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## **China and Yunnan Economic Relations with Myanmar and the Kachin State: Powering the Peace Process**

Prepared for

Proximity Designs | Myanmar

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This research paper was written by David Dapice ([David\\_Dapice@harvard.edu](mailto:David_Dapice@harvard.edu)), of the Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government, Harvard University, following a trip to Myanmar from July 29-August 14, 2012. *The views expressed herein are the author's alone and do not necessarily reflect those of Proximity, the Government of the Union of Myanmar, or Harvard University.* The author wishes to extend his sincere thanks to people in the Myanmar government and in the Kachin Independence Organization who shared their thoughts. Funding for the study was provided by the Royal Norwegian Government. This study, along with other recent Ash-Proximity reports on Myanmar, is posted at <http://www.ash.harvard.edu/Home/Programs/Institute-for-Asia/Publications/Occasional-Papers>

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## About the author and the research partners

David Dapice is a professor at Tufts University and a leading expert on the economic development of Southeast Asia and has worked extensively in Indonesia, Thailand, Cambodia and Vietnam. He was principal advisor to the Indonesian Ministry of Finance when this country enjoyed its period of rapid growth. He has studied the Vietnamese economy since the late 1980s, with a particular emphasis on macroeconomic issues, public investment policy, and regional development. Professor Dapice is also the principal economist and researcher associated with the Ash Center's research paper series on Myanmar.



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The Ash Center at the Harvard Kennedy School is dedicated to studying development and democratic governance in very different situations, including “hard countries” such as Vietnam, Indonesia and Myanmar. The approach taken is to understand the political economy of reform, not just the technical economics, and to explore the connections between politics and institutional development to help address social and economic problems.

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Proximity Designs is a non-profit social enterprise operating in Myanmar designing, manufacturing, and marketing innovative products and services that improved the well-being of struggling rural families. Through its sales force in 9 states and divisions, across the Delta, Central Dry Zone, and Shan Hills, Proximity has excellent insight into local conditions, and experiments with participatory governance in the countryside. [www.proximitydesigns.org](http://www.proximitydesigns.org)

This combination of local knowledge at Proximity and on-the-ground economic and political analysis of the Ash Center has produced a series of studies that are deeper and more nuanced than many typically seen.

## Political Background

Myanmar, long isolated from western economies due to its government, has been one of the poorest and worst governed countries in the world.<sup>1</sup> Ruled for many years by a reclusive dictator, Senior General Than Shwe, Myanmar was dependent on China for diplomatic protection and arms. Trade and investment deals reflected its lack of alternatives. China's "One nation, two oceans" policy and Yunnan's "Bridgehead" strategy envisioned Myanmar providing access to the sea via gas and oil pipelines, deep sea ports, naval docking facilities and transport for Yunnan. Yunnan through its Southern Grid along with CPI (China Power International) saw Myanmar's Kachin state as providing ample hydroelectric supplies for the landlocked Chinese province. Deals were signed under General Than Shwe without popular review or consultation with the Kachin whose state had most of the hydroelectric sites.<sup>2</sup>

The Kachin have the best armed and organized army resisting the national army in a conflict dating back to the 1950's. When peaceful protests over poor social and economic conditions led by monks in central Myanmar were violently put down in 2007, there was massive revulsion in the country and even in the army. Than Shwe, aging and perhaps nervous about his vulnerability, imposed a constitution. (It was approved in a highly managed referendum in 2008.) It prolonged the army rule through appointing 25% of parliament from the military. In addition, parliamentary elections which were widely viewed as rigged resulted in a large majority of the elected seats for the government party. A later by-election in which Aung San Suu Kyi's National League for Democracy ran successfully was generally seen as honest.

General Thein Sein, a long time aide of Than Shwe, resigned from the military to become president. He signed a "comprehensive strategic cooperative partnership" treaty with China early in his term. At about the same time, the army restarted conflict (there had been a cease fire since 1994) in the Kachin state by sending in 130 battalions.<sup>3</sup> According to reliable local reports, over 60 villages were burned, hundreds of villages depopulated, and at least 70,000 internally displaced people (out of 1.5 million) created as corridors were cleared for hydroelectric sites, and gas and oil pipelines from the Myanmar coast to Yunnan and some

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<sup>1</sup> GDP per capita in PPP terms was \$1300 in 2011 (IMF), lower than Cambodia (\$2216) or Bangladesh (\$1613). Its governance score was 19 out of 600 according to the World Bank in 2010, about half of North Korea's. Poverty numbers have been purposely underestimated according to officials interviewed and are perhaps really 40%-50% rather than the official 26%.

<sup>2</sup> For a more detailed account, "China's Strategic Misjudgment on Myanmar" by Yun SUN In the Journal of Current Southeast Asian Affairs (1/2012, pp. 73-96) is a useful study.

<sup>3</sup> A Myanmar army battalion is supposed to have 700-800 men, but reports indicate that many have only 200 men or fewer. Military spending by some unofficial estimates is half of the national budget; officially it is about one-quarter.

border areas around the state. (The pipelines ran through northern Shan state close to Kachin state in areas controlled by the Kachin.) In interviews with Kachin Independence Organization (KIO) officials, they noted that the Kachin population was more radical than the Kachin army (KIA) and leadership<sup>4</sup>. This includes 8,000 regular Kachin soldiers and tens of thousands of armed local militia members. Unless the Myanmar army – which seems to be ignoring direct presidential orders to stop fighting – decides to negotiate, it is likely this long running conflict will continue. The conflict has caused China to stop dam construction, even where it is still allowed. Chinese workers will be targets of an angry populace so long as the policy of military occupation and violent repression continues.<sup>5</sup>

The President, seriously concerned with the environment, surprised many by suspending a large dam at the headwaters of the Irrawaddy River. This dam, Myitsone, was very unpopular throughout the country, not merely among a small urban segment or the Kachin. The dam was planned for a culturally and environmentally sensitive area also close to an earthquake zone. The terms of investment were poor as well, providing limited benefits to Myanmar or the Kachin. Myitsone is only one of seven dams planned in Kachin state and agreed to under the previous regime. Myanmar politicians interviewed said that it would be very dangerous for an elected politician to support ANY Chinese dams because they are widely viewed as exploitative. The use of crony Sino-Burmese investors to partner with CPI and the Southern Grid increases the unpopularity of the proposed dams. If the dams are to proceed, it would require a renegotiation of terms, agreement of the Kachin, and support from a broad coalition of parties including the NLD (National League for Democracy), the party of Aung San Suu Kyi.

This paper explores terms which might be acceptable to all sides. It reflects discussions with Myanmar government, environmental, opposition and Kachin leadership elements, as well as presentations and discussions with China Southern Grid officials in the Harvard Ash Center Asian Energy Leaders Program. No Myanmar or Kachin person has approved any of these hypothetical terms. However, we have been given verbal authorization to discuss these proposals from government and KIO representatives.

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<sup>4</sup> The Kachin were not allowed to form a political party to run in recent elections. The state government is installed rather than freely chosen and the state governor is a retired general appointed by the central government.

<sup>5</sup> In April 2010, multiple bomb blasts killed four Chinese workers and injured twelve, after which 300 Chinese workers were evacuated by China Power International. ([http://indigenouspeoplesissues.com/index.php?option=com\\_content&view=article&id=4842;bombblasts-at-irrawaddy-myitsone-dam.prc](http://indigenouspeoplesissues.com/index.php?option=com_content&view=article&id=4842;bombblasts-at-irrawaddy-myitsone-dam.prc))

## Electricity Background

Electricity is a fundamental input to every modern economy. Electricity consumption per capita in Myanmar is among the lowest in Asia and had been growing very slowly since the 1980's. Its connection rate – fewer than a quarter of the population – is also very low. Power use gently grew from 45 kWh per capita in 1987 to 99 kWh in 2008, a 3.8% annual growth rate.<sup>6</sup> However, since 2008, the production of electricity has jumped considerably. The Central Statistical Organization (CSO) has published the following data:

**Table 1: Myanmar Electricity Production 2008-2011 (Million kWh)**

	<u>2008/09</u>	<u>2009/10</u>	<u>2010/11</u>	<u>2011/12</u>	<u>Annual Growth</u>
Electricity Production	6,622	6,964	8,625	9,711	13.7%

Data are from Table 9, p. 27 of Selected Monthly Economic Indicators, 6/2012.

This 47% jump in three years is about 14% per year, far higher than in the past. The CSO does not report any increase in installed capacity since 2010, so the existing system is being worked much more intensively. This creates problems, such as the risk of sudden outages from failures in generators. Indeed, there has been an increase in blackouts in the Yangon and Mandalay areas in the last year in spite of higher output – and even during the wet season. (Most power is from hydroelectricity.) With increases in tourism, exports and overall economic activity, electricity demand will continue to soar. Even with 2011/12 output, estimated consumption in Myanmar is only about 150 kWh per capita, compared to 2009 consumption of over 250 kWh per capita in Bangladesh and nearly 600 in Indonesia. Vietnam had over 1000 kWh per capita in 2011. A recent presentation by the Ministry of Electric Power-2 stated that **supply was only about half of projected demand, even though less than a quarter of people had access to electricity in 2011. There are no plans to invest enough to alleviate the blackouts from current deficits and growth in demand.**

Specifically, the planned investments, mainly in hydroelectricity, over the next five years are only 617 MW (megawatts) of capacity, a growth rate of 4% a year on current capacity of 3413 MW. The demand growth – especially if people wanting and able to pay for connections are connected – is certainly triple this growth rate. The 12-15% annual demand growth based only on GDP growth ignores the blackouts of current users.

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<sup>6</sup> These data exclude power from diesel generators using both diesel fuel and gas from rice husks. The total amount of these sources is unlikely to be more than 10% of total reported power.

## Potential and Plans

There are two major plausible sources of new electricity supply: hydroelectric and gas. Gas is now mainly used for export to Thailand and, soon, China but additional supplies will become available later in this decade and could provide as much as 6000 billion kWh a year by 2017.<sup>7</sup> This is likely to provide for power in the southern part of the country since long distance transmission from northern hydroelectric sites is costly. If gas prices are \$10 per million BTU<sup>8</sup>, total costs of producing combined cycle gas power may be seven to eight cents per kWh. (Imported coal would cost about as much. There are limited supplies of thermal coal within Myanmar. A controversial project in southern Myanmar near Thailand has been approved but is now delayed.)

There are 40,000 MW of potential hydroelectric capacity in Myanmar and only 2560 MW have been developed. Since retail prices of electricity are only six cents per kWh, current plans are to rely almost exclusively on hydro for base load, even though during the dry season output of many dams is reduced considerably. This requires the use of expensive diesel backup for up to three months a year, raising the total cost of reliable power well above the cost of hydroelectricity alone. In Myanmar, diesel electricity costs about 30 cents per kWh. However, hydroelectricity is preferred because once built it is virtually free and does not bankrupt the electricity company. In short, the current power generation strategy does the following: 1) it locks in a single major source of power vulnerable to drought, 2) it charges less than the retail cost of reliable electricity – about ten cents per kWh – and, 3) it is totally inadequate to supply growing demand.

## Chinese Hydropower in Kachin State

The Myitsone and six other dams in Kachin state would have provided more than 10,000 MW of capacity. However, 90% of the power would have gone to China and profit taxes could easily be minimized through power sales at low prices to intermediary firms that would sell it at wholesale prices of about 7.5 cents or .49 yuan in Yunnan. Thus, the national “rent” for providing the sites would be little more than 10% of output. Displacement of people and downstream damage were considered, but not adequately in the view of many citizens of

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<sup>7</sup> [www.elevenmyanmar.com/national/479-gas-for-domestic-use-to-be-available-by-2016-2017](http://www.elevenmyanmar.com/national/479-gas-for-domestic-use-to-be-available-by-2016-2017)

<sup>8</sup> Current Asian gas prices for liquefied gas (LNG) are about \$15 per million BTU now, reflecting the Japanese shut down of most nuclear plants. However, prices of pipeline gas in Europe and the US are much lower and some US export facilities to take advantage of cheap US gas (now about \$3 per million BTU) are likely to come on-line and reduce Asian gas prices in the next several years. The \$10 figure is an estimate, surely enough to elicit offshore gas.

Myanmar and Kachin state. Again, since the agreements were negotiated in private within a very small group, there was no serious external review.<sup>9</sup>

It is likely that Myitsone will be cancelled since it is so sensitive and unpopular. The other dams are less sensitive but still unpopular. It makes sense for China to want to invest in Myanmar hydropower as it is a relatively cheap, green and accessible resource. However, there is intense resentment in Myanmar among citizens when “Myanmar power” is exported while blackouts are common and most villages cannot get connected to a central grid at all due to a shortage of power.

If China wishes to salvage its past investment in dams<sup>10</sup> and develop a mature and less extractive relationship with Myanmar, it will have to renegotiate the past contracts which were one-sided. The Kachin will have to be involved or else they will create instability. This means China has to play a constructive role in the Kachin peace process, which is now stuck. It could try to continue working only with the central Myanmar government and NLD<sup>11</sup> but this approach is likely to prove inadequate. Only if there is a real agreement with something for everyone (including Chinese investors) can the conditions for peaceful and shared hydroelectric investment take place.

The following proposal is an attempt to create conditions that would allow Myanmar politicians to support renewed investment; to get the Kachin to agree to some of the seven dams; and to provide the investing companies completed projects with a high rate of return.

### **Draft Outline of Possible New Contract**

The new contract would propose the formation of a new company called the Sino-Kachin Hydropower Company. This company could invest and manage several hydropower dams in Kachin state as a Build-Operate Transfer for twenty-five years of operation. Equity would be 30% of total costs and it would accept a small fraction of equity investment from the Kachin state or electric company and the Myanmar electric company<sup>12</sup>. Both groups would be represented on the board of directors. Major investment and majority control would rest with

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<sup>9</sup> There is a concept called “odious debt” in which debt is repudiated if it was contracted by a highly corrupt government that essentially privatized a government loan. A similar concept may be one of “odious contracts” in which very unequal giveaways of resources are made by incompetent and unrepresentative regimes.

<sup>10</sup> People in Myanmar, when wondering if renegotiation would be possible, asked “Who would repay the bribes?” It is understood that under the military junta, any resource investment required substantial payments.

<sup>11</sup> A large interest free loan was said to have been made to Myanmar as part of a widespread campaign to contact diverse groups in and out of the country (though not the Kachin) in attempt to salvage the old economic order.

<sup>12</sup> Funding for any Myanmar or Kachin equity stake would have to come from a loan, probably from an ODA or private source.



CPI (China Power Investment and its subsidiary, China Power International) and other Asian investors<sup>13</sup>. It is possible that one more minor equity investor would be a multinational organization, such as a multilateral or bilateral aid or investment agency.

The company would sell all of its output at a price slightly below that of the wholesale price of electric power in Yunnan province, currently about 7.5 cents per kWh. *It would not provide free electricity at all.* It would also be exempt from profit taxes for 15 years. However, it would pay a minimum of 1.5 cents per kWh or 25% of sales, whichever is more, to the Myanmar government. The Myanmar government would share the sales tax according to the following formula: one-third to the state in which the hydroelectric facility is located; one-third to an infrastructure fund for investment in other states of Myanmar; and one-third to the national government. States would be allowed to receive and spend these funds at a local level based on their own priorities for development purposes. This would require a greater degree of self-government in the states than is now presently allowed.

Furthermore, the Myanmar electric company would have the right but not the obligation to buy at Yunnan wholesale prices up to 30% of power generated over the year and up to 50% of power generated during the dry season of December 1<sup>st</sup> through April 30<sup>th</sup>. (The dry season purchases would count towards the overall limit.) *It would have to raise its average electricity price in order to benefit from such purchases*, although subsidies to very small users would be possible. Current urban commercial electricity rates are already in the 8-12 cent per kWh range. If rates averaged about ten cents per kWh, it would be profitable and possible to develop gas-fired electricity supplies.

Part of the new contract would be to allow a serious and independent review of environmental and social impacts of the dams. It is possible that some sites, in addition to Myitsone, would not be developed if it were determined that these social and environmental costs were too high. The experience of Nam Theun 2 dam in Laos is a possible template for involving local groups in these decisions, and technical advice from the World Bank and/or ADB would be useful in this respect. However, even with some environmental costs, it may be determined that the benefits outweigh the costs. *An elected (non-appointed) Kachin state government would have to license any dam, along with the central government.*

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<sup>13</sup> Other investors could include others from China, such as the Southern Grid, or from Japan or Singapore. Both China and Myanmar might prefer that ownership include more than one foreign country.

## Pro Forma Illustrative Data

Build-Operate-Transfer Project with an operating life of 25 years

Majority Partners:	China Power International and other Asian investors
Minority Partners:	Myanmar electric company and Kachin state or electric company
Financing for 6000 MW:	\$6 billion in debt at 6% (China corporate bond rate – all Chinese debt) \$2.3 billion in equity (exempt from profits tax for fifteen years)
Output once completed:	25 billion kWh a year
Price per kWh:	7 cents (less than current wholesale Yunnan price)
Revenue:	\$1.75 billion a year
Sales tax @ 25%:	\$438 million (\$146 million each to Kachin, other states and central gov't.)
Net Company Revenues:	\$1312 million (\$800 million to retire debt; \$512 million remainder is profit <sup>14</sup> )
Contractual sales:	Myanmar electric company allowed but not required to buy (at 7 cents/kWh) Up to 30% of annual output and up to 50% during December through April. Dry season purchases count towards the annual limit of 30%.

Note: These are illustrative data, not required or promised numbers. If actual output or wholesale prices differ, the actual revenue, taxes and profits would be different as well. However, they are plausible numbers given current conditions.

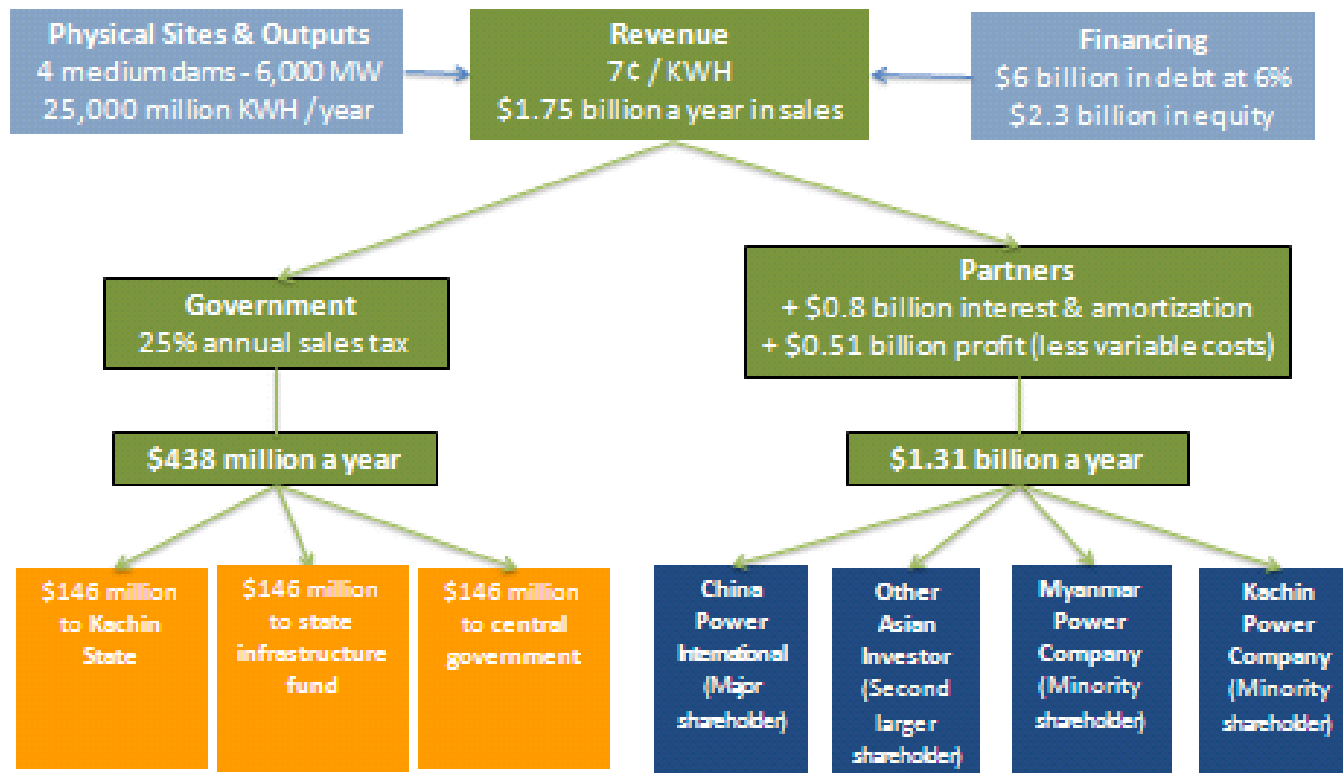
### Comments:

1. Licensing for hydroelectric sites required at both state and central levels<sup>15</sup>
2. Reform of state-central relations needed for fiscal flows to work as specified
3. Directly elected state governments with fiscal autonomy are needed
4. Need for Myanmar electric company to raise average electricity prices to actual costs
5. Considerable additional investment in transmission and distribution will be required
6. Additional power supplies from gas and Myanmar-owned hydroelectricity will be needed
7. Running and management of dams ( e.g., water releases)will require oversight

<sup>14</sup> There is a small variable cost of producing hydroelectricity, perhaps \$50 million a year for 6000 MW. This would have to be deducted from profits. Even then, the profit rate for the first fifteen years would be about 20%. The debt should be retired in 12-15 years. After that, the \$1312 million (less variable costs) would pay a 25% profits tax but still net nearly \$1 billion a year for the next fifteen years, a 40% after-tax annual return on equity.

<sup>15</sup> The current state government has an appointed (ex-military) governor and an elected group that did not have to run against a Kachin political party, which was not allowed. It is assumed that a more competitive election would allow the selection of a state government that was aligned more closely with the interests of the population. This point is crucial not only for dam licenses but also for the fiscal transfers to the state government are to have meaning.

**Appendix One: Proposed Sino-Kachin Hydro Power Company – Pro-forma Example<sup>1</sup>**



<sup>1</sup>Sells power at 7¢/KW (no free power); negotiates amount and seasonality of power bought by Myanmar; World Bank and ADB supply environment and governance help

## Appendix Two: Benefits of Proposed Sino-Kachin Hydro Power Company

### To Kachin:

- “Seat at the table” in discussing sites, size and management of hydro sites
- Substantial revenues to finance displaced people, infrastructure, other services
- Development of new relationship and peace with central government
- Possible ownership share in equity of proposed sites (would require loan)

### To China:

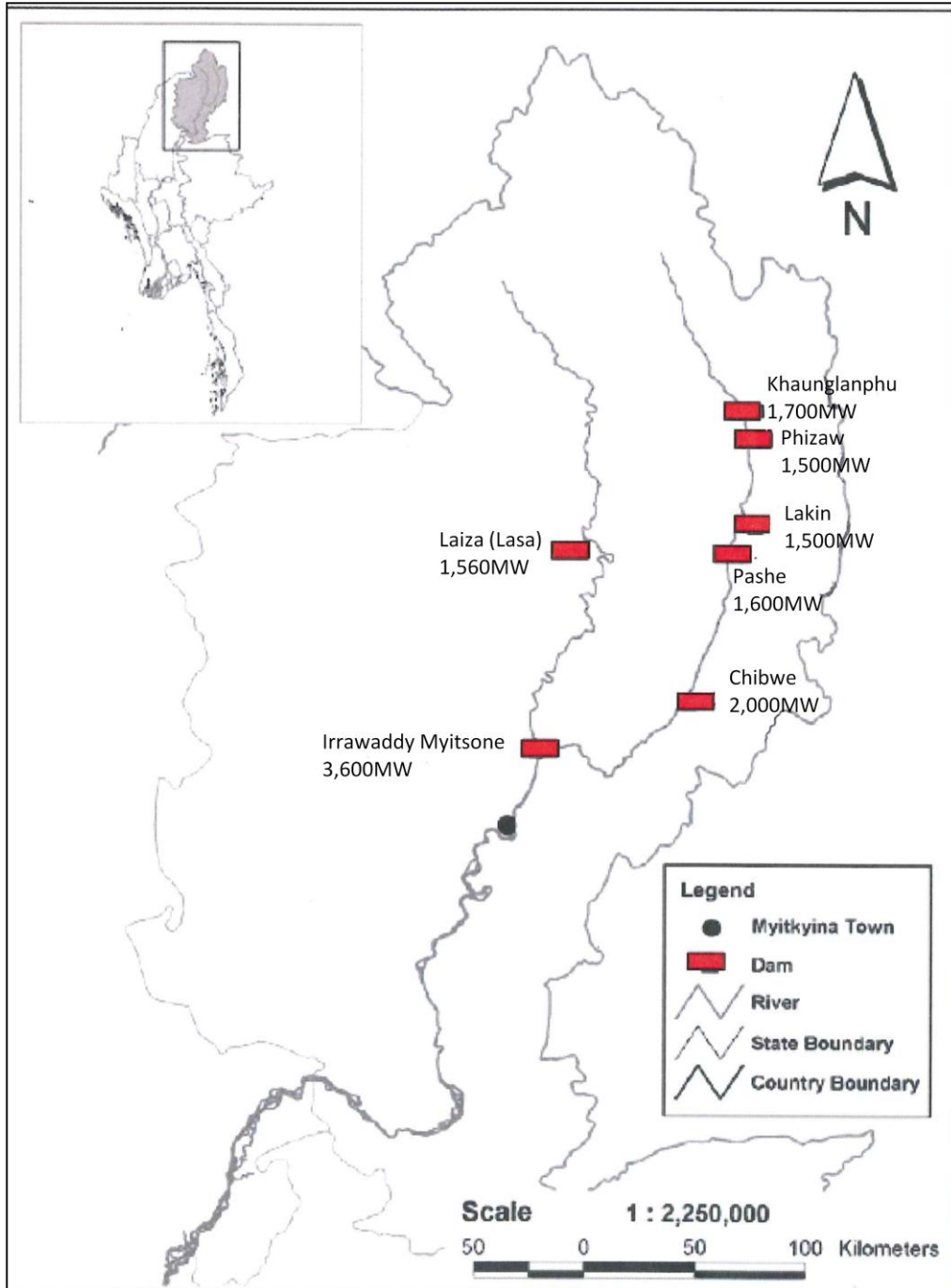
- Peaceful development of Kachin hydropower and enhanced pipeline safety
- Profitable investment for Chinese capital
- Substantial additional power for Yunnan below wholesale prices
- Possible template for further hydroelectric investment in Myanmar
- Likely reduction in hostility of Myanmar population as they benefit from revenues, power.
- Opportunity to learn how to invest sustainably abroad, creating competitive advantage over other utilities seeking to do so.

### To Myanmar:

- Ability to augment electricity supplies at a fair price
- Substantial revenues to finance grid and other infrastructure
- Method to hasten real peace in Kachin and possibly other states
- Incentive to raise electricity price to commercial levels and develop gas-fired power
- Develop a more equal and mutually beneficial relationship with China

By allowing renegotiation, China recognizes political changes and creates a broader and more stable relationship with Myanmar. It helps to create a more unified and peaceful union which would be a better environment in which to invest and for trade. This would provide more stability on its southern border and reduce the flow of drugs and refugees.

### Appendix Three: Map of Planned Irrawaddy/N'Mai/Mali Dams



## Appendix Four: Nam Theun 2 as a Model

Nam Theun 2 is a dam in Laos of about 1000 MW financed through a consortium of commercial and aid agencies providing power primarily for Thailand's utility, EGAT<sup>16</sup>. Public documents suggest that the project will generate nearly 6000 megawatt-hours a year and provide the Laotian government an average of \$80 million a year over the 25 year operating life of the BOOT project. (Build-Own-Operate-Transfer) This works out to 1.33 cents per kWh in benefits, close to the minimum 1.5 cents projected in the Kachin dams. However, the time distribution of benefits is not specified nor is the cost per kWh. Ownership is split with 40% held by Électricité de France; 35% by Lao Holdings State Enterprise; and 25% by EGCO, a Thai company set up to privatize generation holdings of EGAT, the Thai utility.

The Nam Theun 2 company has a website at: <http://www.namtheun2.com/>. That site provides a wealth of information and documents of the Power Purchase Agreement: <http://www.namtheun2.com/images/stories/PPA&CA/041006%20-%20EGAT%20PPA%20%20Summary%20for%20Public%20Disclosure.pdf> and the Concession Agreement: <http://www.namtheun2.com/images/stories/PPA&CA/SummaryofCA,%20for%20public%20disclosure.pdf>. However, the published information does not make available the price at which power is sold.

The project is of interest because an unusually high level of environmental and community review was involved, with some calling it "state of the art" in terms of environmental review and the provision of offsets for those affected by the dam. Some groups such as the International Rivers (an NGO) have protested that these safeguards and procedures are inadequate. Its website information is at: <http://www.internationalrivers.org/campaigns/namtheun-2-dam>.

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<sup>16</sup> A small amount (75 MW) of generating capacity is provided for Laotian power supply in addition to the 1000 MW providing exports to Thailand.