

# **Governance challenges for sustainable hydropower development in the Mekong region**

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## **EXECUTIVE SUMMARY**

We present a critical review of issues related to less sustainable development of hydropower in the lower Mekong region, focusing on the role of the private sector and the possibility for public-private partnerships to improve environmental and social performance of large hydropower in the region. We raise issues about the relationship between commercial hydropower development and social equity worthy of further discussion by a range of stakeholders, including academic researchers and the private sector. Written for a general interested audience, the report also includes recommendations for policy development and ongoing research.

This report was commissioned by the EU Water Initiative's SPLASH project: 'Sustainable Development of Hydropower involving the Private Sector in Research Collaboration in the Lower Mekong Region.' SPLASH aims to explore possibilities for capacity building in the academic sector around critical issues raised by hydropower development in the Lower Mekong Basin (LMB). The authors warmly invite interested readers to respond to issues raised in this review.

We found four key sets of development and governance issues. Together these issues define what we might call the 'Mekong hydropower regime.' The issues are (1) the resilience of the Mekong's aquatic ecosystems, in particular its fisheries, which is uncertain but expected to decline as more dams get built throughout the region; (2) the structure of the electricity industry, in particular an electricity supply chain dominated by monopolistic state utilities, in which willingness to pay, consumer choice, and awareness of sustainability issues are limited; (3) state regulation, which has limited accountability to citizens and is constrained in terms of technical and legal enforcement capacity; and (4) 'bottom-up' river basin development.

In bottom-up development, a range of project sponsors (multilateral and private financiers and developers), confront relatively weak state regulatory practices. Among project sponsors, we can distinguish high- and low-risk development strategies, with respect to the quality of environmental and social activities, as well as responsiveness to an emerging sustainability agenda led by diverse actors including the Mekong River Commission and civil society.

We focus on state regulation and bottom-up development. Sustainability outcomes, we argue, might improve if screening and feasibility studies are conducted first not by developers, but by independent institutes with multi-disciplinary capacity, working in a participatory manner. If the governance regime were to shift in this direction, opportunities for rent-seeking would reduce, but more socially optimal planning and project designs might emerge.

Legal frameworks in Laos, Cambodia and Vietnam have the potential to regulate more sustainable hydropower outcomes, but our analysis finds that the hydropower sector continues to be low in transparency, easily influenced by developers and other actors with money and access to political power, and less responsive to the interests of the weakest segments of society, especially project-affected communities.

While weaknesses in each country's regulatory practices can be addressed, time to build capacity, as well as leverage to negotiate and implement reforms is needed. Until state regulation improves, complementary ways of regulating hydropower projects – such as industry codes of conduct and sustainability assessment – need to be monitored.

Financial models of hydropower projects are examined to better understand how investors construct feasibility and make investment decisions.

Hydropower projects structured as independent, project-financed companies bring together a mix of actors, including lenders, equity investors, and engineering contractors. The potential for conflicted interests exists when contractors also serve as equity investors; when government also takes an equity investment; and when consulting engineers drawn from the industry serve as the main source of technical advice.

We found that financial rates of return vary considerably between projects, and are strongly influenced by the hydrological properties of a particular site. Large infrastructural projects in developed countries might yield returns to equity investors of 12–14% before inflation. From a sustainability perspective, if an investor's apparent financial rate of return on a proposed project in a *developing* country increases beyond about 14% – that is, beyond returns that can be earned in developed countries – it is important to know why. For example, has the investor adequately and fairly budgeted environmental and social project components?

Although dated, a 2004 study by Maunsell and Lahmeyer International appears to be the most recent comprehensive, publicly available analysis of typical financial rates of return. Most of the 33 projects screened in this study were estimated to have financial rates of return below 10% at a tariff of 4.4 c/kWh (2003 USD) (or approximately 6.9 c/kWh in 2010 USD). As of 2010, however, it is interesting to note that a number of those supposedly marginal projects are actually being built, or in advanced planning. In all cases, the projects were redesigned. For example, for the Nam Ngum 2 and Nam Ngum 3 projects, a number of design changes between 2004 and 2007 resulted in a net power capacity increase. The capacity increase also increased the total inundated area in a way that has not been “socio-environmentally optimal” according to a subsequent cumulative impact assessment conducted by Vattenfall (2008).

Marginal projects overcome their lack of commercial viability through design modification, tariff negotiation, and other financial optimisation. These activities are usually carried out in confidence, but of course have wider social implications. Overall, a striking lack of knowledge exists around the topic of investors' financial design practices.

A number of mechanisms, currently being applied in the lower Mekong region, that aim to improve the sustainability of private sector investment impacts. These include:

- Investors' use of sustainability frameworks and corporate social responsibility frameworks;
- Benefit sharing, including development projects aimed at poverty alleviation;
- Payments for ecological services for watershed management, in catchments where hydropower development takes place (PES).

We review use of the Equator Principles, a voluntary sustainability framework adopted by lenders in the Nam Theun 2 and Theun Hinboun Expansion Projects in Lao PDR. Once adopted, these codes of conduct perform, to a certain degree, a regulatory function. However, both cases highlight challenges in having financiers hold hydropower developers accountable. The Equator Principles' currently weak disclosure by investors was also identified as a problem.

Lenders' perceptions of their options – when governments or developers do not deliver upon social and environmental commitments – are worthy of further investigation. For example, during the long repayment period, are lenders willing to alter interest rates or other loan conditions to enforce compliance with best practice?

Without benefit sharing, projects become more difficult to justify to society because of their cumulative environmental and social impacts, and the inequitable distribution of those impacts. We analysed a number of benefit sharing mechanisms including the draft Vietnam Decree on Benefit Sharing from Hydropower, the Nam Theun 2 revenue management framework, and the Nam Leuk hydropower project in Laos.

The Vietnam Decree provides a framework for equitable sharing of benefits from hydropower resources. The Decree calls for long-term revenue sharing arrangements to be established between electricity consumers, and local communities hosting hydropower projects who are adversely affected by the project in their locality. Treating affected people as project stakeholders may create incentives for local action to sustainably manage hydropower assets such as catchments. This may also serve the interests of electricity consumers and hydropower operators. Although promising, the effectiveness of the Vietnam's draft Decree remains to be seen. Meanwhile, case studies from Laos suggest to function as planned, benefit sharing requires appropriate financial oversight as well as effective implementation. This remains a challenge in countries where levels of transparency and accountability remain low.

We reviewed a promising initiative involving payment for forest environmental services, in Lam Dong Province, Vietnam. Annual payments of \$2.8 million from the Da Nhim and Dai Ninh hydropower stations are being made to over 3400 poor households in two watersheds located at the headwaters of the Dong Nai river basin. Households are paid to protect 104,000 hectares of forest.

Any significant benefit sharing, particularly environmental flows release to benefit aquatic resource dependent communities and ecosystems, would have negative financial impacts on IPP projects, and thus might not be viable without compensation or additional financing. This implies sustainable tariffs need to be higher than currently negotiated.

## **Conclusions and recommendations**

More insight into the cost and feasibility of alternative project design, including critical review of the concept of benefit sharing, could be gained by establishing a number of cooperative case studies with hydropower projects already in operation in the region. Notions of cooperation and ‘collaboration’ however raise a number of ethical challenges for academic researchers, whose basic responsibility is to avoid harm. A tension exists between academics and developers, but it is not necessarily unproductive. The Nam Theun 2 international panel of experts appears to be an example of cooperation that has produced usable and critical knowledge.

In theory, projects in earliest stages of feasibility study have the most flexibility to be designed in more equitable terms. However the bottom-up approach to development awards the privilege and responsibility of preparing feasibility studies to non-state parties, whose commitment to environmental and social sustainability varies.

An alternative development framework would be to first assign project definition, pre-feasibility and feasibility responsibilities to a third party – e.g. independent institute – with a mandate to protect the public interest. The design of alternatives for a particular location would take place in a broadly participatory and multi-objective manner, considering and debating a range of alternatives from small to large in impact and capacity.

In the LMB, design and public dialogue could build on previous multi-project planning studies as well as improved understanding of ecological and social thresholds, for example, with the risk of fisheries collapse. Developers would then be selected through a transparent procurement process.

This kind of public-interest design is more sustainable when power system planning (the larger context) itself is conducted according to integrated demand-side and supply-side principles, in a participatory manner, leading to a rigorous justification of the need for new hydropower (World Commission on Dams 2000).

The public-interest design and procurement model means initial higher cost to the state, to be recovered from developers. A developer selected through this process would need to invest in further site-specific knowledge. The viability of this approach remains to be explored. It is consistent with an iterative, participatory screening and ranking process carried out in Nepal ca. 2000, supported by World Bank.

A public-interest hydropower design and procurement model is easiest to imagine occurring for small projects. But of course it is those sites where very large-scale projects are being planned – such as major tributary and Mekong mainstream dams – that are most controversial and most urgently need fresh approaches to development.