

Dams, Development and Displacement: Towards More Inclusive and Social Futures

By Tanya Wragg-Morris, with contributions from Leisa Perch

Development schemes are created and supported to encourage progress on local, national and regional scales. Mega or large-scale hydropower dam projects are usually framed in the context of creating greater prosperity in the form of jobs, narrowing the energy equity gap, and enhancing water storage for irrigation; on paper seemingly advancing a three-pillar approach to sustainable development. In reality, economic rationales largely dominate this decision-making process, often overshadowing and outweighing equally important negatives for the environment, society and culture—considerations vital for sustainable development. This Policy Research Brief explores the intersection of green economic policy, access to water, energy and cultural rights, and challenges the prevailing concept that these objectives are innately complementary. They may be, but they can also be contradictory. With significant effort, planning, strategy and careful design, they can produce results which are successful and enduring.

1. Introduction

As we move toward 'The Future We Want' (United Nations, 2012), broader awareness and concerns that link social, environmental and economic sustainability have become significantly more influential, at least politically. While there are clear linkages between these factors, they also have the potential individually to negate the other(s), and thus it cannot be assumed that this is still sustainable development. To be considered also are issues of social and environmental justice and, critically, the potential socio-economic costs to be borne by those targeted as beneficiaries whose lives are to be bettered by taking such action.

Increasing the share of renewable energy in overall energy composition, while at the same time providing efficient energy services to the 2.7 billion people without access (UNEP, 2011), remains contested territory for public policy and private-sector growth. Hydroelectric dams are considered one of the most efficient methods of providing energy services from renewable sources and narrowing deficits in energy access. Still, dams can create significant impacts on both people and ecosystems. Policy efforts tend to centre on the need to ensure proper and equitable resettlement schemes¹ for displaced persons, ignoring some of the more serious socio-economic and socio-cultural implications.

By challenging the concept that the social and environmental costs of resettlement are 'acceptable' or even 'unavoidable' trade-offs for the benefit of increased availability of renewable sources of energy, this *Policy Research Brief* suggests that cost-benefit calculations need to consider all costs, including indirect, direct and medium- and long-term costs and immediate impacts. A renewed focus on inclusive sustainable development offers us the opportunity to revisit the lessons of the 1980s and 1990s in Asia and to contrast those with the current expansion of hydropower development projects in Latin America and Africa. Narrowing the 'energy gap' in many developing countries demands viable alternatives to traditional forms of hydroelectric energy, ones that encourage less intensive social and environmental change. By considering the 'micro' reality, as a critical pillar of the 'macro', new pathways can emerge which better serve all of a region's people, including urban, rural and indigenous populations.

2. Social Sustainability of Dams: the Acceptability of Displacement and Resettlement

"The total domination of nature inevitably entails a domination of people by the techniques of domination." – André Gorz (1974)

At the centre of the controversy regarding the construction of dams for development is the delicate balance between gains of natural capital and losses of social capital.² At the core of the debate is that one good can be traded for another and that a reasonable balance between the two is achievable. This creates layers of acutely contested political issues as well as policy failures. In some cases, policies intended to help those affected by development schemes "can at best keep the victims poor and at worst push them below the poverty line" (Fernandes, 2004).

When dams are built, the actual numbers of displaced people often exceeds official estimates, making proper resettlement schemes more difficult to effectively implement. This incorrect policy analysis changes the balance of costs and benefits in terms of both the distribution of compensation to those displaced and the distribution of any benefits allocated to them that result from the project itself. The 2000 World Commission on Dams (WCD) report estimates that under-enumeration for these projects typically ranges between 2000 and 40,000 displaced persons. When it began, the Sandar Sarovar dam project in India had initial estimates of 39,700 displaced people (WCD, 2000), while the actual number when the dam is completed is expected to reach upwards of 320,000 (Lupine, 2007).

Forced displacement for megaprojects serving the macro objective of providing potential services to millions of people has led to unrest in the form of protests by civil society and resulted in various forms of legal action. Stemming from this unrest, international development institutions, namely the World Bank and the International Union for Conservation of Nature (IUCN), created the WCD in 1998. The Commission was mandated to “review the development effectiveness of large dams and assess alternatives for water resources and energy development” (WCD, 2000). It also sought to “develop internationally acceptable criteria including guidelines and standards for planning, design, appraisal, construction, operation, monitoring, and the decommissioning of dams” (WCD, 2000). Its recommendations highlight a greater need for both environmental and social justice in the building of dams as well as greater consideration and inclusion for those persons displaced by their construction.

International practices on issues of hydropower still often focus on macro elements, separating economics from deeper social impacts. They additionally separate the social from the environmental and treat the social dimensions largely as reparative strategies rather than exercising anticipatory conflict-sensitive approaches to reduce, mitigate or eliminate risks. The inclusion of ‘to-be’ displaced persons in the earliest stages of dam project development and continuous consultations throughout the building of a dam project should be *de rigueur*. Such consultations may include, or be guided by, concerns relating to potential relocation sites, economic rehabilitation and timing of resettlement, to avoid the potential tendency whereby “representation by outside agencies, whether governmental or nongovernmental, can sometimes be based on mistaken assumptions and can feed on stereotypical notions of what [displaced persons] *should* feel or want, ignoring their actual preferences” (World Bank, 2004).

Specifically, the World Bank policy on involuntary resettlement for displaced persons affected by dam construction requires that displaced persons somehow benefit from the project, and suggest that this might include:

- percentage shares of revenues generated by the project;

- provisions of irrigated land;
- electricity supply;
- preference in obtaining contracts to manage recreation or transportation facilities; and
- construction employment opportunities.

Each of these categories of benefits could be used persuasively to suggest that such projects are largely beneficial and promote local development directly targeted at displaced populations. Two important counter-arguments to this exist, however: first, the mandate of doing no further harm in implementing projects for development and, second, the social sustainability of these large-scale projects as a whole.

Seven recommendations from the WCD suggest some of the ways in which issues of governance, the economy, society and natural resources need to be considered to serve the needs of target communities (see Table).

In a post Rio +20 world, renewed focus on cultural diversity and sustainability act as an impetus to getting these intersections and values right. As shown from development failures of the 1970s onward, development is not congruent with economic development alone but rather acts as a means “to achieve a more satisfactory intellectual, emotional, moral and spiritual existence” (UNESCO, 2012a). This is especially relevant for indigenous people whose culture is at the heart of their daily lives and activities. UNESCO further states that “through their spiritual relationship to the land and their holistic worldviews, indigenous peoples offer a valuable pathway in the search for global visions of sustainable development” (UNESCO, 2012b).

Seven Essential Steps of the WCD Report

Gaining Public Acceptance	From recognising rights, addressing risks and safeguarding entitlements of all affected groups. Where projects affect indigenous people, processes are guided by their free, prior and informed consent.
Comprehensive Options Assessment	Alternatives to dams exist. An appropriate development response is identified from a range of options. During the assessment, social and environmental aspects have the same significance as economic or financial factors.
Addressing Existing Dams	There are opportunities to optimise benefits of existing dams. Management and operation practices must adapt to changing circumstances during the life of a project and must address outstanding social issues.
Sustaining Rivers and Livelihoods	Rivers, watersheds and aquatic ecosystems are the basis for life and livelihoods of local communities. Dams transform landscapes causing a risk of irreversible impact. Site selection and project design should be chosen to reduce impacts.
Recognising Entitlements and Sharing Benefits	Negotiations with adversely affected populations result in mutually agreed to and legally enforceable provisions. Provisions recognise entitlements improving livelihoods and quality of life. Affected people are project beneficiaries.
Ensuring Compliance	Governments, developers, regulators and operators must meet commitments for planning, implementation and operation of dams where mutually reinforcing incentives/mechanisms are required for social, technical and environmental measures.
Sharing Rivers for Peace, Development and Security	As specific interventions for diverting water, dams require cooperation between states. Management of resources results in a shift from the allocation of finite resources to the sharing of rivers and associated benefits.

3. Bringing into Focus the Social Unsustainability³ of the Large Hydroelectric Dam Model

Despite many lessons and advancements made on development frameworks, deepened considerations of 'culture as capital', and the expansion of social safeguards for infrastructural projects, there are valid concerns that the mistakes of the past could be repeated in the current wave of hydroelectric dam expansion and development. On a global scale, hydropower production has expanded by 50 per cent since 1990, with the largest absolute growth occurring in China between 1990 and 2008 (IEA, 2010). After China, Brazil, USA and Canada produce the greatest global shares of hydroelectricity, while Norway produces the most hydropower as a percent of its total domestic electricity production, followed by Brazil, Venezuela, Canada and Sweden (IEA, 2011).

In the case of Brazil, the scale of movement towards hydropower takes on a specific shape. The Belo Monte complex, supported by the Brazilian government, is one of 40 large dams planned for the Amazon in the next 10 years (International Rivers, 2012). Originally estimated at a cost of US\$8 billion, industry analysts have projected the final building cost may be closer to US\$17 billion due to the complexity and size of the project by the time it is finished (Ibid.).

Indigenous people represent about 0.09 per cent of the overall Brazilian population (CIA, 2012) and 0.85 per cent of the population of the Amazonia region (Greenpeace International, 2003). Indigenous groups cover approximately one quarter of Amazonia and number 238 distinct peoples. While the percentage of indigenous peoples as a proportion of the total population seems small, the number of distinct peoples within this region speaks to the rich diversity and cultural heritage that exists here.

Safeguarding the rights and promoting the needs of indigenous peoples often involves a number of potentially contradictory concepts and approaches including traditional norms balanced with post-modernist legal principles. Alcida Ramos and colleagues note, "sovereignty, self-government and self-determination are core values in the Western world, but they are seldom contemplated in relation to indigenous peoples. [...] To indigenize development is to take into account the indigenous version of these values" (Ramos et al., 2011). The application of such principles often proves less rigorous and usually weaker than desired.

An often unrecognised and undervalued consequence in indigenous communities, occurring when people are displaced, is the breakdown of community bonds. These exist primarily in informal networks that help to accomplish everyday tasks and contribute to both economic and personal well-being. They involve the everyday social ties and bonds that add to people's general feelings of contentment and improved quality of life. Kothari (1996) specifies some of these factors as mutual help for childcare, food security and informal labour exchange, all of which are beneficial factors in promoting development.

Job creation and economic regeneration is argued as one of the primary socio-economic benefits of hydroelectric dam projects through tourism,⁴ temporary construction contracts, reservoirs to promote fishing and jobs for dam maintenance and operation (World Bank, 2004). Construction jobs often pay well but tend to be seasonal and short-term. The employment benefits they produce at best offer a short-term win only which fails to provide tangible gains and opportunities for long-term economic growth. From a gender perspective, these concerns increase even more, considering the limited participation of women generally in the sector. For poor rural female-headed households this could mean limited real and direct benefits alongside increased difficulties in accessing water and land for livelihood activities.

Consequently, large dams can often bring as many social costs as they do economic benefits. Tribal and economically marginalised rural populations depend significantly on 'free' access to natural resource 'commons', to subsist and survive (Kothari, 1996). The livelihoods of these people, their economic activities and their social identity are significantly dependent on natural resources, and dams can potentially undermine these relationships if not well-designed. Thayer Scudder⁵ consolidates these sentiments when he claims, "Resettlement policies must require that the majority improve their living standards in an environmentally, economically, institutionally and culturally sustainable fashion during implementation since restoration can be expected to further impoverish what already tend to be poor people."⁶

4. Creating Alternative Pathways and Policy Recommendations - Are Hybrid Options Viable?

When considering hybrid technologies and renewable energy in general, cost-effectiveness and reliability are two of the primary concerns associated with their development.

Higher costs for renewable energy stem largely from investment in research and the building of new infrastructure. The UNEP (2011) report on renewable energy, however, highlights that the economic efficiency of solar and offshore wind power is soon to be cost competitive with existing natural gas and fossil fuel technologies. It is also important to keep in mind that the increased short-term cost of supporting renewable energy technologies appears less severe when considering the rising cost of fossil fuels and their long-term negative environmental and health impacts.

Spotlight in Real Time: The Belo Monte Dam

The Belo Monte Dam will be the third largest hydroelectric dam in the world once complete, next to the Three Gorges Dam in China and the Itaipu Dam on the Brazil-Paraguay border. To create the power necessary to be generated by the dam, up to 80 per cent of the Xingu River will be diverted from its original course. The dam's reservoir and canal, once flooded, will directly displace over 20,000 people from their homes, affecting communities of the Juruna and Arara indigenous peoples. The Instituto Nacional De Pesquisas Da Amazonia (INPA) estimates that flooding of forest by the Belo Monte Dam, and possibly an eventual second dam upstream called Babaquara, will emit large quantities of methane gas, the most potent greenhouse gas, into the atmosphere.

Acknowledgement to Zachary Hurwits, Policy Programme Coordinator at International Rivers (www.internationalrivers.org) for verification of information on the Belo Monte Dam complex (June 2012):

In addition to cost, the reliability of renewable systems of energy has been an argument used against their development. Reliability and resource limitations may stem from the availability of the resource or seasonal variability preventing steady sources of renewable energy supply.

Hybrid systems, combining one or more sources of renewable energy—hydro, solar, wind etc.—may provide a solution to some or all of these issues. It is suggested that hybrid systems can improve the quality and availability of renewable energy by combining various methods. Hybrids have the potential to lower costs by providing a larger proportion of renewable energy from less expensive renewables and ensuring reliability by substituting to available power sources when others are unavailable or limited due to seasonal variability (Burch, 2001).

Two recent innovations present green policy alternatives that hold the potential for a better balance between the economic, social and environmental pillars. On their own they serve as viable hydropower alternatives and can potentially be combined with alternate forms of renewable energy as part of a hybrid energy system.

- **Run-of-the-river** operates with the use of a smaller dam and the natural flow of the river to produce hydroelectric power.

It omits the need for a large reservoir characteristic of traditional dams that can result in the displacement of local community groups and populations.⁷

- **Wave energy power production** harnesses hydropower from natural wave movements along coastal regions. This example is particularly applicable to Brazil, as it possesses extensive coastline that could be used to harness this form of renewable energy and has no direct impact on human displacement.

A trial wave power station located in the Port of Pecém in the state of Ceará, Brazil, supported by Alberto Luis Coimbra Institute—Graduate School and Research in Engineering (COPPE in Portuguese), Federal University of Rio de Janeiro (UFRJ in Portuguese), Tractebel and the government of the state of Ceará, has been implemented, representing the first wave power station in Latin America.⁸

Moving away from policy approaches which focus singularly on resettlement practices should involve a shift toward improved social accountability and sustainability, including:

- establishing as a first priority site selection that does not displace or harm communities established in a particular area;
- when dams are built, creating appropriate resettlement and redistributive mechanisms to help mitigate the social and cultural costs of these projects;
- if displacement is unavoidable, offering appropriate jobs in line with displaced persons' established skills and knowledge sets as well as support to access other livelihood opportunities as they arise;

- establishing strategic community rehabilitation programmes to reduce psychological and socio-cultural impacts from community degradation; and
- placing added emphasis on research into alternative forms of clean energy, including hybrids, with lesser impacts on natural ecology and established communities.

In addition to raising awareness about the harmful indirect consequences of ill-conceived dam projects, there is a need and value in mitigating such issues regularly and consistently. This is required to produce true accountability for actions, including those by the World Bank, developers, governments and other financial institutions.

5. Conclusion

Hydroelectric dams have been encouraged to promote economic development and ensure rapidly growing energy needs are met. Generally considered a 'clean' form of energy, large hydroelectric dams still pose significant threats to the environment and cause concerns for local and indigenous communities.

In discussing the balance between socio-economic costs and natural capital gains of clean energy, it is important to broaden the discussion to include some of the deeper social costs and their damaging long-term effects.

Recognising the presence of alternative hydropower options could provide a first step in avoiding the significant social and environmental impacts of these projects. Hybrid options for renewable energy and exploration into this sector should be considered as an alternative model to support expanding demands for clean energy.

Renewed commitment to green and inclusive development must fundamentally ensure that non-monetary costs and benefits are balanced with monetary considerations as large-scale projects for development in the Amazon region and elsewhere move ahead.



1. A complete list of recommendations for resettlement with linear dam projects can be found on pages 319–320 of the World Bank *Involuntary Resettlement Sourcebook* (2004).

2. For definitions, see Quereshi (2006).

3. Section 58j of the UNCSO outcome document outlines that policies for sustainable development and poverty eradication should "Enhance the welfare of indigenous peoples and their communities, other local and traditional communities and ethnic minorities, recognizing and supporting their identity, culture and interests, and avoid endangering their cultural heritage, practices and traditional knowledge, preserving and respecting non-market approaches that contribute to the eradication of poverty involving sustaining local traditions and methods of interacting with the earth that have created sustainable livelihoods, often for millennia."

4. The Itaipu Dam on the Brazil–Paraguay border near Foz do Iguaçu offers a dam tour with access to the inner dam section and film screening. See <<http://www.itaipu.gov.br/en/turismo/special-tour>> (accessed 23 November 2012).

5. Thayer Scudder is an American social Anthropologist, Anthropology Professor Emeritus at the California Institute of Technology and former Commissioner to the World Commission on Dams.

6. Statement from the International Network on Displacement and Resettlement website, <www.indr.org> (accessed 15 June 2012). For most recent work, see Scudder (2005).

7. For more information, see Douglas (2007).

8. This project was officially launched during Rio +20, the United Nations Conference on Sustainable Development held on 13–22 June in Rio de Janeiro. See <<http://www.planeta.coppe.ufrj.br/artigo.php?artigo=1450>> – content in Portuguese (accessed 23 November 2012).

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International Policy Centre for Inclusive Growth

Esplanada dos Ministérios, Bloco O, 7º andar

70052-900 Brasília, DF - Brazil

Telephone +55 61 2105 5000

E-mail: ipc@ipc-undp.org ▪ URL: www.ipc-undp.org

International
Policy
Centre for Inclusive Growth