

Existing and Planned Lao Hydropower Projects – September 2010

The table below lists existing and planned large (greater than 10 MW) hydropower projects in Laos. The table is based on the Lao Government Department of Energy Promotion and Development's "Electric Power Plants in Laos" as of September 2010, available at: http://www.poweringprogress.org/index.php?option=com_jotloader&cid=10&Itemid=91.

The table is updated regularly by International Rivers with new information from news reports, official project documents and other sources. Please send comments, questions or corrections to berklee@internationalrivers.org.

SUMMARY/Color Key:

- Projects in operation: 10
- Projects *officially* under construction: 4
- Projects at planning stage: 23
- Projects at feasibility stage: 42

• **Projects proposed for Mekong mainstream in Laos/Lao-Thai border: 9**

PPA = Power Purchase Agreement	COD = Commercial Operations Date	NPA = National Protected Area		
PDA = Project Development Agreement	IOD = Thai Institute of Directors			
Project (province)	Installed Capacity (MW)	Project Sponsors (Country)	Purpose	Remarks (status, cost, actors, impacts, etc.)
Existing Dams				
Houay Ho (Champasak & Attapeu)	150	Suez Energy (Belgium) 60%; Electricité du Lao (EdL) (Laos) 20%; HHTC (Thailand) 20%	Export to Thailand	<ul style="list-style-type: none"> – Began operation in 1999. – Built by Daewoo (Korea) & Loxely (Thailand); was sold to Tractebel in 2002. In September 2008, Thailand's GLOW Energy, a unit of Suez, bought a 67.25% stake in the project from Suez-Tractebel for US\$45 million (Reuters 9/15/08). – Resettled about 2,500 mainly ethnic minority Nya Heun to area with insufficient agricultural land and affected others downstream; adequate compensation still not provided. Many affected people have moved back to their former homelands. – More information: http://www.internationalrivers.org/en/node/3343 http://www.internationalrivers.org/en/node/1794
Nam Leuk (Vientiane)	60	EdL (Laos)	Domestic/Export to Thailand	<ul style="list-style-type: none"> – Began operation in 2000. – US\$130 million project was financed by ADB and Japanese government. – More than 9,500 people downstream affected by fisheries losses and clean water shortages; adequate compensation still not provided. – Built in Phou Khao Khouay NPA. – More information: http://www.internationalrivers.org/en/node/877 http://www.internationalrivers.org/en/node/3343
Nam Lik 1-2 (Vientiane)	100	China International Water and Electric Corporation (China) 90%; EdL 10%	Domestic	<ul style="list-style-type: none"> – Concession Agreement signed October 2006. – Construction started December 2007 and completed in August 2010 – Cost US\$150 million (Vte Times 31/08/10). – BOT arrangement for 25 years (Vte Times 31/08/10). – CWE is subsidised by China Three Gorges Corporation (Vte Times 31/08/10) – Dam will be 103 meters high; resettlement required only for construction of access road (Vte Times 12/18/07).
Nam Mang 3 (Vientiane)	40	EdL (Laos)	Domestic/Export to Thailand	<ul style="list-style-type: none"> – Began operation in 2004. – CWE secured finance from China EXIM to build the project and hand it over to EdL. The project started in 2002 at the cost of more than 537 billion kip (US\$63 million) (article 15/09/09). – More information: http://www.internationalrivers.org/en/node/1794

Nam Mong (Luang Prabang)	70	Japanese funding; EdL (Laos)	Domestic	<ul style="list-style-type: none"> – Supplies electricity to six villages (ISRIA 04/07/09). – EdL compensated Mr. Syvone, a Phonekeo villager, the sum of 4.4 million kip, because part of his land was taken up by the project (ISRIA 04/07/09).
Nam Ngum 1 (Vientiane)	155	EdL (Laos)	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – Laos' first large hydropower project, began operation in 1971. – According to one estimate (Thayer Scudder), approx. 3,500 people were displaced, although exact numbers unknown. – Project's underperformance led the ADB to finance Nam Song diversion dam to increase Nam Ngum's power output. – Closure of dam gates to fill the Nam Ngum 2 reservoir stopped water flow into the Nam Ngum 1 Dam, stopping generation of electricity needed by the capital city. Vientiane has to import electricity from Thailand; Laos will start repaying the debt in 2011, once construction of the Nam Lik 1, Nam Lik 2 and Nam Ngum 5 hydropower plants are completed and operational (Vte Times 01/07/10). – Project resumed full operations in October 2010. (Vte Times 10/09/10).
Nam Theun 2 (Khammouane & Bolikhamsay)	1070	Nam Theun 2 Power Company (NTPC), comprising: Electricite Du France - EDF (France) 40%; Electricity Generating Company - EGCO (Thailand) 35%; Lao Holding State Enterprise - LHSE (Laos) 25%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – Construction began 2004; reservoir filling began in April 2008; commercial operation began March 2010. – Estimated cost US\$1.45 billion, financed by World Bank, ADB, EIB, NIB, a number of export credit agencies and commercial banks. 95% of power sold to Thailand. – Project owners handed over the first US\$600,000 in revenues to the Lao government in June, 2010, two months after the commencement of commercial operations (Vte Times 20/07/10). – Approximately 6,200 indigenous people living on the Nakai Plateau have been resettled to make way for the reservoir and still have no source of sustainable livelihood, threatening their food security. More than 110,000 people downstream who depend on the Xe Bang Fai and Nam Theun rivers for their livelihoods have been directly affected by the project, due to destruction of fisheries, flooding of riverbank gardens and water quality problems (see map). World Bank and Asian Development Bank resettlement policies have been violated, along with provisions of the Concession Agreement. A key selling point of the project was the funds it would provide for protection of the globally significant Nakai-Nam Theun National Protected Area, yet the reservoir has opened up a access to the area, exacerbating logging and poaching and threatening its ecological integrity. – During the 25-year concession, NT2 PC will pay US\$2 billion in royalties, dividends and taxes to the GoL. After that, the dam is to be fully owned by the GoL (AP 16/03/10). – More information: http://www.internationalrivers.org/en/node/1847 http://www.internationalrivers.org/en/node/3343
Theun-Hinboun (Bolikhamsay)	210	Theun-Hinboun Power Company (THPC), comprising: EdL (Laos) 60%; Nordic Group [owned by Statkraft] (Norway) 20%; & MDX [GMS Power] (Thailand) 20%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – Began operation in 1998. – Funded by the ADB, Norwegian aid agency, Norad, and other funders. – Despite originally claiming that the project had minimal impacts, THPC and the ADB now admit that more than 29,000 people in 71 villages have lost fisheries, rice fields, vegetables gardens and fresh drinking water supplies as a result of the dam. The project diverts water from the Theun River to the Hai and Hinboun Rivers. Many villagers living along the Hai and Hinboun Rivers have abandoned wet-season rice fields because project-induced floods have made rice cultivation unviable. The flooding has also caused water contamination, livestock deaths and other hardships for villagers living downstream. The Company is now building an additional dam upstream (see Theun-Hinboun Expansion Project) that will double releases into the Hai and Hinboun Rivers, causing more flooding, erosion, and displacement of villagers. – More information: http://www.fivas.org http://www.internationalrivers.org/en/node/964 http://www.internationalrivers.org/en/node/3343

Xeset 1 (Salavanh)	45	EdL (Laos)	Domestic/ Export to Thailand	– Began operation in 1990.
Xeset 2 (Salavanh)	76	EdL (Laos)	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – Began operation in September 2009 (Vte Times 10/9/09). – Estimated cost US\$135 million, largely financed by China EXIM. – In 2006, Norconsult awarded contract for advisory services and construction supervision; main construction contractor is Norinco of China. – The project has serious impacts, especially on the Xeset River, which will be dewatered for a long stretch, and two other rivers that will be essentially dewatered in order to divert water for the project. All three rivers are crucial for the health and livelihoods of around 18,000 people who live adjacent and near the streams. EdL has a poor track record of compensating for project-induced impacts. – In the process of registering for the UN Clean Development Mechanism (Vte Times 02/09). – More information: http://www.terraper.org/pic_water/Watershed%2011(1).pdf http://www.internationalrivers.org/en/node/4554
Projects Under Construction				
Nam Ngum 2 (Vientiane)	615	CH. Karnchang (Thai) 28.5%; EdL (Laos) 25%; Ratchaburi Generating Co. (Thai) 25%; Bangkok Expressway PCL (Thai) 12.5%; Shlapak Group (USA) 4%; PT Construction & Irrigation Co., (Laos) 4%; TEAM Consulting Engineering (Thai) 1%	Export to Thailand	<ul style="list-style-type: none"> – Construction complete and impoundment occurred in 2010. While reservoir was filling, water levels in downstream Nam Ngum 1 project were so low that Laos was forced to import power from Thailand to make up for the shortfall. Official operations probably commenced in December 2010. (Vte Times 06/08/10) – EIA finalised but not publicly disclosed (in violation of National Hydropower Policy). – Ratch-Lao won a 27 year contract to manage operation and maintenance; expects to earn about 31.8 billion kip annually for management services. (Vte Times 17/09/10) – Estimated cost US\$832 million (or US\$790 million, VT Times 22/03/10), largely financed by Thai commercial banks; EdL's equity share in project was provided by Thai EXIM. Reports that costs have increased by 30% (Bangkok Post 10/7/08). – Mitsui and Toshiba (Japan) awarded contracts worth approx US\$100 million to supply turbines and generators (JCN Newswire 8/23/06). – In May 2006, Jikko Poyry (Finland) announced it had been awarded an engineering contract worth €8.9 million. – Displace approx. 6,100 mainly ethnic minorities from 17 villages; questionable land availability and livelihood proposals; apparent lack of RAP. Will impact fishery of Nam Ngum 1 reservoir, a source of food and income for more than 9,000 people. Transmission line constructed through Phou Khao Khouay NPA. – Nam Ngum basin is a high-security area, with reports of major mining and logging interests controlled by the military. – More information: http://www.internationalrivers.org/en/node/3343
Nam Ngum 5 (Luang Prabang & Xiengkhuang)	120	Sinohydro (China) 85%; EdL 15%	Domestic	<ul style="list-style-type: none"> – 50% complete; COD expected 2011, Lao gov't report Sept 2010. – Sinohydro announced it had signed a Concession Agreement and PPA for the project in April 2007. – Construction reportedly began in April 2008 (Vte Times 4/30/08) before EIA was approved by the Water Resource and Environmental Administration (WREA) June 23, 2008. Approval of Social and Environmental Obligations, as listed in the concession agreement, was granted by WREA on July 20, 2009. (Vte Times 21/12/09) – Estimated cost US\$200 million, will be covered by a loan from national Bank of China (US\$140m); Sinohydro (US\$54m) and EdL (US\$6m) (VOA 4/03/07). – Affect paddy land of 49 households in Chim village, Phoukhoun district, totalling about 50ha ((Vte Times 07/11/09); questionable livelihood proposals. Lack of baseline data or assessments of downstream impacts. – Over 1.7 billion kip (over US\$198,000) for compensation and more than 11.9 billion kip (over US\$1.4 million) for the environmental management plan have been allocated. (Vte Times 07/11/09) – Nam Ngum basin a high-security area, and reports of major mining and logging interests controlled by the military in the basin. – Sinohydro has approached World Bank's MIGA for a guarantee, although construction is proceeding before MIGA's Board has approved its involvement; EIA posted on MIGA's site: http://www.miga.org/news/index_sv.cfm?aid=1640 – More information: http://www.internationalrivers.org/en/node/3343

Theun-Hinboun Expansion (Bolikhamsay)	280	Theun-Hinboun Power Company, comprised of: EdL (Laos) 60%; Nordic Group [owned by Statkraft] (Norway) 20%, & MDX (Thai) 20%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – 58% complete; COD expected late 2012 (GoL report 09/10). – 440MW will be sold to Thailand with the remaining 60MW sold to EdL for local supply (Vte Times 08/12/09). – THXP involves a 70m high upstream dam and reservoir on the Nam Gnouang River and a new 60MW power station at the Nam Gnouang Dam. The project will also involve a 230MW expansion of the existing THPC capacity, doubling releases into the Nam Hai and Nam Hinboun Rivers. – The project is displacing 4,186 indigenous people from the reservoir area and will affect another 51,441 people living downstream, on project construction lands, and in host villages. Already water levels along the Hai and Hinboun Rivers have dramatically changed as a result of the existing dam, which has caused erosion and flooding along the rivers leading to the loss of fertile agricultural land, fruit trees, riverbank gardens, livestock and boats in more than 55 villages. The new project will result in additional flooding and displacement, making life unbearable for many people. The project is in violation of the Equator Principles and Lao law. – UXO clearance reportedly not being completed by accredited company but instead by Lao army. – Estimated cost US\$720 million (Vte Times 11/08/10). Loans secured from Thai EXIM, ANZ, KBC Bank, BNP Paribas and Thai banks. Three European Development Finance Institutions DEG (Germany), FMO (Netherlands) and Proparco (France) provided US\$112.5m of debt in US dollars to replace some Thai Baht debt in late 2009. – More information: http://www.fivas.org/ http://www.internationalrivers.org/en/node/964 http://www.internationalrivers.org/en/node/3343
Xekaman 3 (Sekong)	250	Vietnam-Lao Power Joint Stock Co. - VLP (Vietnam) 85%; EdL (Laos) 15%	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – Under construction since April 2006; only 72.06% complete, yet expected COD still 2010, Lao govt report Sept 2010. – EIA finalised and but not publicly disclosed (in violation of National Hydropower Policy). – Estimated cost increased to US\$311.7 (VNA 10/05/08); power purchase price expected to be increased once project is complete (Vte Times 8/14/08). – 85% of electricity will be sold to Vietnam, the rest is domestic consumption KPL 05/07/09). – Song Da of Vietnam is constructing dam. – VLPC shareholders include: Song Da Corporation (49%), PetroVietnam, Bank for Investment and Development of Vietnam (BIDV), PetroVietnam Finance Company (PVFC), and BIDV Securities Company (Xinhua 12/10/07). – Austrian company Andritz VA Tech Hydro unit has been awarded a €42 million contract to supply electro-mechanical equipment to Xekaman 3 (Thomson Financial 6/3/08). – At least 7 ethnic minority villages downstream and 40 villages upstream may be affected. Will inundate one village. Will impact Dong Amphan NPA. – More information: http://www.internationalrivers.org/en/node/3343 http://www.terraper.org/pic_water/Watershed%2012(1).pdf
Projects at Planning Stage				
Don Sahong (Champasak)	360	Mega First Corporation Berhad - MFCB (Malaysia) 80%; EdL 20%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – PDA signed February 2010. Second draft of EIA has reportedly been submitted to Lao government and approved, but has yet to be publicly released. Project could be presented to Mekong River Commission for consultation and approval in 2011. Expected COD 2015 (GoL) or 2016 (kpl.net 06/10). – Estimated cost US\$600 million (kpl.net 06/10). Located in the Siphandone (Khone Falls) area of southern Laos, less than two kilometers upstream of the Laos-Cambodia border, the dam would block the main channel passable year-round by fish migrating between Cambodia, Laos and Thailand, threatening vital subsistence and commercial fisheries in the Lower Mekong Basin. Through blocking these migratins, the project could threaten the food security of millions of people in Laos, Cambodia and Thailand who depend on fish for protein and income. The project would also threaten the last Irawaddy dolphin population in Laos and jeopardize tourism value of Khone Falls area and potential RAMSAR status. – More information: http://www.internationalrivers.org/en/node/3343 http://www.internationalrivers.org/en/node/2257 http://www.mrcmekong.org/ish/sea.htm

Nam Beng (Oudomxay)	50	China National Electrical Equipment Corp. (China)	Domestic	<ul style="list-style-type: none"> – MoU signed Aug 2006; expired September 2008. – PDA signed March 2010, no estimated COD (Sept 2010).
Nam Kong 1 (Attapeu)	75	Region Oil (Russia) 80%; Lao Holding State Enterprise - LHSE (Laos) 20%	Domestic or Export to Thailand / Vietnam	<ul style="list-style-type: none"> – Still listed as in "Planning Stage" by GoL, but construction started April 2010; COD expected 2012 by Lao government, 2014 by Vientiane times (23/10/09). – Estimated cost US\$186 million (Vte Times 6/25/08). – Villagers already displaced from project area. Impact about 1,612 ethnic minorities downstream; no compensation proposed. – More information: http://www.terraper.org/pic_water/Watershed%2012(1).pdf http://www.internationalrivers.org/en/node/3343
Nam Lik 1 (Vientiane)	60	Hydro Engineering Co. (Thai) 80%; GoL (20%)	Domestic	<ul style="list-style-type: none"> – PDA signed April 2008; expected COD 2013. – Estimated cost US\$109 million (KPL 4/09/08). According to Lao government, at least 1399 people would be affected by the project (www.poweringprogress.org)
Nam Mang 1 (Bolikhamsay)	60	Saytha Construction Company of Sichuan, Dongfang Electric Corporation and Far East Industrial Ltd	Domestic	<ul style="list-style-type: none"> – MoU signed in February 2007; expired April 2009. – Feasibility study submitted in Sept 2009. (Vte Times 30/10/09) – PDA signed May 2010 by Saytha Construction Company of Sichuan, China-based Dongfang Electric Corporation and Hong Kong-based C (Far East) Industrial Ltd (VT Times 24/05/10). – Expect to sign PPA and CA in 2011 and begin project construction at the end of 2011. Construction expected to take two and a half years (Vte Times 08/09/10). – The developers completed environmental and social impact assessments for the project and held meetings with villages affected by the project. Study found the project will not have any large scale environmental or social impacts. No villagers will need to be relocated. No mention of possible downstream impacts of project. (Vte Times 08/09/10)
Nam Mo (Xiengkhouang)	105	Viet-Lao Economical Cooperative General Company (Vietnam) 85%; GoL 15%	Export to Vietnam	<ul style="list-style-type: none"> – Expected COD 2014. – PDA signed March 2008. – Potential resettlement of people from Ban Maung Ngat 1 (a)
Nam Ngiep 1 (Bolikhamsay)	278	Kansai Electric & Nippon Keoi (Japan) 50%; EGAT (Thailand) 20%; Lao Holding State Enterprise - LHSE (Laos) 30%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – PPA/PDA signed April 2006; expired February 2009. – Estimated cost US\$477 million (Vte Times 3/03/08), but increasing costs of approx. 30% led developers to call for re-negotiation of purchase price with EGAT in July 2008 (Vte Times 7/30/08). – Developers suspended investment in December 2008, citing rising construction costs, credit crunch and uncertain Thai electricity demand (Vte Times 12/17/08). – According to feasibility study conducted by Nippon Koei in 2002, project would affect approx. 13,000 people, displacing 1,600 people; will have serious downstream impacts on aquatic life and fisheries.
Nam Ngiep 2 (Xiengkhouang)	155	China International Water and Electric Corporation CWE (China)		<ul style="list-style-type: none"> – MoU signed Dec 2008, expired June 2010. – PDA signed Aug 2010 for 18 months. – Expected to be operational by 2015 with a capacity of 180 MW; electricity will be supplied to the national power grid. (Vte Times 27/08/10) – Located 30 km from Xieng Khuang provincial capital (Vte Times 27/08/10). – Feasibility study and project report complete and submitted to GoL. Environmental and social evaluation approved at village, district and provincial level. (Vte Times 27/08/10) – Expect to sign CA in October 2010, and to build the road to the project at the end of 2010 (Vte Times 27/08/10).

Nam Ngum 3 (Vientiane & Xieng Khouang)	440	GMS Power (Thai) 27%; Marubeni Corp. (Japan) 25%; Ratchaburi Electricity Generating Holding Plc (Thai) 25%; Lao Holding State Enterprise - LHSE (Laos) 23%	Export to Thailand	<ul style="list-style-type: none"> – Excavations for powerhouse, road construction and upgrading currently underway before ADB project approval (VT Times 02/04/10). – Tariff MoU signed with EGAT December 2006, but increasing costs of approx. 30% led developers to call for re-negotiation of purchase price with EGAT in July 2008 (Vte Times 30/07/08). – Developers suspended investment in December 2008, citing rising construction costs, credit crunch and uncertain Thai electricity demand (Vte Times 17/12/08). – New MoU signed 11/03/10. New expected cost US\$1 billion. (Bangkok Post 12/03/10) – Funding likely from ADB: in pipeline for 2011. ADB financed a cumulative impact assessment of the project. – Resettle 523 people within their village territory. Affect at least 2,455 people downstream and unknown numbers upstream. – More information: http://www.internationalrivers.org/en/node/1794 http://www.internationalrivers.org/node/3343
Nam Ou 1-7 (Phongsaly & Luang Prabang)	1,100	Sinohydro (China) 75%-90%; GoL 10-25%	Domestic/ Export to Thailand or China	<ul style="list-style-type: none"> – PDA signed October 2007. COD 2013-2016, Lao gov't Sept 2010. – Sinohydro claims the Nam Ou cascade involves 6-7 projects. – The American company Pacific Resources conducted geological surveys on the Nam Ou in the late 1990s and reportedly determined that many locations were risky due to seismic faults. – Will affect approximately 50,000 people, displacing some 7,000; 300 sq km reservoir would inundate part of Phou Dendin NBCA; "fish life and habitats badly impacted." (b) – Estimated cost for cascade is US\$2 billion. – On 27 Nov. 2007, Sinohydro announced it had signed an agreement to sell 90% of electricity from Nam Ou dams to Thailand, noting it was more profitable than selling to China; and Nam Ou was included in Thailand's 2008 PDP.
Nam Phak (Champasak)	75	Kobe Green Power Co. Ltd (Japan) 80%; EdL 20%	Domestic/ Export	<ul style="list-style-type: none"> – MoU May 2007; expired May 2009; PDA signed November 2009. – Originally studied at 45 MW, but now may be up to 100MW, if expansion is possible. This would require an investment of US\$180 million to US\$200 million (Vte Times 09/11/09). – A detailed feasibility study is ongoing, and expected to be finished and submitted to the GoL by May 2011. (Vte Times 28/09/10). – Construction could start in November 2011 and will take 3 to 4 years to complete (Vte Times 28/09/10). – The proposed reservoir of 4 to 5 sq km, situated about 700 metres above the powerhouse. The powerhouse will be located in Pathoumphon district, and the reservoir will be in Pakxong district (Vte Times 28/09/10).
Nam Pha (Luangnamtha & Bokeo)	130	Asia Pacific Business Lin Snd Bhd Co Ltd [AP Bizlink Group] (Malaysia)	Domestic	<ul style="list-style-type: none"> – PDA signed Aug 2010 for 18 months. – A 145m high dam will be constructed on the Nam Pha about 3 km upstream of its confluence with the Mekong, just below its confluence with Nam Ka, to form a reservoir with a surface area of 71 sq km (Vte Times 23/08/10).
Nam Sane 3 (Xiengkhuang)	60	Rohas Euco Industries Berhad (Malaysia) 75%; GoL 25%	Domestic	<ul style="list-style-type: none"> – Expected COD 2013. – PDA signed June 2008.
Nam Seuang 1 (Luang Prabang)	56	Bru Thai International Co. Ltd (Thailand)	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – 8-month PDA signed Aug 2010, COD TBD (Sept 2010).
Nam Seuang 2 (Luang Prabang)	220	Bru Thai International Co. Ltd (Thailand)	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – 8-month PDA signed Aug 2010, COD TBD (Sept 2010).

Nam Theun 1 (Bolikhamsay)	523	Lao Holding State Enterprise – Gamuda (Malaysia) 40%; EGCO (Thailand) 40%; LHSE (Laos) 20%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – Pre-construction began without final design or EIA approval; expected COD 2016 (Lao government report Sept 2010). – Estimated cost US\$759.68 million (Vte Times 3/03/08), but increasing costs of approx. 30% led developers to call for re-negotiation of purchase price with EGAT in July 2008 (Vte Times 7/30/08). – Serious questions over economic viability – was screened out of Lahmeyer/Manusell 2004 Power Sector Development Plan. – Located in Nam Kading Protected Area, site of Wildlife Conservation Society and GEF project – major biodiversity impacts. – Adversely affect more than 30,000 people, mainly upstream and downstream of reservoir (blocked fish migrations, water quality problems, etc.), displace approx 3,500 people from reservoir area. – Developers suspended investment in December 2008, citing rising construction costs, credit crunch and uncertain Thai electricity demand (Vte Times 12/17/08). – Egco plans to resume development and renegotiate the original contract (Bangkok Post 04/24/09). – More information: http://www.internationalrivers.org/en/node/1794 http://www.internationalrivers.org/en/node/3343
Xekong 4 (Sekong)	300	Region Oil (Russia) 80%, LHSE (Laos) 20%	Domestic/ Export to Thailand or Vietnam	<ul style="list-style-type: none"> – MoU for feasibility study signed 2006 and EIA workshop held in Vientiane November 2007; PDA signed June 2008; expected COD 2013 according to GOL website. – Region Oil has obtained a complete set of environmental compliance certificates approving the environmental management and social protection plans from the Lao Water Resources and Environment Agency. (Vte Times 23/10/09) – Estimated cost US\$600 million. – 147 sq km will be flooded (Vte Times 05/15/09). – Resettle more than 5,000 mainly ethnic minorities; questionable livelihood proposals; many villagers moved out of reservoir area. – Almost 1,500 people from 15 villages in 2 provinces will be resettled in the 2010-2011 dry season. Local media reports confirmed that more than 1,000 people in 13 villages in Kaleum district and more than 400 people in two villages in Lamam district will move to the newly built Vak village. (Vte Times 06/07/10) – Estimated US\$6.25 million in fisheries losses annually in Lao part of basin, potentially affecting more than 190,000 people in Laos and unknown numbers in Cambodia; no compensation proposed. No assessment of impacts in Cambodia. – More information: http://www.terraper.org/pic_water/Watershed%2012(1).pdf http://www.internationalrivers.org/en/node/3343
Xekong 5 (Sekong)	400	Region Oil (Russia); Lao government; others to be invited	Domestic/ Export to Thailand or Vietnam	<ul style="list-style-type: none"> – MoU signed in 2005; expired April 2009; PDA signed May 2009. – Feasibility study submitted early June 2009, ESIA reportedly in process (Vte Times 06/25/09). – According to Region Oil representative, 32 sq km will be inundated and 735 people from eight villages, from both the flooded area and the construction site, will need to be resettled (Vte Times 05/15/09). – Norconsult AS (Norway) and National Consulting Company (Laos) contracted to conduct environmental and social impact assessments (Vte Times 05/15/09). – Resettle mainly ethnic minorities; many already displaced from reservoir area. Exacerbate fisheries losses and water quality problems caused by Sekong 4. Bisect Xesap NPA. – More information: http://www.terraper.org/pic_water/Watershed%2012(1).pdf http://www.internationalrivers.org/en/node/3343

Xayaburi (Xayaburi & Luang Prabang)	1260	Ch. Karnchang (Thailand); others TBD	Domestic/ Export to Thailand	<p>– PDA signed Nov 2008; Project entered Mekong River Commission's Procedures for Notification, Prior Consultation and Approval process in September 2010, need to get approval from all four MRC governments before construction can begin. MRC says process expected to take six months.</p> <p>– Estimated cost US\$3 billion.</p> <p>– Ch Karnchang signed MoU with EGAT for the sale of an average 1,220 MW of electricity from its Xayaburi power plant at the levelised tariff of Bt2.159/kWh (The Nation 06/07/10). 60 MW will be distributed locally (Vte Times 07/07/10).</p> <p>– Would be the first dam on lower Mekong mainstream. The dam would damage the river's aquatic resources and fisheries both locally and basinwide. Around 2,100 people would be resettled, and more than 202,000 people living near the dam would suffer impacts to their livelihoods, income and food security. The impacts would be felt throughout the river basin, affecting millions of people. At least 41 fish species are at risk of extinction due to a severe change in their habitat. The Xayaburi Dam would also block a vital fish migration route that allows at least 23 migratory fish species to travel to the upper reaches of the Mekong to Luang Prabang in Lao, and Chiang Khong and Chiang Saen in Thailand. One such migratory species that could be driven to extinction is the critically endangered and iconic Mekong Giant Catfish.</p> <p>– More information: http://www.internationalrivers.org/en/node/5655 http://www.mrcmekong.org/fish/sea.htm http://www.internationalrivers.org/en/node/2257</p>
Xepian-Xenamnoi (Attapeu & Champasak)	390	SK Engineering & Construction - SKEC (Korea) 26%; KOWEPO (Korea) 25%; Ratchaburi (Thailand) 25%; & LHSE 24%	Export to Thailand	<p>– PDA signed Nov 2008.</p> <p>– EGAT signed an MoU on 16 August, 2010 (MCOT Online 16/08/10).</p> <p>– Estimated cost US\$877 million (MCOT Online 16/08/10).</p> <p>– Feasibility study and environmental impact assessment have been done. Financial details yet to be decided. PPA with Egat expected to be finalized in 2011, with construction expected to take five to six years. (The Nation 17/08/10)</p> <p>– Would be built in the area where people resettled from Houay Ho Dam currently reside, possibly in conjunction with large bauxite mining project.</p> <p>– Resettle at least 4 villages and affect at least another 8 villages. Impact Xepian River downstream.</p>
Xe Katam (Champasak)	61	Kansai (Japan) 55%; Thai investor 20%; GoL 25%	Domestic	<p>– PDA signed December 2007.</p> <p>– EIA completed but not disclosed (in violation of National Hydropower Policy).</p> <p>– According to 2006 feasibility study, project will cost an estimated US\$120 million.</p> <p>– Kansai expects support from JBIC and Nippon Export and Investment Insurance (NEXI).</p> <p>– Resettle 235 mainly ethnic minorities; questionable land availability and livelihood proposals. Affect unknown numbers downstream; no compensation proposed.</p> <p>– More information: http://www.internationalrivers.org/node/3343</p>
Xekaman 1 (Attapeu)	322	Vietnam-Lao Power Joint Stock Co. - VLPC (Vietnam) 70-85%; GoL 15-30% = Xekaman 1 Electricity Co. Ltd.	Domestic/ Export to Vietnam	<p>– PDA signed Mar 2008, agreement with EdL for purchase of 20% of power was signed Nov 2010, construction expected to start soon (VT Times Nov 1, 2010)</p> <p>– Estimated cost US\$441 million (VT Times 24/05/10) with 322 MW installed capacity.</p> <p>– Would consist of two levels; the upper being the Xekaman 1 hydropower plant and the lower the Xekaman Sanxay hydropower plant (VT Times 24/05/10).</p> <p>– Resettle about 800 ethnic minorities; many others already displaced from reservoir area. Affect up to 10,000 people through water quality changes, fisheries losses and erosion. Impact Dong Amphan NPA.</p> <p>– More information: http://www.terraper.org/pic_water/Watershed%2012(1).pdf http://www.internationalrivers.org/en/node/3343</p>
Xelanong 2 (Salavanh)	60	JRC Service Co. Ltd (Japan) 75%; GoL 25%	Domestic	<p>– COD TBD.</p> <p>– PDA signed Sep 2007.</p>
Projects at Feasibility Stage				
Ban Koum (Champasak)	2,330	Ital Thai Development Co. (Thailand) and Asia Corp Holdings Limited	Domestic/ Export to Thailand	<p>– MoU signed March 2008; expires Sep 2010. Mekong Mainstream Dam Mekong Mainstream Dam - would have serious impacts on fisheries and ecology of Mekong River Basin, affecting millions of people</p> <p>According to Strategic Environmental Assessment would displace 935 people.</p> <p>– More information: http://www.internationalrivers.org/en/node/2257 http://www.mrcmekong.org/ish/sea.htm</p>
Dak Emeule (Sekong)	130	Vietnam-Lao Power Joint Stock Co. - VLPC (Vietnam) 75%; GoL 25%	Domestic/ Export to Vietnam	<p>– MoU signed January 2008, expired July 2009.</p> <p>– Estimated cost over US\$155 million (Vte Times 1/10/08).</p>

Houay Lamphan Nhai (Sekong)	86.7	EdL	Domestic	<ul style="list-style-type: none"> – New Jec Inc. (Japan) commissioned to undertake feasibility study in May 2008 (Vte Times 5/12/08). – World Bank provided funds (approx. \$1 million) for study as part of GMS Power Trade (Laos) Project, approved in 2007. – Australian company GHD conducting feasibility study.
Lat Sua (Champasak)	800	Charoen Energy and Water Asia Co. (Thailand)	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – MoU signed April 2008, expires Oct 2010. Mekong Mainstream Dam - would have serious impacts on fisheries and ecology of Mekong River Basin, affecting millions of people.
Lower Xekong (Attapeu)	80	V&H Corporation (Vietnam) = comprised of Hoang Anh Gia Lai Group and a Lao businessman		<ul style="list-style-type: none"> – V&H is completing exploration and survey activities to report to the Lao Government and implement the project (VietnamNet Bridge 29/08/10).
Luang Prabang (Luang Prabang)	1,410	PetroVietnam Power Corporation (PVPower), subsidiary of PetroVietnam (Vietnam)	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed October 2007, expired April 2010. – Estimated cost US\$2 billion. – Mekong Mainstream Dam - would have serious impacts on fisheries and ecology of Mekong River Basin, affecting millions of people. – PVPower Engineering Consulting Joint Stock Company signed the internal corporation agreement with the Moscow Irrigation and Construction Design Institute. Along with the joint stock company, the other four companies to have recently joined PVPower include the Machinery and Spare Parts Company, the Viet Nam Technology Service Petrol Power Company, the Viet Nam Real Estate Petrol Power Company and a consulting business (VNA 12/21/07). According to Strategic Environmental Assessment would displace 12,966 people. – More information: http://www.internationalrivers.org/en/node/2257 http://www.mrcmekong.org/ish/sea.htm
Nam Bak 1 (Vientiane)	132	Nam Ngum 2 Power Company Ltd., comprised of: Ch. Karnchang (Thai) 28.5%; EdL (Laos) 25%; Ratchaburi Generating Co. (Thai) 25%; Bangkok Expressway PCL (Thai) 12.5%; PT Construction & Irrigation Co., (Laos) 4%; Shlapak Group (USA) 4%; TEAM Consulting Engineering & Mgmt Co. (Thai) 1%	Export to Thailand	<ul style="list-style-type: none"> – MoU signed April 2007; renewed October 2008, expired May 2009; feasibility study ongoing. – Expected cost US\$410 million (Bangkok Post 04/29/09).
Nam Bak 2 (Vientiane)	27	Nam Ngum 2 Power Company Ltd., comprised of: Shlapak Group (USA) 4%; EdL (Laos) 25%; Ch. Karnchang (Thai) 28.5%; PT Construction & Irrigation Co. (Laos) 4%; Ratchaburi Generating Co. (Thai) 25%; Bangkok Expressway PCL (Thai) 12.5%; & TEAM Consulting Engineering and Management Co. (Thai) 1%	Domestic/ Export to Thailand	<ul style="list-style-type: none"> – MoU signed April 2007; renewed October 2008, expired May 2009; feasibility study ongoing.
Nam Et 1, 2, 3 (Houaphanh)	140+170+110 (420)	EVN International Joint Stock Company & BacHaInvestment joint stock Co.	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed December 2008, expired June 2010.
Nam Feuang (Vientiane)	28	Yunan Provincial Power Investment (China)	Domestic	<ul style="list-style-type: none"> – MoU signed April 2007; renewed October 2008; expired June 2009.

Nam Khan 2 & 3 (Luang Prabang)	130+95 (225)	Sinohydro (China)	Domestic	<ul style="list-style-type: none"> – MoU signed October 2006; expired April 2008. – Sinohydro and EdL signed a contract in August 2009 to build two hydropower stations and a power transmission line in a deal that is cumulatively worth around \$559 million (People's Daily 14/8/09). – \$430 million investment for two dams. (People's Daily 14/8/09)
Nam Kong 2 & 3 (Attapeu)	70 + 35	Hong Anh Gai Lai Mineral Joint Stock Company	Domestic	<ul style="list-style-type: none"> – Nam Kong 2 MoU signed Jan 2010, expires July 2011 – Nam Kong 3 MoU signed December 2005; expired September 2008. MoU renewed August 2009, expires February 2011. – Displace roughly 1,550 people from three villages; inundate approximately 23 sq km of forested lands. (a) – More information: http://www.terraper.org/pic_water/Watershed%2012(1).pdf
Nam Ma 1, 2, 3 (Houaphanh)	175	Linh Linh JFC Electrical Construction Investment Joint Stock Company (Vietnam)	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed December 2008, expired June 2010.
Nam Mo 1 (Xiengkhouang)	62	EVN International Joint Stock Company (Vietnam)	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed March 2010, expired Sep 2011. – 30 year concession if project is approved (Vte Times 05/03/10). – Expected cost US\$100 million (Vte Times 05/03/10)
Nam Mouan (Khammouan)	137	Chubu Electric Power (Japan)		<ul style="list-style-type: none"> – MoU signed Feb 2010, expires Aug 2011.
Nam Neun (Houaphan)	65	Indochina Consulting Co, Ltd. (Korea)	Domestic/ Export	<ul style="list-style-type: none"> – MoU signed Oct 2009, expires April 2011. – Expected cost of about US\$400 million. Construction will take about four years. Energy will be distributed locally and exported to neighbouring countries if there is excess supply. (Vte Times 12/10/09)
Nam Nga (Luang Prabang & Oudomxay)	80	Norpower Co. Ltd (Norway)	Domestic	<ul style="list-style-type: none"> – MoU signed November 2007, expired November 2009.
Nam Ngiep (Bolikhamsay)	40	Phongzubthavy Bridge Road Construction		<ul style="list-style-type: none"> – MoU signed Feb 2010, expires Aug 2011.
Nam Ngum Downstream (Vientiane)	70	China National Electronics Import and Export Corp. - CEIEC (China)	Domestic	<ul style="list-style-type: none"> – Construction to start in 2010 and finish in 2014 (KPL 02/23/09). – MoU signed Jan 2008, expired July 2009. – Expected cost US\$4,800 million. Having trouble getting financing due to financial crisis (KPL 02/23/09).
Nam Ngum 4 (Vientiane & Xiengkhaung)	220	Saigon Investment Group (Vietnam)	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed March 2008, expired Sep 2009.
Nam Phai (Vientiane)	60	Norinco International Cooperation (China)	Domestic	<ul style="list-style-type: none"> – MoU signed Nov 2008, expired May 2009. Renewal MoU signed July 2009. – According to representative of Norinco, power supply will be for local households and industries (Vte Times 27/7/09).
Nam Phoun (Xayabouri)	60	SOK Corporation Ltd.	Domestic	<ul style="list-style-type: none"> – MoU signed Dec 2008, expired June 2010.
Nam Phouan (Vientiane)		Velcan Energy (France), Electrical Construction and Installation State Enterprise (Laos)		<ul style="list-style-type: none"> – Velcan Energy, an independent French power producer and Electrical Construction and Installation State Enterprise (Laos) signed an MOU on 24 September, 2010 with the GoL, which paves the way for the two companies to conduct primary studies. Will also need to sign a PDA and CA before any construction can begin. (Vte Times 27/09/10)
Nam Pod (Houaphan)	25-30	ACE Consultant (Laos)		<ul style="list-style-type: none"> – MoU signed Nov 2009, expires May 2011.

Nam Sana (Vientiane)	15	Krung Thai Bank Public Company	Domestic	<ul style="list-style-type: none"> – MoU signed with Nawarat Patanakarn Public Company July 23, 2009 for feasibility study. – If it goes ahead, the project would be constructed by Nawarat company and, once complete, operated by EDL. – All information is from an article in Vte Times 24/7/09.
Nam Tha 1 (Oudomxay)	168	China Southern Power Grid Co. (China) 75%; EdL 25%	Domestic	<ul style="list-style-type: none"> – MoU signed Aug 2006, expired May 2009. Study submitted Sept 2007. New MoU signed June 15, 2010 for 18 months. – Concession Agreement under negotiation. – CSPG will invest \$2 billion yuan in Nam Tha 1 (HydroWorld, 24/06/10). – Construction of access road and transmission line before EIA approval. – Resettle 8,000 mainly ethnic minorities; questionable land availability and livelihood proposals. Affect more than 4,600 downstream and unknown numbers upstream. Impact Bokeo Reserve and Nam Ha NPA. – More information: http://www.internationalrivers.org/en/node/3343 http://www.internationalrivers.org/en/node/1794
Nam Theun 4 (Bolikhamsay)	110	REE Power Plant Inc. (Vietnam)		– MoU signed Sep 2008, expired March 2010.
Nam Sum 1 & 3 (Houaphan & Luang Prabang)	228	Saigon Investment Group (Vietnam)	Domestic/Export to Vietnam	– MoU signed March 2008, expired Sep 2009.
Nam Xam (Houaphan & Luang Prabang)	750	Saigon Investment Group (Vietnam)	Domestic/Export to Vietnam	– MoU signed March 2008, expired Sep 2009.
Pak Beng (Oudomxay & Xayabouri)	1,300	Datang International Power Generating Co. (China)	Domestic/Export to Thailand & China	<ul style="list-style-type: none"> – MoU signed Aug 2007, expired Feb 2010. Mekong Mainstream Dam - would have serious impacts on fisheries and livelihoods of millions. According to Strategic Environmental Assessment would displace 6,700 people. – More information: http://www.internationalrivers.org/en/node/2257 http://www.mrcmekong.org/ish/sea.htm
Pak Lay (Xayabouri & Vientiane)	1,320	China National Electronics Import and Export Corporation [CEIEC] and Sinohydro (China)	Domestic/Export to Thailand	<ul style="list-style-type: none"> – MoU signed June 2007, expired July 2010. Mekong Mainstream Dam - would have serious impacts on fisheries and livelihoods of millions. – Estimated cost US\$1.7 billion (Vte Times 6/13/07). According to Strategic Environmental Assessment would displace 6129 people. – More information: http://www.internationalrivers.org/en/node/2257 http://www.mrcmekong.org/ish/sea.htm
Thakho (Champasak)	30 (or 52, 86, or 172)	Companie Nationale du Rhone [CNR] (France) & EdL	Domestic	<ul style="list-style-type: none"> – MoU signed March 2009, expires Sep 2010. – GoL will hold a share of about 25%. (Vte Times 03/08/10) – Near Khone Phapheng waterfall, one of the largest waterfalls in Asia and a top tourist draw in Laos for domestic and foreign tourists. – The project is a low head run-of-river hydropower project without any dam and associated reservoir. Consists of diverting water from the left bank of the Khone Phapheng waterfalls branch of the Mekong River, about 300 metres upstream from Phapheng falls, drawing into an intake structure and a diversion canal, and conveying it to a power plant located about 500m downstream from the waterfall. (Vte Times 03/08/10) – The cost of the project will be dependent on the government's selection of one of the options of either 52 MW (936 billion kip or US\$114 million), 86 MW (1.2 trillion kip or US\$153 million), or 172 MW (2.1 trillion kip or US\$258 million). (Vte Times 03/08/10) – Will take three and a half years to complete the plant after getting a concession agreement. (Vte Times 03/08/10)

Xanakham (Xayabouri & Vientiane)	500	Datang International Power Generating Co. (China)	Domestic/ Export to Thailand & China	<ul style="list-style-type: none"> – MoU signed Dec 2007, expired June 2010. – According to Strategic Environmental Assessment would displace 4,000 people. – More information http://www.mrcmekong.org/ish/sea.htm
Xekong 3 (Sekong)	150	Song Da Corporation (Vietnam)	Domestic/ Export to Vietnam	<ul style="list-style-type: none"> – MoU signed Jan 2008, expired July 2009. – Cost approx. US\$280 million (Vte Times 1/30/08). – Song Da Corporation has begun feasibility study (KPL 04/08/09). – According to the original design, the project would inundate the provincial capital of Sekong Province.
Xebanghieng 1 (Savannakhet)	65	Song Da Corporation (Vietnam)		– MoU signed Nov 2008, expired July 2010.
Xebanghieng 2 (Savannakhet)	250	Song Da Corporation (Vietnam)		– MoU signed Nov 2008, expired July 2010.
Xebungnuan (Salavane)	80	Sitath Road-Bridge construction Co., Ltd		– MoU signed Aug. 2005, expired March 2008.
Xekanman 4 (Sekong)	66+96 (160)	Vietnam-Lao Power Joint Stock Co. - VLPC (Vietnam)	Export to Vietnam	– MoU signed Nov 2006; expired Feb 2009.
Xelanong 1 (Savannakhet)	60-80	Norpower Co. Ltd (Norway)	Domestic	– MoU signed Nov 2007, expired Nov 2009.
Xe Neua (Khammouane)	40	Phonesack B.& Road Construction Co.	Domestic	– MoU signed in May 2006; expired Nov 2007.
Xepone 3 (Savannakhet)	70-100	China National Machinery & Equipment Import & Export Corporation (CMEC) (China)	Domestic	– MoU signed April 2008, expired Oct 2009.
Xepian-Houaysoy (Attapeu) or Houay Ho Expansion	120	Houay Ho Power Co. Ltd., comprised of Glow Energy (67.25%), Hemaraj Land & Development (12.75%), EdL (20%)	Domestic, Export to Thailand	<ul style="list-style-type: none"> – MoU signed June 2010, expires Dec 2011. – Would almost double the installed capacity of HHPC and its export of electricity to Thailand (The Nation 27/03/10). – Will cost US\$200 million (VT Times 29/03/10).

^a Norplan. 2004. *Lao PDR – Strategic Impact Assessment*. Annex 1: Project Descriptions

^b Lahmeyer and Worlev. 1998. *Nam Theun 2 – Study of Alternatives*

For more information on hydropower development in Laos, see:

<http://www.internationalrivers.org>

<http://www.terraper.org>

<http://www.probeinternational.org/catalog/Mekong.php>

<http://www.poweringprogress.org>