



# THE ADB-GMS SUPPORT FOR HYDROPOWER DAMS AND POWER GRID

ADB and the Greater Mekong Subregion Program

## SUMMARY

In the Mekong Region, many hydropower dams are in operation or under construction, while proposed dams are undergoing feasibility studies. Through its Greater Mekong Subregion Program (GMS), the Asian Development Bank (ADB) has co-financed some of the hydropower dams in the Mekong Region, such as Theun Hinboun<sup>1</sup> and Nam Theun II<sup>2</sup> in Laos. The Bank is also involved in the construction of a few individual dams in the Mekong countries (e.g., Song Bung 4 in Vietnam<sup>3</sup>) and is considering the financing of new ones (e.g., Nam Ngum 3 in Laos<sup>4</sup>). Hydropower dams are considered by the Bank as clean and environmentally sustainable sources of energy.<sup>5</sup>



The ADB's main aim through its GMS program for hydro energy is the establishment of a power grid. More than half (20 projects) of the hydro energy-related projects in GMS have to do with the construction of transmission lines.<sup>6</sup> A network of electricity transmission lines is needed to transmit power from dams in Burma, Laos and Cambodia to urban centers in Thailand and Vietnam, or to other ASEAN countries that are located even further. The grid is also intended to consolidate the energy sectors for regional power trade and private investment in the power sector.<sup>7</sup>

## CONTEXT

### Energy

- There is big potential for hydropower in the Mekong Region. Between 176,350 and 250,000 megawatts have been deemed technically feasible.<sup>8</sup>
- Predicted energy demands in the Mekong Region will increase by 6-7% yearly.<sup>9</sup>
- More than 96% of the regional demand for power by 2025 is expected to come from Thailand and Vietnam.<sup>10</sup>
- Laos prospects to gain income out of power exports to Thailand and Vietnam.
- Power price negotiations between the different Mekong countries are ongoing.

### Natural Resources

- The Mekong river basin, together with its tributaries, constitutes one of the richest areas of biodiversity in the world. Hundreds of different species fish that dwell in the river have already been identified.<sup>11</sup>
- The rivers support one of the world's most productive inland fisheries, which feed more than 60 million people.<sup>12</sup>

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## WHAT IS RELEVANT FOR DIFFERENT STAKEHOLDERS?

- The current financial incentive structure of power utilities is a 'rate of return structure'. Companies are ambivalent about energy efficiency because they earn less money when customers save energy.<sup>13</sup>
- Power companies aim to export energy above the amount needed to meet domestic use.<sup>14</sup>
- A power grid with high voltage lines enables countries to pool the available energy from different sources and secure a steady energy supply. The result will be a consolidated and constant supply of efficient energy which would also be environmentally-friendly. However, dams block fish

migration, leading to a reduction in fish stocks, which in turn is detrimental to inland fisheries. Dams also block the fertile sediments carried by the river. These natural fertilizers nourish the soil, which sustains the rich agricultural production downstream.

## WHO IS AFFECTED?

- About 70% of the Mekong population is rural. The area's inland fisheries are the most intensive in the world, therefore local communities are heavily dependent on the river for food security and livelihood. The blocking of fish migration would cost the local communities their main means of livelihood.

## CASE EXAMPLE

### Nam Ngum 3 (NN3) Hydropower Project<sup>1516</sup>

What:	A privately owned 440-megawatt hydropower dam. Electricity is exported to Thailand. (Lao Holding State Enterprise, Thai and Japanese companies)
Where:	The Nam Ngum river basin in Central Laos.
When:	ADB Board approval on 31 May 2011
Cost:	US\$ 220-million loan from ADB and US\$200-million for Udon Thani Transmission Line)

- Nam Ngum River Basin: Home to 10% of Laos' population, including tens of thousands of ethnic minority people.
- Nam Ngum 1 is in operation. Nam Ngum 2 is ready for operation. There are at least six more proposed projects in the Nam Ngum river basin.
- ADB supported the conduct of a Cumulative Impact Assessment (CIA) for the hydropower cascade in the river basin.
- The buyer of the power to be produced by the 440-megawatt plant is Thailand. It will have a 28-km transmission line to Thailand.
- Thailand has agreed to buy 7,000 Megawatts from Laos by 2015.
- Power Purchase Agreements by Thailand are based on assumptions that its energy demand will grow at 5.95 percent annually from 2007 to 2011.
- The ADB Board will decide by the end of May 2011 on the approval of Bank support to Nam Ngum 3.

### Project impacts:

- The Environmental Impact Assessment (EIA) of NN3 states that an integrated river basin management is needed for the many hydropower and mining projects within the Nam Ngum River Basin.
- NN3 is being built in a valley with only a few villages. The project lies in the center of a conflict zone between the Laotian army and Hmong people. Therefore, the actual

- number of people that will be affected cannot be predicted, since groups of people are more or less, constantly on the run.
- The CIA indicates that the proposed dams would have serious impacts on the livelihoods of tens of thousands of Laotians.
- The study finds that "Subsistence farmers, the poor, the landless, ethnically and otherwise marginalized groups with few alternatives, are likely to be hit hardest by any impact on habitats and wild-capture fisheries. The new reservoirs of the dams are mainly expected to have moderate to low potential for reservoir fisheries."
- The CIA also points out that more than 6,000 square kilometers of mining concessions have been approved in the Nam Ngum basin since 2006, further jeopardizing water quality and local livelihoods. At least one major cyanide spill has already occurred in the area's largest mine.
- A local grievances redress mechanism will be established. According to CSOs, it is questionable whether such a mechanism will be independent and easily accessible to the local people, who are often poorly educated and have limited financial means. Moreover, it is a question of whether they will feel safe and secure enough to express any discontent.
- Thailand has been criticized by CSOs about its investments in Laos.

## WHAT IS THE ROLE OF ADB?

- The Asian Development Bank, in relation to the GMS program, has invested in the construction of several dams, among them are the Theun Hinboun dam, Nam Theun 2 in Laos. The ADB has also funded the Sekong-Sesan and Nam Theun river basins hydropower development study that prioritized six dams for further development within the three river basins shared by Cambodia, Laos and Vietnam.<sup>1718</sup> Another dam, the Nam Ngum 3 in Laos, now awaits approval from the Board of ADB.
- Significant ADB advisory support is directed towards establishing a regional power grid.
- The ADB has helped set up a market authority and rules for regional power trade.

## Related Policies

- The ADB has at least three policies that relate to its dam building, specifically: 1) Safeguards Policy; 2) Energy Policy; and 3) Water Policy.
- Energy Policy explains how the ADB will assist its member countries with its continued support for renewable energy such as hydropower. The Bank considers hydropower projects as clean and renewable.
- Water Policy puts emphasis on the importance of an equitable distribution of water for different uses in the Asia region, as in, an integrated holistic approach of river basins. It promotes "informed participation of government, civil society, and other stakeholders in the country in an open and inclusive manner" where the building of dams is concerned.
- Safeguards Policy enumerates policies concerning Involuntary Resettlement, addresses Indigenous People and the Environment. The Bank needs to implement its safeguards policies in order to avoid, minimize and mitigate any social and environmental impacts that may be caused by the hydropower development.



Road to dam site, April 2007/Photo courtesy of International Rivers

## CHALLENGES

- If the ADB does not build the high-voltage transmission lines, then certainly some of the dams will not be built at all. At the same time, in order for transmission lines to be financially viable, dams must be constructed. The ADB claims that dams (that would supply power to the transmission lines) will meet the ADB environmental and social safeguards. For many of the dams, there are no real requirements to meet ADB's safeguards policy, since the Bank has no direct involvement in their development. In recent years, there has been an increase in the volume of investment from private investors and export credit agencies from Vietnam, China, Thailand, Malaysia and Russia who are all interested to finance hydropower development.
- The ADB, in the interest of climate change, has found renewed arguments for a further expansion of financing hydropower infrastructure. ADB's clean energy loans and investments include power grids for hydropower stations in India, and dams in China and Vietnam. The ADB considers hydropower as a clean energy source.<sup>19</sup> Hydropower dams are controversial from a climate perspective. Dams in tropical countries produce high levels of methane, a greenhouse gas significantly more potent than carbon dioxide. The Bank continues to negotiate with Mekong countries governments about the sharing of project revenues and setting aside of funds that may be used in dealing with project impacts.<sup>20</sup>



## The ADB Safeguards and Accountability Mechanism Policies

The ADB Safeguard Policies are supposed to guide all ADB operations so that they meet the Bank's minimum social and environmental standards. The ADB requires its clients to comply with these standards, otherwise the Bank may withhold financing for the project or activity that are not in compliance.

You can find Safeguards on the ADB's website: <http://www.adb.org/Safeguards/default.asp>.

The ADB has also created an Accountability Mechanism that holds the Bank accountable to its own safeguards policies. It responds to grievances from citizens about the environmental and social impacts of ADB-funded projects.

You can find the Accountability Mechanism on the ADB's website: <http://www.adb.org/AM-Review/>.

## FURTHER READINGS

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## Overview: Energy and Regional Power Interconnection Projects based on the latest ADB GMS Development Matrix (last updated October 2006):<sup>21</sup>

Technical Assistance/ Loan	GMS Program	Projects	
Technical Assistance (9)	North South corridor (1)	ENE005: Subregional Strategy for Cooperation in Renewable Energy	
	East West corridor (1)	ENE003: Feasibility Study for Thailand - Myanmar Interconnection Project (Mae Sot [Thailand]-Thaton [Myanmar])	
	Southern corridor		
	Regional Power Interconnection and Power Trade Agreements (7)		ENE013: ASEAN Power Grid Study (1993)
			ENE014: Human Resource Development for Power Trade
			ENE015: Regional Power Trade Operating Agreement In the GMS
			ENE016: Feasibility Study of Hydropower Development and Transmission Lines Link Between Battambang and Phnom Penh, Cambodia (to be linked with Viet Nam and Thailand)
			ENE025: Developing the GMS Energy Sector Strategy
			ENE026: GMS Power Trade Coordination and Development
			ENE027: Facilitating Sustainable Environment-Friendly Regional Power Trading (RPT) in the GMS
Loan (31)	North South corridor	ENE001: Rural Electrification Along Route 9	
	East West corridor (2)	ENE004: 115 kV Transmission System Upgrading in and around Thakek (Lao PDR)	
	Southern corridor (12)		ENE034: Feasibility study and construction of the Transmission Line 230 kV Double Circuits Link Between Kampot and Sihanoukville
			ENE035: Feasibility study and construction of Lower Sre Pok 2 Hydropower Project in Cambodia
			ENE036: Feasibility study and construction of Lower Se San 2 Hydropower Project in Cambodia
			ENE037: Feasibility Study and construction of Thuong Kom Tum Hydropower Project in Viet Nam
			ENE038: Feasibility study and construction of Se San 4 Hydropower Project
			ENE039: Feasibility study and construction of An Khe Kra Nac Hydropower Project
			ENE040: Feasibility study and construction of Sre Pok 3 Hydropower Project
			ENE041: Feasibility study and construction of Sre Pok 4 Hydropower Project
			ENE048: Lower Sre Pok II Hydropower Project
			ENE049: 115 kV Transmission System Tay Ninh (VIE) to Kampong Cham & Kratie (CAM)
			ENE050: 115/ 22 kV Transmission for Supply to Southern Champassack (LAO) & Stung Treng (CAM)
			ENE052: Lower Stung Russei Chrum Hydropower Project (240 MW)
		ENE006: Jinghong Hydropower Station (Yunnan, Mekong mainstream)	
		ENE007: 110kv Electricity Sale by Yunnan, PRC to Lao Cai, Viet Nam	
		ENE008 GMS Power Interconnection Project Phase I Construction (Lao PDR- Viet Nam Power Interconnection)	
		ENE009: GMS Power Distribution and Transmission Loan Project Cambodia	
		ENE010: Nam Theun 2 Hydropower Development Project	
		ENE011: Northern Power Transmission Sector Project (Viet Nam)	
	ENE012: Northern Power Transmission Sector Expansion (Viet Nam)		
	ENE017: Interconnection Project: Thailand-Western Cambodia		
	ENE018: Interconnection Project: Nam Mo-Ban Mai (Including possible extension)		
	ENE019: Interconnection Project: Udon Thani -Na Bon		
	ENE020: Interconnection Project; Tasang HPP - Mae Moh-Tha Tako		
	ENE021: Interconnection Project: Malutang (Yunnan) to Viet Nam		
	ENE022: GMS Power Transmission Line Between PRC, LAO and THA		
	ENE023: GMS Northern Power Transmission (Lao PDR)		
	ENE024: Viet Nam- PRC Power Interconnection (GMS Power Interconnection Phase II) PPTA and Construction		
	ENE028: Cambodia -Viet Nam Power Interconnection		
	ENE029: Construction Stung Meteuk I Hydropower Project		

## Greater Mekong Subregion Program

The Asian Development Bank and the GMS are unknown among most citizens of the Mekong countries, in spite of the impact they create on many people's lives and on the natural resources that the people depend on.

The ADB is a regional development bank that aims to achieve poverty reduction in Asia through the promotion of economic growth. It is a public bank supported by countries and their citizens taxpayers' money, and is therefore in a position to utilize money for investments.

In the Mekong countries, the ADB, through the GMS, has pledged a lot of money into building large-scale infrastructure such as roads, railways, and high-voltage transmission lines, which are meant to facilitate private sector development. The idea behind such endeavor is to enable the private sector to earn profit and therefore generate growth for the society as a whole. Furthermore,

ADB believes that a regional single market would generate more profitable business opportunities for companies than the local markets.

ADB's main aim for hydro energy production in the Mekong economy is the establishment of a power grid. Electricity transmission lines are seen as cross boundary connections for regional economic integration. Moreover, the grid will enable the private energy companies to consolidate the energy sectors towards regional power trade.

According to civil society groups, the market integration process in the Mekong lacks well-established and effective legal and decision-making frameworks. Plantations and economic zones cope inadequately with the environmental and social safeguards, which borrowers of the ADB are obligated to follow. This creates the risk that the infrastructure would be built at the expense of the environment and people's livelihoods.

## Endnotes:

<sup>1</sup> About Theun Hinboun: <http://www.adb.org/projects/project.asp?id=27325>

<sup>2</sup> About Nam Theun II: <http://www.adb.org/projects/namtheun2/default.asp>

<sup>3</sup> About Song Bung 4: <http://www.adb.org/projects/project.asp?id=36352>

<sup>4</sup> About Nam Ngum 3: <http://www.adb.org/projects/project.asp?id=41385>

<sup>5</sup> Look at: <http://www.adb.org/Clean-Energy/>

<sup>6</sup> See GMS Development matrix at :<http://www.adb.org/gms/Projects/devmatrix.asp?sc=2&sc=8&st=1&st=2&ct=1&ct=2&ct=3&ct=4&ct=5&ct=6&pr=0&pv=1&pv=0&fl=1&fl=2&fl=3&fl=5>

<sup>7</sup> Mottatarn, Van Leeuwen, Lancaster. Mekong Lifeline, The dams, the fish, our future. South East Asia Globe, 2010.

<sup>8</sup> MRC SEA for hydropower on the Mekong mainstream, International centre for environmental management, 2009.

<sup>9</sup> MRC SEA for hydropower on the Mekong mainstream, International centre for environmental management, 2009.

<sup>10</sup> MRC SEA for hydropower on the Mekong mainstream, International centre for environmental management, 2009.

<sup>11</sup> Source: IUCN, WWF, (2008).

<sup>12</sup> MRC SEA for hydropower on the Mekong mainstream, International centre for environmental management, 2009.

<sup>13</sup> Middleton, Carl (2010). Regional Electricity Planning and Transboundary Rural-Urban Divide. Chulalongkorn University, Thailand.

<sup>14</sup> Middleton, Carl (2010). Regional Electricity Planning and Transboundary Rural-Urban Divide. Chulalongkorn University, Thailand.

<sup>15</sup> About Nam Ngum 3: <http://www.adb.org/projects/project.asp?id=41385>

<sup>16</sup> International Rivers. Nam Ngum Hydropower Cascade. <http://www.internationalrivers.org/en/node/2406/>

<sup>17</sup> International Rivers. Nam Ngum Hydropower Cascade.

<sup>18</sup> Cited from: Molle F., Foran T., Kakonen M.. (2009). Contested waterscapes in the Mekong Region. Earthscan, United Kingdom. P. 37.

<sup>19</sup> <http://www.adb.org/projects/project.asp?id=40082>


<sup>20</sup> Look at the portfolio 2008 for example at: <http://www.adb.org/Clean-Energy/>

<sup>21</sup> <http://www.adb.org/GMS/devt-matrix.asp>

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