

Terra Briefing February 1/2000

Basic Facts and Economics: Nam Theun 2 by Bruce Shoemaker

Location

Theun River, Nakai District, Khammouane Province, Central Lao PDR, 250 km east of Vientiane

Dam Structure

Height, 44 to 50 metres

Reservoir Area

447 square kilometres (40% of the Nakai Plateau)

The original area to be flooded by the dam was increased after the engineering team working on the project discovered they were using the wrong topographical maps. As a result, the reservoir area grew from 350 to 447 square kilometres in size - an increase of nearly one third.

Generation Capacity:

900 megawatts (MW) of intermediate load generation

The environmental impact studies conducted for Nam Theun 2 are based on the original plant design to produce 680 MW of base load power. The change in proposed design occurred in 1999

Impact on populations

- * 880 households from 22 villages (over 4500 people) would be resettled from the proposed reservoir site
- * number of households using the Nam Theun River downstream of the proposed dam who would be affected (exact number of people unknown to NTEC - not studied)
- * number of fishing households on Nam Phit and Xe Bangfai Rivers, into which the Nam Theun reservoir water would be released, who would be affected (exact number of people unknown to NTEC - not studied) refer TERRA briefing on Impact on Fisheries

Current estimated project cost from NTEC July 1999, Project Update

US\$1.1 billion

Construction costs: US\$740 million

Social and environmental costs: US\$100 million

from World Bank Web site updated September 9, 1998

US\$1.3 billion

Construction costs: US\$816 million

Development expenditures: US\$180 million

Financial costs: US\$339 million

Other

The proposed Nam Theun 2 hydropower scheme is a transbasin river diversion project impounding water from 4013 square kilometres (28%) of the Nam Theun River basin; annually diverting approximately 7 billion cubic metres (about 30% of the Theun River's annual flow volume) to the generating station turbines, and releasing the water

into the Xe Bang Fai River through the Nam Phit River. The Nam Phit River would be dredged and widened to become the outflow channel for water from Nam Theun 2.

Logging

At least as early as 1997, a Lao military backed company was logging a substantial amount of forest on the Nam Theun Nakai Plateau to make way for the dams construction, and had begun relocating people from the proposed reservoir area. According to the Asian Development Bank's 1999 report Timber Trade and Wood Flow - Study Lao PDR, logs from the proposed Nam Theun 2 reservoir area accounted for 27 per cent of the official 97/98 log supply.

Project Developers refer TERRA briefing on BOT

In 1993, the Government of Lao PDR awarded Transfield, the exclusive mandate to develop the Nam Theun 2 project as a Build - Operate - Transfer Project (BOT). Transfield formed a consortium, now known as the Nam Theun 2 Electricity Consortium (NTEC), to build and operate the Nam Theun 2 dam for a 25 year period, before turning it over to the Lao Government.

The Lao Government has equity of 25% in NTEC and 5 private companies own the other 75%. Electricite de France has taken over the lead agency position in NTEC from Transfield.

These companies are:

- * Electricite de France - the world's largest electricity utility 30%
- * Transfield Holdings - a leading Australian engineering company 10%
- * Italian-Thai Development - Thailand's largest construction company 15%
- * Merrill Lynch Phatra Securities - owned by US firm Merrill Lynch and Thai Farmers Bank 10%
- * Jasmine International - Thai company looking to sell its share 10%

In October 1999, Jasmine announced that it intended to sell its equity in NTEC. EGAT owned company, EGCO has expressed interest in buying a stake in NTEC. In January 2000, Merrill Lynch Phatra Securities announced that they also wish to sell their equity.

Involvement of the World Bank

While publicly stating that it is not committed either way on Nam Theun 2, the World Bank has been working closely with the Lao Government and NTEC since 1989 when the World Bank commissioned the Snowy Mountains Engineering Company (SMEC) to undertake a feasibility study of the proposed dam. Now, the Bank is preparing to appraise the project for a partial risk guarantee and an IDA credit for mitigation of social and environmental impacts.[World Bank Web site updated September 9, 1998] The World Bank has stated it will not make a decision to appraise the project until after a Power Purchase Agreement is negotiated with the Electricity Generating Authority of Thailand (EGAT).

The Bank has played a significant role in the preparation and promotion of Nam Theun 2. After international questions and criticism of the economic viability of the project and its environmental and social impacts, a team of Bank staff visited Laos in 1995 and concluded that the developers' assessment of the project was inadequate.

According to an aide memoir released soon after the visit ". . . Bank support for the proposed (NT2) project depends on its full compliance with the Bank's operational policies and guidelines. [The Nam Theun 2 Hydroelectric Project Technical Mission - Aided memoir, November, 1995]

To this end the Bank requested that five additional studies be conducted. These included:

- * Environmental Assessment and Management Plan (Seatec International)
- * Study of Alternatives (Lahmeyer International)
- * Economic Impact Study (Louis Berger International)
- * Environmental and Social Action Plan for the Watershed Area and Corridor Areas (World Conservation Union and World Conservation Society)
- * Resettlement Action Plan (NTEC)

Several of these studies are not yet complete, including the Environmental Assessment and Management Plan and the Environmental and Social Action Plan. Further, according to a World Bank official "many of the underlying assumptions for the [Economic Impact Study] analysis have been changing" and "once the PPA [Power Purchase Agreement] is renegotiated, the analysis for the project will need to be redone". [Email (dated 4 February 2000) from Mr. Raturi, World Bank official, to TERRA] Nonetheless the project developers are currently negotiating for a purchase agreement with EGAT, confident that the final study reports will downplay or dismiss the many important social environmental and economic impacts. refer TERRA briefings on Economics of Nam Theun 2 and Impact on Fisheries

The World Bank also requested that the government carry out a series of public consultations in Laos on the dam.

In addition to requesting additional studies and public consultations, the Bank established an "independent" group of experts, the International Advisory Group (IAG), funded by the Dutch Government, to review the project and advise the Bank whether it complies with the Bank's operational directives.

Then in late May, 1997 the World Bank paved the way for its support of Nam Theun 2 by approving a new financial guarantee mechanism to protect commercial lenders who make investments with Governments in some of the worlds poorest countries. Previously this mechanism had been restricted from use in countries classified as highly indebted poor nations (HIPC). refer TERRA briefing on Risk Guarantee Mechanism.

Electricity Purchases

The only potential purchaser of electricity from Nam Theun 2 is the Electricity Generating Authority of Thailand (EGAT). Achieving a Power Purchase Agreement (PPA) with EGAT has been a major difficulty facing the developers of the Nam Theun 2 project.

In February 1995, the Lao Government and the project's developers concluded a power purchase agreement (PPA) with EGAT at an average price of US 5.8 cents per kilowatt hour.

In October 1996, EGAT cancelled the PPA because construction of the dam could not be complete by the year 2000, as initially agreed by EGAT and NTEC.

In September 1999, a Memorandum of Understanding (MOU) was signed between NTEC, the Lao Government and EGAT to 'confirm' that EGAT will purchase 1883 megawatts (MW) of electricity at a firm price in 2006.

In October 1999, EGAT offered NTEC a price of 4.327 US cents per kilowatt hour, plus a further unit transmission cost of 0.756 cents (total cost to EGAT of 5.128 US cents per unit). This price is higher than other potential sources available within Thailand where the average Independent Power Producer (IPP) cost of electricity to EGAT is 4.994 US cents per unit, but is still far lower than both the price agreed in the previous PPA (5.8 US cents per unit) and the assumed price of 5.7 US cents per unit used in the Louis Berger Economic Impact analysis. refer TERRA briefing on Economics of the Nam Theun 2 Project

Financing

The total estimated project cost including construction costs, development expenditures and costs is approximately US \$1.1 billion. It is proposed that this will be financed 30 per cent through equity and 70 percent through debt. "The equity funding from the project would come from the sponsoring consortium (75 per cent of equity) and the Government (25 per cent of equity)." [World Bank Web site updated September 9, 1998]

Export credit agencies, Thai financial institutions, multilateral agencies (World Bank) and international commercial banks are all potential financiers for the project. The commercial banks that have been approached and are likely to support the project include the French bank, Societe Generale; British bank, Barclays and the ANZ Bank (Australia).

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Economics of the Nam Theun 2 Project

Economically, the massive Nam Theun 2 hydroelectricity project is on shifting sand. The Government of Lao PDR is positioned to receive the least economic return, yet face the most risks from the project. The parties to receive the most rewards are the private companies within the Nam Theun 2 Electricity Consortium (NTEC) who have secured for themselves lucrative construction project management contracts. Despite this unfair division of risks and benefits the project has been promoted by the World Bank and project developers as a means to remedy the economic problems of Lao PDR. According to the World Bank's web site (Aug 99) "the objectives of the Nam Theun 2 project are to: 1) generate long term net revenues and foreign exchange for the Government [of Lao PDR]." NTEC's July 1999 Project Update reports that "NT2 will contribute at least an additional cumulative 3.2% to the country's GDP for the whole life of the project."

These optimistic statements from the project's supporters obscure the history of difficulties experienced by Nam Theun 2's developers in their efforts to transform the project from a dam builders' dream to constructed reality.

Costs increasing and benefits shrinking

From US\$800 million in 1989, the estimated cost of the Nam Theun 2 project escalated to a high of US\$2 billion in September 1996. Then in response to the more stringent circumstances following the Asian economic crisis NTEC decreased its estimated cost to US\$1.1 billion in 1999.

While estimated project costs have fluctuated in response to opportunity and expediency the expected returns to the Government of Lao PDR (GoL) have steadily decreased. Whereas the first feasibility study of the dam in 1991 estimated that it would generate US\$176 million in annual revenue for Lao, the Louis Berger Economic Impact Study, completed in 1997 said it would generate only US\$33 million net per year.

The current outlook for economic returns to the GoL is far bleaker. Consultants Louis Berger assumed NTEC would achieve a price agreement of 5.7 US cents per unit [unit is a kilowatt hour]. Yet the highest price offered by Thailand in the current negotiations has been 4.372 US cents per unit, 23 per cent less than Berger's assumed price.

Further, according to Berger's report the Nam Theun 2 project would only be profitable at even the high assumed price if inflation remained low and the exchange rate was stable however, since 1997 inflation has soared and the kip and baht have plunged in value. Nam Theun 2 is a high risk project, warned Berger, and there was a good chance that the Government of Laos would earn little, or worse, that Nam Theun 2 returns on equity would be negative.

Despite that the Louis Berger report is now out of date and grossly overestimates Nam Theun 2 project benefits, there has been no further economic study undertaken to identify a purchase price of Nam Theun 2 electricity that would ensure that the project is economically viable. Yet NTEC, in its project summary and public statements, continues to use the figures based on the Louis Berger report.

No more electricity required in Thailand

When Nam Theun 2 is proposed to come on line in December 2006, the Electricity Generating Authority of Thailand (EGAT) will have an excess electricity capacity of 9211.6 megawatts (MW) equivalent to a massive 44.3 per cent of Thailand's total generating capacity (EGAT, Power Development Plan 99-01). This excess capacity is a cost that is born by Thai electricity consumers.

The most recent price offered for Nam Theun 2 electricity by EGAT of 4.372 US cents per unit, plus a further unit transmission cost of 0.756 cents (total cost to EGAT of 5.128 US cents per unit), is higher than other potential sources available within Thailand where the average Independent Power Producer (IPP) cost is 4.994 US cents per unit. It is extremely unlikely that EGAT would consider increasing its offer, despite that this price is not adequate to ensure the economic viability of Nam Theun 2.

Consultants, PriceWaterhouse Coopers (PWC) who were hired by the National Energy Policy Office, Thailand (NEPO) to conduct a Review of Electric Power Tariffs, recommended that "there is scope for further delaying planned investment and

perhaps for canceling some projects." According to PWC "power charges could be 7 per cent lower if consumers did not have to pay for unused generating capacity in the system." (Bangkok Post, 27.5.99)

Future risks from Thai electricity restructuring

A more competitive power purchase system is currently proposed for Thailand, called a 'Power Pool'. According to this system all electricity suppliers would sell their electricity into a 'pool' at a single market price, thereby eliminating preferential pricing for expensive projects like Nam Theun 2. The draft Memorandum of Understanding (MOU) agreement for Nam Theun 2 allows the agreed tariff to be renegotiated if a Power Pool is introduced, thereby reducing certainty and increasing the risk to project developers.

Construction benefits a boon to project developers

While the outlook for project revenues from electricity sales look bleak, private companies in the Nam Theun 2 Electricity Consortium (NTEC) have positioned themselves to make handsome profits from the project construction.

According to the recently concluded contract Electricite de France (EdF) and Transfield are to assume project management responsibility for construction. As 'project management' these two companies would take a project management fee of approximately 20 per cent of the total construction cost that is currently estimated at US \$740 million. At this cost, EdF and Transfield would receive the princely fee of approximately US\$148 million.

The final price for construction will be agreed between the project management (EdF and Transfield), and NTEC on the basis of 'guaranteed maximum cost'. This means that the project management will absorb any cost overruns. However, as EdF and Transfield are also members of NTEC, and will participate in negotiations to set the price, EdF and Transfield will attempt to negotiate a very high 'guaranteed maximum cost' to ensure that they will not face any real risk of cost overrun.

Meanwhile, Italian-Thai Development, Thailand's largest construction company, has secured the contract to build all the above-ground construction associated with the project, including the dam, downstream channels, roads, and buildings.

Private sector benefits - national losses

The Nam Theun 2 project has been promoted to the Government of Lao PDR as a remedy for the nation's economic problems and yet the only beneficiaries of the project will be private companies involved in project construction. Meanwhile, the Government of Lao PDR and the communities of the Xe BangFai and Theun Rivers will be left to bear the economic and environmental costs.

Towards Ecological Recovery and Regional Alliance (TERRA)

409 Soi Rohitsuk

Pracharajbampen Road

Huay Khwang

Bangkok 10320

Thailand

Tel. (66 2) 691-0718

fax: (66 2) 691-0714
e-mail: terraper@comnet.ksc.net.th