of hydropower projects.

### III. What is Benefit Sharing?

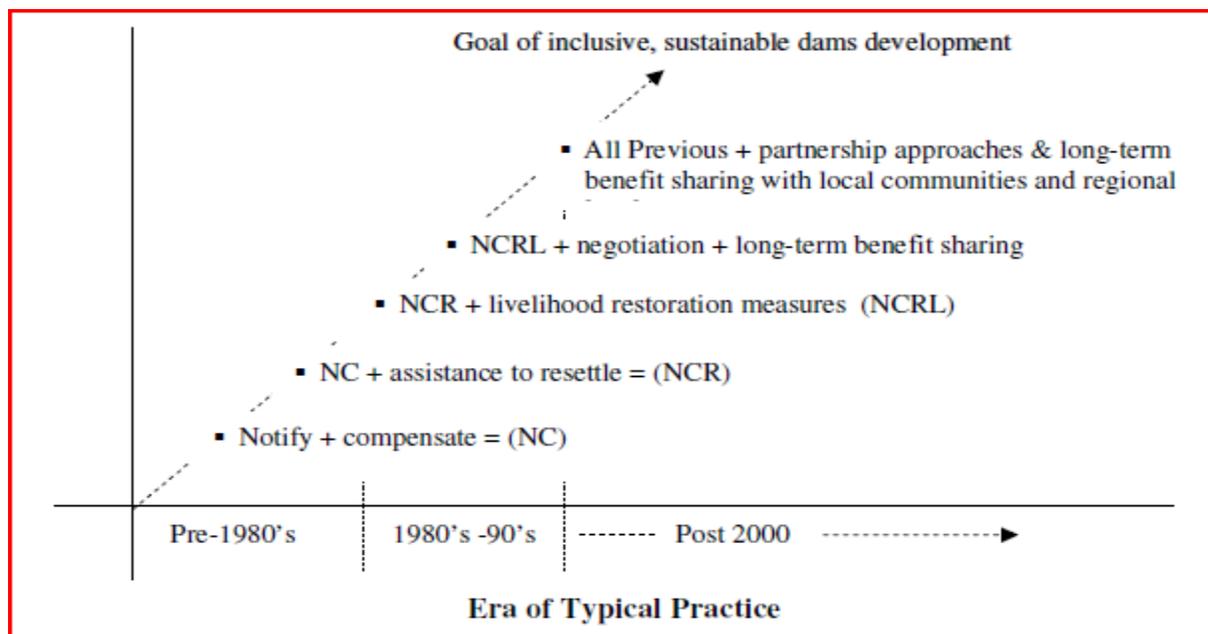
**Definition of benefit-sharing.** In this guide, the operational definition of local benefit sharing in hydropower projects is the following: *the systematic efforts made by project proponents to sustainably benefit local communities affected by hydropower investments.*

**Benefit sharing with local communities has evolved over time.** In hydropower, sharing benefits started with trickle-down benefits to local communities, and then moved on to mitigation and compensation for minimizing the negative impacts. Current thinking emphasizes sustainable development, which requires:

- Moving beyond mitigation and compensation to maximizing development benefits and more equitable outcomes
- Working directly with local communities to increase investment effectiveness.

This evolution in the view and treatment of dam-affected communities is shown in figure 1.

**Figure 1. Evolving Practice in the Treatment of Dam-affected Communities**



Source: International Institute for Environment and Development (IIED), 2009.

**Benefit sharing may be different from compensation and mitigation measures.** There occasionally is some confusion regarding the differences between benefit sharing and compensation and mitigation measures, especially when mitigation measures are enhanced and include a program to restore livelihoods of affected people. But they are different because of the following:

- i) Beneficiaries of benefit sharing programs are spread over the project influence areas and are not limited to the directly affected population.
- ii) Compensation, as one mitigation measure, is usually financed by the project investment budget, while benefit sharing programs in many cases are financed by the operating income of a

hydropower project. However, the investment in a benefit sharing program can be included in the total project investment cost when it is designed as part of the project.

**In practice, it might be difficult to draw a clear line between mitigation measures and benefit sharing**, because some benefit sharing programs can be an extension of mitigation measures. Benefit sharing is a process and opportunity to maximize and distribute development benefits across a range of stakeholders. It focuses attention on proactive identification of mechanisms to share benefits and increases opportunities to improve efficiency and equity in the development of hydropower projects.

**The principal idea of benefit sharing is to share the benefits resulting from the development of hydropower projects in order to satisfy the needs of the concerned local communities.** This can be achieved through a commitment to channel some of the returns generated by the operation of a project back to the population of local communities where hydropower projects are developed.

## IV. Designing Benefit Sharing Programs

Adequate planning and commitment from the project proponents is required to ensure that local communities share the social and economic benefits of hydropower projects. Negative impacts can be significant if benefit sharing is not appropriately planned and implemented. Positive benefits of hydropower projects can be enhanced if they provide local communities with new social and economic opportunities.

Preparation of a hydropower project normally includes the following stages: master plan, prefeasibility study, feasibility study, and technical design. In designing a benefit sharing program, it is important to start at the planning stage of a hydropower project, preferably during the prefeasibility and feasibility study stages. Generally, the design of a benefit sharing program needs to be consistent with other studies and assessments, such as social and environmental impact assessments, socioeconomic studies in the project areas, and a resettlement action plan. It normally includes the following steps:

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

### *A. Understanding the impacts of a hydropower project on local communities*

When designing a benefit sharing program, it is important to understand the impacts of a hydropower project on local communities.

**While hydropower projects generate significant benefits, they can also be harmful.** Hydroelectric dams are in many cases multifunctional. They can be used to generate electricity, supply drinking water, increase the water supply for irrigation, control floods, provide recreational opportunities, and improve certain aspects of the environment. However, the construction and operation of hydropower projects may also bring significant adverse social and environmental impacts to local communities.

**Social impacts can be positive and negative, direct and indirect.** A hydropower project may bring socioeconomic changes to the project area. It may stimulate economic growth through the construction of roads, schools, hospitals, and cultural and recreational facilities. It may also have negative impacts on the livelihoods of some people. During the construction phase of a hydropower scheme, the sudden large influx of outside labor may result in tensions with local populations. During the operational stage, the hydropower project may represent a significant source of revenue for local communities. The local availability of electricity, and other activities associated with the reservoir are all possible sources of sustainable economic and social development.

**The direct adverse social aspects** associated with development of hydropower projects are mainly associated with the displacement of people living in the reservoir area. Such impacts can include affected persons who lose their land and houses, or their employment. Some small-business owners lose access to customers or suppliers. Social relations can often be undermined as friends and relatives move away or are no longer able to interact as before. Aside from the resettlement-related social impacts, hydropower projects also have indirect negative social consequences, such as loss of fertile cultivation areas due to the reservoirs and river bank erosion, or irregular and insufficient water releases downstream. Changes to land use and water quality are generally a consequence of submergence of large areas, permanent modifications to upstream and downstream water levels, and water flows associated with regulation flows and the creation of large reservoirs. Such changes may significantly affect the social and economic activities of local people in areas of a hydropower project. For instance, it might no longer be feasible for local people to continue cultivation in floodplains.

**Downstream impacts of hydropower projects are complex.** The interactions between environmental impacts and economic impacts can result in social impacts in downstream areas because of a change in a dynamic element of the environment. The modification of discharge patterns and stream environments could have a range of significant effects on downstream ecosystems. Due to changes in aquatic and floodplain ecosystems, downstream communities will be affected whether they engage in farming, fishing, or grazing. Downstream impacts can extend to a large area and go far beyond the confines of the river channel (Adams 2000).

**Apart from involuntary displacement, upstream communities can be affected in various ways.** To support water protection and sediment reduction, erosion reduction techniques may be implemented in the upstream catchment area. In some cases, upstream communities are encouraged to change their livelihood from agriculture to forest plantations to protect or improve the environment in the reservoir area.

When the Bank is asked to be involved in a hydropower project, the task team may carry out a quick screening to clarify the following at identification stage:

- What are the project's social, environmental, and ecological impacts, both downstream and upstream?
- Who will be affected?
- How will local communities be affected?
- What are the potential measures to mitigate these adverse impacts?
- Is it possible to include any benefit sharing programs that can either ensure that local communities will directly benefit from the project, or strengthen or enhance the mitigation measures?

### ***B. Analyzing the legal and regulatory basis and local development context***

It is very important to understand the enabling environment and conditions within the project area in designing a benefit sharing program. Analyzing laws and regulations in the client country, the corporate social responsibility strategy of the development companies, and the local development context will help to identify the legal and regulatory basis for benefit sharing programs, as well as local development trends, constraints, opportunities, and plans.

**The legal and regulatory framework is a critical condition for benefit sharing.** The distribution of the project's benefits to local communities can take place in many different ways. They can be based on the initiatives of the project proponents, or they can respond to government laws and regulations. In any case, the policy requirements and legal and regulatory framework are key factors affecting the benefit sharing arrangements.

**The corporate social responsibility of hydropower development companies can be an enabling condition of benefit sharing.** As discussed above, benefit sharing initially started in response to the consequences of project impacts, and the fact that traditional mitigation measures might not be sufficient in responding to the consequences. Hydropower development companies realized they would have to go a step further to minimize the risk to avoid project delays or even a shutdown. In many cases, the hydropower companies initiated benefit sharing programs as part of their corporate social responsibility strategies.

**Institutional capacity is also important for the successful implementation of benefit sharing programs.** The communities affected by hydropower projects are mostly located in rural and remote areas. The capacity of local institutions is often weak. Successful implementation of benefit sharing programs requires strong capacity of all relevant institutions, particularly the local communities and local governments. Assessment of the adequacy of institutional arrangements and capacity at the local level is critical for the design and implementation of a benefit sharing program.

To assess the enabling conditions and environment, the task team may consider the following during the preparation stage:

- Review the government policies, laws, and regulations relevant to benefit sharing. This would illustrate how the principles and concepts of benefit sharing are currently applied.
- Understand the CSR strategies of development companies. This would help to understand how the developers view benefit sharing, their benefit sharing strategies, and the actual benefit sharing programs implemented.
- Review the benefit sharing programs included in other hydropower projects within the country or region.
- Review the institutional arrangements for potential benefit sharing programs, particularly the statutes and regulations of river basin organizations.
- Assess the capacity of implementation agencies involved, particularly at the community and local government levels.

To create the enabling conditions for benefit sharing, the task team may undertake the following during the project preparation stage based on the results of the enabling conditions assessment mentioned above.

- Explore potential benefit sharing programs with relevant stakeholders based on government policy requirements, CSRs of development companies, and institutional capacity.
- Develop an overall advocacy and communication strategy with government, civil society, and the private sector for benefit sharing in hydropower projects.
- Explore benefit sharing mechanisms that can be systematically applied to both new and existing hydropower projects.
- Identify capacity building requirements at all levels.
- Identify the champion institution for advocating benefit sharing.

### ***C. Carrying out consultations with stakeholders***

**Socially acceptable hydropower means** that any proposal for a project must be discussed with all stakeholders concerned and adapted to their needs, and that successful negotiations must be concluded with affected local communities for a project to move ahead. It is important to explore the potential possibilities of including a benefit sharing program in the project through consultation with different stakeholders. Hydropower projects normally involve many different stakeholders with divergent views and expectations (Alternate Hydro Energy Center 2011). The primary stakeholders include government, developers, and local communities (including project-affected communities).

**Stakeholders can also be categorized by the following interested groups**, depending on their roles in the project and in development planning and on how they are affected: (a) directly and indirectly affected people; (b) displaced and host communities; (c) downstream and upstream communities; (d) local government and central government; (e) indigenous peoples; (f) project proponents, developers, and operators; and (g) NGOs.

**It is critical to engage local communities and interest groups at an early stage** in the project cycle in designing benefit sharing programs. It may be difficult to achieve a fixed agreement for benefit sharing at the outset if the benefits have to be accurately forecast in quantity and quality for the lifetime of the project. The early and continual engagement of local authorities, government institutions, developers, and local communities can allow for the negotiation of benefit sharing arrangements.

To design the benefit sharing program, consultations need to be carried out with various stakeholders—local communities, local governments, state government, project developers, and NGOs—depending on specific project context. Consultations can be carried out in various ways, such as individual interviews, focus group discussions, and public meetings. Before any consultation takes place, it is very important that the affected stakeholders should be briefed on the project background and the objectives of the consultation. The following key areas can be considered for consultation at identification and preparation stage (of course, questions should be modified when consulting with different stakeholders):

For all stakeholders:

- How do they view the project's impacts and benefits?
- Is a benefit sharing program needed for the project?

For local communities:

- What benefits are they expecting from the project?

For government and project proponents:

- How do they understand the concept of benefit sharing?
- What are the scope and objectives of benefit sharing programs?
- What are the laws, regulations, and principles to be followed in the design of the benefit sharing program?
- What form should the benefit sharing program take?
- Who is willing to pay for what?

#### ***D. Designing the objectives of benefit sharing programs***

Benefit sharing programs can be designed for different purposes, such as (a) providing additional long-term compensation; (b) establishing partnerships with local communities; (c) promoting local development in a socially and environmentally sustainable way; (d) meeting the needs and expectations of poor communities in the project area; (e) avoiding potential conflicts between communities that benefit from the project and those that do not; (f) ensuring communities receive financial incentives for taking local actions that contribute to sustainable management of the watershed and thereby help maintain performance levels and revenue flows from hydropower assets in the long term; and (g) ensuring local communities become long-term partners in sustainable management of hydropower assets.

The objectives of benefit sharing can be varied according to specific project context, but should be as specific as possible.

#### ***E. Defining the beneficiaries of benefit sharing programs***

**Beneficiaries of a benefit sharing program can vary depending on the specific objectives of the benefit sharing program.** The intended targeted population can be, for instance, people affected by land acquisition, people affected by adverse environment impacts, and local communities in the project areas. Local communities generally can be understood as the residents of an area surrounding a development project who experience any direct and indirect impacts to their environment. “Impacts” connote any social, environmental, and economic impacts, both positive and negative. Within the context of a hydropower project, local communities can be the communities affected by land acquisition, or encompass the whole watershed area or river basin. The geographical and administrative boundaries of benefit sharing programs will vary depending on the specific project context. The coverage of local communities sometimes depends on the mechanisms of benefit sharing programs. Overall, benefit sharing programs can be designed to target the following local communities:

***Local communities affected by land acquisition and resettlement.*** When a benefit sharing program is designed to target local communities affected by land acquisition and resettlement, its function may differ from compensation and mitigation included in the resettlement action plan (RAP), which contains the compensation to immediate losses of affected persons and measures assisting them to rehabilitate their livelihoods and living standards. The benefit sharing programs normally will cover the whole community rather than only persons affected by land acquisition, and provide both resettlement and host communities with opportunities to benefit from the project’s operation in the long term.

***Local communities living downstream and upstream:*** Aside from the communities affected by land acquisition, communities in upstream and downstream areas can be affected in various ways, as discussed in previous sections. These communities should be covered by benefit sharing programs.

***Local communities in the whole watershed or river basin:*** In some cases, the benefit sharing programs should cover all local communities in the whole watershed area or river basin, particularly when a hydropower project uses the run-of-the-river approach or the benefit sharing arrangement is integrated into local development plans; see for example, the benefit sharing programs in the Glomma and Laagen River basin in Norway (box 5).

At an early stage in designing the benefit sharing program, the task team should work with clients, including the local government and development companies, to define the targeted local communities of the benefit sharing programs. Once the targeted communities are determined, the team needs to identify the formal and informal organizations at the community level and assess the capacity for them to implement the benefit sharing programs.

#### ***F. Designing the types and mechanisms of benefit sharing***

**Various benefit sharing mechanisms** have been used in hydropower projects based on some case studies and a review of Bank-financed hydropower projects. Benefit sharing mechanisms used in some Bank-financed hydropower projects are summarized in annex 1.

**In terms of temporal scale**, benefit sharing can be categorized as either short-term or long-term. Short-term benefit sharing may start during the project design and construction period and can span several years. Such forms of benefit sharing include investments to maximize local employment in the construction work force and local supply of goods and services to the project, as well as investments in infrastructure and public services such as roads and clinics. Such services are primarily intended for the project, but they are open to local communities.

**Long-term benefit sharing** refers to the benefit sharing arrangements that commence after the project becomes operational, and can normally last over the economic life of the project. These arrangements mainly include (a) monetary benefit sharing, and (b) non-monetary benefit sharing.

**Monetary benefit sharing** means sharing part of the monetary flows generated by the operation of the hydropower projects with local communities. It includes, but is not limited to, the following mechanisms:

- Direct payments/revenue sharing
- Preferential electricity rates
- Payments for environmental or ecosystem services
- Community development fund
- Equity sharing

***Direct payments/revenue sharing.*** This mechanism refers to transferring some revenues generated by the operation of a hydropower project to local communities, local governments, regional authorities, or the national government. Through this mechanism, the target beneficiaries share part of the monetary benefits the project generates, typically expressed as a portion of revenue from bulk electricity sales on an annual basis. This mechanism normally includes two different approaches. In the first approach, the hydropower companies pay a certain proportion of their sales to the government in the form of royalties, taxes, or license fees as defined in legislation, or based on an agreement reached among local and national authorities and project development companies (annex 2). Under this approach, the government will decide how the fund is to be used. Without further action, it may be difficult to determine the extent of the benefits going to local communities. In the second approach, the hydropower companies pay directly to communities in certain community development programs or into a community development fund. When this approach is used, operational arrangements need to be well-established in advance, and capacity building is always critical at the community level.

**Box 1. Khimti I Hydropower Project in Nepal: Direct Payments for Education Scholarships**

Khimti I Hydropower Project is a 60 MW run-of-the-river hydropower plant. The construction work was started in 1993 and its commercial operation began in 2000. The project area lies in the middle hills of Nepal. The main project structures lie in Dolakha district; fifteen villages are within the direct and indirect impact zones. The main environmental and social impacts include (a) loss of cultivated land; (b) reduced water availability for irrigation; (c) loss of habitat; and (d) displacement of a few households, one school, and some cultural and religious sites. The project includes several benefit sharing programs. One of them is direct payment of education scholarships.

The project provided scholarships to 50 female students from community schools to continue their studies. The arrangement of a fund for the scholarships was made through an endowment fund established by the project company, Himal Power Limited (HPL), in collaboration with the Rotary Club of Kantipur. To sustain the program, HPL provided NRs. 1 million (equivalent to \$12,500) as a contribution, with a matching amount provided by the Kantipur Rotary Club. The fund provides scholarships—roughly between NRs. 1,500 and 2,000 (equivalent to \$25) per year—to 50 female students.

*Source:* SWECO's Nepal Case Study Report

***Preferential electricity rates.*** Local authorities can negotiate preferential electricity rates with the hydropower operator, which will benefit the local population and contribute to local economic development. This mechanism is a form of monetary benefit sharing, as beneficiaries pay less of their electricity bill because of the monetary contribution of hydropower companies. In the hydropower context, it is important to note that this benefit sharing mechanism may not extend to everyone, since some local residents may lack electrical connections. An adequate measure in such a situation would be to combine this benefit sharing approach with a rural electrification program.

**Box 2. Vishnugad Pipalkoti Hydroelectric Project in India: Preferential Electricity Rates**

Vishnugad Pipalkoti Hydro Electric Project is designed as a 444 MW run-of-the-river hydropower generation scheme on the Alaknanda River in Uttarakhand, India. The major project infrastructure entails construction of a 65-meter high diversion dam, which will channel water from the Alaknanda River through a 13.4 km headrace tunnel to an underground powerhouse located near the village of Haat. A 3-km tailrace tunnel will return the water to the river. The total estimated project costs are \$922 million. The main environmental and social impacts include (a) degraded forests in the project influence area; (b) land acquisition, and (c) displacement of households and structures. To mitigate the adverse impacts and enhance benefits to local communities, the project included several benefit sharing arrangements, such as community development fund, revenue sharing, and free electricity to local communities.

With regard to preferential electricity rates, the electric company provides 100 kWh of free electricity per month for a period of 10 years to affected households scattered in 18 villages.

*Source:* PAD of Vishnugad Pipalkoti Hydroelectric Project

***Payments for environmental or ecosystem services.*** There is evidence that the suspended sediments in the water source decrease significantly when there is sufficient forest cover in the upstream area. This leads to less damage to hydropower equipment, less necessity to interrupt production for maintenance and preparations, and an extended life of the reservoir. Hydropower project companies can offer incentives to farmers or landowners in upstream catchment areas to protect forests or establish forest

plantations for the purpose of water protection and sediment reduction. Through this mechanism, the hydropower development companies can pay the fund directly to landowners or channel the fund through local communities or authorities from electricity sales for tree plantations. This mechanism was used in the Angostura Hydropower Project in Costa Rica (box 3).

**Box 3. Angostura Hydropower Project in Costa Rica: Payments for Environmental Services**

The Angostura Hydropower Project is a 180 MW storage hydropower project. It is located within the Reventazon River watershed. The watershed is the third largest watershed in the country and is strategically important for Costa Rica's development.

The concept of environmental services was defined in the Forestry Law 7575 of Costa Rica as "those that provide the forest and forest plantations and directly influence the protection and improvement of the environment."

To strengthen the protection and management of water resources within the Reventazon River watershed, the State Forestry Administration initiated the Environmental Service Payment program according to requirements of the Forestry Law. The targeted beneficiaries of the program are basically the owners of private property with forest cover on their lands that contribute to water resource protection within the Reventazon River watershed. The payment is based on the cost of planting trees, at \$1.30 per tree, of which the hydropower company paid \$0.65 and the government paid \$0.65 per tree planted. The Angostura Hydropower Project contributed approximately \$571,000 to this program in 2010.

*Source: SWECO's Costa Rica Case Study Report*

**Community development funds.** Community development funds financed from electricity sales can be established to foster economic development in the project areas, including the project-affected communities, both downstream and upstream. The sources of the fund can also be from the royalties and taxes paid to the government. The objectives, structure, and duration can be the result of negotiations between local authorities and the hydropower project companies. Under this mechanism, the local communities will be empowered to manage the fund implementation, and local people will make the decisions in selecting activities to be financed by the fund (box 4).

#### **Box 4. Lesotho Highlands Water Project (LHWP): Community Development Fund**

The Lesotho Highlands Revenue Fund (LHRF) was established in 1991 to guide the use of revenues from LHWP. After an audit of LHRF in 1996, the fund was reformulated to support community-driven development (CDD) activities in pre-identified poor districts. The Lesotho Fund for Community Development (LFCD) was established through a legal notice in March 1999, and began operating in 2000. All of LHRF's assets and liabilities were transferred to LFCD, including ongoing subprojects. The sources of the fund include budget allocations from the government and 40 percent of the revenues generated by LHWP. IDA also contributed \$4.7 million through the Community Development Support Project. The Fund has three levels of management: (a) the LFCD board; (b) the management unit, and (c) ten district offices at the district level.

A number of local development initiatives have been successfully implemented. Through implementation of the fund, the affected communities and villages within the project—as well as communities that hosted the relocated individuals—received improved infrastructure as a benefit. This included upgrading of rural roads, bridges, and the provision of basic services.

However, the Community Development Support Project was rated as *highly unsatisfactory*, partly because of governance arrangements not being appropriate, as well as the failure to test demand-driven and participatory approaches. This case study illustrates that community development funds can be a good practice of benefit sharing in hydropower projects. However, challenges and failures can occur in implementation of such funds if their implementation is not adequately managed.

**Source:** SWECO's Lesotho Case Study Report and ICR of Lesotho Community Development Support Project

**Equity sharing.** In certain contexts, local communities or regional authorities can share partial equity of a hydropower project. In such cases, local communities or regional authorities will share the risks of the project and receive dividends. When the mechanism of equity sharing applies, local communities and/or regional authorities may have more voice in the project design and operation of the hydropower project (box 5).

#### **Box 5. Glomma and Laagen Basin in Norway: Equity Sharing**

In the Glomma and Laagen River basin in Norway, the power companies operating hydropower plants are owned either by public authorities (the state, counties, or municipalities) or by the private sector. The majority of power companies in the G&L basin are publicly owned. As a consequence, public authorities have a responsibility—both as hydropower utility owners, and as a part of the water management system—to balance all interests. All local authorities have a proportional share of equity in the hydropower plants. Counties and municipalities thus receive revenues in the form of dividends to the owners.

The operation and management of the basin involves several governmental institutions—five counties, five county governors, and 60 municipalities, in addition to the national ministries and directorates—with jurisdiction over different acts, different types of planning processes and monitoring, forecasting, and research activities. Operation and management also include participation by nongovernmental organizations (NGOs) and management of the different water user interests by professional associations.

**Source:** SWECO's Norway Case Study Report

**Non-monetary benefit sharing** refers to the approaches adopted by the project entity for ensuring that local communities benefit from construction and operation of a hydropower project in non-monetary

terms. A hydropower project can share benefits with local communities not necessarily in monetary terms, such as improved infrastructure, support for health and education programs, improved access to fisheries and forests, and legal title to land. Non-monetary benefits can be as valuable to local communities as the monetary benefits. However, it is important that non-monetary benefit sharing programs are integrated in and/or complement local or regional development strategies and plans. Examples of non-monetary benefit sharing mechanisms include:

- Modifying project design and operation
- Watershed management
- Associated infrastructure and public service investment
- Employment creation

***Modifying project design and operation.*** This mechanism focuses on efforts to enhance benefits to local communities through modifying either project design or the operational rules of a hydropower project. Particularly in the case of multipurpose hydropower projects, local communities can benefit from modifying the project design, such as complementary irrigation, water supply, and flood protection (box 6).

**Box 6. High Aswan Dam in Egypt: Enhance Benefits to Local Communities through Modifying Project Design**

The High Aswan Dam is located about 7 km up the Nile from the city of Aswan. The dam construction was completed in 1967. It has 12 installed hydropower turbines, each of 175 MW, totaling 2,100 MW, with a generating capacity of about 1 billion kwh per year.

This is a multipurpose project. The design included considerations for irrigation expansion and improvement, water supply improvement, flood protection, navigation improvement, and growth of fisheries. While the electricity generated was connected to the national grid, it was also connected to the local grid. Thus local communities benefited from the project in various ways. Benefits to local communities were enhanced by modifying project design.

**Source:** SWECO's Synthesis Report on Benefit Sharing and Hydropower

***Watershed management.*** Sedimentation is caused by erosion and poor watershed management. Reservoirs are like batteries: they store water and release it over time to produce energy. As the reservoir fills with sediment, it loses storage capacity. Reservoirs are built with excess capacity, but sedimentation degrades capacity over time. If sedimentation is high, facilities are either shut down or sediments must be physically removed. Appropriate watershed management would help to reduce sediment and to prolong the lifetime of hydropower projects. Such measures will benefit both the hydropower project developers and local communities. This has been applied well in the Angostura HPP in Costa Rica to benefit local communities (box 7).

### Box 7. Angostura HPP Costa Rica: Watershed Management

The project developer invested about \$3.3 million from 2002 to 2009 in watershed management. The investment provided funds for the development of an integrated management plan for the river watershed, as well as implementation of the plan. Its primary objective was to maintain the quantity, quality, and continuity of aquatic resources in order to benefit future and existing hydropower plants, with the purpose of regulating the water regime and increasing the viable lifetime of the physical infrastructure, especially of the dams. At the same time, it provided local communities with economic and social benefits through an improved use of natural resources and by generating local employment. The targeted population is from the communities in the upper and middle watershed. The plan includes four programs:

**Agroforestry and livestock.** The objectives of the program are to promote and develop, within the watershed, production activities and sustainable crops in the agricultural, livestock, and forestry fields through land conservation practices in order to (a) decrease losses of fertile soils caused by erosion; (b) decrease sediment inputs, as well as the stoppage of reservoirs in order to take advantage of the projects present in the watershed; (c) decrease the use of agrochemicals that affect water quality, its biodiversity, and the quality of agricultural products; and (d) improve the economic situation of the farmers within the watershed and increase their agricultural, livestock, or forest production, and quantify—as well as reduce—the soil losses on their farms. The majority of farmers receiving benefits from this program are generally small landowners with farms between 0.5 and 1.5 hectares.

**Vegetation cover.** The main objective of this program is to promote the active participation of the communities in reforestation and vegetative restoration in areas of the watershed with water sources, aquifers, the edges of river channels, streams, and loose soils with high erosion risks that are not appropriate for agricultural activities.

**Environmental education and social management.** The objectives of the program are to (a) strengthen the population's awareness of the watershed; (b) increase the knowledge of natural resources, hydroelectric energy, and impacts on the agricultural activities in the region; (c) encourage respect and care for the environment; and (d) recuperate the volume of the reservoir to optimize use.

**Biological management.** The main objective of this program is to study and eventually understand the aquatic ecosystems of the river in order to implement mitigation measures for those impacts caused by the operation of the hydropower project in the Angostura River. This program includes the following activities: (a) biological sampling along the river to study the aquatic ecosystems found in the river, accomplished through biological inventories of fish, insects, mammals, and water quality; and (b) determining fish migration seasons to identify migratory species and evaluate the impacts of this process on the hydropower projects in the watershed. Through these activities, the local population acquires more knowledge and awareness of the value of local aquatic biodiversity and water quality.

**Source:** SWECO's Costa Rica Case Study Report

**Associated infrastructure and public service investment.** This refers to investments outside core infrastructure that provide a broader reach of benefits. The investment can cover (a) physical infrastructure, including all infrastructure investment undertaken by the project companies directly or indirectly related to the construction and operation of the hydropower project; and (b) social and environmental investment such as for schools, health facilities, or watershed protection. Local people will benefit from these investments if efforts can be made to ensure they are an integral part of the local development plan (box 8).

#### **Box 8. Khimti Hydropower Project in Nepal: Investment in Health Services**

Local communities benefited from the investment of the project in the health sector. The project company, Himal Power Limited (HPL), provided a project clinic within the premises of the project office in Kirne. It has been functioning since 1993. It also runs a dispensary at the intake site in Palate. The entire annual operating cost—approximately \$60,000—is borne by HPL. The clinic is headed by a health assistant and has seven health workers. The intended beneficiaries of the health clinic were primarily the project staff, their families, and security staff (Nepal Army staff). However, it is open to villagers. Its current patient flow shows that it has served the local community more than the project staff and families. In 2009, 14,737 people were provided primary health care services. Among them, 82 percent (12,071) were villagers and 15 percent (2,202) were project staff and their family members.

**Source:** SWECO's Nepal Case Study Report

**Employment creation.** In addition to the work force needed for project construction and operation, the project can offer preferential employment to local people. Project-related employment results in cash income and skills development for local people. In addition, the project companies can engage local service providers and procure goods from local suppliers to enhance the spread of local benefits (box 9).

#### **Box 9. San Carlos Hydropower Project in Colombia: Local Employment Program**

San Carlos Hydropower Plant is located in the eastern part of the Department of Antioquia, about 150 km east of Medellin City, within the territory of San Carlos Municipality. It has an installed capacity of 1,240 MW. It is owned by San Carlos Hydropower Project, which is owned by ISAGEN S. A. E.S. P.

A local employment program was initiated as one of the benefit sharing arrangements of the San Carlos hydropower project. It aims to increase the proportion of residents in nearby villages as sources of unskilled labor in maintenance activities and plant operation. Under this program, 80 percent of the unskilled labor force is recruited from the nearby communities for diverse operation and maintenance tasks. In 2009, for example, it provided 860 job opportunities for the communities in the area of influence of the project through implementation of the program.

**Source:** SWECO's Colombia Case Study Report

However, the risks and advantages of different mechanisms are different. Based on the findings and lessons learned in previous studies, the key features, advantages, and weaknesses of some benefit sharing mechanisms are summarized in table 1.

**Table 1. Key Features, Advantages, and Weaknesses of Different Benefit Sharing Mechanisms**

<b>Mechanisms</b>	<b>Key features</b>	<b>Main advantage</b>	<b>Key weaknesses</b>	<b>Design principles</b>
Revenue sharing/Direct payment	Hydropower companies transfer revenue to local communities based on agreement	Clearly targeted beneficiaries	Potential for elite capture  Potential embezzlement	Transparent process  Disclose information publicly
	Hydropower companies pay taxation and royalties based on legislation or transfer revenue based on agreement to government	Clear regulations and rules to follow	Won't necessarily benefit local communities	Clear provisions for using the fund to ensure it benefits local communities
Preferential electricity rates	Negotiated treaty between local government and hydropower companies	Clear benefit to targeted beneficiaries  Clearly targeted population  It is generally easier for local people to accept	People without electricity connections cannot benefit from it.  Legislative barriers can limit this possibility	Combining it with rural electrification program  Local government's commitment to ensure targeted population have access to electricity
Payments for environmental or ecosystem services	Cash paid directly to beneficiaries	Benefit to hydropower companies	Limit to upstream landowners	Result-based payment
Community development fund	Hydropower companies transfer revenue and/or government channels funds to community  Development fund established based on agreement	Clearly targeted beneficiaries  Empowering local communities	Weak capacity at local level  Potential for elite capture	Clarify sources of funding  Disseminate fund information in communities  Established project implementation organization at the community level  Building community capacity  Grievance redress mechanism is adequately established
Equity sharing	Local communities or authorities share partial equity of a hydropower project based on agreement	Local communities or authorities have more voice on project design and operation	Local communities and/or authorities share the project risks	Upfront agreement on the equity sharing  Transparent procedures of use and distribution of dividends received

<b>Mechanisms</b>	<b>Key features</b>	<b>Main advantage</b>	<b>Key weaknesses</b>	<b>Design principles</b>
Modifying project design and operation	Changing or modifying either project design or operational rules	Cost effective to developers  Can have long-term benefits to beneficiaries	Might not be applicable to all projects	Explore potential alternatives at early stage  Take into consideration local development plans
Watershed management	Hydropower companies invest in various programs in the watershed management plan based on agreement	Targeting different groups of people through different programs  Both hydropower companies and local communities can benefit from such investment	Benefit limited to upstream local communities and landowners in most cases  Might not work when there is no watershed management plan	Need to be consistent with watershed management plan
Associated infrastructure and public service investment	Hydropower companies invest in infrastructure and public services	Beneficial to both hydropower companies and local communities	Potential restriction of local people's access  Lack of clear sources of funding for maintenance and operation	Planning such investment in coordination with local authorities  Integrating such investment in local development plan  Local people have open access to the public and infrastructure services
Employment creation	Project provides employment opportunities to local people	Direct benefit to local people  Direct contribution to local economy and development	Limited number of employment opportunities  Potential exclusion of vulnerable groups	Agreement with hydropower companies on priority recruitment of local people in project construction and operation  Ensure different groups of people have equal employment opportunities

To determine the types and mechanisms of benefit sharing programs, the following aspects should be discussed with hydropower development companies and government officials during the project preparation stage:

- What benefits can the project bring to local communities in addition to the broad development objectives?
- How can benefit sharing mechanisms be introduced systematically?
- Is it possible for the project company to share a certain percentage of its operational revenue with local communities and/or government in addition to taxation and royalties?

- Is it possible to establish a community development fund by channeling funds from the company and/or government to local communities?
- Is it possible to give local communities a preferential electricity rate?
- What is the scope of non-monetary benefit sharing?
- Is it possible to maximize benefits to local communities through modifying project design?
- Is it possible to include a special component focusing on community benefit sharing?
- What efforts can be made to ensure local communities benefit more from investment in associated infrastructure and public service?
- How can we ensure that project investments in associated infrastructure and public services are consistent with the local development plan and/or strategies?
- Can the project improve services for local people by providing access to infrastructure and public service? If yes, how?
- What efforts should the project company take to engage local service providers and suppliers?
- Is it possible to include a rural electrification component in the project?
- Can the project offer preferential employment opportunities to local people?

### ***G. Exploring benefit sharing arrangements through multiple entry points***

Benefit sharing programs can be designed based on the results of consultations with stakeholders; the requirements of government policies, laws and regulations; corporate social responsibility strategies of development companies; and policies of financing institutions. For instance, some the Bank’s safeguards policies require sharing benefits with project affected people. The policy on Indigenous People (OP 4.10) requires that “the borrower includes in the IPP arrangements to enable the Indigenous Peoples to share equitably in the benefits” when a project involves “the commercial development of natural resources on land or territories that Indigenous Peoples traditionally owned.” The policy on Involuntary Resettlement (OP 4.12) requires that “resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits” when involuntary resettlement is not avoidable. The policy on Environmental Assessment (OP 4.01) requires that EA takes into account the natural environment and social aspects, and “explores opportunities for environmental enhancement.” In many cases, benefit sharing programs can be derived from other initiatives, such as the following:

- Mitigation instruments
- Corporate social responsibility
- Local development plan

***Mitigation instruments.*** In almost all hydropower projects, it is common practice to develop an environmental and social management plan based on an environmental and social impact assessment. Resettlement action plans are needed for the land acquisition and resettlement involved in hydropower projects. Such plans include measures to mitigate or compensate the negative impacts resulting from the construction and operation of a hydropower project. These plans can be used as entry points for benefit sharing programs, since they can include enhancement measures that comprise a sustainable development program or provide opportunities for environmental enhancement. In many cases, such enhancement measures can be considered as a form of benefit sharing.

**Box 10. Nam Theun 2 Hydropower Project in Laos: Providing Affected Communities with Preferential Access to Resources**

The Nam Theun 2 (NT2) Hydroelectric Project is owned by private shareholders, including Electricity of France (EDF), Electricity Generating Public Company Limited (EGCO), and the government of Lao P.D.R. The construction of the Nam Theun 2 hydropower project (NT2) was started in 2005 and completed in 2009. Its operation started in 2010. The key social impacts were related to relocation of approximately 6,300 people in 17 villages.

The project companies together with the government went to a great deal of effort to enhance benefits to local communities by extending the mitigation measures. For instance, based on the concession agreement, a public health action plan was developed in the resettlement areas. The public health program supported construction of two new health centers, provision of essential medical and office equipment, as well as vehicles and ambulances, and training for health staff. The NT2 project committed \$31.5 million to manage and protect the NT2 watershed.

Prior to the project, the resettled communities did not have rights over the forest, land, and fish resources. Through implementation of the resettlement action plan, the resettled communities have been provided with rights for forest resources, fishing in the reservoir, and tenure security over their residential and agricultural land. The resettled communities were provided with largely exclusive access to reservoir fisheries for 10 years, and exclusive rights to forest resources for 70 years.

Under the access to fisheries arrangement, the villagers benefit both from consumption and sales of fish, as well as from control over all fish marketing on the reservoir through village fisheries groups. Reservoir fisheries have been developed into a major source of income for the resettled people.

**Source:** SWECO's Nam Theun 2 Case Study Report

**Corporate social responsibility.** In some cases, benefit sharing programs are strongly linked to companies' CSR policies and business model. For instance, the San Carlos hydropower plant is owned by Isagen S. A. E. S. P., a mixed public utility corporation in Colombia (ISAGEN). The company's philosophy is to think of "companies as human groups that exist to satisfy needs and expectations of other human groups" (SWECO 2011a). Thus, the companies have an ethical imperative to obtain good results in terms of welfare for all, including local communities. Following its own CSR policies and business models, ISAGEN supported local development initiatives associated with its hydropower projects. Such support includes investment in complementary environmental management (such as watershed management and restoration, and conservation and sustainable use of natural resources) and various social investment initiatives (such as a community development program, peace initiatives, and good neighbor initiatives) (box 11).

**Local development plan.** In some cases, benefit sharing programs can be directly linked with local or regional development plans, particularly for the monetary revenue sharing with local authorities. When hydropower companies transfer a certain percentage of electricity sales to a government, the funds can be one source of funding to implement local development plans. Thus local communities would benefit from the transfer. In many cases, the use of such funds is explicitly intended for certain activities, which are a part of the local development plan. Linking specific measures or initiatives associated with the construction and operation of a hydropower project with local or regional development plans may generate synergies for both and eventually enhance development impacts.

### **Box 11. San Carlos Hydropower Project in Colombia: Linking Monetary Benefit Sharing with a Local Development Plan**

As mentioned in box 9, the San Carlos Hydropower Plant is located in the eastern part of the Department of Antioquia, within the territory of San Carlos Municipality. It has an installed capacity of 1,240 MW and is owned by ISAGEN S. A. E.S. P.

It is required by law in Colombia for hydropower projects with total installed capacity exceeding 10 MW to share monetary benefits with affected municipalities and displaced people. Law 99 requires that 6 percent of gross sales from hydropower generation will be transferred as follows:

- 3 percent goes to the watershed agency of the dam to fund watershed management activities working with basin communities
- 3 percent goes to municipalities to finance infrastructure projects identified in municipal development plans, of which 1.5 percent goes to the municipalities that border the reservoir, and 1.5 percent goes to the municipalities in the watershed upstream of the dam reservoir.

As authorized by Law 99, the transfer of 3 percent of gross sales to the municipalities can only be used for financing initiatives under the municipal development plan, giving priority to projects such as basic sanitation and environmental improvement. The municipalities use the transferred fund for the following activities:

- Rural and urban water supply
- Solid waste management
- Sewage systems and wastewater treatment plant
- Forest conservation and reforestation
- Erosion control activities
- Environmental education and awareness programs

*Source:* SWECO's San Carlos HPP Case Study Report

To explore different entry points for benefit sharing programs in hydropower projects, the following aspects should be discussed with both the government and project development companies during the project preparation stage:

- Is it possible to enhance mitigation measures in the social and environmental management plans to ensure local communities benefit more from the project?
- Can more measures be taken by enhancing the mitigation plans—such as EMP and RAP—to support sustainable livelihoods of local people?
- Does the CSR strategy of the development company provide an adequate basis for any benefit sharing program?
- How can we link investment in associated infrastructure and public services with the local development plan?

### ***H. Setting up implementation arrangements of benefit sharing programs***

**Implementation arrangements are critical for any benefit sharing program.** Although many hydropower projects involve benefit sharing arrangements, constraints exist in implementing benefit

sharing programs. Based on the findings of the case studies report commissioned by the World Bank Social Development Department (SWECD 2011b), benefit sharing is often reactive, lacks coordination across players, and is not well-embedded in an economic development context. Monitoring and evaluation arrangements were not found in any of the benefit sharing programs in the case studies. In some cases, the institutional arrangements were not well-established for benefit sharing program implementation, and local communities were not able to access benefits paid to higher levels of government. In addition, weak capacity or improper involvement of local communities may hinder the successful implementation of benefit sharing programs.

**An operational manual should be prepared** to guide implementation of benefit sharing programs in hydropower projects. The manual should include—but not be limited to—the following elements:

- Communication strategy and community mobilization
- Institutional arrangements
- Funding mechanisms
- Capacity building
- Monitoring and evaluation
- Grievance redress

***Communication strategy and community mobilization.*** It is important to ensure that all stakeholders from all levels are well-informed of the emerging issues, decisions, and challenges during implementation of the benefit sharing program. A communications strategy would be a valuable tool to promote accountability and transparency. At the same time, information related to benefit sharing arrangements should be well-disseminated within local communities. The key information to be disseminated should include the contents of benefit sharing programs established for the communities, the amount of funds and funding mechanisms, and the institutional arrangements and organizational responsibilities for the implementation of the benefit sharing program. Local communities should also be well-mobilized in decision making and management of funds, particularly when a community development fund is established.

***Institutional arrangements.*** In hydropower projects, the benefit sharing programs can be implemented by communities, development companies, government agencies, or specialized foundations depending on specific mechanisms used and the targeted population. Appropriate institutional arrangements are critical for implementation of benefit sharing programs. Such arrangements need to clarify (a) the responsibilities of agencies involved in implementation of the benefit sharing program; and (b) the arrangements to ensure appropriate coordination among government agencies, hydropower project companies, and local community organizations.

***Funding arrangements.*** It is very important to include clear funding arrangements in any benefit sharing program. The funding arrangements should specify the amount of funding, the sources of funding, and payment arrangements and processes, tranches, conditions, channels, and timing. The arrangements should ensure that funding flow is transparent and auditable. For instance, if the community development fund is established as a benefit sharing program, it is important to clarify the total amount of the fund, time period, payment arrangements, etc. Normally, the government should pay the community development fund when the hydropower company pays a certain percentage of its revenue to the government in the form of royalties, taxes, or license fees (as defined in regulations).

However, hydropower companies can directly pay local communities to establish such a community development fund. In any case, the funding mechanism should be clearly clarified in the operational manual when a benefit sharing program is designed. Specially, when no national legislation exists, funding mechanisms should be negotiated at an early stage in project preparation. Table 2 reflects the funding arrangements used in some existing benefit sharing programs in hydropower projects. They can be used as a reference when designing benefit sharing programs.

**Table 2. Benefit Sharing and Funding Arrangements**

<b>Benefit sharing mechanism</b>	<b>Funding arrangement</b>
Direct payment/revenue sharing	Developers pay government or local communities on an annual basis: as defined in legislation based on negotiated agreement
Payment for environmental service	i) developers directly pay to local communities ii) government allocates a certain proportion of “revenue sharing” received from developers
Community development fund	i) developers pay community based on agreement ii) government allocates a certain proportion of revenue sharing received from developers
Investment in associated infrastructure and public services	i) paid by hydropower companies from its operational costs ii) paid by government from “revenue sharing” received from development companies

**Capacity building.** Institutional capacity assessment needs to be carried out for all institutions involved in implementation of benefit sharing programs. It needs to clarify the technical skills and human resources needed in different institutions involved in implementation of the benefit sharing programs, as well as the measures needed to strengthen the implementing agencies’ capacity.

**Monitoring and evaluation.** It is important to think of monitoring and evaluation arrangements early on in designing the benefit sharing programs. Well-designed monitoring and evaluation arrangements would help to track the implementation process and understand the impacts of the benefit sharing programs. Both internal and external periodic monitoring is important. The monitoring and evaluation arrangements should be included in the operational manual.

**Grievance redress.** Lack of transparency and accountability resulting in corruption is perhaps the single greatest threat to the successful introduction of benefit sharing measures and to community and public acceptance. Participatory, neutral, transparent, and accountable processes are very important when implementing a benefit sharing program in hydropower projects. A grievance redress mechanism—by providing a way for communities to express their concerns, and promote mutually constructive relationships among stakeholders—will help reduce the risks. Therefore, a grievance redress mechanism should be established as part of the implementation of benefit sharing programs. It should include the institutional arrangements, the procedures for handling of complaints, and the timeline in which the complainant must be guaranteed a reply or resolution of the matter. The grievance mechanism should be based on local structures and avoid having too many layers.

To set up appropriate implementation arrangements for benefit sharing programs, the task team can start with the following questions.

- What are the institutional and legal arrangements for implementing the benefit sharing programs?
- Do the agencies involved in implementation have appropriate capacity?
- Have any capacity building plans been developed?
- Have local communities been involved in the development of the benefit sharing programs?
- Have mechanisms been established for communities to participate in the design and implementation of a benefit sharing program?
- Has the information about benefit sharing programs been disseminated to local communities?
- Have local communities been well-informed and mobilized about the benefit sharing programs?
- Are there clear arrangements on who pays for what?
- What are the specific rules to ensure transparency of fund flows in the implementation of monetary benefit sharing programs?
- Is there an independent monitoring arrangement established for implementation of benefit sharing programs?
- What are the existing arrangements at the local level to deal with complaints?
- Is it possible to devise a grievance redress mechanism based on existing arrangements for implementing benefit sharing programs?

## V. Financing instruments

The Bank is increasingly involved in hydropower projects through the use of different financing instruments. Besides specific investment loans, other financing instruments are frequently used, such as PPPs and IPPs.

**Public-Private Partnerships.** PPPs involve a contract between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical, and operational risk in the project. The Bank's involvement in a PPP project can include support for PPP policy development in the country, preparation of potential projects to be financed by a PPP, and financing a specific transaction.

**Independent Power Projects.** There may be variations in the regulatory framework for IPPs, which in turn may explain outcomes. Some IPP laws may provide fast-track approvals, guaranteed returns on investment, or other inducements such as special tax treatment. Some countries may have adopted IPP strategies that envision transforming these plants into merchant generators at some future point. For such a project, the Bank is always asked to provide a partial risk guarantee to potential lenders to private investors.

Although the Bank's role might be different in terms of different financing instruments, the efforts to include benefit sharing arrangements in the project should be more or less the same. However, if the Bank supports the development of PPP policy, it would be good to explore whether it is possible to include a provision in the policy on benefit sharing.

## **VI. Concluding Remarks**

Benefit sharing is a promising approach for implementing hydropower projects sustainably, and can enhance the requirements of compensation and mitigation. Benefit sharing can improve sustainability and smooth project implementation for hydropower development especially through proper involvement of stakeholders.

For benefit sharing mechanisms to work, the key enabling conditions are government policies and the legal and regulatory frameworks, corporate social responsibility strategies of development companies, and the capacity of local communities.

Stakeholder engagement is essential in initiating and designing benefit sharing programs. It is also very important for implementing benefit sharing programs at the local level. Community support can enhance the likelihood of a successful outcome of the regulatory process, which is a key enabler of benefit sharing in hydropower projects.

Benefit sharing mechanisms can be both monetary and non-monetary. The non-monetary benefit sharing programs can be designed by using different mechanisms. It is good practice to use a portfolio approach in designing benefit sharing programs in hydropower projects.

For Bank-financed projects, benefit sharing programs need to be designed consistent with other studies and assessments, such as social and environmental impact assessments, socioeconomic studies in the project areas, and a resettlement action plan. Designing a benefit sharing program should be an integral part of project preparation. For Bank-financed hydropower projects, the Bank's task team may provide guidance to clients in designing benefit sharing programs. This guide provides some advice to task teams on how to design effective local benefit sharing mechanisms in hydropower projects.

Appropriate implementation arrangements are critical for successful implementation of benefit sharing programs. A well-designed benefit sharing program should include clear objectives, a target population, mechanisms, responsible agencies, and implementation arrangements. It is important to ensure that appropriate institutional arrangements are set up and all relevant institutions have appropriate capacity, especially at the local level.

## **Annex 1. Benefit Sharing Arrangements used in Bank financed projects**

The Bank's current hydropower portfolio consists of 35 projects,<sup>1</sup> which can be grouped into four categories:

- New dam or run-of-the-river projects (nine projects)
- Off-grid rural electrification, usually through small hydro projects (mostly as part of renewable energy and electrification projects) (nine projects)
- Infrastructure rehabilitation and emergency repair projects (six projects)
- Regional power market creation, institutional development, and waterways management projects (eleven projects).

Eight out of nine new dam or run-of-the-river projects have a combination of benefit sharing mechanisms that consist of watershed management, revenue sharing, preferential electricity rates, community development funds, ancillary investments, and employment creation (table 3).

Most of the off-grid rural electrification projects are designed to provide funding, create incentives, and build capacity for rural villages or household collectives to participate in a CDD program for village hydro projects. Some projects encourage the private sector to construct small hydro projects in rural areas or extend their provision of electrification to rural areas. Some of these off-grid rural electrification projects have community development funds in order to increase benefits of electrification to the community once the service is provided. These projects often include components on training and capacity building, as well as grants and micro-credits to households or small enterprises for creation/enhancement of social, productive, or commercial activities utilizing electricity. Thus local communities are always the intended beneficiaries.

Infrastructure rehabilitation and emergency repair projects do not have any benefit sharing arrangements as part of the project. Regional projects, which focus on power market pool creation, institutional development, or collective waterways management, do not have benefit sharing arrangements either. Three of these projects have varying watershed management arrangements, but these are an integral component of the original project design.

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<sup>1</sup> The list of 37 projects has been compiled by hydropower practitioners at the Bank and may not be exhaustive.

**Table 3. Bank Dam Projects with Benefit Sharing Arrangements**

Project ID	Approval Date	Project Title	Region	Country	Summary of Benefit Sharing Arrangements
P049290	2005	Nam Theun 2 Social and Environmental Project	EAP	Lao PDR	<p><b>Watershed management</b> and livelihood restoration programs are part of project components and will be financed by revenues from the dam (general, no specific percentage earmarked). The project has extensive plans for the preparation and implementation of land use plans in a participatory manner in the watershed; design and implementation of programs to prevent loss of forest cover, wildlife trade, and non-sustainable resource use; compensation for livelihood impacts due to resource access restrictions; design and delivery of sustainable livelihood alternatives for the population of enclave villages; and facilitation of the development of alternative livelihoods for people living in the peripheral impact zones who currently use its resources. The cost, over a 30-year period, will be \$31.5 million.</p>
P086801	2005	Bumbuna Hydroelectric Environmental and Social Management Project	AFR	Sierra Leone	<p>The project includes several benefit sharing arrangements in its design.</p> <p><b>Watershed Management:</b> The project will establish a Watershed Management Authority to protect the Bumbuna Reservoir from sedimentation, improve the livelihood of farmers in the catchment area, increase economic opportunities for communities in the area, protect biodiversity, ensure adequate water quality for users of the reservoir and downstream users, ensure sufficient water quantity for downstream uses, and protect the downstream environment. Watershed management cost will be \$3.7 million.</p> <p><b>Revenue Sharing:</b> The project will establish a Bumbuna Trust, with the aim of sharing benefits with the indirectly affected population, through provision of community development funds for improved public services. Communities will receive development benefits, based on their demands for improved public services, through subprojects implemented by them in collaboration with ward development committees and in harmony with overall district development plans. Public services could include clearing and rehabilitation of smaller access roads, hand-dug community wells and construction of latrines, management of organic waste, and rehabilitation of existing school buildings and health centers. The Bumbuna Trust will have a budget of \$1.3 million, to be funded by the electricity tariff. The Trust will be established as a separate legal entity from the power company. The board of trustees would be constituted by different stakeholders, including national and local government, traditional leaders, civil society, and the private sector.</p>

Project ID	Approval Date	Project Title	Region	Country	Summary of Benefit Sharing Arrangements
P089659	2007	Private Power Generation (Bujagali)	AFR	Uganda	<p>A community development fund is the main benefit sharing arrangement. Total investment of the fund is \$2.4 million. It is paid by Bujagali Energy Limited, the private power company in charge of the plant. The fund will support community development investments and programs over a five-year period following the start of construction. These commitments cover health care facilities, employment opportunities, water supply and sanitation, fisheries, education, small-scale tourism, and training and financial services. Village-based NGOs will be used to ensure that community works will be sustainable. For example, village water committees are being formed, and villagers will be trained in operating and maintaining water pumps. To be sustainable, the operation and maintenance costs are shared by the villagers and district (local) governments. Similar committees will be set up for health, agriculture, etc. There is a separate program for women, including a facility for maternal and child care. Many of the village committees are chaired by women.</p> <p>In addition, the project also takes measures to enhance local employment. The project implementation unit will give priority to hiring local people for dam, road, and other construction. Since jobs in these areas are expected to be insufficient for all project-affected people, plans are being made to identify additional employment opportunities, such as a tree planting program for the borders of the reservoir and the river banks.</p>
P095114	2008	Rampur Hydropower Project	SAR	India	<p>The main approach of benefit sharing used in this project is to <b>integrate ancillary investment into the local development plan</b>. The local development plan includes (a) construction of basic infrastructural facilities in the affected villages; (b) operation of mobile health vans to provide health services to the villages around the project site; (c) award of scholarships to the wards of affected people and local people; (d) sponsoring children to industrial training institutions for acquiring technical skills; and (e) support services to agricultural and horticultural activities. The small contracts and wage employment under contractors will offer income-earning and employment opportunities to the local population. These benefit sharing activities will cost \$6.3 million (in addition to RAP, which will cost \$7.7 million).</p>

Project ID	Approval Date	Project Title	Region	Country	Summary of Benefit Sharing Arrangements
P096124	2011	Vishnugad Pipalkoti Hydroelectric Project	SAR	India	<p><b>Community Development Funds:</b> The project will provide local development funds to 18 affected villages over 5 years during construction. These civil works programs will be designed and monitored by the communities. The cost is \$6.8 million. According to the PAD, the power company has spent \$300,000 from its corporate social responsibility funds on minor infrastructure development projects and community welfare schemes in 10 villages. The infrastructure created includes an access path to temples and common properties, bus shelters, and water supply schemes. The welfare schemes include distribution of computers, furniture, and bags in schools; plantations of fruit-bearing trees; assistance for construction of vermi-compost pits; garbage bins for waste management; installation of solar lights on village roads; providing seed money for income generation schemes, distribution of sweaters, blankets, rain coats, and generators; and furnishing of community centers. In addition, the power company has adopted a corporate social responsibility policy for the implementation of a community development scheme. The scheme will finance community development in the vicinity of operating stations where construction has been completed and rehabilitation and resettlement issues addressed. In consultation with the project-affected communities in the area, it has identified certain community development activities and is implementing them through separate corporate funding. In order to implement the activities, the power company has established an NGO that is responsible for finalization of activities, funding, and monitoring of the utilization of funds and creation of community assets. To plan, execute, follow up, and monitor the schemes, the Society for Empowerment and Welfare Activities (SEWA) was registered on March 24, 2009.</p> <p><b>Revenue Sharing:</b> The monetary equivalent of 1 percent of the power generated by the project will be made available for local development activities in a wider area comprising both directly and indirectly affected communities. The National Hydro Policy recommends that 1 percent of the plant's generation (or monetary equivalent) be available for local development activities in a wider area comprising both directly and indirectly affected communities after the commissioning of the project.</p> <p><b>Subsidy / Preferential Electricity Rate:</b> The electric company will also provide 100 kWh of free electricity per month for a period of 10 years to affected households.</p>

Project ID	Approval Date	Project Title	Region	Country	Summary of Benefit Sharing Arrangements
P107350	2011	Water Resources Development	AFR	Mozambique	<b>Local Development Plan</b> (called a Community Livelihood Plan, as part of the RAP that costs a total of \$4 million): The project will support the provision of civil works, including a water supply and sanitation program, community development measures, and equipment and incremental operating costs in order to ensure that benefits accrue among the wider host communities. This is partially in response to legacy issues. Construction of the dam started years ago and displaced people. The Bank was not involved in initial construction.
P084773	2011	Trung Son Hydropower Development Project	EAP	Vietnam	<b>Ancillary Investments:</b> The project will finance access roads and bridges for communities as an ancillary investment to the dam. This is a major subcomponent of the project. It will cost \$24.9 million and be financed by the IBRD loan. The project will also support a public health plan in order to mitigate the adverse health impacts resulting from the project. The health plan costs \$0.60 million and will be financed by the IBRD loan.
P112158	2011	Upper Cisokan Pumped Storage Power Project	EAP	Indonesia	<b>Revenue Sharing</b> : A small hydropower plant at the lower dam—to mainly serve the local communities and/or share profits with the local communities—may be constructed to benefit from the natural water flow and the water-head to be created by the lower dam (feasibility will be decided during implementation). If feasible, the national power company may decide to finance the small hydropower project under the current project with its own financing resources or seek additional financing from the Bank. <b>Employment:</b> The project encourages local hiring by contractors during implementation.

**Source:** PAD of these projects

## **Annex 2. Policies on Benefit Sharing for Hydropower Projects in Seven Countries**

### **Brazil**

The national Constitution (1988) charges a fee for water used to generate electricity. This is part of a general resource use tax. Under a Constitutional provision, the distribution of the resource use tax is as the following:

- Forty-five percent goes to municipalities losing land to reservoir inundation.
- Forty-five percent goes to the state or provincial authorities where the project is located.
- Ten percent goes to the federal government to finance regulatory functions, of which 8 percent is to the Federal Electricity Regulatory Agency and 2 percent to the Ministry of Science and Technology.

### **China**

Benefit sharing has been introduced on a project-specific basis in China since the 1980s. In 2007, the government introduced a new policy on revenue transfers from the power sector to regional and local authorities to (a) boost regional development around the dam projects; (b) provide infrastructure financing for reservoir areas, including areas where dam-affected people are resettled; and (c) provide an additional long-term and also retroactive compensation to dam resettlement populations. The main elements of the policy include:

***National resettlement fund.*** The fund would establish a nationwide program to pay for future and retroactive payments to people resettled from dams dating back to 1949. The fund pays RMB 600 yuan to each resettled person each year for 20 years. The funds are derived from a 0.08cents per kwh standard charge on the bulk electricity tariff from all hydropower projects in the country, regardless of the number of persons resettled. Payments are automatically applied on dams under construction and will be applied to future projects. For existing projects, the payment will be based on an investigation of persons resettled.

***Reservoir area infrastructure improvement fund.*** The fund is supported by a 0.08 cents per kwh chare on the bulk electricity tariff from hydropower generation paid to the provincial finance authority. The province then allocates the funds to prefecture and local government authorities to “develop production and improve living conditions of residents after relocation and to realize stable and sustainable development of the residents’ living and working conditions.”

### **Colombia**

Law 56 (1981) establishes a set of obligations to hydropower, irrigation, and water supply projects with affected municipalities and displaced people. It includes three provisions:

1. Creating a special fund to develop socioeconomic activities and works identified in the socioeconomic studies that should be conducted by the implementing agency to identify the potential impacts of the project.
2. Payment of commercial taxes based on the generation capacity installed.
3. The implementing agency to invest 4 percent of gross energy sales annually to rural electrification (2 percent) and protection of natural resources in the watershed (2 percent).

The third provision was modified by Law 99 in 1993. It increased the transfer of gross sales from 4 percent to 6 percent, to be transferred as follows:

- Three percent goes to the watershed agency of the dam to fund watershed management activities working with basin communities.
- Three percent goes to municipalities to finance infrastructure projects identified in municipal development plans, of which 1.5 percent goes to the municipalities that border the reservoir, and 1.5 percent goes to the municipalities in the watershed upstream of the dam reservoir.

### **India**

Since 1998, states (provinces) have received an allocation of 12 percent of electricity generation from hydropower output. The state government can allocate it to different electricity using sectors without charge and can also sell power to recover money for other state budget uses. However, there was no mechanism where states were required to target or share these funds with project-affected communities.

In its new hydropower strategy announced in 2006, the state of Himachal Pradesh made the following changes:

- Local area development funds (LADF) will be established on hydropower projects.
- Funding sources of LADF are mainly from a contribution by the project developers: a minimum of 1.5 percent of final cost of the projects with a capacity of more than 5 MW and a minimum of 1 percent for projects with a capacity up to 5 MW.
- The local area fund will have a multi-stakeholder board composed of representatives of project-affected communities and local governments. A local government representative appointed by the state will chair the fund.
- Beneficiary preference will be reflected in how the money is spent. Expenditures of the fund will be monitored by the state.

Approved in 2008, India's new hydropower policy requires an additional 1 percent **free** power over and above the 12 percent that will be earmarked for a local area development fund aimed at providing a regular stream of revenue for income generation, infrastructure creation, and welfare schemes in the affected areas. The national policy also mandates funding of 10 percent of the cost of setting up rural electricity distribution infrastructure around a certain area of the project.

### **Lao PDR**

There are no clear requirements stipulated in national policies on benefit sharing in hydropower projects. But specific revenue and expenditure management arrangements are set out in the project agreements in its largest hydropower project, Nam Theun 2. These provide a framework for the transfer of power revenues when Nam Theun 2 is commissioned. Five indicative programs were identified for the distribution of these funds on the basis of the National Growth and Poverty Eradication Strategy, including (1) basic education; (2) basic health care; (3) rural roads; (4) local development initiatives identified through a participatory decision-making process; and (5) environmental protection initiatives.

## **Nepal**

The Hydropower Development Policy includes the following provisions:

- It provides appropriate benefits at the local level while operating hydropower projects.
- Royalties are paid to the government based on the capacity of electricity generation.
- One percent of royalties obtained from hydropower projects shall be provided to village development committees directly affected by the hydropower projects.
- A Rural Electricity Fund shall be established by pooling a certain percentage of the amount received as royalties.

## **Norway**

Norway is relatively unique in terms of its geography. There was little displacement in its hydropower development. Dam projects are typically run-of-the-river, and many are part of the regulation scheme of existing natural lakes. Municipalities where hydropower projects are located receive income from hydropower companies through a variety of sources:

- Taxes and fees paid to regional and local authorities, such as a resource use tax, taxes on profits by hydropower companies, and license fees. The resource use tax is calculated based on the average power generation from the plant.
  - Tax on profit: 28 percent, of which 20.75 percent goes to the state, 2.5 percent to the county, and 4.75 percent to the municipalities
  - Property tax: 0.7 percent of the market value of the power installations
  - Resource tax: Nkr 0.013 per KWh, of which Nkr 0.011 goes to the municipalities and Nkr 0.002 goes to the county
  - Fees: licensees pay up to 10 percent of electricity generation to local authorities.
- Equity sharing: Municipalities have an equity share in the hydropower project, and receive benefits in the form of dividends.
- Preferential electricity rates: This is for municipalities that host hydropower projects.
- Business development fund: Municipalities are entitled to receive from the hydropower companies a non-recurrent amount to be used in a local area business development fund.

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<sup>2</sup> One case study report was prepared for each of six projects, including Colombia San Carlos Hydropower Project, Lesotho Highlands Water Project, Nepal Khimti 1 Hydropower Project, Costa Rica Angostura Hydropower Project, Norway Glomma and Laagen Basin, and Laos Nam Theun2 Hydropower Project.

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