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New Benefit Sharing Approaches for Dams

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Introduction

This summary overview of new benefit sharing approaches for dams draws on the results of a study on monetary benefit sharing from dam projects carried out in 2002 for the World Bank[1] and from subsequent work conducted in 2006 for UNEP's Dams and Development Project.[2] It focuses on mechanisms that ensure a direct monetary redistribution of a share of project revenues to populations adversely affected by projects, based on the existence of an economic rent. Such "monetary benefit sharing" mechanisms go beyond compensation financing for displacement and rehabilitation programs and environmental mitigation (see table below).

Table 1: Main mechanisms to be considered within the general framework of compensation policy and links with monetary benefit sharing mechanisms

Monetary compensation for lost assets and loss of access to resources
Livelihood restoration and enhancement (Sustainable agricultural and non-agricultural employment)
Community development (Housing; access to primary services such as schools and health; access to financial services; domestic water supply; roads and public transportation; rural electrification; markets and meeting places; and access to common resources such as forests).
Catchment development (Custodianship of catchment resources; reforestation, afforestation, planting of fruit trees; and environmental enhancement for wildlife resources)
Monetary benefit sharing mechanisms (revenue sharing; development funds; equity sharing; property taxes; and preferential electricity rates)

Need for Benefit Sharing from Dam Projects

One of the key points put forward by the World Commission of Dams (WCD) report[3] 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 states 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." Indeed, while the primary beneficiaries of dams usually 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

[1] Egré, D., Roquet, V. and Durocher, C. 2002. *Benefit Sharing from Dam Project. Phase 1: Desk Study*. *Report* prepared for Alessandro Palmieri, World Bank.
[2] Egré, D., Roquet, V. and Durocher, C. 2007. "Compensation policy (a focus on benefit-sharing mechanisms)" in *Dams and Development – Relevant Practices for Improved Decision-Making - A Compendium of Relevant Practices for Improved Decision-Making on Dams and Their Alternatives,* UNEP Dams and Development Project.
[3] World Commission on Dams. 2000. *Dams and Development. A New Framework for Decision-Making*. Earthscan Publications Ltd, London and Sterling, VA.

other instances, water provided for irrigation may benefit small groups of farmers located downstream of the dam. In view of this, dam proponents, operators, and regulators need to also commit to support measures for development and welfare opportunities for local and regional communities that are negatively affected by the dam. One way to fulfil this need is to share part of the benefits generated by dam operation with these communities.

In the case of dam-induced forced population displacement – which is recognised as one of the most significant adverse socio-economic effects of dam projects –, research shows that compensation for lost assets is not alone sufficient to secure the productive and enduring reestablishment of those displaced. As a result, since the early 1980s, international standards have stressed the need both for a) equitable compensation of all affected parties and b) rebuilding affected communities and supporting the development of affected parties' livelihoods. "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"[4]. Benefit sharing mechanisms are generally considered as one of the most important means required for complementing cash compensation and other measures conceived within the framework of a compensation policy. Therefore, one of the key elements to be taken into account in compensation policies is the sharing of part of the benefits generated by dam operation with affected communities, as recommended by the World Commission on Dams, the International Energy Agency's Guidelines on Hydropower and the Environment[5] and the International Hydropower Association's Sustainability Guidelines[6]. The need to provide additional compensation to project-affected people is recognised in the legislation on revenue transfers from hydropower projects in countries such as Norway, Nepal and Brazil.

Monetary benefit sharing mechanisms can also be used as a way for a developer to establish a partnership with local populations, including project-affected populations (if any) or as a means to establish a long-term regional economic development fund. Monetary benefit sharing mechanisms can thus be implemented even in cases where there are no project-affected people. The interest of such mechanisms resides in their potential to support long-term beneficial partnerships between developers and concerned communities. Such partnership agreements are probably the most innovative forms of monetary benefit sharing. They can take various forms depending on the development priorities of local communities, such as part or full community ownership of the dam project or community development funds. For the developer, a partnership provides an assurance of the local acceptance of the project, thereby reducing the level of risk and the cost of lengthy feasibility studies and authorisation processes. For the local communities, it is a recognition of their entitlement to a share of the economic rent generated by the dam as well as a say in the management of local water resources. Such mechanisms provide: a) a source of funding over the long term; b) enable local and regional entities to set their own priorities and to minimise their dependency towards the developer and the State; and c) facilitate adaptive management. Examples include Hydro-Québec's approach on partnership with indigenous communities and with local communities and the Proyecto Hidroamazónico (PROHA) in Ecuador.

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Pre-requisite: Existence of an Economic Rent

Monetary benefit sharing is based on the premise that dam projects may generate a significant economic rent that can be shared with project-affected populations. Economic rent is the surplus return which exceeds the normal return on capital. Such a rent arises because the company is exploiting a natural resource whose development depends on site-specific

[4] Van Wiclin III, Warren W. 1999. Sharing Project Benefits to Improve Resettlers' Livelihoods. In *The Economics of Involuntary Resettlement. Questions and Challenges* edited by Michael Cernea. World Bank.
[5] International Energy Agency (IEA). 2000. Hydropower Agreement. Annex III/5: *Hydropower and the Environment: Present Context and Guidelines for Future Action*, Vol. II: Main report, Vol. III Appendices.
[6] International Hydropower Association. 2004. *Sustainability Guidelines.*

hydraulic, topographical and geological conditions[7]. Since natural resources are considered public goods, governments, in the name of the public, may thus try to "capture" the rent through royalties, fees or 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 do not pay for this benefit.

Types of Monetary Benefit Sharing Mechanisms

Various monetary benefit sharing mechanisms have been developed and applied to dam projects, both in developed and developing countries. Five types of monetary benefit sharing mechanisms may be considered:

- ***Revenue sharing***: because exact measurement of the economic rent from dam projects is difficult, revenue sharing through taxes on revenues or royalty regimes have often been used to attempt to capture some of the rent, without explicitly measuring it. 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.
- ***Development funds***: developments funds financed from power sales, water charges, etc. may be established to provide seed money for fostering economic development in the project-affected area.
- ***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.
- ***Taxes paid to regional or 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 on the dam's property value or other basis. 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.
- ***Preferential electricity rates or other water-related fees***: this mechanism is a form of revenue sharing since it results in less revenues for the dam owner and in avoided costs for beneficiaries.

When the monetary benefit sharing framework is defined in legislation, it often takes the form of transfers of part of the revenues from hydropower projects to municipalities or regional entities. This is the case in the Brazilian, Colombian and Nepalese legislation. While these legal frameworks do not directly address project-affected people, they may benefit from the infrastructures and services put in place with the funds received from the projects. This type of legislation can thus be considered as a positive step towards equitable sharing of benefits from hydropower development, provided sound mechanisms are implemented to manage the funds received by municipalities or regional entities. However, no comprehensive monitoring studies of the application of these funds could be found.

[7] Rothman, Mitchell. 2000. *Measuring and Apportioning Rents from Hydroelectric Power Developments*. World Bank Discussion paper No. 419.

The Chinese legislation also comprises a revenue transfer mechanism that takes the form of "Later Stage Support Funds" to resolve outstanding problems resulting from dam-induced population displacement. These funds are financed from power sales and managed by the Provincial Resettlement Bureaus. This legislation demonstrates the commitment of Chinese authorities to achieve full restoration of the livelihood of the resettled people. However, no monitoring studies that evaluate the performance of such funds could be found. Another example of revenue transfer is the "Paix des Braves" Agreement between the Government of Québec and the Grand Council of the Crees in Canada. This agreement is also an interesting example of recognition of the rights of Indigenous communities to have a say in the management of natural resources on their ancestral lands. However, its application is to recent to be able to draw conclusions.

The Norwegian legislation comprises a variety of mechanisms: revenue sharing, equity sharing, development funds, property taxes, preferential electricity rates. This legislation explicitly recognises that project-affected people, as part of the populations of municipalities in which water resources are exploited, must receive a share of the project benefits, over and above mitigation and compensation measures that are included in project design. However, such revenues represent a relatively small portion of municipal budgets in Norway.

Two examples of development funds for dams that are built on shared river basins have been identified: the Columbia Basin Trust (Canada-USA) and the Lesotho Fund for Community Development (Lesotho-RSA). They provide the only examples of explicit measurement of the economic rent generated by dam projects. In each case, part of the rent was used to finance a development fund. The CBT exemplifies several approaches that maximise the efficiency of such funds, e.g. the setting up of provisions that foster the active involvement of community organisations in the project-affected area. The LFCD encountered many problems that illustrate the importance of establishing and implementing sound institutional procedures to manage such funds.

Examples of innovative partnership agreements between developers and local communities include four hydropower projects in Hubei (China), two Canadian projects (Minashtuk and Toulnustouc) and the Jondachi hydroelectric project in Ecuador. One determining factor of success for partnership agreements is a long term power purchase agreement that provides the necessary conditions for the local community to invest.

Monetary benefit sharing mechanisms are relatively new mechanisms. In most instances, the framework has been implemented recently and outcomes have been only partially evaluated. They would all benefit from further studies, including interviews with concerned stakeholders on the outcomes and results of the benefit sharing mechanisms implemented in the context of each project.

Requirements for Monetary Benefit Sharing Mechanisms

The performance of monetary benefit sharing mechanisms largely depends upon the way they are conceived and implemented. They require the consideration of the following elements:

- Existence of an economic rent and financial constraints.
- Institutional and legal framework.
- Involvement of local communities.
- Efficiency of redistribution of benefits.
- Capacity and accountability of agencies entrusted with benefits redistribution.

1) Existence of an Economic Rent and Financial Constraints

The economic rent from dam projects is difficult to measure and monetary benefit sharing mechanisms generally capture some of the rent without explicitly measuring it. However, the prerequisite to benefit sharing is the very existence of such a rent. Ideally, this rent should be measured so as to determine what can 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 benefit redistribution independent of other circumstances. This may occur in situations such as 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 recover 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 (which do not accrue to the dam owner but are real for the society and can be major) exceed dam capital and operation costs. The sum of profits accruing to the dam owner, of benefits accruing to local communities and of taxes on profit or water-use fees collected by the government, should not exceed the economic rent.

In practice, only two examples identified in our research, the Columbia Basin Trust (Canada-USA) and the Lesotho Fund for Community Development (Lesotho-RSA), are based on an explicit measurement of the economic rent. Revenue transfers through taxes on revenue or royalty regimes implicitly or explicitly recognise the existence of an economic rent. For instance, the rent tax in Norway is justified by assuming the existence of an economic rent without explicitly measuring it. Equity sharing, in turn, does not require the explicit measurement of the 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 it.

2) Institutional and legal framework

Most types of monetary benefit sharing mechanisms are largely defined by the State which generally specifies the destination of the funds that are transferred to local and/or regional authorities, such as in the case of the Chinese legislation on post resettlement and rehabilitation for hydropower projects. The equity sharing type of monetary benefit sharing mechanism used within the framework of a partnership agreement is based on the principle of reconciling the goals of the developer and the local communities. Defining monetary benefit sharing mechanisms is a complex task that involves reconciling interests, goals and values of the following categories of stakeholders:

- ***Developers*:** developers bring capital as well as technical and managerial expertise to build and operate the project. Large dam 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 equity 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.
- ***Project beneficiaries*:** dam projects are often multi-purpose projects that generate significant benefits over and beyond issues related to monetary benefit sharing with affected populations. Most project beneficiaries are generally located far away from the dam site and 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.

- ***Local communities, project-displaced and other affected people*****:** dam construction and operation affect to various degrees the uses of water resources and other resources as well as ways-of-life of regional and 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. Local communities can claim entitlements to a share of project benefits as they contribute to project development by sacrificing – voluntarily or not – the access to or use of natural resources in the project-affected area: "those who give their lands to the new project are in fact "investors of equity" in those new projects. As investors they are entitled to a share of the benefits."[8]
- ***The State*****:** many institutions are concerned by dam projects, e.g., land use and resource management, manpower, health or economic development agencies. Furthermore, the State has the responsibility to establish legal guidelines for the use of natural resources and, when required, for resolving dilemmas raised by projects that exploit such resources.

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3) Efficiency of Redistribution of Benefits

The process used to transfer revenues to project-affected populations should contain steps, provisions and safeguards to ensure that the goals of the mechanism are achieved, especially in the case of mechanisms aiming at providing additional long-term compensation to affected populations. In the first place, the goals should be clearly spelled out. Possible uses of the funds, in relation to the goals, should be defined. Separate budgets may be established for each category of uses. Local community governments, which are sometimes ill equipped to manage large sums of money and complex procedures, should be assisted to strengthen their institutional capacity.

In practice, national legislation on revenue transfers or development funds, such as the Brazilian legislation or the Lesotho Fund for Community Development, do not ensure that those affected by dams actually benefit from transfer payments because one or several of the conditions described above are not met. The Columbia Basin Trust, however, exemplifies several approaches that maximize the efficiency of monetary benefit sharing mechanisms, in particular the funding of activities covering a wide array of economic, environmental and social objectives, all contributing to sustainable development in the project-affected area. The efficiency of monetary benefit sharing mechanisms, other than equity sharing, generally depends on the existence of a strong and sophisticated public administration system, such as in the case of the Norwegian legislation relating to taxes and license fees.

4) Involvement of Local Communities

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. The project-affected population is indeed best placed to decide what constitutes an improvement in their quality of life and also has 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 design of the mechanism and planning of the use of their share of the benefits received from the dam project. Partnership agreements that gain the support of all stakeholders involved, such as in the case of the Jondachi Project in Ecuador, illustrate the meaningful involvement of local communities.

[8] Cernea, Michael M.. 2002. "For a New Economics of Resettlement: A Sociological Critique of the Compensation Principle", in Michael Cernea and Ravi Kanbur. *An Exchange on the Compensation Principle in Resettlement*. WP 202-33. Ithaca: Cornell University. Department of Applied Economics.

5) Capacity and Accountability of Agencies Entrusted with 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. They also may involve risks of embezzlement and corruption. The accountability of implementing agencies entrusted with the redistribution of benefits is thus a basic requirement. A transparent process, involving all stakeholders and disclosing publicly how benefits are invested as well independent audits, would provide greater assurances that the proceeds are effectively spent on projects that truly benefit project-affected communities. The information collected in the cases studies did not enable the authors to evaluate this crucial element which should be examined in a subsequent study.

Conclusions

In consideration of the above, capacity building needs for the design and implementation of monetary benefit sharing mechanisms for large dam projects in Africa should be focussed upon the following themes:

- Fostering appropriate institutional and legal frameworks;
- Involving local communities;
- Ensuring efficient redistribution of benefits;
- Holding responsible agencies to account.