The World Bank Group

Benefit Sharing from Dam Projects
Phase 1: Desk Study

Final Report

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1.0 Introduction

1.1 Context of Study

One of the key points put forward by the World Commission of Dams (WCD) report (2000) is that "*dams have made an important and significant contribution to human development, and the benefits derived from them have been considerable*". These benefits are varied and include power generation, flood control, irrigation, industrial and domestic water supply, navigation as well as recreation. However, the WCD report also underlines that " *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*". While the primary beneficiaries of dams can live far away from the dam sites, other groups of people in the project-affected area may sustain most of the negative impacts of dams. For instance, power generation often benefits urban populations and industries located far away from the project-affected area. In other instances, water provided for irrigation may benefit small groups of farmers located downstream of the dam. In view of this, there is a need for dam proponents, operators, and regulators to commit to support measures for development and welfare opportunities for project-affected communities. One way to fulfill this need is to share part of the benefits from dam operation with these communities.

As part of its follow-up to the WCD report, the World Bank has put forward a Dams Planning and Management Action Plan. This Action Plan aims to improve the quality of the Bank's operations by building on the core values and strategic priorities identified in the WCD report. The present study on Benefit Sharing from Dam Projects constitutes one of the 20 projects which are part of this Action Plan.

1.2 Defining Benefit Sharing

This study focuses on mechanisms that ensure a direct monetary redistribution of project-related revenues or profits to project-affected populations, associated with the existence of an economic rent. Such mechanisms go beyond resettlement and rehabilitation programmes and environmental and social mitigation or compensation measures. The main types of mechanisms considered in the study are the following:

- Redistribution of part of the dams revenue to local or regional authorities in the form of royalties tied to power generation or water charges;
- Establishment of development funds financed from power sales;
- Part or full ownership of the project by project-affected populations (equity sharing);
- Levying property taxes by local authorities; and,
- Granting preferential electricity rates and fees for other water related services to local companies and project-affected populations.

Non-monetary benefits are thus excluded from the study. Examples of non-monetary benefits are the allocation of fishing rights to resettlers in a newly-created reservoir,

access to improved infrastructure or priority hiring of project-affected people on construction works or in operations activities. As the analysis of each of these forms of non-monetary benefit could justify a report on its own, they could not be included in this study. However, non-monetary benefits will be considered whenever they are part of the steps leading to an agreement on monetary benefit sharing or to its implementation.

The study considers all levels of project-affected peoples, from those who have to move to those whose livelihoods or ways-of-life are affected to various degrees by the project but who do not have to relocate.

The design and outcome of the main types of mechanisms considered in the study vary in many ways, particularly in terms of degree of involvement of project-affected populations and efficiency in the use of the benefits. The challenge is to conceive mechanisms that are both efficient in their application and viewed as equitable by the key parties involved.

1.3 Study Objectives

The objectives of this study are the following:

- Describe the principles involved with benefit sharing in the form of direct monetary redistribution of project-related revenues or profits to project-affected populations;
- Evaluate the processes and practicalities involved with implementation of the benefit sharing mechanisms; and,
- Evaluate the outcomes from various types of benefit sharing mechanisms.

The lessons from this study will be used to integrate best practices for benefit sharing into World Bank operations and to assist client countries in developing policies to promote benefit sharing for dam projects.

This report presents the results of Phase I of the project. Phase I corresponds to a desk review with resulting recommendations on "essential elements" that are to be taken into consideration for achieving equitable benefit sharing. The desk review follows a case study approach to organize the research and resulting recommendations. Cases include those that were analyzed in the Summary Review on Dams and Benefit Sharing prepared for the World Commission of Dams (Milewski *et Al.*, 1999). Other cases have been selected to cover more thoroughly the main types of benefit sharing mechanisms and dams that are not solely intended for power generation (irrigation, water supply, etc.). These cases are presented in Appendix 2 and are summarised in Table 1 next page.

In Phase II, it is expected that more in-depth case studies will be carried out on "desirable elements" and on "emerging trends" with respect to benefit sharing, focusing on practicalities involved with the design, negotiation and implementation of benefit sharing mechanisms (what really works and why?). The lessons learned from these in-depth case studies will be used to prepare tool kits to improve current practices.

In Phase III, an international benefit sharing best practice conference would be organized to further disseminate the results of the study.

Table 1: *Cases Selected for Desk Review of Benefit Sharing Mechanisms*

Name of project	Purpose of project	Project size	Country
Urra 1 (commissioned in 2000)	Power generation, flood control	340 MW	Colombia
Itaipu	Power generation	14 000 MW	Brazil and Paraguay
Eastmain-1 Dam and Eastmain-1-A and Rupert Diversion Project, Canada	Power generation	770 MW 12,6 TWh	Canada (Quebec)
Columbia River Basin (Columbia Basin Trust created in 1995)	Power generation, flood control	Flood control benefits and downstream electricity benefits: Cdn$ 295 million	Canada (British Columbia) and U.S.A.
Lesotho Highland Water Project (Phase 1A commissioned in 1998)	Water supply, power generation	Transfer of 70 m^3/s from Lesotho to South Africa, 72 MW power plant	Lesotho and South Africa
Minashtuk (commissioned in 2000)	Power generation	9,9 MW	Canada (Quebec)
Toulnoustouc (project start-up)	Power generation	440 MW 2,6 TWh	Canada (Quebec)
Hydropower devel-opment in poor areas of Hubei (project start-up)	Power generation	4 projects: 30 MW to 110 MW	China
Glomma and Laagen River Basin Development	Power generation	862 MW 3,8 TWh	Norway
Tokke Project	Power generation	960 MW	Norway
Shuikou (commissioned in 1993-1996)	Power generation, navigation	1 400 MW 4,95 TWh	China

1.4 Contents of Report

Section 2 of this report presents justifications for sharing benefits from dam projects with project-affected populations. Section 3 describes the types of benefit sharing mechanisms considered in the study. Evaluation criteria derived from these justifications are proposed in Section 4. These criteria are used in Section 5 for a preliminary evaluation of the various types of benefit sharing mechanisms selected for the study. Section 6 discusses

the processes and practicalities involved with implementation of benefit sharing mechanisms. Finally, Section 7 proposes a workplan for Phase II of the study.

2.0 Justifications for Benefit Sharing from Dam Projects

Arguments supporting benefit sharing from dam projects with project-affected populations are three-fold. First, dam projects may generate a significant rent for dam owners that can be shared with project-affected populations. Secondly, there are several ethical reasons for redistributing monetary benefits to project-affected populations. Finally, dams can be conceived as part of a strategy to foster regional and local development. These arguments are further detailed below.

2.1 Economic Rationale [1]

- Theory of economic rent

Sharing monetary benefits from dams implies the existence of an economic rent from dam operation that goes to the owner of the dam but that can also be distributed to other entities. Indeed, the exploitation of natural resources, including water resources, "*can generate significant economic rent – a surplus return over and above the value of the capital, labour, materials and other factors of production employed to exploit the resource" … "Surplus means that the return is more than what the factor could earn in its next best occupation. In other words, the return is greater than needed to keep the factor in that use or a reward in excess of that required to bring forth a desired effort or function"*. Therefore, resource developers "*do not "earn" rent as they do normal profits (i.e. return to capital and entrepreneurship). Rather, rent is a windfall created by the bounty of Nature*" (Rothman, 2000).

Such a situation occurs when a hydroelectric project is rationally developed since it would not be developed if it were not the least cost alternative (Trembath, undated). The same rationale applies to dam projects developed for flood control, irrigation, water supply or navigation.

- Ownership of the rent

The existence of an economic rent and the possibility of sharing it raises the issue of who owns the rent. In most countries, water, as a natural resource, is considered part of the common national heritage (BAPE, 2000). *In federal states, a national water resource may be shared by several states or provinces, each of which may have various rights to it … In general, rights of the local governments depend on local practice"* (Rothman, 2000). In particular, Indigenous peoples generally claim an inherent right to natural resources on their ancestral lands and a role of guardian of these resources.

Since natural resources are considered public goods, governments, in the name of the public, may thus try to "capture" the rent through royalties, fees, competitive auctions or

[1] This section is generally drawn from a report by Rothman, Mitchell. 2000. *Measuring and Apportioning Rents from Hydroelectric Power Developments.* World Bank Discussion Paper No. 419.

other mechanisms and deliver it back to the public. This is common practice in the oil and gas, mining, forestry and fishing sectors. It is rare, however, in the hydroelectric power sector, where governments typically regulate tariffs in such a manner that the resulting rent flows to electricity consumers in the form of lower tariffs. Those who consume more electricity will get more of the rent and, depending on conditions in the exported goods market, some of the rent can even go to foreign customers.

The situation is similar in the case of other water uses made possible through dams. Irrigation fees, water fees or navigation fees generally reflect at best the actual cost of the dam. In the case of flood control, populations benefiting from reservoir storage capacity generally do not pay for this benefit.

Rents resulting from dam projects thus typically flow to people benefiting directly from the services provided by the dam. Part of the rents also increasingly flow to private investors when power utilities un-bundle and divest their hydropower assets and when new hydropower generation is partly or fully developed by private investors. However, as explained below, ethical considerations may justify that part of the rents be channelled to project-affected populations. Indeed, in many cases, project-affected people sacrifice their access to and use of local natural resources that contribute to project development.

- Measuring rents from dam projects

Conceptually, rent from a hydroelectric project is "*the competitively determined electricity price minus the marginal cost of producing the hydroelectric power. Unfortunately, neither of these values is readily observable in jurisdictions with public utilities and regulated tariffs*" (Rothman, 2000). Regulated tariffs, typically set at the utility's average cost, remain the norm in most industrialized countries. Developing countries still often subsidise electricity with the result that tariffs are set at a fraction of the costs of supply. At the same time, public utilities' costs often do not reflect the marginal opportunity costs of factors of production. For example, capital may be subsidized by borrowing at the government preferred rate of interest. Governments may offer utilities preferential tax treatment. Labour may be paid higher than normal wages. Finally, accounting systems are not set up to track actual costs of specific projects.

Measuring the rent from a hydroelectric project *"involves four general steps:*

1) *Adjusting the financial cost of hydroelectric generation and transmission to reflect the full opportunity cost of the factors of production employed;*

2) *Identifying the least-cost alternative source of electricity that could replace the electricity generated at the hydro site(s);*

3) *Estimating the full opportunity costs of the factors of production employed to generate and transmit electricity produced using the least-cost alternative; and*

4) *Calculating rent as the cost of generating electricity using the least-cost alternative minus the cost of the hydroelectric generation and transmission*" (Rothman, 2000).

A similar procedure can be followed for other services provided by dams. However, there are very few examples of measuring economic rent from dam projects and they often refer to dams built on international water courses where the rent has to be apportioned between the countries owning the water resources. Because exact measurement of such a rent is difficult, tax or royalty regimes have often been used to attempt to capture some of the rent, without explicitly measuring it. Rothman (2000) gives examples of explicit measurement of rents associated with a project. Two examples of rent measurement are summarized in the Appendix to the present report: the Columbia River Basin Development (Case 5) and the Lesotho Highlands Water Project (Case 6).

2.2 Ethical Considerations

- Need for fair redistribution of benefits from dams to project-affected populations

Water resources and other natural resources are used generally from time immemorial by local populations in river basins with potential for generating economic rents from dams. Such resources often form the very basis of their livelihood. While dam promoters bring financial resources and technical expertise, local populations thus contribute to project development by sacrificing – voluntarily or not – their access to or use of natural resources in the project-affected area. However, benefits from the dam generally accrue to other populations located far away from the project site. For instance, the large majority of domestic customers and enterprises benefiting from the electricity generated by hydropower are located outside the affected area, often in urban centres. Similar situations often occur in the case of other services provided by dams: flood control benefits for populations located downstream of the dam, irrigation benefits for small groups of farmers, or water for industrial or domestic use that benefit villages and cities situated far from the project site.

There is thus a strong ethical argument that local populations who have to sacrifice water and land uses should receive part of the monetary benefits that accrue to populations and enterprises outside the affected area. Such benefit sharing has to go beyond mitigation and compensation measures, recognising that local populations can claim entitlements to part of the ownership of the economic rent generated by the dam.

Notwithstanding this ethical argument, benefit sharing may be perceived as a way for a developer to appease local opposition and gain acceptance to the project. Project-affected communities can gain a vested interest in the project, instead of having only an adversarial relationship with the developer. Benefit sharing, along with mitigation and compensation measures, provide the developer with a better assurance that the project will be built and will be in operation in the long term. Conversely, the local population, or at least part of it, will perceive the entire package of mitigation and compensation measures, along with benefit sharing mechanisms, as an opportunity to improve their standard of living.

- Increasing recognition of entitlements of project-affected communities

Over the past three decades, the rights of project-affected individuals and communities have been increasingly recognised. For instance, international public opinion tends to be in favour of fair and generous settlements when indigenous peoples are affected (IEA, 2000). The resettlement guidelines of donors agencies are now much more detailed and focus on improving the standards of living of displaced persons or, at least, the restoration of their standards of living to their previous levels. In addition, the World Bank resettlement policy states that resettlement activities should provide sufficient investment resources to enable resettlers *"to share in project benefits"*.

Perhaps the most important recognition of the need for fair redistribution of benefits to people affected by development projects is given in Principle 3 of the Rio Declaration on Environment and Development (United Nations, 1992). This principle recognizes *"the right to development"* but states that it *"must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations"*. Therefore, a project must be equitable for the present generation if it is to be considered fully as development. In other words, a project must ensure not only fair compensation for project-affected populations for all project-related impacts but also a fair redistribution of benefits between the latter population and other segments of the society. This principle is reinforced by other principles of the Rio Declaration: Principle 10 underlines the importance of giving individuals *"the opportunity to participate in decision-making processes"*. Principles 20 and 22 insist on the vital roles of indigenous communities, other local communities and women.

Recognising the entitlements of adversely affected populations and sharing benefits with them is one of the seven strategic priorities that were put forward by the WCD report. In order to implement this priority, the WCD report proposed an approach based on *"recognising rights and assessing risks (particularly rights at risk)"* … *"Clarifying the rights context for a proposed project is an essential step in identifying those legitimate claims and entitlements that may be affected by the project or its alternatives. It is also a pre-condition for effective identification of legitimate stakeholder groups that are entitled to a formal role in the consultative process, and eventually in negotiating project-specific agreements relating, for example, to benefit sharing, resettlement and compensation"* (WCD, 2000).

- Role of the State in setting national priorities

As owner of the water resource, the State plays a central role in resolving dilemmas which are raised when arbitrating between the rights of project-affected populations and the rights of larger numbers of dam beneficiaries. As stated in the World Bank Position on the WCD Report, *"in both developed and developing countries the State has the right to make decisions that it regards in the best interest of the community as a whole, and to determine the use of natural resources based on national priorities"*.

When evaluating the need for benefit sharing, one of the main factors to be considered by the State is the level of existing public infrastructure and services in the affected area.

The requirement for benefit sharing should be the highest in remote regions that do not have access to public investments in infrastructure and services. This is a frequent occurrence in developing countries.

Conversely, the need for benefit sharing would appear to be less significant in cases where the State already provides high levels of public investment in local infrastructure and services. This is particularly the case for remote regions where existing public infrastructure and services often entail costs for the State that are higher than in more populated central regions. Examples of this are rural electrification and specialized medical services. In addition, allocating significant benefits to communities that are already the recipients of substantial public investments might generate tensions with less well serviced neighbouring regions.

- Full compensation of environmental and social costs

Another reason for implementing benefit sharing mechanisms, in addition to mitigation and compensation measures for environmental and social impacts of dams, is that existing guidelines fail to capture the full social costs of these impacts. David Pearce (1993) lists the following potentially large sources of under-compensation in the case of involuntary resettlement:

- "*under-compensation due to the time-lag between determining compensation and the time of resettlement;*
- *failure to account for non-market income and costs which in turn comprises: non-priced environmental services, cultural assets, the value of social cohesion, the value of market access, psychological costs of dislocation;*
- *lost "consumer surplus" from existing assets,*" i.e. the difference between the "willingness to pay" for the benefits of the assets and the market price.

Van Wicklin (1999) adds that "*proper socio-economic reestablishment requires more than paying the fair market value of the condemned land*" … "*the stream of benefits created by the project should also be tapped to provide direct benefits and resources for resettlers*". In other words, rather than trying to measure non-quantifiable losses (over and above the more obvious quantifiable losses) and then increasing the compensation to account for all losses, the 'profits' from the project can be used as compensation for these un-quantified losses. Thus the project-affected people get: a) a compensation package based on the readily quantified losses; and b) a share of the profits to cover additional losses.

2.3 Development Considerations

In poorer regions that have untapped water resources, dam projects can be planned as part of a regional economic development plan. Such a plan can take into account all resource potentials in the region as well as opportunities created by the reservoir and by access roads built for the construction of the dam and power plant. These new opportunities may include reservoir fisheries, irrigated agriculture, better access to markets or improved navigation. Part of the funding to implement the plan may be provided by channelling a portion of the benefits from the dam project to local and regional communities.

Such an approach also addresses the risk of leakage of redistributed benefits away from project-affected communities. This risk is high in poorer regions lacking in infrastructure, industry, public and commercial services as well as local institutional capacity.

3.0 Types of Benefit Sharing Mechanisms

On the basis of the cases reviewed, five types of benefit sharing mechanisms may be considered. For a given project, more than one type of mechanism can be used. These types of mechanisms are defined below.

3.1 Revenue Sharing

In the case of revenue sharing mechanisms, part of the revenues are redistributed to local or regional authorities in the form of royalties tied to power generation or to water charges. Such mechanisms may be the result of negotiations between local or regional authorities and the promoter or may be defined in the legislation. In the latter case, the percentages of revenues which must be transferred to regional or local beneficiaries and the destination of the proceeds are generally specified.

3.2 Development Funds

Developments funds financed from power sales, water charges or government may be established to provide seed money for fostering economic development in the project-affected area. As for revenue sharing mechanisms, the objectives, structure and duration of development funds may be the result of negotiations between local or regional authorities and the promoter or may be defined in the legislation. Projects to be financed by the development funds may be specified or not. They may include for instance community facilities, training programmes or job creation in industrial or commercial projects.

3.3 Equity Sharing or Full Ownership

A variety of mechanisms may allow local or regional authorities to partly or fully own a dam project. Local authorities thus share the risks of the venture but also its profits, if any. Moreover, they may in certain cases gain a degree of control over the design and operation of the project.

3.4 Taxes Paid to Regional and Local Authorities

Two main types of taxes paid to regional and local authorities can be considered. In some countries, the State allows local or regional authorities to directly tax dam owners (e.g. hydropower corporations) on the dam's property value or other basis. This mechanism is not linked to revenues since the tax applies whatever the level of power generated or water supplied by the dam operator. However, it represents a fixed charge for the producer, which has a direct impact on profits. Taxes to be paid to regional and local authorities can also be defined in State legislation, sometimes as a percentage of project sales or net income. In the latter case, this mechanism is similar to revenue sharing.

3.5 Preferential Electricity Rates and Other Water-Related Fees

Local or regional authorities may negotiate free energy or preferential electricity rates with the hydropower producer, which benefits all electricity consumers in their constituency and contributes to local and regional economic development. Similarly, water for irrigation or water used for domestic or industrial purposes can be supplied to adversely impacted communities at subsidized rates or for free. This mechanism is a form of revenue sharing since it results in less revenues for the dam owner and in avoided costs for beneficiaries.

4.0 Criteria to Evaluate Types of Benefit Sharing Mechanisms

Justifications for benefit sharing from dam projects can serve as a basis for defining criteria to evaluate various types of benefit sharing mechanisms. These criteria are summarized in Table 2 in relation to each category of justification put forward in the preceding Section 3. Another category addresses administrative considerations. These criteria are described in more detail below.

Table 2: *Criteria to Evaluate Benefit Sharing Mechanisms*

Categories	Criteria
Economic rationale	1) Existence of an economic rent (pre-requisite).
Ethical considerations	2) Benefits shared commensurate with the entitlements and needs of each category of project-affected population. 3) Involvement of project-affected population in use of benefits. 4) Involvement of the State in defining benefit sharing mechanism.
Development considerations	5) Contribution of benefit sharing mechanism to development on a sustainable basis in project-affected area.
Administrative considerations	5) Efficiency of transfer mechanism. 6) Accountability of implementing agencies.

- Economic rationale

1) *Does the dam project generate an economic rent?*
   As mentioned above, economic rent from dam projects is difficult to measure and benefit sharing mechanisms generally capture some of the rent without explicitly measuring it. However, a prerequisite to benefit sharing is the very existence of an economic rent. Otherwise the amounts of money channelled to project-affected populations would add further to the deficit borne by society. Ideally, this rent should be measured so as to determine what could be shared with the project-affected population. However, even if the existence of an economic rent can be demonstrated and measured, it does not mean that monetary flows from dam operation allow for a redistribution of benefits. For instance, electricity may be sold at rates lower than expected, irrigation fees often cover only operation costs and not capital costs and flood control benefits do not accrue to dam owners.

- Ethical considerations

2) *Are the benefits shared commensurate with the entitlements and needs of each category of project-affected population?*
When the existence of an economic rent can reasonably be inferred from annual statements of accounts and other evidence, it remains difficult to determine what would constitute a fair share of economic rent for the project-affected population. A basic factor to consider should be the needs of the population in the affected area. Poorer backward regions with few or no public services and infrastructure should receive a higher share of dam benefits. Another factor is the level of losses or impacts borne by each category of project-affected population, as further detailed in Section 6.4.

3) *Can the project-affected population influence the provisions of the benefit sharing mechanism and the use of the benefits received from the dam?*
The project-affected population should be meaningfully involved in defining the provisions of the benefit-sharing mechanism and these provisions should be viewed as fair by those affected. In addition, the project-affected population is best placed to decide what constitutes an improvement in their quality of life. They also have a first-hand knowledge of local and regional potentials and constraints. A benefit sharing mechanism should thus allow for the involvement of concerned populations in the use of their share of the benefits received from the dam project.

4) *Is the State involved in defining benefit sharing mechanisms?*
As described in Section 2.2, a central role of the State is to determine the use of natural resources based on national priorities while protecting the rights of minorities. One way of setting objectives in this regard is by defining a legislative or policy framework for benefit sharing mechanisms. Project-affected populations and developers can then refer to common rules concerning the design of such mechanisms, the level of benefits to be shared and their management as well as institutions involved. The State can also be directly involved in negotiating benefit sharing mechanisms on specific projects.

- Development considerations

5) *Does the benefit sharing mechanism contribute to development on a sustainable basis in the project-affected area?*
As described in Section 2.3, mechanisms can be designed in such a way as to contribute to investments in the project-affected area, within the framework of a regional economic development plan. Such mechanisms could maximise local economic spin-offs and minimise leakage of benefits away from project-affected communities.

- Administrative considerations

7) Is the process used to transfer revenues to project-affected populations efficient?
The process used to transfer revenues to project-affected populations should contain steps, provisions and safeguards that provide assurances that the goals of the selected mechanism are achieved. These are further detailed in Section 6.3 below.

8) Does the benefit sharing mechanism include provisions guaranteeing the accountability of implementing agencies entrusted with the redistribution of benefits?
Transfers of money to local communities may represent very important sums and raise the concern that they may not be used in the manner intended by an agreement or by relevant legislation. A transparent process, involving all stakeholders and disclosing publicly how benefits are invested, would provide greater assurances that the proceeds are effectively spent on projects that truly benefit project-affected communities.

5.0 Preliminary Evaluation of Types of Benefit Sharing Mechanisms

The above criteria can be used for a preliminary evaluation of types of benefit sharing mechanisms. This preliminary evaluation is summarised in Table 3 below and is discussed hereafter on the basis of the case studies presented in Appendix 2.

Table 3: *Summary Evaluation of Types of Benefit Sharing Mechanisms*

	Revenue Sharing	Development Funds	Equity Sharing	Local Taxes	Preferential Rates
Economic rent	No explicit relation to economic rent	May be related to economic rent	Related to economic rent	Taxes may be justified on the basis of the existence of an economic rent	No relation to economic rent
Benefits commensurate with needs	May be related to needs	May be related to needs	May be related to needs	Generally fixed rate with no relation to needs	Mat be related to needs
Involvement of Project-affected population	Involvement through local or regional administration receiving revenues transferred	Involvement through entity in charge of managing the Fund	Involvement through entity receiving dividends	Involvement through entity receiving taxes	No direct involvement
Role of the State	Mechanism often defined in legislation	Mechanism defined in legislation or State involved in use of funds	Some provisions may be defined by legislation	Mechanism defined in legislation	Mechanism defined in legislation
Contribution to development	Depends on legislation and on priorities of entities receiving benefits	Direct contribution to development	Depends on priorities of entities receiving benefits	Depends on priorities of entities receiving benefits	Incentive to economic development
Efficiency of transfer mechanism	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis
Accountability of implementing agencies	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis	To be assessed on a case by case basis

5.1 Economic Rationale

All types of benefit sharing mechanisms may be designed and implemented without any measurement of the economic rent generated by the project and even without any demonstration of the existence of such a rent. This could even lead, as in the case of the Urra 1 project in Colombia, to adding to the financial difficulties encountered by project owners who have to face a deficit. However, any benefit sharing mechanism, such as in the case of the rent tax in Norway, may be justified by assuming the existence of an economic rent, without explicitly measuring it. Furthermore, proper design and implementation may include an explicit measurement of the economic rent, such as in the case of the Lesotho Development Fund or the Columbia Fund. Equity sharing does not require the explicit measurement of an economic rent but the design of this mechanism is based on the assumption that the project will generate profits that reflect at least part of the economic rent.

5.2 Ethical Rationale

Whatever the type of benefit sharing mechanism, ethical criteria may be met or not depending on the way that the mechanism is designed and implemented. However, in the case of mechanisms that are generally defined in legislation – in particular revenue sharing, local taxes and preferential electricity rates and water fees – the framework tends to be rigid and does not allow for adjustments to specific local or regional needs, such as in the case of the tax regime for hydroelectric projects in Norway. Development funds and equity sharing mechanisms may offer more room for adjustments. In the latter case, a determining factor is the capacity of the local communities to invest and/or borrow funds (Pesamit and Minashtuk cases). This mechanism also presents a much higher level of risk, the redistribution of benefits being dependent on the capacity of the project to generate profits.

Except for preferential electricity rates and water fees, all mechanisms allow for some degree of involvement of the project-affected population in the design of the mechanism and in the use of benefits received. Meaningful involvement depends on the process to arrive at an agreement on benefit sharing, as described in Section 6, as well as on the degree and representativeness and accountability of regional and local authorities responsible for the use of benefits.

5.3 Development Considerations

Two types of mechanisms – development funds and preferential electricity rates and water fees – explicitly incorporate development considerations and can be conceived as part of a regional economic development plan. The cases of the Lesotho Highland Water Project and of the Hubei Hydropower Development in poor areas are illustrations of this approach. For other types of mechanisms, benefits may be used for a variety of purposes that are sometimes specified in legislation.

6.0 Processes and Practicalities Involved with implementation of Benefit Sharing Mechanisms

The discussion in the preceding section suggests that the performance of benefit sharing mechanisms largely depends upon the way that these mechanisms are conceived and implemented. In practice, designing benefit sharing mechanisms is a complex task that involves reconciling the conflicting goals and values of concerned stakeholders, taking into account a fixed amount of benefits. This difficulty is illustrated in the following comment from Ms Kristalina Georgieva[2], the World Bank's director for the environment: "*I've never seen a real win-win in my life. There's always somebody, usually an elite group grabbing rents, that loses. And we've learned in the past decade that those losers fight hard to make sure that technically elegant win-win policies do not get very far"*.

Further in-depth case studies will thus have to focus on essential elements in the processes and practicalities involved with implementation of benefit sharing mechanisms that could ensure success in meeting the evaluation criteria proposed in Section 4. The following proposes a summary description of these elements, based on cases reviewed in Phase I..

6.1 Understanding the Goals of Stakeholders

Designing appropriate benefit sharing mechanisms involves four categories of stakeholders with different sets of goals and values:

1) Developers: Developers bring capital as well as technical and managerial expertise to build and operate the project. Hydroelectric projects require a high level of investment. They require a long lead time before entering into operation and their period of use typically extends over several decades (50 to 100 years). Payback periods are thus much longer than for most other electricity generation projects. Under such conditions, any mechanism such as benefit sharing that may lower the risk of social, institutional and political unrest in the long term will be highly valued by developers. Developers will also favour reaching a consensus with interested parties over project design and project benefits early on in the planning process so as to avoid unnecessary expenditures and efforts.

2) Project beneficiaries: Dam projects are often multi-purpose projects with most, if not all, project beneficiaries located far away from the dam site. Project beneficiaries expect to benefit from the services provided by the dam at the lowest price or fee possible, or even for free. Most beneficiaries have little or no knowledge of local and regional impacts related to dam construction and operation.

3) Project-affected people: Dam construction and operation affects to various degrees the uses of water resources and other resources as well as ways-of-life of regional and

[2] As cited in *The Economist*, July 6th, 2002, in an article entitled: "A survey of the global environment – The great race", page 4.

local populations. In addition, project-affected people form heterogeneous groups with regards to occupations, revenues, values, education, social organisation, etc. Several subcategories can thus be generally defined in relation to expectations and issues raised by a dam project.

4) The State: Many institutions are concerned by dam projects, e.g. land use and resource management, manpower, health or economic development agencies. Depending on the country, legislation may provide for a more or less rigid framework for mitigating and compensating dam-related impacts. Furthermore, as discussed in Section 2.2, the State has the responsibility to establish guidelines for the use of natural resources and, when required, for solving dilemmas raised by projects that exploit such resources.

A stakeholder analysis should be carried out early in the planning process. The purpose of such an analysis would be to identify each subcategory of stakeholder and, for each of them, the issues raised by the project (what they might lose or gain because of the project), their goals and values (some of them may be in conflict with the goals and values of other subcategories of stakeholders). When appropriate, the analysis should also describe how each category is represented, their legal rights and the capacity of the concerned people to put forward their position. The rights and risks approach set out in the WCD report and described in Section 2.2 can be used as a framework for a stakeholders analysis.

6.2 Reaching an Agreement on Benefit Sharing

- Evaluating the likelihood of reaching an agreement on benefit sharing at the options assessment or pre-feasibility stage

At the options assessment or pre-feasibility stage, a number of indicators could be used to assist in the evaluation of the likelihood of reaching an agreement on benefit sharing for specific projects. A tentative set of indicators, based on information that is generally available at an early stage in the planning process is proposed in Appendix 1. The appropriateness and comprehensiveness of this tentative set of indicators could be further evaluated as part of Phase II.

- Negotiating Impact Benefit Agreements upstream of feasibility studies and EIA/SIA studies

The direct monetary redistribution of project-related revenues or profits to project-affected people should be conceived in relation to other non-monetary benefit sharing measures that could pursue the same overall goals, reinforcing each other. Such other types of measures could include, for instance, the priority hiring of project-affected people on planning surveys, construction works and in operations activities. It could also include the allocation of fishing rights to resettlers in a newly-created reservoir, access to improved infrastructure, etc.

A package of monetary and non-monetary benefits may take the form of an Impact Benefit Agreements (IBA) which may be signed with project-affected populations prior to the undertaking of feasibility and EIA/SIA studies. Cases such as Urra (Colombia), Toulnoustouc or Eastmain-Rupert (Canada) suggest that it is preferable that IBAs be signed early in the planning process. As many project components still have to be defined at such a stage, such IBAs generally focus on the definition of specific objectives for monetary and non-monetary benefit programs, rather than on detailed measures. They may also define processes to be followed during feasibility studies, such as a communication programme or the hiring of local workers for field studies. Negotiating IBAs generally require the building of relationships based on trust between the parties over a number of years.

- Role of the State

As benefit sharing agreements usually involve the recognition of basic rights of stakeholders and the resolution of conflicts related to the use of natural resources, the State should be a party to the agreement or even support the negotiations. The results of negotiations can later be submitted for public consultations with project-affected groups (in certain cases, they can be approved on the basis of local referendums). In cases where benefit sharing mechanisms are defined by law (such as the payment of royalties to regional and local authorities in Brazil), they must be taken into consideration when negotiating IBAs.

- Financial constraints to benefit sharing

As mentioned in Section 4, the existence of an economic rent does not mean that monetary flows from dam operation allow for a redistribution of benefits. This occurs in a number of situations such as the following: regulated electricity rates that do not cover the actual supply cost of generating power; benefit transfers based on a percentage of revenues that result in financial losses for the dam owner; irrigation fees that do not cover capital cost.

Government subsidies may be used to balance financial flows when they can be justified on the basis of an economic analysis, for instance when it can be demonstrated that flood control benefits, although they do not accrue to the dam owner, exceed dam capital and operation costs. Ideally, the sum of profits accruing to the dam owner, of benefits accruing to project-affected populations and of taxes on profit or water-use fees collected by the government, should not exceed the economic rent.

6.3 Ensuring the Efficiency of the Process Used to Redistribute Benefits

As specified under criterion 6, the process used to transfer revenues to project-affected populations should contain steps, provisions and safeguards that provide assurances that the goals of the mechanism are achieved. In the first place, the goals should be clearly spelled out. Possible uses of the funds, in relation to the goals, may be defined. Separate budgets may be established for each category of uses. When required, local community

governments, which are sometimes ill equipped to manage large sums of money and complex procedures, should be the beneficiaries of capacity building activities.

6.4 Ensuring the Equity of the Process Used to Redistribute Benefits within the Project-affected Communities

Mechanisms may include provisions specifying how amounts transferred to project-affected communities should be shared out among beneficiaries, taking into account their entitlements as well as their level of losses and impacts. Such provisions may be required to minimise the risk of exacerbating social divisions between recipient communities. They may also be required to avoid that subgroups claim further compensations or a higher share of benefits from dam owners. For instance, in Nepal, district governments where hydropower has been built receive 10% of the royalties collected by the central government from hydropower projects. These district governments face the issue of redistributing these funds between project-affected villages and other villages which are more remote and claim to have been deprived of the roads and other infrastructure brought by the hydropower project.

6.5 Guaranteeing the Accountability of Implementing Agencies Entrusted with the Redistribution of Benefits

The information collected on the cases reviewed in Phase I does not address the processes and practicalities related to the accountability of implementing agencies entrusted with the redistribution of benefits. These aspects, such as using referendums to verify the acceptance of the results of negotiations on a benefit sharing agreement, the transparency of the process used to redistribute benefits, the public disclosure of benefit uses, etc. will be examined in Phase II.

7.0 Proposed Phase II Workplan

7.1 Objectives of Phase II

On the basis of the study background and objectives described in Section 1, the specific objectives of Phase II can be defined as follows:

1) Evaluate the outcomes of specific types of monetary benefit sharing mechanisms for dam projects;

2) Identify essential elements and emerging trends in processes and practicalities involved with the design, negotiations and implementation of benefit sharing mechanisms; and,

3) Use lessons learned from in-depth case studies to develop a sourcebook on best practice for benefit sharing.

7.2 Scope of Work

The study will base its outputs on 5-6 in-depth case studies. In order to help safeguard the quality of the study's outputs, the Project Team will be supported by an Advisory Panel which will provide comments and recommendations on the intermediate outputs. In addition, a peer-review workshop will be convened to provide expert critique on a draft version of the sourcebook.

The following tasks and outputs are planned:

Task 1: Assemble an Advisory Panel
The consultant will assist the Task Manager in assembling an independent, external Advisory Panel which will provide comments and recommendations on the intermediate outputs of the study. The consultant will develop terms of reference for the participation of the Advisory Panel.

Output:
- Terms of Reference for the participation of the Advisory Panel

Task 2: Prepare an analytical framework for in-depth case studies
On the basis of the outputs of Phase I, the consultant will prepare an analytical framework to guide national consultants who will carry out in-depth case studies. The analytical framework is critical to ensure meaningful results and comparability among cases. A first draft of the analytical framework will be submitted to the World bank and Advisory Panel for comments. The final draft, incorporating comments from the Advisory Panel, will be part of the terms of reference of the in-depth case studies.

Outputs:
- Draft analytical framework

- Final Analytical framework incorporating comments from the World bank and Advisory Panel

Task 3: Select cases for in-depth case studies

In parallel with the preceding task, the consultant will propose cases which could be selected for in-depth case studies, using the following screening criteria:

- Cases representative of all types of benefit-sharing mechanisms
- Regional spread
- Availability of documentation
- Differences in country governance systems
- Potential for identifying essential elements and emerging trends in the design and implementation of benefit sharing mechanisms
- Innovative approach to benefit sharing and processes
- Willingness of stakeholders to participate in in-depth case studies

The latter criterion implies discussions on the modalities to be applied for carrying the studies with the stakeholders, such as government ministries, regional and local governments and other concerned parties. The final selection will be made in consultation with the World Bank and the Advisory Panel. It will include 5-6 cases.

On the basis of the desk review, the following cases could be considered for Phase II. Other cases could also be considered taking into account those selected in other studies of the Dams Planning and Management Action Plan.

Table 4: *Cases to be considered for Phase II in-depth case studies*

Proposed cases	Comments
Colombia	Example of revenue sharing defined in legislation. Lessons could be drawn from the way revenues transferred to regional entities and municipalities are managed in a number of projects in Colombia, including Urra 1.
Brazil	Example of revenue sharing defined in legislation. Lessons could be drawn from the way revenues transferred to regional entities and municipalities are managed in a number of projects in Colombia, including Itaipu.
Minashtuk and Pesamit, Canada	Examples of an innovative equity sharing mechanism that was negotiated directly between a developer and an indigenous community.
Eastmain-1 Dam and Eastmain-1-A and Rupert Diversion Project, Canada	Example of an innovative umbrella agreement between the State and indigenous communities on revenue sharing from development projects. Example of an innovative IBA negotiated between a developer and an indigenous communities prior to EIA/SIA studies.

Table 4 (Cont'd): *Cases to be considered for Phase II in-depth case studies*

Proposed case	Comments
Lesotho Highland Water Project, South Africa, Lesotho	Example of development fund. Explicit measurement of the rent. Lessons can be drawn from the way the fund was established and managed.
Norway	Example of taxes paid to regional and local authorities and of preferential electricity rates. Lessons can be drawn from the tax regime applicable to hydroelectric projects in Norway, such as Glomma and Laagen and Tokke.
China	Example of development fund defined in legislation. Lessons can be drawn from the way this legislation was applied in a number of projects such as Shuikou.

Output:

- Final selection of 5-6 cases

Task 4: Carry out in-depth case studies

The consultant, with assistance from the World Bank, will identify and select national consultants for negotiating the modalities of the study with the stakeholders and for carrying out in-depth case studies. One of the main prerequisites for selecting national consultants will be extensive experience in working with upper management of the concerned utility and a good understanding of the issues involved. The consultant will prepare terms of reference for each specific case and will sub-contract the national consultants who will each do the data collection and draft write-ups of their specific cases. The consultant will visit each of the national consultants for supervision as needed.

Outputs:

- Terms of reference for national consultants for each in-depth case study
- Interim reports and draft final report of each case study
- Final report of each case study

Task 5: Prepare a draft synthesis report of the cases

The consultant will prepare a synthesis report of the cases that will include a summary of the results of each in-depth case study as well as the lessons drawn from these studies. The draft version of the synthesis report will be submitted to the World Bank and Advisory Panel for comments.

Output:

- Draft version of the synthesis report of the cases to be submitted to the Advisory Panel for comments

Task 6: Prepare a final synthesis report of the cases

The consultant will incorporate comments from the World Bank and Advisory Panel in a final version of the synthesis report.

Output:

- Final synthesis report incorporating comments from the Advisory Panel

Task 7: Prepare a draft sourcebook

The sourcebook will serve as guidance material and in view of provoking new thinking on monetary benefit sharing mechanisms for dam projects. The sourcebook will draw upon the case studies to illustrate conclusions and recommendations. It will include the following:

- Rationale for such mechanisms;
- Types of benefit sharing agreements
- Pros and cons of each main type of mechanism with reference to the relevant governance system;
- Essential elements of the processes involved with their implementation;
- Considerations on non-monetary benefit sharing;
- Framework for evaluating the likelihood of arriving at benefit sharing agreements at the options assessment or pre-feasibility stage;
- Synopsis of case studies;
- References.

Outputs:

- Detailed outline of the sourcebook to be submitted to the Advisory Panel for comments
- Draft sourcebook

Task 8: Organize a peer-review workshop of the draft sourcebook

A workshop will be organized to provide expert critique of the draft sourcebook. The workshop will assemble members of the Advisory Panel as well as experts from the World Bank and other organisations such as developing and industrialised country licensing agencies, dam developers, NGOs, etc. The consultant will prepare minutes of the workshop.

Output:

- Minutes of the workshop

Task 9: Prepare the final version of the sourcebook for publication

The consultant will integrate the workshop comments and recommendations to finalize the sourcebook and propose the Phase III workplan.

Output:
- Sourcebook incorporating comments and recommendations ready for publication
- Phase III workplan

Task 10: Prepare a PowerPoint presentation of the sourcebook
The consultant will prepare a PowerPoint presentation of the sourcebook to facilitate dissemination of the results of the study to task managers and client country stakeholders. A draft version will be submitted to the World Bank and Advisory Panel for comments. The consultant will incorporate these comments in a final version.

Outputs:
- Draft version of PowerPoint presentation of the sourcebook
- Final version of PowerPoint presentation of the sourcebook

7.3 Timeline and Level of Efforts

Table 5 presents the level of effort of the consultants who would be involved in the study in terms of person-days. Once the contents and outputs of the tasks are finalized and approved by the World Bank, the following expenses will have to be added to the budget:

1) Reviewer honorarium (Advisory Panel and Workshop participants)
2) Travel expenses and per diems of the international consultant and of national consultants
3) Data acquisition costs
4) Workshop direct costs
5) Editing, graphics and printing costs

Table 5 also proposes a schedule for Phase II. Overall duration of Phase II is estimated to be 14 months.

Table 5: *Timeline and level of effort*

Task	Schedule (number of months from start)	Level of effort Consultant (person-day)	Level of effort National consultants (person-day)
Task 1: Assemble an Advisory Panel	1	5	
Task 2: Prepare an analytical framework for in-depth case studies	2	15	
Task 3: Select cases for in-depth case studies	2	5	
Task 4: Carry out in-depth case studies	8	70	50 per case
Task 5: Prepare a draft synthesis report of the cases	10	40	

Table 5 (Cont'd): *Timeline and level of effort*

Task	Schedule (number of months from start)	Level of effort Consultant (person-day)	Level of effort National consultants (person-day)
Task 6: Prepare the final synthesis report of the cases	11	10	
Task 7: Prepare a draft sourcebook	12	30	
Task 8: Organize a peer-review workshop of the draft sourcebook	13	15	
Task 9: Prepare the final version of the sourcebook for publication and the Phase III workplan	14	30	
Task 10: Prepare a PowerPoint presentation of the sourcebook	14	10	
TOTAL	**14**	**230**	**300 (6 cases)**

International Consultants required:
Senior economist: 140 days
Senior sociologist: 90 days

National consultants: 360 days (6 cases)

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APPENDIX 1: INDICATORS TO EVALUATE THE LIKELIHOOD OF REACHING AN AGREEMENT ON BENEFIT SHARING

This Appendix proposes a tentative set of indicators to assist in the evaluation of the likelihood of reaching an agreement on benefit sharing at the options assessment or pre-feasibility stage. These indicators, as summarized in Table 6, are based on information that is generally available at an early planning stage and fall under four categories:

- Economic rent
- Perceptions of project-affected populations
- Standard of living of project-affected populations
- Local institutional capacity.

A positive evaluation of the indicators falling under the first two categories appears as a pre-requisite to negotiations on benefit sharing.

Table 6: *Indicators of the likelihood of reaching an agreement on benefit sharing*

Category	Indicators
Economic rent	Cost of project
Perceptions of local populations towards the project	Judgement based on the following factors: - History of relationships between local communities and the project proponent or the government - Presence of vulnerable communities that draw a substantial portion of their livelihood from the use of natural resources - Willingness of local communities to increase their standard of living through commercial and industrial ventures
Standard of living	- Percentage of people below poverty line - Literacy rate - Infant mortality rate - Level of public services
Local Institutional capacity	Judgement based on stakeholder analysis

1. Economic Rent

The lower the cost of the project relative to the cost of the best alternative, the higher are the chances to generate a reasonable profit for the dam owner and to transfer revenues to project-affected populations. In an options assessment, the cost of each project can thus be used as a proxy to the economic rent as long as it reflects the full opportunity costs of

the factors of production and as long as it can be assumed that the monetary flows of the project would allow for transfer of benefits (see Section 6.2).

2. Perceptions of Local Communities towards the Project

As exemplified in case 3 in Appendix 2(ongoing Eastmain-1 Project and proposed Eastmain-1-A and Rupert Diversion Project in Canada), the lack of trust between local communities and the project proponent or the government, combined with negative perceptions of the project, are very difficult to overcome. They may lead to open conflicts with repercussions at the national and international levels. Perceptions depend upon a wide array of factors, many of them being outside the control of the proponent or the government. An open, transparent, communication process and the possibility for the local communities to influence project design should minimize the probability of negative perceptions. Other factors which determine perceptions can be evaluated at a pre-feasibility stage, such as the following:

- History of relationships between local communities and the project proponent or the government;
- Presence of socially or culturally vulnerable communities that draw a substantial portion of their livelihood from the use of locally available natural resources (such as indigenous or ethnic minority communities);
- Willingness of local communities to increase their standard of living through commercial and industrial ventures, away from subsistence-based activities and traditional activities.

3. Standard of Living

As mentioned in Section 4, populations in poorer backward regions with few or no public services should receive a higher share of dam benefits. Their expectations concerning project's economic spin-offs should also be higher. Readily available information on standards of living could be used such as:

- Revenue: Percentage of people below poverty line in project area compared to national average
- Education: literacy rate or percentage of children of school-going age attending school in project area compared to national average
- Health: Infant mortality rate in project area compared to national average
- Public services: Indicators, adapted to the country, can be defined to evaluate the level of service in the project area for access to drinking water, sewers, roads, electricity, telephones, etc.

4. Local Institutional Capacity

The higher the ability of the project-affected people to express their needs and participate in negotiations, the higher is the likelihood of arriving at an agreement that is acceptable to local communities. The lack of capacity to negotiate the terms of an agreement with a project proponent or the government may lead project-affected communities to rely to a large extent on national or international NGOs and experts that may, or may not, properly

represent their interests. Judgement based on the stakeholder analysis described in Section 6.1 can be used for this indicator.

APPENDIX 2: CASES OF BENEFIT SHARING MECHANISMS

CASE 1: THE URRA 1 PROJECT IN COLOMBIA: BENEFIT SHARING THROUGH REVENUE TRANSFERS TO AFFECTED MUNICIPALITIES AND WATERSHED MANAGEMENT AGENCIES

Project Description

The Urra 1 hydroelectric project is located in the Northwestern part of Colombia on the 350 km long Sinu River which flows into the Caribbean Sea. Its installed capacity is 340 MW and its reservoir area is 7400 hectares. Construction began in 1994 and its four units were commissioned in 2000.

The construction of the civil works as well as the impoundment and protection of the reservoir required the acquisition of 15,000 hectares of land inhabited by some 5,800 people. Land in the upstream Sinu valley has been used by indigenous people since the pre-Colombian era and has been occupied by settlers since the 1950s. This valley can be characterized as an economically backward area with almost no government presence, subsistence-level agriculture, extreme poverty and high levels of ethnic, social and political conflicts.

Benefit Sharing Mechanism

Under National Law 99 promulgated in 1993, for all new power generation plants of more than 10 MW installed capacity built in Colombia, power producers must transfer part of project revenues to local watershed agencies and concerned municipalities. Decree 1933 promulgated in 1994 specifies the percentages and destination of such transfers.

For hydroelectric plants, 3% of project revenues must be transferred to the watershed agencies that have jurisdiction in the region where the project is located. The amounts must be used for the protection of the environment in the watershed upstream of the dam and in the area of influence of the project, in accordance with a watershed management plan. In the case of the Urra 1 Project, the Corporacion Autonoma Regional del Sinu y del San Jorge (CVS) will receive most of amounts transferred to watershed agencies.

Another 1.5% of project revenues must be transferred to the municipalities bordering on the reservoir and 1.5% of project revenues must be devolved to the municipalities located in the watershed upstream of the dam. These amounts must be used for infrastructure projects that have been identified in municipal development plans. Water and sewage treatment projects as well as liquid and solid residue disposal projects must be prioritized. In the case of the Urra 1 Project, the municipality of Tierralta, the largest by area in Colombia, will receive most of these amounts.

National Law 344, promulgated in 1996, which created the Fondo de Compensacion Ambiental (Environmental Compensation Fund), modified the destination of transfers of project revenues: this Fund now receives 20% of revenue transfers from the power sector. The Fund helps finance environmental studies and measures carried out by watershed agencies.

In 2001, the transfers from the Urra 1 Project under the legislation described above amounted to US$ 1,460,000.

Summary Assessment

Colombian legislation establishes a clear framework for ensuring the effective long-term protection of the watershed situated upstream of a hydroelectric facility. The sums allocated for such purposes, which correspond to the relatively high percentages specified by way of Decree 1933, should generally be sufficient to finance appropriate measures. Although the legislation excludes the funding of social and economic development projects per se, watershed protection is a fundamental requirement for ensuring both the sustainable use of local natural resources and the long-term benefits associated with the operation of the hydroelectric facility.

In the case of the Urra 1 Project, the implementation of Decree 1933 is made easier because only one municipality and one watershed agency will receive most of project transfers. Besides, a National Park covers a large proportion of the watershed upstream of the dam. However, in spite of these favorable conditions, most of this area is the scene of numerous and complex problems, including uncontrolled occupation by settlers, illegal wood cutting, land degradation, illicit cultures and armed conflicts. Although many stakeholders, including the company responsible for the construction of the Urra 1 Project, have an interest in re-establishing the integrity of the Park, efforts to develop and implement a concerted management plan for the watershed upstream of the dam have not yet come to fruition. Other issues are the transparency of the transfer process and the accountability of the entities receiving project transfers.

CASE 2: THE ITAIPÚ BINATIONAL PROJECT IN BRAZIL AND PARAGUAY: BENEFIT SHARING THROUGH PAYMENT OF ROYALTIES TO NATIONAL, REGIONAL AND LOCAL AUTHORITIES

Context

The Brazilian Constitution of 1988 warrants that the States, the Federal District, Federal administrations and municipalities participate in the results of exploitation of hydraulic resources for the purpose of generation of electric power. The same applies to petroleum, gas and mining activities.[3]

Law 8001 of 1990 stipulates that the monthly allocation of financial compensation to be paid by electric utilities for the exploitation of hydraulic resources as royalties shall be distributed as follows:

- 45% to the affected States
- 45% to the municipalities
- 8% to the Federal Electricity Regulatory Agency (ANEEL)
- 2% to the ministry of Science and Technology

Municipalities receive their royalties as a proportion of the land area lost to impoundment.

The case of the Itaipú Project illustrates how Brazilian law ensures significant transfers of revenues to the municipalities bordering a reservoir.

Project Description

Itaipú is the largest hydropower plant in the world, with 12 600 MW of installed capacity, due to increase to 14 000 MW in 2003. The output from this giant power plant (87,800 GWh in 1998) satisfies most of Paraguay's electricity needs, and 25% of those of Brazil. Located on the Paraná river, which constitutes the border between Brazil and Paraguay, it is co-owned by both countries following the Itaipú Treaty of 1973, which established the ITAIPU Binacional entity to build, own and operate the power plant. Construction of the Project began in 1975 and the first 700 MW unit was commissioned in 1984.

Benefit Sharing Mechanism

The case of Itaipú Project is exceptional, both by its size and its binational ownership. The following text concentrates on the benefit sharing mechanisms applicable to the Brazilian side of the Itaipú Complex.

The Itaipú Treaty sets royalties, which amounted in 1999 to about US$ 13 million per month, to be paid by ITAIPU Binacional to each of the governments of Brazil and Paraguay. For Paraguay, 100% of the royalties are paid to the National Treasury, which then redistributes this income according to government priorities.

[3] Constituição da República Federativa do Brasil, Título III, Capítulo II, Artigo 20.

In Brazil, following the Constitution of 1988 and Law 8001 of 1990 discussed above, 45% of the royalties are distributed to affected municipalities. This amounts to a revenue flow to local municipalities of over US$ 70 million per year. There are 16 municipalities on the Brazilian side which receive revenues from the royalties, as a function of the area lost to reservoir impoundment. This revenue flow often constitutes the main source of income for these municipalities, averaging 51% of their total revenues in 1998. For 6 municipalities, the royalties account for over 75% of their total income.

It must be noted that in addition to these royalties, ITAIPU Binacional has developed its own large scale environmental and social development programs. They concentrate on activities such as reforestation, public health, reservoir fisheries, biodiversity conservation, and environmental monitoring activities. These programs also constitute a source of economic activity for the neighbouring communities.

Summary Assessment

The Brazilian mechanism of redistributing part of the royalties levied on power production to the affected municipalities is a simple and effective way of ensuring that the administrations most affected by the project also receive most of the royalties: 45% in this case. This ensures a continual flow of money, over the lifetime of the project, well beyond what would typically be the revenues of municipalities without the hydropower project. The objective transferring benefits to affected municipalities is thus achieved quite efficiently. The payment of royalties over the lifetime of the infrastructure, in this case certainly several generations (50 to 100 years of production), ensures the economic sustainability of the concerned communities.

There are possibly two limitations to this approach:

1. The legislation is designed to provide revenues to partly impounded municipalities. However, residents of some municipalities may be affected, even though their land is not impounded.

2. Transfers of money to municipal institutions are effective if the municipal governments and the local population have the political and institutional capacity to properly manage such a resource.

Reference

Altino Ventura Filho. 1999. *ITAIPU, A Binational Hydroelectric Power Plant: Benefits and Regional Insertion*. ITAIPU Binacional. Paper submitted to the WCD Regional Consultation "Large Dams and their Alternatives in Latin America". 16p.

CASE 3: EM-1 HYDROPOWER DAM AND EM-1-A AND RUPERT DIVERSION PROJECT IN NORTHERN QUEBEC (CANADA): BENEFIT SHARING THROUGH SHARED REVENUES AND THE ESTABLISHMENT OF A DEVELOPMENT FUND

Context

In 1998, many changes took place at Hydro-Québec, a Canadian government-owned power utility, as well as in the North American energy market. The Government of Québec appointed a new CEO at Hydro-Québec, new senior managers were hired and a new corporate strategic plan was put forward to take into account the deregulation of the energy market, among other things. Under Hydro-Québec's 1998-2002 strategic plan, three essential conditions must be met for Hydro-Québec to undertake any new project:

- The project must be profitable under market conditions.
- The project must be environmentally acceptable according to the principles of sustainable development.
- The project must be well received by local communities.

Regarding the last of these three conditions, whenever it is economically feasible Hydro-Québec proposes a partnership with local communities affected by new projects, including Indigenous communities and nations. Local communities are able to invest directly in the projects. The partnership approach reflects Hydro-Québec's business priorities as well as the readiness of Indigenous communities to pursue their own interests.

A partnership provides a flexible framework through which local Indigenous and non-Indigenous communities can invest directly in projects alongside Hydro-Québec. The utility assumes the financing, construction and operation of the project. Design work and measures to offset environmental impacts are carried out in consultation with local communities. Profits are distributed among the partners in proportion to their share of the working capital. For Hydro-Québec, a partnership confirms local acceptance of a project, thereby reducing the level of risk and the costs of a lengthy project-planning and authorization process. For the Indigenous community, it constitutes recognition that widespread project benefits stemming from use of local and regional resources must be shared with the community.

The following case study discusses the various agreements signed this year by the Government of Québec and Hydro-Québec with the Cree Nation of Northern Québec for construction of the Eastmain-1 hydropower dam and the study of the proposed Eastmain-1-A hydropower dam and partial diversion of the Rupert river in the southern James Bay area.

Background

In 1971, the Premier of Québec announced a major hydroelectric development project in the James Bay area (the project which eventually became the La Grande complex), in the heart of a vast region occupied by Northern Québec's indigenous communities. This hydroelectric development project raised the issue of the Aboriginal rights and land claims of about 5,000 Crees, 3,500 Inuit and 400 Naskapis who in 1971 inhabited the James Bay region and Northern Québec. At the time little was known about these peoples or about their attachment to their

ancestral lands. In addition, environmental protection was an emerging science and there was no such thing as a ministry of the environment or an environmental protection act.

The announcement elicited an immediate reaction from the Indians of Québec Association, especially from the Cree chiefs. Cree representatives made a plea to the Premier of Québec to stop the work until the overall question of Cree rights was settled, but the Premier refused to listen to them and according to the Crees they had no choice but to put a stop to the damming of the James Bay rivers.

On November 7, 1972, the Crees and the Inuit went to court to stop the project, and hearings began in December 1972. In November 1973, the Québec Superior Court granted the Crees and Inuit an interlocutory injunction and ordered cessation of work on the James Bay project on the basis that there was clear evidence of Aboriginal rights to lands used for the traditional pursuits of hunting, trapping and fishing. Seven days later, the Court of Appeal suspended the injunction. However, a few days before the Court of Appeal ruling, the Premier of Québec offered to negotiate a settlement with the Crees and Inuit. After the decision of the Court of Appeal was handed down, the Crees and Inuit agreed to negotiate.

On November 11, 1975, the *James Bay and Northern Agreement* (JBNQA) was signed by the Government of Canada, the Government of Québec, Hydro-Québec, the James Bay Energy Corporation (a subsidiary of Hydro-Québec), the James Bay Development Corporation, the Crees and the Inuit. The Crees voted 922 to 1 in favor. The JBNQA took two years of exhausting, intense, high-level negotiation to hammer out. Since then, this agreement has shaped relations not only between Hydro-Québec and the Crees but also with other Indigenous nations throughout the province of Québec.

The JBNQA is a landmark agreement in Aboriginal land and land-use claims. It established mechanisms for mitigating the environmental impacts of hydroelectric projects and activities and for supporting traditional economic pursuits. However, the agreement was first and foremost a social contract between Aboriginal nations and the Government. As a matter of fact, only one chapter actually deals with hydroelectric development.

Many Crees nonetheless believe that they signed the JBNQA under duress, making the best of a bad situation. In addition, the Crees were not happy with the implementation of the agreement in the 25 years following its signing. A sociopolitical climate of mistrust and of frustration with the Government and with developers, namely forestry companies and Hydro-Québec, set in, and a series of legal proceedings were filed against the Government and developers in this period. This climate of mistrust did not, however, prevent the parties from amending and modifying the JBNQA. A total of 12 amendments were adopted between 1975 and 2001, and Hydro-Québec signed six impact and benefit agreements concerning additions and modifications to the La Grande complex (1975).

In the late 1990s, Hydro-Québec wanted to begin working on a hydroelectric development, the Eastmain-1 project, that was provided for in the JBNQA but never built. The project had been the subject not only of legal proceedings launched by the Crees but also of negotiations between the Crees and Hydro-Québec.

Project Description

The Eastmain-1 project as contemplated in the JBNQA called for a powerhouse with three generating units and an installed capacity of approximately 480 MW (2.7 TWh). Design flow was

to be approximately 840 m^3/sec and rated head about 63 m. The main dam was to be roughly 890 m long and 70 m high. The reservoir at maximum level was to flood an area of approximately 603 km^2, with an annual drawdown of approximately 9 m. To construct the project, a temporary village and camp were to be built, as well as a permanent access road about 85 km long. The powerhouse was to be integrated into the power transmission system via a 315-kV power line about 70 km long.

In the late 1990s, Hydro-Québec proposed in addition to the construction of the Eastmain-1 dam, a new Eastmain-1-A and Rupert diversion project which called for a powerhouse with three generating units and an installed capacity of approximately 700 MW and also involved the partial diversion (approximately 600 m^3/sec) of the Rupert river, a river with an average annual flow of about 870 m^3/sec that has great cultural value for the Crees. Because the diverted water from the Rupert river would be transferred hundreds of kilometers further north towards the mouth of the La Grande river, the areas potentially affected by this project involved sections of the territories of 8 of the 9 Cree communities in the James Bay region. The combined EM-1 dam and EM-1-A/Rupert diversion project would represent up to 12.6 TWh/year of additional power to the provincial power grid. However, in accordance with its strategic plan, Hydro-Québec could only develop this new project if the Crees agreed to such an undertaking.

Negotiation of a Benefit Sharing Mechanism

Over a period of four years starting in 1997, Hydro-Québec held information sessions in Cree communities that would be directly affected by the Eastmain-1-A and Rupert diversion project. Informal meetings were held between Hydro-Québec senior managers and Cree leaders to see if, within the framework of a partnership, the Crees would be interested in investing in the newly proposed Eastmain-1-A/Rupert diversion project and receiving their share of the revenue and profits from the project. Technical investigations required for the project were carried out jointly by Hydro-Québec and Cree communities.

Hydro-Québec's new approach of not trying to impose the project but rather of seeking Cree acceptance within the context of a partnership was well received. Chiefs of Cree communities that would be affected by the new proposed project invited Hydro-Québec representatives to informally meet with them and their members in public assemblies. These meetings also provided an opportunity for the Crees to have their voices heard. At times, certain Crees were very vocal against the proposed project, but Hydro-Québec always maintained that it would not impose the project against the will of the Cree communities. Although by 2001, Hydro-Québec had not yet received a response to their proposal from the Crees, they never received a flat no from the Cree leadership.

In early year 2001, negotiations were taking place behind closed doors between the Government of Québec and the Crees to solve their dispute about the implementation of the JBNQA. The Crees still had unsettled multi-billion dollar lawsuits against Canada, Québec and developers such as Hydro-Québec and forestry companies.

On October 21, 2001, the Crees and the Government of Québec announced that they had reached an agreement-in-principle for settlement of their disputes (known as the "Paix des Braves") and for financial provisions of $CAN 3.5 billion over a 50-year period. This agreement-in-principle also contained provisions regarding hydroelectric, mining and forestry development, including Cree consent to construction of the Eastmain-1 project as defined in 1975 in the JBNQA and to the start of construction upon signing of the final agreement. The Crees also consented to the

carrying out of the Eastmain 1-A/Rupert project (variant 314), provided the project is subject to the environmental and social protection regime and the provisions of Section 22 of the JBNQA.

It was in this new sociopolitical context that the Crees and Hydro-Québec finalized negotiations on the terms of the *Nadoshtin Agreement* in connection with the Eastmain-1 project and of the *Boumhounan Agreement* in connection with the Eastmain 1-A/Rupert project, as well as seven other agreements in connection with past obligations of Hydro Québec. Those agreements, which were attached to the "Paix des Braves" agreement, were signed on February 7, 2002 by the Government of Québec and by the Grand Council of the Crees of Québec (GCC). Under the terms of these agreements, the Crees gave free, prior and informed consent to pursue the construction, operation and maintenance of the Eastmain-1-A/Rupert project in a manner respectful of the Cree way of life and the environment. The project will be subject to a stringent impact assessment regime in which the Crees are represented along with the provincial and federal governments.

Before the signing of these agreements, a wide-ranging consultation of the Cree people, conducted by the Crees, took place and a Cree nationwide referendum was held. The Crees came out in large numbers for the vote: 4,479 people participated in the referendum. By way of comparison 3,398 people voted in 1999 to elect the Grand Chief of the Crees and 2,379 people voted in the Canadian federal election in 2000. Of those who voted, 69.35% voted for the signing of the agreements and 30.65% against.

Contents of Benefit Sharing Mechanism

Under the terms of the "Paix des Braves" agreement negociated between the Government of Québec and the GCC, the Cree Nation of Québec will benefit from annual payments of at least $CAN 70 M over a period of 50 years to cover their economic and community development needs. These annual payments correspond to a transfer of provincial government obligations and related funding under the terms of the JBNQA to the Cree Nation of Québec. They constitute a recognition of the Cree communities' right to govern themselves and aim to support the trend towards governmental autonomy for Québec's Indigenous communities.

In addition, from 2005 to 2052, annual payments of $CAN 70 M provided for under the agreement will be indexed according to the value of natural resources extracted from Cree territories. This also constitutes a recognition of the rights of Cree communities to have a say in the management of hydropower, mining and forestry resources on their territories and to share directly in the benefits of new resource-based development projects on their ancestral lands. Chapter 7 of the agreement defines the method to be used to establish the yearly indexation rate of benefits starting in 2005. This method can be summarized as follows:

> $CAN 70 M X $\frac{\text{Value of hydropower production and of mining and forestry extraction from Cree territories over the last five years, divided by}}{\text{Value of hydropower production and of mining and forestry extraction from Cree territories between 1999 and 2003, minus the year of highest value and the year of lowest value, divided by 3.}}$

In sum, if the post 2005 average yearly values of hydropower production and of mining and forestry extraction from Cree territories are higher than the pre-2005 average yearly values of hydropower production and of mining and forestry extraction, the annual payments of $CAN 70 M provided for under the agreement will be increased according to the corresponding rate of increase in such values.

Under the terms of the "Paix des Braves" agreement, the Crees give their consent to construction of the Eastmain-1 hydropower dam and to supporting the development of the Eastmain-1-A/Rupert diversion project. In return, start-up of operations of the Eastmain-1 hydropower dam after 2005 will result in increased annual revenues for all of the communities governed by the Cree Nation of Québec. These revenues will be substantially increased in the event of federal and provincial government approval and subsequent start-up of operations of the Eastmain-1-A/Rupert diversion project.

A new Cree Development Corporation (CDC) is set up under the terms of the "Paix des Braves" agreement, with the Cree Regional Administration as its sole shareholder. Funding of the CDC will be provided by the Cree Nation of Québec on the basis of annual payments made out under the terms of the agreement. The CDC will be responsible for supporting the economic and community development of the province's Cree communities. The CDC will provide the Crees with a modern development agency and will have the following mandate:

- Support long-term development of Cree communities
- Develop an original Cree expertise in economic development and the management of development funds
- Promote and accelerate the development of Cree employment on Cree territory
- Enable the Crees to become active partners in the economic development of the Cree territory
- Support, promote and encourage the creation, diversification or development of Cree companies, resources, goods and industries in view of improving Cree economic perspectives as well as their economic situation in general.

The "Paix des Braves" agreement includes monitoring mechanisms that apply both to the Government of Québec and to the Crees, as well as a conflict resolution mechanism in case of disagreements concerning the indexation rates applied to yearly payments paid by the Government of Québec to the Cree Nation of Québec. The Crees will be required to produce detailed annual reports describing the expenses covered by the funds provided by the provincial government. The Crees also consent to use these funds exclusively for economic and community development purposes, as well as for the support of traditional hunting, fishing and trapping activities.

The *Nadoshtin Agreement* signed in connection with the Eastmain-1 project and the *Boumhounan Agreement* signed in connection with the Eastmain 1-A/Rupert project call for remedial measures, economic and community benefits such as training, employment, contracts, environmental guarantees, commitments and undertakings, and the creation and financing of a joint study group to conduct the E&SIA in connection with the Eastmain 1-A/Rupert project, including hiring of Cree coordinators and representatives and opening of fully equipped offices in Cree communities affected by the project. Monetary compensation in connection with hydroelectric, mining and forestry development is covered in the financial provisions of the "Paix des Braves" agreement with the Government of Québec.

Summary Assessment

The benefit sharing mechanism put into place under the terms of the "Paix des Braves" agreement signed in February 2002 between the Government of Québec and the Grand Council of the Crees of Québec is much more comprehensive than a simple revenue sharing scheme designed for a hydropower project. It covers all forms of development of natural resources on the Cree territory, including hydropower. It constitutes a recognition of the Cree communities' right to govern themselves and aims to support the trend towards governmental autonomy for Québec's

Indigenous communities. It also constitutes a recognition of the rights of Cree communities to have a say in the management of hydropower, mining and forestry resources on their territories and to share directly in the benefits of new resource-based development projects on their ancestral lands.

The benefit sharing mechanism proposed under the terms of the agreement is only based upon increases of yearly values of new hydropower production and of mining and forestry extraction from Cree territories. In sum, if the post 2005 average yearly values of hydropower production and of mining and forestry extraction from the Cree territory are higher than the pre-2005 average yearly values of hydropower production and of mining and forestry extraction, the annual payments of $CAN 70 M provided for under the agreement will be increased according to the corresponding rate of increase in such values. In addition, the annual payments referred to under the terms of the agreement are made out by the Government of Québec (and not by utilities or mining or forestry companies) and are destined not to locally affected communities, but rather to the Cree Nation of Québec as a whole. Under the first criterion proposed for evaluating benefit sharing mechanisms in Section 4 of this report, it would have been preferable to introduce a more explicit relation to economic rent in the benefit sharing formula. However, the mechanism reflects the recognition by the Government of Québec of a right for the Crees to receive royalties for the exploitation of natural resources in their territory. It also reflects the intention by both parties to use these funds for the economic development of the Cree people.

Hydro-Québec's strategic priority was to gain Cree acceptance of the project before initiating the E&SIA. It appeared from the onset that the traditional model of involving the public in the environmental and social impact assessment process (i.e., initiation of the EIA and SIA review process, scoping meetings, public hearings, etc.) was not adequate to meaningfully engage stakeholders, namely the Indigenous people affected by a project. The approach taken by Hydro-Québec was flexible and progressively adapted as the level of co-operation with the concerned communities increased.

In sum, the key elements that influenced the Crees to give free, prior and informed consent to pursue the construction, operation and maintenance of the EM-1 hydropower dam and, if Hydro-Québec obtains the necessary authorizations, the Eastmain-1-A/Rupert project:

- A corporate strategic plan that did not impose the project but rather sought Cree acceptance of it was implemented.
- High-ranking officers of the corporation took the time to personally communicate the proposal in public assemblies and meetings involving hundreds of people.
- The Crees were allowed sufficient time (more than 3 years) and financing to assess, consult and understand the nature and scope of the project and the proposed partnership, and were assisted throughout the process by specialists and lawyers.
- Financial provisions were made for capacity building, e.g.: for logistics, hiring of Cree coordinators and representatives, technical assistance and opening of fully equipped project information offices in the communities.
- Transparency was ensured by jointly defining criteria for public access to information, translation of key documents and holding of discussions in languages the local people understand.
- Information booths were maintained at local events such as general assemblies, and meetings were held individually with elders and trappers.
- The field investigation campaign of 1999 and other joint forums were considered successful joint ventures by both parties and showed that the new relationship between the Crees and Hydro-Québec is viable.

- Agreements were signed to address past obligations under the JBNQA, so that the page could be turned and energy and attention focused on a common effort to harness the hydroelectric potential of the area.
- The Crees are participating in the design and assessment of the Eastmain 1-A/Rupert project; they choose the variant to be built and propose environmental and economic options that will influence project design.
- A new nation-to-nation relationship was established with the Government of Québec based on cooperation, trust and mutual respect that allows for full development of the territory, including its hydroelectric potential, with general financial provisions.
- Hydro-Québec's commitments regarding remedial work and measures, training, employment, contracts, environmental guarantees, commitments, undertakings and so forth are entrenched in the *Nadoshtin* and *Boumhounan* agreements.

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CASE 4: THE SHUIKOU HYDROELECTRIC PROJECT IN CHINA: BENEFIT SHARING THROUGH THE ESTABLISHMENT OF POST RESETTLEMENT AND REHABILITATION FUNDS

Context

It is considered that 30-50 millions people have been displaced by some 8600 reservoirs of all size in China. Before the 1980s, resettlement planning was not part of standard practice. As a result, many people who were forced to resettle ended up being worse off. Following mounting pressure from relocatees and local governments, Chinese authorities issued guidelines and legislation to address outstanding problems resulting from previous reservoir-induced relocation and to provide for an appropriate framework for involuntary resettlement and economic rehabilitation of resettlers rehabilitation in new projects. Among various mechanisms put in place by the Chinese authorities, the establishment of Reservoir Development Funds stand out as an important measure designed to help resettlers develop new production systems in the relocation areas and resolve outstanding problems. The main guidelines and legal documents providing a framework for the establishment of these funds are described below.

- Reservoir Maintenance Funds for Hydropower Projects (1981): In 1981, the Ministry of Finance and the Ministry of Electric Power issued a decree establishing guidelines for the setting up of Reservoir Maintenance Funds from electricity sales, based on 0.1 fen / kWh for the life of the hydropower plant. These funds are managed by local county resettlement offices and Hydropower Plant Authorities. They must be used for:
    1. maintaining reservoir facilities;
    2. maintaining infrastructures used for irrigation and drinking water and of transportation infrastructures benefiting resettlers;
    3. providing economic support to the populations displaced by the reservoir.

- Post Resettlement and Rehabilitation Fund for Irrigation Projects (1985): In 1985, the State Council issued a decree to allow for the setting up of Development Funds for irrigation projects. Under this decree, the water charge can include an amount used to finance a Post Resettlement and Rehabilitation Fund..

- Land Administration Law (1986): The Land Administration Law, issued in 1986, includes provisions to develop regulations on reservoir-induced resettlement. The first regulation was issued by the State Council in 1991. This regulation was revised in 1996 and is presently in force.

- Post Resettlement and Rehabilitation Fund for Hydropower Projects (1991, revised in 1996): The 1996 regulation was issued by the State Planning Commission, the Ministry of Finance, the Ministry of Hydropower and Industry and the Ministry of Water Resources. It concerns all hydropower projects that were commissioned between 1986 and 1995 as well as all new projects cleared for construction after 1996. All these projects must set up a Post Resettlement and Rehabilitation Fund to help resettlers develop new production systems and resolve outstanding problems. The Fund is established for 10 years and is financed from power sales. Each province sets a uniform rate for all funds corresponding to reservoirs located in its territory on the following basis:

1. the number of resettlers as determined in the Resettlement Plan approved by the State;
2. the rate must correspond to an amount from 250 to 400 yuan per year per resettler, taking into account physical losses due to reservoir impoundment, total electricity production, the seriousness of the problems encountered by resettlers and the standard of living in the area;
3. the rate must be from 1 to 5 fens / kWh.

All Funds within a province are managed by the Provincial Resettlement Bureau which is responsible for allocating the amount of money provided by the Funds.

Project Description

The Shuikou dam and hydroelectric power plant is located in Minqing County, Fujian Province, People's Republic of China, in the middle reaches of the Min River (Minjiang). The project site is 84 km upstream of Fuzhou, the provincial capital. The main purpose of the Shuikou project is power generation. The total installed capacity is 1,400 MW, making it the largest hydroelectric plant in the East China Region. The average annual energy generated is 4,950 MWh. In addition to power generation, the project also includes a shiplock and a shiplift to maintain navigational capability and capitalize on the improved navigational potential created by the reservoir and the regulated river downstream of the dam.

The Shuikou project was approved by the State Planning Commission in 1985 and construction started in March 1987. The first generating unit was commissioned in July 1993 and all seven units were in operation by December 1996.

The Project involved the displacement of over 67,000 rural and 17,000 urban people. After an extensive review, the World Bank's Operations Evaluation Department concluded that "the Shuikou resettlement has generally been successful in generating sufficient employment and restoring the incomes and livelihoods of resettlers".

Benefit Sharing Mechanism

In addition to the establishment of policies and standards and the institutional framework for resettlement, the Fujian Provincial Government took various measures to facilitate the economic rehabilitation of the resettlers, in particular the adoption in 1987 of 17 preferential policies for Shuikou resettlement. These policies include the establishment of a Reservoir Development Fund to provide low-interest loans to assist economic rehabilitation efforts in the affected counties and townships. For these purposes, a total of Y 50 million was drawn over a period of five years from provincial budget and tax revenues. This Fund was established prior to the 1991 regulation on reservoir-induced resettlement. It is not tied to electricity sales and aims at rehabilitation efforts during dam construction.

On February 2, 1995, in accordance with the national 1991 regulation, Fujian Province established a 10-year Shuikou Reservoir Maintenance and Construction Fund. The Fund is financed from power sales at a rate of 4 fens/kWh, which was increased to 5 fens/kWh in 1996 following the revised regulation. The Shuikou Reservoir Resettlement Office (SRRO) received Y 10 million in 1995, Y 20 million in 1996 and Y 20 million in 1997. SRRO had the discretion to determine allocations from the Fund. It considers that for the first few years, about half should go toward infrastructure improvement, with the remainder toward improvement of production

measures. After the initial period, the Fund would generally be allocated to production measures (Youxuan *et Al.*, 1999).

Summary Assessment

The establishment of the Shuikou Reservoir Development demonstrates the commitment of Chinese authorities to pursuing a development approach to dams-related resettlement as early as 1987. Follow-up studies indicate that interest-free loans obtained from the Fund was one source of investment in local township and village enterprises. Other sources of investment were varied and included: compensation for enterprise relocation, land compensation earmarked for economic rehabilitation, savings from individual resettlers, village and township budgets, outside investors and bank loans. Local governments were actively involved in supporting and facilitating new investments. However, existing information does not evaluate the importance of interest-free loans from the Fund in investment decisions.

It is interesting to note that, beyond tax incentives, the provision of electricity at a subsidised price to each affected township and village (500 Kwh per year per resettler) is one of the reasons cited by newly established enterprises for setting up in the Shuikou area.

The 1991 regulation establishing Post Resettlement and Rehabilitation Funds recognises that, even with well-planned resettlement, remedial measures still have to be taken beyond the end of the relocation period. Further studies are required to document the use of subsidies and loans made available through the 10-year Shuikou Reservoir Maintenance and Construction Fund and evaluate its efficiency.

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CASE 5: THE COLUMBIA RIVER BASIN DEVELOPMENT IN CANADA: BENEFIT SHARING THROUGH THE ESTABLISMENT OF A SOCIO-ECONOMIC DEVELOPMENT FUND

Project Description

In 1961, the Government of Canada (who later transferred its obligation to the province of British Columbia) and the United States signed the Columbia River Treaty which was implemented in 1964. The Columbia River is an important river in the western part of North America. It has its source in the Canadian Province of British Columbia and the mainstem flows from there into the U.S. State of Washington.

The Columbia River has important tributaries both in Canada and in the United States. A large fraction of the total water in the river comes from snow melt in the mountains, so that the flow is highly seasonal. The river has therefore been subject to severe flooding, mostly in the United States.

The hydroelectric potential of the Columbia has been heavily developed in the United States since the end of the 19th century, often in multipurpose projects including flood control, irrigation and recreation. There were also developments on the U.S. tributaries. By contrast, none of the mainstem of the Columbia River had been developed in British Columbia at the time of the negotiation of the Treaty.

The United States had two objectives from cooperative development of the Columbia River in British Columbia: increased flood protection and increased generation at its existing hydroelectric stations, some of which were run-of-river and some of which did not have enough storage to allow for full utilization of the total annual water flow. British Columbia did not need flood protection but could use some additional electricity to meet expected domestic needs.

The purpose of the Treaty is to provide a structure for the co-operative use of the Columbia River in order to provide Canada and the United States with greater hydroelectric power and flood control. To accomplish this goal, Canada was required to build three large storage dams that would provide flood control and power benefits downstream in the United States. In return, Canada got an upfront fixed payment representing the discounted present value of the flood control benefits, plus the rights to half of the additional electricity generated because of the added storage.

This electricity (called the Downstream Benefits), was then sold by British Columbia to buyers in the United States on a 30-year contract for an upfront payment. The total of the upfront payment for flood control and electricity sales was sufficient to pay for all the Treaty projects in British Columbia, plus about half the cost of installing hydroelectric generation facilities at Mica, one of the Treaty dams. The electricity from that facility is the sole property of British Columbia Hydro, the province's power utility.

Benefit Sharing Mechanism

As a result of the Treaty, the Libby dam was built in Montana, U.S. (with a reservoir impounding on the Canadian side) and three dams were built on the Canadian side: Mica, Keenleyside and

Duncan. These dams were built in the 1960s and early 1970s. At that time, less attention was devoted to mitigation and compensation measures and there had been very few consultations with the project-affected people, particularly the 2,300 people displaced by the reservoirs and project facilities.

In the early 1990s, the people in the Canadian part of the basin came together to press the Province of British Columbia for recognition of the injustice of this situation. Local governments in the basin coordinated their efforts at the regional district and tribal council level under the Columbia River Treaty Committee, which first met in 1992. The Committee negotiated with the Province for the creation of a Trust governed by a board of basin residents, and an allocation of funding to the region representing a fair share of the ongoing downstream benefits earned under the Treaty, to be managed by the Trust. On both counts the negotiations were successful. In 1995, The Columbia Basin Trust was created.

The Columbia Basin Trust is an organization working on behalf of the 170,000 residents of the Columbia Basin to bring benefits to the region most affected by the Columbian River Treaty. Its mission and mandates are the following:

Mission:
"The Columbia Basin Trust supports efforts by the people of the basin to create a legacy of social, economic and environmental well-being and to achieve greater self-sufficiency for present and future generations."

Mandate:
- "To manage the Columbia Basin Trust's assets, including money allocated by the Province for power projects and other investments, for the ongoing economic, environmental and social benefit of the region, without relieving governments of their obligations.
- To include the people of the Basin in planning for the managing of these assets.
- To work with other to coordinate activities related to the corporate purpose of the Columbia Basin Trust".

In 1995, the Columbia Basin Trust was endowed with a CAN$295 million financial commitment from the province of British Columbia or approximately 5 % of the Downstream Benefits owned by the Province from the United States. Of that, CAN$250 million was used for financing three power project developments in the basin (together with Columbia Power Corporation) and CAN$45 million was invested in non-power investments.

As specified in its mission, "Trust activities are based on meaningful public input and the trust's responsiveness to the needs of the basin and its people". Accordingly, the Trust currently has a youth committee and five sector steering committees providing advice in the delivery of its programmes. These sectors are the following: economic development. Education and training, environment, social, arts, culture and heritage. Programmes are delivered through community organisations that act as partners.

Summary Assessment

The Trust represents the case of a measure meant to address outstanding environmental and social issues of existing dams. This was made possible following repeated claims from project-affected people but also because of the existence of a significant rent generated by the Treaty projects.

The Trust also exemplifies several approaches that meet the criteria proposed to evaluate benefit sharing mechanisms, particularly the following:

- Negotiations involving all concerned stakeholders resulted in a sharing of the rent generated by the Treaty dams. The Trust was thus endowed with what can be deemed a fair share of this rent.
- The Trust includes several provisions providing for the active involvement of community organisations in the project-affected area.
- Investment and non-investment activities financed by the Trust cover a wide array of economic, environmental and social objectives, all contributing to sustainable development in the project-affected area.

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Columbia Basin Trust Web Site: www.cbt.org

CASE 6: THE LESOTHO HIGHLAND WATER PROJECT: BENEFIT SHARING THROUGH AN ECONOMIC DEVELOPMENT FUND

Project description

Lesotho is a small southern African kingdom, completely surrounded by South Africa. The western part of the country is occupied by a high plateau. In the East, Lesotho is mountainous (the Maloti mountains) but well watered. The population of Lesotho was approximately 2,000,000 persons in 2001. Most of the population lives on the western side of the country while the eastern side is sparsely populated and is largely of arable land.

The Lesotho Highlands Water Project (LHWP) is a dual purpose project:

1. By a series of dams and tunnels, the project will control and redirect a portion of the water of the Senqu/Orange River in the mountain region of Lesotho to the Vaal River basin where it will be utilized for municipal and industrial purposes in the Gauteng Province of the Republic of South Africa.
2. The LHWP will take advantage of the head differential between the highlands and lowlands of Lesotho to generate hydroelectric power and meet the needs of Lesotho.

The LHWP was planned to be implemented in five phases, which would together transfer 70 m^3/s of water to South Africa. The beginning of the project was authorized by the signing of an international Treaty between Lesotho and South Africa in October 1986, in which the two parties committed themselves to the first two phases of the project (Phases 1A and 1B).

Under Phase 1A, the Katse and Muela dams were built for a total of US$ 2.5 billion. First water was delivered in January 1998. Phase 1A also comprised the construction of a 72 MW hydroelectric project in Lesotho. Phase 1B comprises a 145 m dam at Mohale, a 15 m weir at Matsoku and water tunnels from each site to channel water to the Ketse dam. From Ketse, the water will be transferred by gravity to Gauteng Province in South Africa. Phase 1B will be completed in 2004. Total cost of Phase 1B is US$1.1 billion. The first two phases are able to deliver about 38 m^3/s of Water to South Africa.

The project has been financed by a variety of international aid agencies and lending institutions, including the World Bank, but reimbursement of the loan comes under the entire responsibility of South Africa who is responsible for all construction costs of the project. The power generation facilities are being built entirely by Lesotho which is also entitled to all the electricity supplied by the facilities.

The Joint Permanent Technical Commission later known as the Lesotho Highlands Water Commission (LHWC), was created in 1986 as a result of the Treaty and is responsible for the overall implementation of the project. Its role is to ensure the conditions of the 1986 Treaty are upheld. The LHWC can play an arbitration role in dispute between the two countries. The LHWC also monitors the activities of the two national companies created as a result of the Treaty to manage the project in each country: the Trans-Caledon Tunnel Authority (TCTA) in South Africa and the Lesotho Highlands Development Authority (LHDA).

The LHDA is charged with the engineering, construction, and operation and maintenance of the Lesotho part of the project. The LHDA's mandate comprises three elements:

(i) to capture and transfer water from Lesotho to South Africa, and by so doing to generate royalties;
(ii) to generate hydroelectric power for Lesotho (LHDA is responsible for funding and buiilding the Muela hydropower station, the only hydroelectric generating station built for the first two phases of the project);
(iii) to promote sustainable development in the Highlands of Lesotho.

Benefit Sharing Mechanism

Measuring the economic rent

According to the 1986 Treaty, South Africa will pay Lesotho royalties for water transferred and Lesotho will receive all of the hydroelectric power generated by the project. The provisions of the Treaty give an example of the explicit consideration of the rent available from a water project. As explained by Rothman (2000), the royalties cannot be seen as payment for the water itself, since that would devolve to South Africa in any case. Royalties are to be viewed as payment for the use of the water in its higher elevation in Lesotho. The Treaty bases royalty payments on the difference in cost between two entirely hypothetical systems. Each of them is designed to deliver 70 m^3/s of water to the Vaal River system. The first system, which forms the basis for the alternative cost calculation, is the Least-Cost Orange Vaal Transfer Scheme. It is a system of canals, tunnels, siphons, and other works that would move 70 m^3/s of water from the Orange River to a tributary of the Vaal. The other system, whose costs form the basis of payment of royalties, is called the least-cost Lesotho Highlands Water Project Initial Development. It is a system of dams, tunnels and pumping facilities that will also deliver 70 m^3/s to a tributary of the Vaal. This system is optimally designed for such a purpose.

The cost savings associated with the selected scheme include investment costs and operation and maintenance costs, so that two types of royalties will be paid by South Africa to Lesotho:

- The fixed royalties are based on capital cost savings and are to be paid for a period of 50 years from the moment the water level at the Katse Dam reaches a certain point. Those royalties were first paid in October 1996.
- The variable royalties are based on savings in operation and maintenance costs and are to be paid from the moment South Africa receives water from the water transfer scheme (January 1998). Those royalties are calculated according to the amount of water delivered, the cost of electricity and various inflation indicators.

The royalties represent 56% of the cost savings between LHWP and the next lowest cost alternative (The Orange Vaal Transfer Scheme). This proportion, which favours Lesotho slightly over what might have been a baseline 50/50 split of the rent, could reflect the fact that, relative to South Africa, Lesotho is a small and poor country and the water in the Maloti Mountains can be seen as the only significant natural resource of the country. These revenues are extremely important for Lesotho. Lesotho's economy is largely dependent on South Africa as a source of income, employment and foreign exchange. Half of Lesotho's income is derived from remittances from 110,000 Basotho migrant workers who work in the coal and gold mines of South Africa. But the number of migrant workers in South African mines is declining because of the difficulties facing the industry. The revenue from royalties generated by the project is critical to Lesotho to

compensate for declining migrants miners' remittances, as does the increase in employment opportunities and training the LHWP provides to Lesotho's unemployed.

Lesotho Highlands Water Revenue Fund

Lesotho decided at the start of the LHWP (phase IA) to deposit all revenues gained from the project (royalties plus incremental SACU revenue[4]) into the Lesotho Highlands Water Revenue Fund. This Fund was established in 1991. It is administered by the Lesotho Government. The resources from the Lesotho Highland Revenue Fund have been used throughout Lesotho for development purposes. As of 1998, about 335 million Maloti (almost US$ 75 million) had been deposited into the Fund, of which 215 million Maloti has been committed and 150 million Maloti disbursed on community identified labour based infrastructure projects including 1,100 km of roads, 210 small dams, 60 foot bridges and a number of forestry and soil conservation projects.

The World Bank project appraisal document of Phase 1B Project concludes that, while the Lesotho Highland Water Revenue Fund has been successful in starting a poverty focused public works program, the Fund has suffered from a number of weaknesses in terms of technical review (raising questions about the sustainability of some investments), transparency and accountability. The selection of some of the initial projects was not transparent, technical designs were weak (and hence some dams and roads have been washed away), and weaknesses have been detected in financial control and monitoring. A limited number of legal proceedings for fraud have been initiated.

To regularize matters, Fund operations were suspended by the Government of Lesotho in early 1997. A combined technical and financial audit was completed in December 1997. Until 1998, the extent to which the Fund should be poverty targeted and exactly how this should be done was not very clear. The Government of Lesotho recognized the need for a radical overhaul of the Fund's operations and undertook a process of consultations to put this in place between April and June 1998. Meanwhile the Government of Lesotho clearly placed the Fund at the centre of its poverty alleviation strategy. LHWP resources were to be used following a two window approach. The first was a community driven, labour intensive, poverty focused Social Fund, with the rest being transferred directly to the budget. The latter was to be used to offset any potential falls in revenue due to re-negotiation and to falling miner remittances.

In addition, a full range of reforms of the legal framework of the remaining Social Fund, its management and operating procedures has been proposed and is being implemented. The new Social Fund will be based on International Best Practice and will include mechanisms to overcome weaknesses identified in the audits and technical reviews. The Government of Lesotho will also undertake annual technical and financial audits of the Fund, and will make these audits publicly available.

Summary Assessment

The LHWP gives an example of an explicit measurement of the rent as well as of sharing the rent on the basis of the relative needs of the parties who can claim its ownership. The 56/44 split recognizes the dependency of Lesotho on the exploitation of its water resources as an additional source of much needed income. Resources from the Lesotho Highlands Water Revenue Fund are used for development purposes and do not target explicitly the project-affected population.

[4] Because of the project, Lesotho is gaining more tax revenue on importation from the South African Custom Union (SACU)

However, the latter would represent a significant part of the country population as Lesotho is a small country.

The LHWP case also illustrates the importance of establishing sound institutional mechanisms to manage the funds made available through project benefit sharing. The revenue Fund was established in 1991 but, as described above, it encountered many problems related not only to the quality and cost-effectiveness of selected projects but also to the transparency and accountability of the Fund. New provisions put forward in 1998 directly addressed those problems by introducing a full range of reforms, particularly new budgeting procedures, annual technical and financial audits and procedures to make these audits publicly available.

References

Description of this case is generally drawn from the following two reports:

- World Bank. 1998. *Project Appraisal Document on a Proposed Loan in the Amount of US$ 45 million to the Lesotho Highland Development Authority for Lesotho Highlands Water Project*. Report No. 17727-LSO.
- Rothman, Mitchell. 2000. *Measuring and Apportioning Rents from Hydroelectric Power Developments*. World Bank Discussion Paper No. 419

CASE 7: THE PESAMIT AGREEMENT AND OTHER AGREEMENTS IN QUEBEC, CANADA: BENEFIT SHARING THROUGH REVENUE SHARING, TRUST FUNDS AND A JOINT PARTNERSHIP COMPANY

Context

As described in Case No. 3, under Hydro-Québec's 1998-2002 strategic plan, three essential conditions must be met for Hydro-Québec to undertake any new project:

- The project must be profitable under market conditions.
- The project must be environmentally acceptable according to the principles of sustainable development.
- The project must be well received by local communities.

In order to ensure the social and economic acceptability of potential projects, Hydro-Québec has developed a partnership strategy with local communities, whether indigenous or not. This strategy offers local communities the option to participate in the project's equity by becoming, in effect, part owners of the project. This strategy also offers local communities an array of other options, such as revenue sharing agreements, trust funds, etc. The following case study presents the agreements signed between Hydro-Québec and local communities for the construction of a hydropower dam and of three partial river diversions on the North Shore of the Saint-Lawrence River.

Project Description

The projects involve the construction of a 440 MW hydropower dam on the Toulnustouc River below the existing Lac Sainte-Anne Reservoir and the partial diversions of the Portneuf, Sault-aux-Cochons and Manouane Rivers towards the existing Bersimis-1 and Bersimis-2 hydropower dams on the Betsiamites River. The projects represent an average annual production of 2.6 TWh and an investment of $ CDN 680M. Construction of the Toulnoustouc Project started in 2001 following government approvals and the last component of the project is scheduled to be commissioned by 2005.

The various projects are located within the boundaries of five regional county municipalities (or RCMs), part of which territory is also the object of land claim settlement negotiations between the governments and three Innu indigenous communities (Betsiamites, Essipit and Mashteuiatsh). The Innu (or Montagnais) communities of Québec are relatively small and some are impoverished when compared to other non-indigenous communities.

Benefit Sharing Mechanism

The project are being developed in partnership with the five RCMs and the three Innu communities. Specific agreements have already been signed with three Innu communities and with four RCMs. Project design and environmental assessments were carried out under the responsibility of Hydro-Québec in close co-operation with the local communities.

<u>Agreements with involved Innu communities</u>

The Pesamit Agreement (1999) was signed in September 1999 by Hydro-Québec and the Innu community of Betsiamites. The Agreement was submitted for approval through a community-wide referendum. The community of 3000 inhabitants voted close to 80% in favor of the Agreement with a turn-out of about 50 % of residents eligible to vote.

According to the Agreement, the community of Betsiamites may invest 17.5% of the total construction costs of the three partial river diversions. The costs of these diversions are estimated at $ CDN 82M. The community could therefore invest about $CDN 14.3M in the projects. In return, the community can benefit from revenues equivalent to the value of 17.5% of the total energy produced by the river diversions minus the corresponding operating and environmental monitoring and follow-up costs. Hydro-Québec will buy the power from Betsiamites over a 50 year period under an agreed pricing formula, based on the electricity tariffs in Québec and the New England Power Pool prices. In 50 years, the community will retain the option of extending the partnership agreement for another 49 years. The agreement also covers the Toulnoustouc Project. However, for that project, there will not be an investment opportunity offered to Betsiamites.

In addition to the revenue sharing mechanisms, Hydro-Québec will contribute:

- a total of $CDN 10.4M towards the setting up of a Betsiamites Community Development Fund;
- a total of $CDN 11M for environmental mitigation and socioeconomic and cultural development programs for the community to be managed through a joint Betsiamites/Hydro-Québec Remedial Work Corporation or "SOTRAC". Job creation objectives for the Innu community of Betsiamites is set at 12.5 % of the total person-years of employment related to the studies and construction of the projects. This goal could lead to the creation of approximately 200 person-years of employment for Betsiamites Innu. In addition, the agreed upon goal for contracts to be awarded to Innu companies from Betsiamites is set at 10 % of the contracts awarded for the projects.

Hydro-Québec and the Innu community of Essipit signed a similar partnership agreement in October 1999. According to that agreement, the community of Essipit (400 inhabitants) may invest 3.4 % of the total construction costs of the partial diversion of the Portneuf River, which are estimated at $CDN 10M. In return, the community of Essipit will benefit from revenues equivalent to the value of 3.4 % of the total energy produced by the river diversion. In addition, the community of Esipit will receive a total of $CDN 500 000 for remedial works.

More recently, in June 2001, a third partnership agreement was signed by Hydro-Québec and the community of Mashteuiatsh concerning the partial diversion of the Manouane River. The community may invest 7.3% of the cost of the project ($CDN 60M). The community of Mashteuiatsh will also receive $CDN 650 000.

Agreements with involved regional municipalities (RCMs)

In conjunction with the agreements signed with Innu communities, Hydro-Québec has reached agreements with four concerned RCMs in view of establishing a joint partnership company for the three river diversions. This is the first agreement of its kind to be signed between the Provincial power utility and Regional County Municipalities. The agreement covers the partial diversion of three rivers into an existing hydropower reservoir. The agreement specifies that Hydro-Québec will be both the official representative of the company and the majority

shareholder with at least 86 % of its shares. The responsibility for project construction and operation is devolved by the company to Hydro-Québec.

The joint partnership company will exist for a period of 50 years, subsequent to which the RCMs retain the option of extending the partnership agreement for another 49 years. Following the completion of the projects, the four RCMs will have the option to acquire 14 % of the company shares, which would represent an investment on their part of $CDN 6.5M. In return, the RCMs will receive annual royalties of approximately $CDN 1.4 M over a period of 50 years. These royalties will be shared out amongst each of the concerned RCMs.

Summary Assessment

It is still too early to draw firm conclusions regarding the effectiveness of these types partnership agreements. However, these agreements represent a breakthrough both for the Provincial power utility and the involved indigenous and non-indigenous communities. For Hydro-Québec, the agreements are evidence that the projects are well received by the local communities, thereby reducing the levels of risk and associated costs related to a lengthy project planning and authorization process.

For the involved communities, in our view, the agreements constitute a recognition of the requirement to transfer to such communities a share of the widespread project benefits derived from the use of local or regional resources. As observed by the Prefect of the RCM of La-Haute-Côte-Nord…"In a context of devolution of powers towards local governments, the sums redistributed within our community will enable us to ensure our development according to models adapted to our needs."

CASE 8: THE MINASHTUKᴼ PROJECT IN QUÉBEC, CANADA: BENEFIT SHARING THROUGH A LIMITED PARTNERSHIP COMPANY

Project Description

The Minashtukᴼ hydroelectric project is located in the Province of Québec, in Eastern Canada, on the Mistassibi River, within the boundaries of the city of Dolbeau-Mistassini, which has a population of some 15,400 inhabitants. With a capacity of 9.9 MW, the Minashtukᴼ Project is a run-of-river facility with minimal environmental impacts since it involves no impoundment and little water flow changes. Construction began in February 1999 and the project has been in operation since May 2000. The main developer of the project is the Band Council of the Montagnais of Lac Saint-Jean. This Amerindian community has a total population of some 4600 inhabitants. About 1960 of the community's members live near the project site. The Montagnais (who also call themselves Ilnu) have traditionally fished, hunted and trapped in the region where the Mistassibi River is located.

Benefit Sharing Mechanism

The project is financed and owned by the Minashtukᴼ Limited Partnership Company. The Band Council of the Montagnais of Lac Saint-Jean is the company's majority shareholder with more than 50% of the shares. Hydro-Québec, the Provincial public power utility, owns the rest of the company's shares. As part of its partnership in the company, Hydro-Québec has agreed to buy all of the electricity generated by the project under a 20 year contract. The contract is renewable for another 20 years. The shareholders directly invested about 25% of the total cost of the project, with the remainder of the project being financed through a long-term bank loan. Hydro-Ilnu, a company fully owned by the Band Council of the Montagnais of Lac Saint-Jean, was mandated to conduct the feasibility studies, obtain all the governmental authorizations, have the project built under a turnkey contract and operate the facility. Minashtukᴼ is the first project developed by Hydro-Ilnu.

Summary Assessment

Since the beginning of the 1990s, the project has been considered by the Montagnais of Lac Saint-Jean as a means to alleviate the high level of unemployment in the community and ensure its long-term social and economic development. In an agreement signed with Hydro-Québec for the construction of a transmission line in 1994, both parties had expressed their intention to enter into partnerships for specific projects. However, proper mechanisms had to be developed to ensure the long-term profitability of such projects for the Montagnais of Lac Saint-Jean. The community also wanted to retain a degree of control over project design.

Besides being guaranteed a direct entitlement to a share of the profits of the Minashtukᴼ Project, the limited partnership company allowed the Montagnais of Lac Saint-Jean, as majority shareholder and owner of Hydro-Ilnu, to design the project according to their priorities. The project was also planned in close partnership with the city of Mistassini, under the common goal of maximizing regional economic spin-offs.

The main long-term goal of the Montagnais of Lac Saint-Jean is to reinvest the profits into other projects that can generate employment for their community. Another goal pursued by the community is to favour the transfer of technology and the training of technically specialized manpower. The long-term profitability of the Minashtuk^{o} Project is ensured by strict management rules. Such rules include, for instance, obligatory calls for tenders for contracts for goods and services and regular maintenance programs, as conditions to be respected in the long-term contract for the purchase of power from Hydro-Québec.

CASE 9: THE HUBEI HYDROPOWER DEVELOPMENT IN POOR AREAS: BENEFIT SHARING THROUGH THE ESTABLISHMENT OF A DEVELOPMENT FUND

Context

Until the early 1980s, China's power systems were entirely government owned. For the most part, power was provided through a centralized government department with operating units at the province, prefecture (or municipality) and county levels. However, because not all rural areas were connected to the grids, local systems were also set up and managed at the county level and even at local government levels (township and village).

Over the two last decades there have been great changes in the power sector in China. The sector is now largely corporatized and its ownership is diverse, budget allocations have been phased out, subsidies eliminated and electricity prices are in line with or above marginal supply costs in most grids. This has enabled the sector to grow dramatically with installed capacity and generation quadrupling to over 300 GW and about 1250 TWh. China's power sector is by now the second largest in the world, and supply and demand are basically in balance. The government intends to introduce and expand competition, starting with generation in the short term and eventually extending to retail competition in the longer term (5 to 10 years).

China's power sector has long been dominated by coal-fired generation with concomitant large emissions of SO_2, NO_X particulates and greenhouse gases with consequent adverse impacts on health, agricultural production, and global warming. One measure taken to reduce these emissions is to accelerate the development of small hydropower and non-traditional renewable energy sources.

The Government has embarked on a Western Region Development Program to reduce poverty and regional inequality, conditions that are perceived to threaten national social stability. Development of hydropower and other renewable resources are viewed as particularly beneficial in this regard, since such sources of power are usually located in mountainous terrain or remote areas. This type of rural environment, which is generally characterized by scarcity of agricultural land and difficulty of access, is also a primary determinant of poverty. The entire western area of Hubei is classified as a poverty area. It includes 25 national-level poverty counties (the poorest of the poor deserving the attention of the central government) and four provincial-level poverty counties. Three of the four project counties are national-level poverty counties and the fourth is a provincial-level poverty county.

Project Description

The project has three objectives:

a) expand power generation capacity in Hubei in an economically and environmentally sustainable manner in order to facilitate economic growth;
b) enhance the efficiency of the electricity sector in Hubei by commercialising county level generation companies;
c) contribute to poverty alleviation efforts in poor communities in Hubei.

As part of the project, four small/medium size hydropower plants and dams are to be built in four different counties. Their characteristics are summarized in the following table.

Table 1: *Summary of Project Components*

Project Component	County	Construction	Installed capacity	Number of persons resettled	Cost (US$ M)
Dangping	Xuan-en	• 134 meters dam • Underground power house • Substation and transmission line	110 MW	3 047 persons	86.19
Najitan	Laifeng	• 39 meters dam • Surface power house • Substation and transmission line	36 MW	2 565 persons	42,40
Songshuling	Zushan	• 65 meters dam • Surface power house • Substation and transmission line	50 MW	465 persons	86,19
Xiakou	Nanzang	• 85 meters dam • Surface power house • Substation and transmission line	30 MW	1 043 persons	32,54
Total			**226 MW**	**7 120 persons**	**203,45**

These four hydroelectric plants and dams are being developed by four, county-registered, limited liability companies. These companies will have direct responsibility for implementation and ultimately own and operate the respective hydropower plants. The ownership of the power plants is diverse but, in general, shareholders are power generation or power financing companies owned by provincial, municipal and county governments.

However, the Hubei Government recognizes that in the current state of development of the power industry at the county level and below, and the close cooperation needed between developers and government for hydroelectric projects in undeveloped areas, projects of the contemplated size cannot be developed without strong government support. Therefore, the Hubei Provincial Government has accepted the role of overall sponsor and executing agency for the project. The Hubei Provincial Planning Commission, which has a role in alleviating poverty in poor areas of the province, has taken the project lead in obtaining central government support for a World Bank loan., and subsequently in project preparation. The World Bank will finance 47.2% of the total investment required for the project (US$ 222.41 million). The remaining financing will come from local and provincial government and local banks.

Electricity from each plant will be sold to the provincial power grid at a price subject to approval by the Provincial Pricing Commission and ultimately by the State Development Planning Commission. The procedure represents a cost plus approach with a reasonable return on equity of 4 % higher that interest rates for long term loans.

The project has two characteristics which can be considered as benefit sharing mechanisms:

1. Through its share in the equity of the county-registered limited liability company, each county government will be entitled to part of the profits of the company.

2. Each of the project counties will devote 20 % of the fiscal revenues accruing from the operation of their respective plants for at least five years after commissioning to funding county poverty alleviation plans. Fiscal revenues include an income tax (33% of project net income) and a quarter of the value added tax (bulk supply tariff includes 17% VAT).

A financial analysis carried out by the State Power Economic Research Center shows that returns on equity invested by county owned power generation companies will be high, in the range of 15 to 25 % per year in real terms. Returns to the counties would be even larger if the current power pricing formula were to be altered to an avoided cost approach, or if the tax regime were adjusted to provide for a resource tax which captured the economic rent. Fiscal revenues are also expected to be high. They would amount to 20 to 61 % of total funds directed to poverty alleviation in the four counties.

The project will thus clearly boost revenues in the affected counties, and according to the World Bank Project Appraisal Document, past results demonstrate the capability of the counties to effectively utilize poverty alleviation funding. Studies in the project area indicate the potential for improvement of poverty alleviation efforts in line with the new strategy being initiated at the central government level. The project includes a component to prepare poverty enhancement plans for each of the four host counties using similar methodologies to those developed for other pilot counties in Hubei.

Summary assessment

The establishment of county-registered limited liability companies and the partial funding of county poverty alleviation plans through fiscal revenues are not presented and justified as a redistribution of the project economic rent to project-affected populations. However, since county governments are shareholders of the county companies, it is a form of equity sharing. Likewise, fiscal revenues based on a percentage of power sales are a form of revenue sharing. These mechanisms do not target specifically project-affected people, although the latter are part of the county population. Project-affected people will thus benefit directly from poverty alleviation plans as well as from infrastructure and services partially paid from profits of the county owned power generation companies.

It is worth noting that several measures have been taken to support local governments in setting up the county enterprises, which should ensure the technical feasibility of the project as well as its financial viability. In addition, county poverty alleviation plans will be developed based on an evaluation of current poverty alleviation efforts in other pilot counties in Hubei.

References

Description of this case is generally drawn from the following report:

World Bank. May 2002. *Project Appraisal Document on a Proposed Loan in the Amount of US$ 105 Million to the People's Republic of China for Hubei Hydropower Development in Poor Areas*.

CASE 10: THE GLOMMA AND LAAGEN RIVER BASIN IN NORWAY: BENEFIT SHARING THROUGH LOCAL TAXES

Context

Norway is a mountainous country with precipitations that are twice as high as the European average. The topography and climate thus create an optimum situation for hydropower development. Throughout the 20th century, hydropower has provided a basis for industrialisation, particularly for the expansion of the electro-metallurgical industry. Norway is presently the 6th largest hydropower producer and has the world's highest electricity consumption per capita. During the past five years, Norway has been a net importer of electricity from Sweden and Denmark.

The 1991 Energy Act introduced free competition in the production and sale of electricity. In 2000, 15-20% of the household consumers had changed suppliers and the competition has more or less eliminated price differences in the market. The Nordic Power Exchange is the world's first international commodity exchange for electrical power.

Norway's electricity supply involves a large number of companies and utilities. In 1997, there were more than 300 production, wholesale and distribution companies and utilities. Of total production capacity, the State owns 31%, municipalities and counties 56% and private interests 13%. The electricity sector is controlled by the Ministry of Industry and Energy. Its directorate, the Norwegian Water Resources and Energy Administration (NVE), prepares guidelines and regulations in accordance with the Energy Act, and issues Area Concessions and Electricity Sale Concessions. NVE also has the authority to ensure that all parties follow applicable provisions and regulations.

Project Description

The Glomma and Laagen (G&L) basin is the most populated river basin in Norway, with a population of some 620,000 people (14.5% of Norway's population). Hydropower development in the basin started at the beginning of the 20th century. Dam building in the basin continued until the late 1970s. Today, the G&L basin supplies some 10 TWh, about 9% of national electricity production. A typical feature of reservoirs in the G&L basin, as in most of Norway, is that they are originally natural lakes whose storage capacity has been increased by dams. They also are often located in remote highland areas and do not involve resettlement of people. With a few exceptions, they have been built primarily for hydropower production. The G&L basin comprises a total of 40 dams/reservoirs.

Benefit sharing mechanism

Taxation of electricity companies is governed by a new Power Taxation Act that was enforced in 1997. Counties and municipalities are entitled to receive three types of tax:

1. Tax on profit: This tax is applicable to publicly and privately owned companies. As for all companies in Norway, electricity companies must pay a tax on profit at a rate of 28%. The distribution of the tax is as follows: 20.75% go to the state, 2.50% to the county and 4.75% go to the municipalities.
2. Property taxes: Most municipalities levy a municipal property tax based on 0.7% of the market value of the power installations.

3. Natural resource tax: This tax is independent of income as it is calculated on the basis of the average power generation from the plant over the last seven years. The rate was NKr 0.013 per kWh in 2000 (0.172 ¢ per kWh), of which NKr 0.011 goes to the municipality and NKr 0.002 goes to the county.

Moreover, licence fees are paid annually to the local authorities and to the state.

In addition to the taxes and fees described above, hydropower production companies in Norway also pay a natural resource tax to the state. This tax is justified by the possible existence of a surplus return that a company may obtain by exploiting a water resource, in other words an economic rent. The rate is 27% of net revenues (revenues less operating costs, depreciation and tax-free revenues).

According to the case study prepared for the World Commission on Dams on the G&L basin, taxes and license fees paid to municipalities and counties by power companies in the G&L region amounted to NKr. 304 million (US$ 40.3 million) in 1998, which represents some 1.4% of municipal and county revenues. A few municipalities received larger amounts in taxes and license fees, representing more than 5% of their total revenues. However, these municipalities obtain lower subsidies from the state.

Summary Assessment

Local taxes paid by power production companies are a form of recognition that local populations had to forego exploiting other uses of water resources. However, such taxes represent a relatively small percentage of the revenues of the municipal sector in the G&L region. Moreover, the tax system in Norway implicitly does not recognize that municipalities with more hydropower installations on their territory should receive more tax revenues from power companies, since larger tax revenues are compensated by lower state subsidies.

It is worth noting that three other forms of benefit sharing mechanisms are widely used in Norway:

- Owners of power plants must deliver up to 10% of their electricity production to the local municipality at cost. Sales of licensed energy in the G&L region represent NKr. 26 million (US$ 3.4 million) or 0.1% of total municipal and county revenues.
- Many electricity production companies are municipal and intermunicipal companies. As owners, municipalities are entitled to receive dividends from these companies. For instance, net revenues from such companies in the G&L region represent NKr. 90 million (US$ 11.9 million) in 1998 or 0.4% of total municipal and county revenues.
- Since 1969, municipalities are entitled to receive from the electricity production company a non-recurrent amount to be used in a business development fund. In total, the G&L municipalities have received US$ 3.9 million for their business development funds.

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CASE 11: THE TOKKE HYDROPOWER PROJECT IN NORWAY: BENEFIT SHARING THROUGH PREFERENTIAL ELECTRICITY RATES

Context

Norway is a mountainous country with precipitations that are twice as high as the European average. The topography and climate thus create an optimum situation for hydropower development. Throughout the 20th century, hydropower has provided a basis for industrialisation, particularly for the expansion of the electro-metallurgical industry. Norway is presently the 6th largest hydropower producer and has the world's highest electricity consumption per capita. During the past five years, Norway has been a net importer of electricity from Sweden and Denmark.

The 1991 Energy Act introduced free competition in the production and sale of electricity. In 2000, 15-20% of the household consumers had changed suppliers and the competition has more or less eliminated price differences in the market. The Nordic Power Exchange is the world's first international commodity exchange for electrical power.

Norway's electricity supply involves a large number of companies and utilities. In 1997, there were more than 300 production, wholesale and distribution companies and utilities. Of total production capacity, the State owns 31%, municipalities and counties 56% and private interests 13%. The electricity sector is controlled by the Ministry of Industry and Energy. Its directorate, the Norwegian Water Resources and Energy Administration (NVE), prepares guidelines and regulations in accordance with the Energy Act, and issues Area Concessions and Electricity Sale Concessions. NVE also has the authority to ensure that all parties follow applicable provisions and regulations.

Project Description

Statkraft, the State Power Company, started the construction of the Tokke hydropower scheme in 1950. The total installed capacity amounts to 960 MW, of which 500 MW are located in the municipality of Tokke, located in the mountainous western part of Telemark county, 200 km southwest of Oslo. Tokke has a population of some 2,500 inhabitants. Farming and forestry are the main economic activities.

Benefit sharing mechanism

NVE is responsible for the licensing procedures for new hydropower plants and for the handling of notifications and applications. The Government or Parliament grants the license, depending on the project's size. The State company and companies owned by municipalities and counties receive their licenses for an unlimited period of time. Private companies (more than 1/3 of the shares) receive their license for up to 60 years.

The legislation establishes conditions for the licenses. Based on experience and cooperation with the relevant authorities, NVE has developed a set of standard terms of license. These terms include the compulsory delivery of 10% of their electricity production to the municipality at cost. This was originally intended to secure local power supply. But it is now seen as a form of compensation to the local population for foregoing former water uses and for negative environmental impacts.

If the municipality uses less than 10%, the surplus is offered to the county. This is often the case since many hydropower stations are located in remote and sparsely populated areas The price corresponds to the production cost which is generally lower than the average market price. However, in 1997-2000, the license power price was higher than market price because of "wet" years. However, the municipalities were able to sign long term contracts for selling the license power and they bought power on the spot market for their own consumption. The municipalities could still earn a profit even though the price of the license power was higher than prices on the spot market.

The quantity of "license power" delivered to the local utility exceeds the total power demand in Tokke. In 2001, the "license power" represented total savings of NKr. 6,500,000 on the electricity bills in Tokke. These savings came in addition to taxes and license fees paid by Statkraft and which amounted to NKr. 40,500,000. The contribution of Statkraft to Tokke's municipal revenues represents a significant amount when compared to the total cost of municipal services which amount to NKr. 165,000,000.

Summary Assessment

This benefit sharing mechanism does not have any direct relation with the existence of an economic rent. However, as mentioned above, it is now seen as a compensation from the Norwegian society for the loss of former water uses by local populations. "License power" benefits individual electricity customers (either individuals, households or companies) within the limits of the municipality. The larger electricity consumers thus benefit the most from the mechanism.

Reference

Norwegian Water Resource and Energy Directorate. The Licensing Procedure for Hydropower Development in Norway. www.nve.org