Department of Energy Policy and Planning Ministry of Energy and Mines Lao People's Democratic Republic

Project for the Improvement of the Governance Mechanism for Sustainable Power Development Planning

Final Report Appendix

June 2013

Japan International Cooperation Agency

Chubu Electric Power Co., Inc. Electric Power Development Co., Ltd.

LA
JR
13-006

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Appendix I



Lao People's Democratic Republic Peace, Independence, Democratic Unity and Prosperity

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Ministry of Energy and Mines

Ref. No.: 0542/EM Vientiane Capital City, date: 10/05/2012

Administration Decision

Minister of Energy and Mines on the Establishment and Activities of the Department of Energy Policy and Planning

- Referring to the Prime Minister Decree No. : 372/PM, dated: 21/10/2011 concerning establishment and activities of Ministry of Energy & Mines.
- Referring to the Personnel Department Application No.: 259/EM.PD, dated 08/05/2012.

Minister of Energy and Mines has issued the Administrative Decision:

Part I Location and Roles

Article 01: Location and Roles

Department of Energy Policy and Planning (DEPP) is one of the technical departments under the organization system of the Ministry of Energy and Mines, has the role to assist the Minister of Energy and Mines in the field of policy and planning nation-wide.

Part II

Duties and Rights

Article 02: Duties

- 2.1 Study, research and draft policy and energy development plan or amend the policy and the existing energy development plan such as: the policy and the total energy plan, which consists of the electricity energy, gasoline energy (oil, coal, gas), the renewable energy and others for middle and long term period in order to propose to the Government for consideration.
- 2.2 Disseminate policy and energy plan and environmental engineering task.
- 2.3 Study, research and draft policy concerning sustainable development of the environmental engineering for energy projects.
- 2.4 Collect, consolidate, analyze and draft statistics reports, usage, export and import of each type of energy to or from Lao PDR regularly by classification of source of production, countries that export or import, and energy volume for each usage and in each sector such as: industry, communication, agriculture, accommodation and others up to the present and in the future.
- 2.5 Study, research and propose the structure and unit price of the energy.
- 2.6 Monitor and make reports to the high level regularly and closely pay attention to supply situation where world oil price varies, especially in the Lao PDR market that is closely related to trade and in import of oil.
- 2.7 Analyze the trend and forecast oil and gas consumption demand each year.
- 2.8 Draft policy related to national oil reserve.
- 2.9 Study price structure, set oil and gas price policy that is suitable to economic conditions in each period for the country and corporate with the concerned parties of the Ministry of Industry and Trade.
- 2.10 Contact, cooperate with various organizations both domestic and international concerning oil and gas.
- 2.11 Study master plan and set feasible policy to develop nuclear energy in the future for Lao PDR. Follow-up, analyze and make a report of nuclear energy development situation in areas and regions to the high level regularly and clearly. As its duties make or become the coordination point with international organizations such as ASEAN concerning nuclear energy task.
- 2.12 Study and forecast energy demand outlook for each economic sectors of the country with being classified by periods for the future in order to make annual reports. In addition, disseminate the said forecast energy demand to various parties.
- 2.13 Set up energy balance table between supply and usage of each type of energy in each sector of the economy.

- 2.14 Coordinate all parties who have investment intension, survey and develop energy resources including transmission line and power stations for serving domestic demand and for connecting with neighboring countries.
- 2.15 Play the role of coordination point for cooperation with international energy organizations such as GMS, ASEAN, the Economic Cooperation Organization of Eravady River, the Chao Paya River and Mekong and other parties concerning the policy, strategy and the energy development plan.
- 2.16 Consolidate, report and draw-up work plans for the department for each period.
- 2.17 Forecast the future energy demand of the country.
- 2.18 Collect, consolidate and make the production statistic report on usage, export and import of each type of coal by calorific value nation-wide regularly.
- 2.19 Draft policy and mechanism to promote hydropower.
- 2.20 Draft master plan and conduct study on the feasibility of hydropower project, coal-fired power project and power projects by other sources.
- 2.21 Inspect and accept the economic and technical aspects of hydropower feasibility study report.
- 2.22 Research, give technical comments on application for, and the extension of, MOU.
- 2.23 Research, give technical comments on application for, and the extension of PDA.
- 2.24 Coordinate with the Lao National Mekong River Secretariat and the International MRC for implementing notice procedures for, and advance consultation of various agreements, especially the NPPCA in accordance with MRC Agreement in 1995.
- 2.25 Coordinate usage of water source of various rivers in Lao PDR with various parties that are involved with using the water sources.
- 2.26 Cooperate with Chinese Drawing Design Institute to set up the experiment laboratory, to make small duplicate model before actual construction of dam to supply data for construction of each dam as reference.
- 2.27 Study and draft master plan for transmission line and power station.
- 2.28 Draft and disseminate the sustainable hydropower development policy.
- 2.29 Study and find solution concerning change of water flow course, resettle fish to minimize the impact on environment and society as much as possible.
- 2.30 Study climate changes that may have impact on construction of hydropower dams.
- 2.31 Support, promote and supervise and inspect the environmental engineering of energy enterprise operators.
- 2.32 Research and give technical comments on the environmental impact assessment, the initial Environmental assessment of energy source development and the high voltage of transmission line.
- 2.33 Research structure and electricity unit price for electricity for each type of consumers.

Article 03: Rights.

- 3.1 Set duties of each task, rights and detailed responsibility for each division of the department.
- 3.2 Propose to improve regarding the personnel structure. Propose the appointment of the head and deputy head of the division, appointment and reshuffle of duties of working units within the department.

- 3.3 Study, train, strengthen, supervise, follow-up, and inspect staff within the department. Make proposal to give praise to outstanding staff that had outperformed others and put on measure to those who violate the regulations.
- 3.4 Sign invitations that call internal meetings regarding policy and energy plans. Sign all corresponding letters directly with developers, investors and various consultants related to policy task and energy plan. Besides, has further right to sign other documents in accordance with the regulation or as assigned by the Minister of Energy and Mines
- 3.5 Call, invite and arrange meetings for consultation and solving problems regarding education tasks, survey for source, plan and energy policy with various parties both domestic and overseas.
- 3.6 Monitor and make reports to the high level regularly and closely on supply situation and change of world oil price, especially the trade market that Lao PDR has imported the oil from.
- 3.7 Analyze trend and estimate the usage of oil and gas demand each year.
- 3.8 Draft policy concerning the national oil reservation.
- 3.9 Disseminate, give advice on various policies that are involved in the energy section, the strategic energy development plan, the energy development for each period, including the national development of transmission line, the transmission line connection with domestic system and the friendly countries and others in various forms in accordance with the regulation.
- 3.10 Provide outsiders with energy data source and take charge to propose the exclusive right for projects to develop energy source.
- 3.11 Propose to improve polices that are related to energy sector, the strategy energy development plan of the sector, the energy development source for each period, master plan of energy development sources in accordance with the regulation.
- 3.12 Contact, cooperate with both internal and international organizations concerning oil and gas.
- 3.13 Study master plan and set feasible policy to develop nuclear energy in the future for Lao PDR. Follow-up, analyze and report nuclear energy development situation of areas and regions to the higher level regularly and clearly. As the duty become the coordination center point in contacting international organizations such as ASEAN concerning nuclear task.
- 3.14 Study and disseminate to project the energy demand outlook of each economic sector of the country at each period for the future as a report each year.
- 3.15 Disseminate and provide the energy balance table between the energy supply and consumption of each type in each sector of the national economic sector.
- 3.16 Draft policy and responsibility on environmental engineering and sustainable development of energy sector in coordination with various parties both domestic and overseas.

- 3.17 Collect, consolidate, supply and report production statistics, usage, export and import of coal for each type including the calorific value within the nation regularly.
- 3.18 Propose to give support to energy development source in consistency with coordination with usages of energy sources to yield the highest benefits and minimize the impact on the environment and society.
- 3.19 Proposed to the Energy and Mines Committee to consider various measures, to those companies that carry out study, survey and collection of data of energy sources as well as to those who violated the law, the articles and the regulations of energy sector.
- 3.20 Contact and coordinate with internal and international organizations concerning policy tasks and energy plans at the department level in accordance with the regulation or as assigned by the Minister of Energy and Mines.
- 3.21 Play the role of coordination center place of energy sector with international organizations such as: GMS, ASEAN, ADB, WB, JICA, IEA and others concerning drafting strategy plan, policy and energy development plan.
- 3.22 Do coordination between various users of various rivers in Lao PDR with other parties that are involved with using water sources.
- 3.23 Issue certificates of accepting the feasibility study reports.
- 3.24 Participate in negotiation of the memorandum of understanding, project development agreement, power purchase agreement and concession agreement of energy development projects with the developer both domestic and foreign in accordance with the regulation or as assigned by the Minister of Energy and Mines.
- 3.25 Participate in and follow up inspection of energy development project during construction period, and operation in accordance with the regulation or as assigned by the Ministry of Energy and Mines.
- 3.26 Coordinate and cooperate and work with international organizations in accordance with the regulation or as assigned by Minister of Energy and Mines.
- 3.27 Report to and seek directive advice and work authorization regarding policy and energy plan directly from the Minister of Energy and Mines.
- 3.28 Implement other rights as assigned by the Minister of Energy and Mines.
- 3.29 Propose the structure and electricity unit price for each type of consumers to the higher level for its consideration.

Part III

Organizational Structure and Personnel

Article 04: Personnel structure.

- 4.1 Department of Energy Policy and Planning consists of Director General that is appointed to or dismissed from its position by the Prime Minister in accordance with proposal of the Central Party Committee based upon unanimous agreement with the Minister of Energy and Mines.
 - Director General of the Department has the direct responsibility to the Minister of Energy and Mines for success or failure in implementing its rights and duties as set forth in Article 2 and 3 of these articles.
 - Director General of the Department who sign all departments' documents, in case of absence, Director General of the Department shall temporary assign any deputy to act on his behalf.
- 4.2 Department of Energy Policy and Planning consists of some deputies who are appointed to or dismissed from position by the Minister of Energy and Mines in accordance with proposal by the Personnel Department, and based upon unanimous agreement with the Central Party Committee. Deputies are responsible for assisting Director General of the Department in advising, leading all tasks of the department and deeply responsible for certain tasks as assigned by Director General of the Department.
- 4.3 Department of Energy Policy and Planning consists of head of divisions, some Deputies which have been appointed or dismissed by the Minister of Energy and Mines, in accordance with proposal by and unanimous approval between the Department of Energy Policy and Planning and the Personnel Department, and also consists of technical staff and some administrative staff as appropriate.

Article 05: Organizational Structure.

Department of Policy and Energy Planning consists of 5 divisions as:

- 5.1 Administration Division.
- 5.2 Energy Policy Division.
- 5.3 Electricity Generation Planning Division.
- 5.4 Power System Planning Division.
- 5.5 Environmental Engineering Division.

Article 06: Detailed Duties of Each Division.

6.1 Administration Division

- 6.1.1 Draft annual budget plan, monitor budget spending of the department in order to make proposal to the Cabinet Office of the Ministry of Energy and Mines.
- 6.1.2 Carry out the personnel administration tasks, and receive, dispatch, manage, distribute and follow-up documents, and monitor number of personnel.
- 6.1.3 Manage and propose a personnel training plan in accordance with regulation and policy set forth by the high level.
- 6.1.4 Arrange and administer office supplies, material assets and other supplies of the department.
- 6.1.5 Carry out protocol duties and administer services as official task of the department.
- 6.1.6 Consolidate plans and make weekly, monthly, semester and annual summary reports of the department.
- 6.1.7 Draft and process documents that are related to the personnel of the department traveling to perform duty both domestically and abroad.
- 6.1.8 Contact and coordinate with regard to administration and management with various divisions of the department and outside organizations as assigned by the department.
- 6.1.9 Provide facilities and give advice to all parties that come in to contact the department.
- 6.1.10 Contact and coordinate with the locals in facilitating high authority, such as various ministry staff and all energy development project developers that implement their official task at locality.
- 6.1.11 Carry out its management task and closely follow-up usage of loan and technical assistance grant in accordance with regulations.
- 6.1.12 Collect and consolidate energy data both internal and foreign and make advice on and propaganda of various data of the department.
- 6.1.13 Establish and manage database.
- 6.1.14 Summarize activities of work, and make monthly, semester and annual budget usages reports to the Ministry regularly.
- 6.1.15 Implement other tasks as assigned by the department.

6.2 Energy Policy Division.

6.2.1 Study master plan and set policy of usage and development of each type of energy such as: electricity, oil, gas, coal, wind energy, solar energy and nuclear energy, in aiming to guarantee that sufficient energy is sustainable and

- effective for the national economy and society for each period and has good benefits to the social-environment.
- 6.2.2 Collect, consolidate, analyze and make reports on production statistics, usage, export-import of energy of each type in Lao PDR regularly by classification of: production source, all countries that Lao has export-import relationship with and energy volume of each sector such as: industry, communication, agriculture, accommodation and others.
- 6.2.3 Follow-up and make a report to the high level regularly and closely pay attention to supply and price fluctuation of world oil, especially markets that Lao trades with.
- 6.2.4 Analyze the trend and assess the oil and gas demand each year.
- 6.2.5 Draft annual policy on the national oil reserve.
- 6.2.6 Study price structure, set oil and gas price policy as appropriately suitable with economic conditions in each period of the country, by coordination with various parties of Ministry of Industry and Trade.
- 6.2.7 Contact and cooperate with various organizations both domestic and international concerning oil and gas.
- 6.2.8 Collect, consolidate and make statistics reports regularly on nation-wide production, usage, export and import of each type of coal with information on calorific heat value of coal.
- 6.2.9 Study economic-technical feasibility study reports on survey of coal reservoir, study master plan and set policy on coal development industry, in corporation with the concerned sectors.
- 6.2.10 Study master plan and set feasible policy to develop nuclear energy in the future in Lao PDR. Follow-up, analyze and make a report on nuclear energy development situation in areas and regions to the high level regularly and clearly. Have duties to play the role of coordination place with the international organizations such as ASEAN on nuclear tasks.
- 6.2.11 Study and forecast the national energy demand outlook for each economic sector of the country for each period for the future, in order to make annual reports. At the same time, should disseminate the said forecast of the national energy demand outlook plan to various parties.
- 6.2.12 Draft energy balance table between energy supply and consumption of each type in each economic sector.
- 6.2.13 Research and make a proposal of structure and unit price of electricity for each type of electricity for the high level's consideration and acceptance.

6.3 Electricity Generation Planning Division.

- 6.3.1 Draft master plan and study feasibility of power projects
 - * Map study.

- * Meteorology and climate study.
- * Geological study on dam base foundations.
- * Design of projects.
- * Economic and financial assessment of projects.
- * Build duplicate model, CAD operation and energy simulation.

6.3.2 Carry out examination on feasibility study reports

- * Total volume and peak volume of water usage.
- * Dam stability with geological conditions.
- * Power outputs.
- * Project costs.
- * Comments on the feasibility study report.
- * Issuance of a certificate for economic-technical feasibility study report.
- * Coordination with the National Mekong River Committee, the Mekong River Committee to establish the NPPCA in accordance with the 1995 Agreement.
- * Coordination with other parties that are related to use of water, land and other resources of project.
- * Coordination with Chinese Design Institute to build the experiment room, duplicate dam model prior to the actual construction of dam and as a reference for providing technical data for each dam.
- * Other implementation as assigned by the department.
- * Technical comments on application or extension of MOU.
- * Provision of data on technical aspect in application and extension of PDA

6.4 Power System Planning Division

- 6.4.1 Collect and analyze the concerned data
 - * Collect and analyze of data and increase of population and the National GDP.
 - * Collect and analyze investment data with aiming at various economic sectors such as: industry, mines, services, agriculture, communication, accommodation and others.
 - * Forecast electricity demand of each sector as mentioned above and the gross national production for each period

6.4.2 Study and draft the national transmission line and station

- * Study the laneway and location of the station.
- * Load flow analysis.
- * Dynamic analysis.

6.4.3 Cooperate with GMS and ASEAN.

- * Be a member of the Working Group of GMS and ASEAN.
- * Play the role of coordination place for RPTCC in the GMS.

- * Coordinate plan to connect the transmission line with GMS Region.
- * Improve transmission line master plan connected with GMS and ASEAN
- 6.5 Environmental Engineering Division.
 - 6.5.1 Draft, disseminate sustainable electricity development policy.
 - 6.5.2 Study, give comment on management of reservoirs of various hydropowers in Lao PDR.
 - 6.5.3 Study and search for solution concerning change of water flow and transfer of fish in order to reduce impact to the environment.
 - 6.5.4 Study climate change that may make impact on development of dam.
 - 6.5.5 Give advice on, disseminate and expand content of regulation, and the standards regarding the environmental engineering of energy development project.
 - 6.5.6 Support, promote and supervise and follow-up the environmental engineering for energy enterprise operator.
 - 6.5.7 Research and give technical comment on the energy source development of IEE, EIA, including the high voltage transmission line project.
 - 6.5.8 Participate in and join implementation of the energy development project in the community.
 - 6.5.9 Implement other tasks as assigned by the department.

<u>Part IV</u> Work Method

Article 07: Work Method.

- 7.1 Implement one chief regime principle in accordance with diversification of management system based upon Central-Democracy principle, lead by group of committee, individuals responsible for clearly dividing work and responsibility, and assigning rights to solve problem at each level, to each individual clearly with dividing them appropriately.
- 7.2 Activity should strictly follow the directive policy of the Party, the strategy for energy development plan of the Ministry of Energy and Mines to make detailed plan of each project and orderly work plan, concentrate and learn from the past lesson.
- 7.3 Implement report regime, consultation meeting regime, inspection regime regularly, and give feedback to and seek the advice from the high level regularly.

- 7.4 Coordinate various departments under the Ministry of Energy and Mines and various organizations concerned in accordance with its responsibility to ensure that energy plan of energy sector are implemented soundly and effectively.
- 7.5 Accepted weekly feedback and hold monthly meetings within the department.

Part V Final Provisions

Article 08: Department of Energy Policy and Planning has its own seal to serve official tasks.

<u>Article 09</u>: Department of Energy Policy and Planning with all concerned parties shall acknowledge and implement these articles strictly.

<u>Article 10</u>: hese articles are effective immediately after duly signed and replaces all earlier agreements and decision that contradicts with these articles.

The Minister of Energy and Mines

Signed and Sealed

Soulivong Daravong



Lao People's Democratic Republic Peace, Independence, Democratic Unity and Prosperity

Ministry of Energy and Mines

Ref. No.: 0515/E.M Vientiane Capital City, date: 04/05/2012.

Administration Decision

Minister of Energy and Mines on the Establishment and Activities of Department of Energy Business

- Referring to the Prime Minister Decree of No. : 372/PM, date 21/10/2011 on establishment and activities of the Ministry of Energy and Mines.
- Referring to proposal of Personnel Department No. : 246/EM.SO, date 30/04/2012.

Minister of Energy and Mines has issued the Administration Decision:

Part I General Provision

Article 01: Objective.

This Administration Decision details a set of the concerned establishment, the roles, duties, rights, the structure and work method of the Department of Energy Business, as reference to juristic act on establishment and activities of the Department of Energy Business in aiming to defend and follow-up all of investment in all economic sectors legally implemented by energy business project in consistence with Party's Policy, regulation and law and the state strategy that are set forth from time to time.

Article 02: Location and Roles.

Department of Energy Business (DEB), is the technical department underneath the mechanism structure of the Ministry of Energy and Mines, plays the role as the chief of staff for the Minister of Energy and Mines in administering energy business development tasks nation-wide.

Part II

Duties and Rights

Article 03: General Duties.

- 3.1 Support various energy business investment projects that are invested by the state and private sectors both domestic and foreign as set forth in the role of the Ministry of Energy and Mines.
- 3.2 Supply and spread information and data on various projects, technical research concerning investment, analysis of benefits from economic-financial, buying-selling and energy marketing standpoints in accordance with duties and responsibilities of the Ministry of Energy and Mines.
- 3.3. Revise and give comment from technical points of view on feasibility study reports including study or study report on social-environmental, economictechnical and financial aspects including other documents that are concerned with all the entire energy business projects as set forth in the role of the Ministry of Energy and Mines.
- 3.4 Study, research and be fully in-charge of negotiation and bargaining tasks for the state benefits on energy business development projects by the state or/and private sector based upon implementation of the state policy, the regulations and laws that are laid down from time to time.
- 3.5 Research and give comments on law and agreement's obligations for investment authorization in energy business sector. Draft, negotiate and co-sign agreement of various energy business projects and then report to the high authority for directive advice or apply for authorization to the said party that has power to sign the agreement.
- 3.6 Corporate with the concerned sectors of the Ministry of Finance, Ministry of Planning and Investment and the other concerned sectors in calculating or proposing tax and tariff rate and set appropriation fees in accordance with the policy in aiming to promote energy business development in consistence with the regulation and law, and the capacity of various conditions for searching fund for each project and then report to the concerned organizations who have the right to sign the agreement.
- 3.7 Corporate with the concerned ministries and various organizations for comment to improve the law, the regulation that are related to development of energy business so that the law or the regulation will be compact, tight and transparent with aiming to attract more investments in energy sector and to persuade more fund into investment in form of using projects as guarantee.
- 3.8 Give consultation on law, finance, banking and various services system of financial institutions to the people and businessmen for correct and effective development of energy development projects.

- 3.9 Administrate and follow-up construction operation of energy business project and then submit summary of the reports to high authority from time to time concerning implementation of various signed project agreements.
- 3.10 Be the permanent secretariat for the specific committees such as: the Electricity Development Cooperation Committee, the Advisory Committee on implementation of any energy business project in each case and as the representative unit for the state in corporation with developer on the energy business project.
- 3.11 Carry out various state's rights including those in the memorandum of understanding that the Government had in relation to the developer of the energy business projects.
- 3.12 Reshuffle, train, build-up and administer the Deportment of Personnel in accordance with the regulations.
- 3.13 Implement other duties in accordance with the regulations and law and in accordance with assignment from high authority.

Article 04: Rights.

- 4.1 Negotiate for the best benefit for the state from energy business development projects, based upon strict implementation of the regulations and policy set forth by the state from time to time.
- 4.2 Sign invitations to call meetings with both internal and with foreign participants, attestation letters, notify to or be notified by the co-signatory of concession agreement and sign all the corresponding letters directly with the developers, investors, contractors, lenders and various consultants. Besides, have the right to sign other documents as well as assigned by the Minister of Energy and Mines.
- 4.3 Has the full rights to make direct contact with the concerned state enterprise for facilitating of implementation task on various energy business projects.
- 4.4 Invite developers, investors, consultants, co-signed state parties with the government, international organizations to come in to explain, give data, give report, consultation and do negotiation when necessary. Accelerate the co-signed party to implement agreement and be informed of progress report of the project. Give advice to Government representative as the co-signed party for implementing the measures in amending of the agreement or/and the operation of the termination procedure as stated in the agreement.
- 4.5 Support to each project developer, corporate with the concerned state organizations on the issue of using natural resources to the upmost and long lasting benefits to reduce the impact to the social-environment to the minimum level.
- 4.6 Enforce implementation of agreement obligation on both state and the project developer, issue acceptance documents concerning energy business project under rights and duties as stated in the agreement.

- 4.7 Represent the Ministry of Energy and Mines as witness at the memorandum of understanding signing ceremony and other agreements that are involved with the state in energy development project.
- 4.8 Corporate and work with international cooperation organizations such as: ASEAN Organization and the Lower Mekong River Committee in searching for solution method to problems that occurred during project development and then report to the high authority for approval.
- 4.9 Report to, seek directive advice from and apply for various authorizations of implementation directly to the Minister of Energy and Mines.
- 4.10 Draft and submit to the Minister of Energy and Mines for approval or give directive advice in the case of violating the agreement, law and various state regulations that are set forth from time to time.
- 4.11 Issue regulations and order to be used internally in the Department of Energy Business.
- 4.12 Implement other rights in accordance with articles set forth in the law and regulation or as assigned by the Minister of Energy and Mines.

Part III

Organizational Structure and the Personnel

Article 05: Personnel Structure.

- Department of Energy Business is composed of the Director General that is appointed or dismissed by the Prime Minister in accordance with proposal of the Central Party Committee based upon the fundamental agreement with the Minister of Energy and Mines. The Director General has direct responsibility to the Minister of Energy and Mines, for success or deficiency in rights and one's duties in implementation as set forth in Article 03 and Article 04 of this Administrative Decision, the Director General who sign all the various Department's documents, in case there is an obstacle or the Director General is on duty traveling far to a distant place, the Director General must assign temporarily any deputies to act on his behalf
- The Department of Energy Business consists of some deputies that are appointed or dismissed from position by the Minister, with proposal of the Personnel Department and base upon agreement with the Director General and also be approved by the Central Party Committee. Deputies are responsible for assisting the Director General in advising, leading all the general works of the department and specifically responsible for any task as assigned by the Director General.
- 5.3 The Department of Energy Business is also composed of division heads, some deputies of heads which are appointed and dismissed from position by the Minister in accordance with proposal of the Personnel Department, based upon agreement with the Director General.

5.4 Department of Energy Business is also composed of technical personnel, some administrative staff to assist administration task in accordance with the necessity demand of the task.

Article 06: Organizational Structure.

Department of Energy Business consists of 4 Divisions such as:

- 6.1 Administration Division
- 6.2 Contraction Division
- 6.3 Project Development Division
- 6.4 Project Monitoring Division

Article 07: Detailed duties of each division

7.1 Administration Division

- 7.1.1 Plan, arrange and administer the state annual budget, office-supply of the Department including keeping the fixed asset account.
- 7.1.2 Record income and expenditure for Department of Energy Business.
- 7.1.3 Arrange the public meetings, round-table meetings, cerebration and various seminars under the responsibility of Department of Energy Business.
- 7.1.4 Arrange schedule and consolidate all the minutes of meetings that Department of Energy Business is in charge.
- 7.1.5 Obtain traveling visa to/from abroad and ticket reservation for receiving and dispatching Lao high level officials who travel abroad and return from meetings or negotiation.
- 7.1.6 Facilitate, assist and advise investors or developers or contractors to receive the authorization or certificate of master list of import-export materials, machinery equipment, tools and the necessity of labors for implementation of project agreement between the concerned ministries and sectors.
- 7.1.7 Inspect, file, administer and make account-keeping for various imported materials, equipment, machineries, vehicles, labors and others that are concerned with construction of projects in consistence with import plan and in accordance with the actual needs from time to time.
- 7.1.8 Consolidate and writ reports on all activities of the Department of Energy Business on weekly, six months and annual basis.
- 7.1.9 Consolidate all tasks concerned with recruiting new personnel, propose promotion, raise salary, praise and make penalties.
- 7.1.10 Implement other tasks as assigned by the Department.

7.2 Agreement Division.

7.2.1 Give Advice on procedure of energy development projects in Lao PDR to those who visit the Department of Energy Business.

- 7.2.2 Analyze financial proposal, electricity price and various investment measures of energy business projects including benefits from the project for the Government and the society, assumption, project cost, interest rate, structures for consideration of authorization.
- 7.2.3 Propose tax rate, tariff, commission fee by reference to various appropriate promotion policies in aiming to promote investment in energy business in accordance with the Government's benefits.
- 7.2.4 Draft and negotiate the memorandum of understanding, project development agreement, concession agreement and various specific authorization for giving the organization rights to negotiate and to sign or accept.
- 7.2.5 Draft invitation letters in order for the Director General to sign to developers, investors, off-takers and other concerned parties who come in to explain or to negotiate various procedures that lead to drafting of the project agreement.
- 7.2.6 Make brief summary and analysis of all agreements and propose to the internal meetings with the concerned sectors of the Government for research, preparation, negotiation with the investors. Prepare agreement contents, points of view and reasons to defend during negotiation with investor, and documents, handouts, brief summaries and the official documents to be distributed to those who attend internal meetings and meetings with investors.
- 7.2.7 As for agreement of Lao Government or the representative of Lao Government as one party:
 - (i). Corporate with other sections and assist the Director General in negotiating with developers and investors. Inform the co- signatory each time after negotiation done and agreement amended.
 - (ii). After successful negotiation write summary reports and apply for approval from the high authority in order to give the organization power to sign agreement at appropriate time.
 - (iii). If it is necessary take signed agreement to apply for acceptance, apply for exception from National Assembly and various ministries and make explanation to the various concerned parties and follow-up the acceptance or exception from various parties.
- 7.2.8 As for agreement to which Lao Government or the representative of Lao Government is not co-signatory but which need the Government's acceptance:
 - (i). Attend meetings, discussion and negotiation with off-takers, lenders, banks, international finance institutes, consultants, contractors and independent inspectors that are related to project in each case.
 - (ii). After completion of each negotiation, make reports to the high authority for directive for the next negotiation or consideration to authorize for acceptance case by case.
- 7.2.9 Revise the harmony and the inconsistence with the Lao Government's cosignatory and with other agreements such as: power purchase agreement,

- construction agreement and various financial agreements prior to proposing to the high authority to accept those agreements.
- 7.2.10 Follow-up the implementation of agreements and evaluation of meanings of signed agreements, for giving technical comments on them for the high level to consider the extension, and accelerating, re-negotiating and amending or canceling case by case.
- 7.2.11 Gather all project documents and collect all law articles, decree of the establishment of implementation on law, solution, decision, regulation of Lao PDR, the regulatory principles of the energy sector, business, finance, banking and the various governance of the surrounding countries and the international organizations as reference to obligations of law with regard to the state and private investment both domestic and foreign, the off-takers and the lenders to the projects.
- 7.2.12 Conduct operational tasks of law, agreement, juristic acts and other in accordance with advice and directive advice of the Director General.

7.3 Project Development Division.

- 7.3.1 Contact and corporate with the local authorities to facilitate the leader level, ministry's staff, those who are interested in project development and those who are interested in construction by visit and field works.
- 7.3.2 Study and revise feasibility study reports and social-environmental impact as reference to prepare various project documents under responsibility of the Department.
- 7.3.3 Participate with technically responsible parties, social-environmental and the other concerned parties in going to the field and collecting data for project development in field during research on social-environment impact assessment.
- 7.3.4 Give comments on technical documents, social-environment documents, development documents in relation to projects for the developers and the responsible parties under the state management.
- 7.3.5 Corporate with companies and the concerned sector to spread various project contents which are necessary for the sector, local and general community to be aware of, understand and cooperate, facilitate, support and assist for establishment of the implementation of project development plan prior to and after signing of concession agreement.
- 7.3.6 Corporate with the various state consultation companies, make summary reports and various proposals of consultant companies for the high authority to acknowledge it or give directive advice to implement the next step.
- 7.3.7 Corporate with other parties to assist the local organizations at the project site to solve various issues that occurred in project development such as: tasks to establish the Mobilize Settlement Committee, tasks of solving impact on social-environment aspects, prepare and resettle people and others concerning related tasks in accordance with advice or as assigned by the Director General.

- 7.3.8 Be fully in charge of drafting the schedule, contents and for the specific meeting committee (Project Advisory Committee) regularly, in three months, six months, nine months and annually.
- 7.3.9 Attend various meetings concerned with project development such as: the mobilization of resettlement committee meeting, environmental management meeting, reservoir management or meetings for water source of forest and water management, and various technical inspection committees on asset to be return back to the Government's use.
- 7.3.10 Ask for periodical reports concerning various development activities of various projects, already based on signed project memorandum of understanding, development agreement and concession agreement between the Government and developer to be used as reference writing progress reports for each project regularly, monthly, in three months, six months and annually for the Department.
- 7.3.11 Follow-up field works during construction period from time to time and regularly.
- 7.3.12 Implement other tasks and attend various negotiation meetings in accordance with assignment by the Director General.

7.4 Project Monitoring Division

- 7.4.1 Follow-up implementation of various projects that have been officially constructed during the entire concession operation period.
- 7.4.2 Follow-up and create the harmonized statistics among design, implementation stage of operation, mobilization and arrangement for training of new job for those who are affected from the project.
- 7.4.3 Consolidate and build up the database for each project such as: volume of fuel that is used each year, power generation in each season, precipitation, water discharge from reservoir, collected revenue for each project, and follow-up the power sales for each season's generation.
- 7.4.4 Create and improve database, website system of the Department and the various publicity tasks.
- 7.4.5 Corporate with project companies operating power stations for monitoring and write report for the improvement of operation and maintenance of the projects.
- 7.4.6 Persuade those responsible parties in the task of solving environment problems, and develop new occupations for those who are affected in the protect areas.
- 7.4.7 Make the field visit to the project sites periodically.
- 7.4.8 Corporate with the concerned state parties and project companies to set up technical meetings to discuss, consult in case where there is a problem that occurred during project operation in order to seek a way to solve or propose to the high level for consideration based upon the articles in the agreements.

- 7.4.9 Corporate with international organizations that are involved in projects in order to follow-up activities including those who are not under the Government's responsibility in order to report to and inform the high authority regularly.
- 7.4.10 Join cooperative activities with sub-region countries of the Lower Mekong River, the ASEAN Communities and corporate similarly for bilateral tasks with more parties including international organizations.
- 7.4.11 Implement other tasks in accordance with the regulations and laws or as assigned by the Department.

Part IV Work Method

Article 08: Work Method.

- 8.1 Implement one chief regime principle in accordance with diversification of management system based upon Central-Democracy principle, lead by group of committee, individuals responsible for clearly dividing work and responsibility, and assigning rights to solve problem at each level, to each individual clearly with dividing them appropriately.
- 8.2 Activity should strictly follow the directive policy of the Party, the strategy for energy development plan of the Ministry of Energy and Mines to make detailed plan of each project and orderly work plan, concentrate and learn from the past lesson.
- 8.3 Implement report regime, consultation meeting regime, inspection regime regularly, and give feedback to and seek the advice from the high level regularly.
- 8.4 Coordinate various departments under the Ministry of Energy and Mines and various organizations concerned in accordance with its responsibility to ensure that energy plan of energy sector are implemented soundly and effectively.
- 8.5 Accept weekly feedback and hold monthly meetings within the department.

Part V Final Provisions

- **Article 09**: Department of Energy Business has its own stamp to serve official purposes.
- <u>Article 10</u>: Department of Energy Business with all concerned parties shall acknowledge and implement these articles strictly.
- Article 11: This Decree is effective from the day duly signed onward and replaced the Decree No.: 396/EI, dated 19/09/2006.

The Minister of Energy and Mines

Signed and Sealed

Soulivong Daravong



Lao People's Democratic Republic Peace, Independence, Democratic Unity, and Prosperity

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Ministry of Energy and Mines

Ref. No.: 0641/EM Vientiane Capital City, date: 10/05/2012

Administrative Decision

Minister of Energy and Mines on the Establishment and Activities of the Department of Energy Management

- Referring to the Prime Minster Decree No. : 372/PM, dated 21/10/2011 on the Establishment and Activities of the Ministry of Energy and Mines
- Referring to the Personnel Department's application No. 219/EM.PD, dated 08/05/2012.

Minister of Energy and Mines has issued the Administrative Decision:

Part I Location and Roles

Article 01: Location and Roles

Department of Energy Management is the technical department under the mechanism system of the Ministry of Energy and Mines, and is hereinafter referred to as Department of Energy Management (DEM) and plays the role of responding to questions by the Minister of Energy and Mines about state management concerning the energy industry sector. The Department of Energy Management is responsible for, in accordance with its duties and rights, implementation of the macro-economic level state management such as management, monitoring, inspection and examination of the energy business and energy activities, as an engineer to follow-up and inspect construction and operation of energy development projects, promotion and management of supply, distribution, services and energy utilization in consistent with the

technical standards, effectiveness, saving and safety in accordance with the laws and regulations concerned.

Part II Duties and Rights

Article 02: General Duties

In the administration and management for examination, inspection, support and promotion to the energy development projects, the Department of Energy Management has the following duties:

- 2.1 Study, research and draft energy law, improve or build regulations, technical standards, safety rules, efficiency and energy conservation standard, and other rules, guidelines and regulations that are related to the administration and management of generation, transmissions, distribution, usage and services, competition and others in relation to the energy business operations.
- 2.2 Study, formulate and improve electricity tariffs structure on generation, transmission, distribution, electricity services and electrical equipments.
- 2.3 Promote and monitor supply, distribution, services and energy usages in accordance with the technical standards, effectiveness, energy saving and safety.
- 2.4 Manage, monitor and inspect the energy enterprise operator including state and private's activities who must act in conformity with the rules and regulations concerned.
- 2.5 Be a member of the Administration Committee and the Advisory Committee for Energy Development during construction and operation stage of projects.
- As the GOL engineers in administration and management, monitor and inspect energy development operations including the both state enterprises and private sector, and dispatch technical engineers to the sites during the construction stage of the electricity development project.
- 2.7 Study and research regulations formulation in the electricity generation about various kind of dams that shares water utilization in order to guarantee electricity generation during both the dry and rainy seasons.
- 2.8 Manage, monitor, inspect and test electricity appliances and electrical facilities produced domestically or imported from abroad.
- 2.9 Manage, monitor, and inspect energy usage in order to praise outstanding energy enterprises, factories and buildings that use energy effectively and save energy.
- 2.10 Inspect technical check of qualification of oil and gas that are imported or produced in Lao PDR.
- 2.11 Research and give comment to the feasibility study of power project

- 2.12 Accept design and issue completion certificate to construction of electricity projects that serve for domestic and export purposes in conformity with the Lao Electric Power Technical Standards
- 2.13 Research, consider and examine proposal to develop electricity generation projects, monitor and inspect production of electricity, transmission line, substation, distribution lines and electrical equipment in consistence with the technical standard and safety.
- 2.14 Issue licenses, extend, suspend, and stop energy business operation.
- 2.15 Play a role of coordinator of regulation, management and energy efficiency and conservation with international organizations such as ASEAN, GMS, WB and ADB.
- 2.16 Jointly negotiate the Memorandum of Understanding, Project Development Agreement, Power Purchase Agreement, Concession Agreement and other agreements concerning the energy development project both domestically and abroad in accordance with duties and rights or as assigned by the Minister of Energy and Mines.
- 2.17 Participate in signing of the agreement or represent GOL to sign agreement with energy project developers for the transmission line extension projects, distribution line projects, transformer projects, low-voltage and substation projects in accordance with rights and duties or as assigned by the Minister of Energy and Mines.
- 2.18 Contact and coordinate parties concerned, both domestically and abroad concerning task of administration and management of energy enterprise for seeking fund to develop legislation for energy management.
- 2.19 Take the initiative or coordinate the others concerned to carry out study, aiming to solve various business operation issues and energy consumer issues.
- 2.20 Establish database and energy management.
- 2.21 Give technical comments, technology services and necessary data and information concerning energy management in accordance with the relevant regulations.
- 2.22 Make propaganda for and disseminate the legislation concerned to the individuals or legal entities to manage, support and promote energy development in various forms.
- 2.23 Draw-up plan, budget managerial expenditure and supervise assets of the department.
- Assign, reshuffle, train, build up and supervise staff personnel of the department in accordance with the relevant regulations.
- 2.25 Make summary report concerning the department's activities in each period to the Ministry regularly.
- 2.26 Implement other task as assigned by high level personnel.

Article 03: Right

In administering, managing, monitoring inspecting, controlling, supporting and promoting the energy development project, the Department of Energy Management has the primary rights as below:

- 3.1 Set various duties, tasks, rights and detailed responsibilities to each division within its department.
- 3.2 Propose to improve, restore the personnel structure of the department, and propose to appoint division heads and deputies, appoint and reshuffle duties of units within the department.
- 3.3 Study, strengthen, supervise and use staff-personnel within the department, monitor, research and propose to give praise to those who showed outstanding performance in management of energy or put discipline on those who violated the regulations.
- 3.4 Sign official documents that are related to management, monitoring and inspection of energy activities in accordance with its right and role, or as assigned by the Minister of Energy and Mines.
- 3.5 Call, invite developers both from domestically and abroad including state, state enterprise and private enterprise for consultation and arrange a meeting concerning management and solution of various issues related to energy business operations.
- 3.6 Issue licenses, extend, suspend, stop carrying out the energy business operation in accordance with the regulations and the law ser forth.
- 3.7 Disseminate, advice on legislations, procedure, articles and regulations that are related to the managing energy activities.
- 3.8 Propose to improve the law, technical standard, procedure, articles, regulations that are related to management of energy activities.
- 3.9 Support, promote and monitor those who are related to energy project development such as: producer, deliverer, distributor and energy consumer to make them closely corporate with each other for sustainable development.
- 3.10 Propose to the Ministry of Energy and Mines to consider using various measures, toward those various business operators and energy consumer that violated the law, articles and various regulation of the energy sector or to those who do not implement in accordance with their right that are set forth in various agreements concerning survey, design, construction, installation, generation, transmission, distributions, services and energy consumers.
- 3.11 Contact and coordinate parties both domestic and foreign concerning management at its level in accordance with regulations or as assigned by the Minister of Energy and Mines.
- 3.12 Research and give technical comment on the draft of project development agreement, power purchase agreement, concession agreement or other agreements concerning energy development project both domestic and foreign.

- 3.13 Participate in negotiation of the memorandum of understanding, project development agreement, power purchase agreement, concession agreement and others concerning energy development project both domestic and foreign in accordance with its rights and duties or as assigned by the Minister of Energy and Mines.
- 3.14 Attend signing of agreement or as a representative sign agreement with energy project developer with regard to high voltage transmission lines, medium voltage, transformers, low voltage transformers and substation project in accordance with its rights and duties or as assigned by the Minister of Energy and Mines.
- 3.15 Research and give technical comments on feasibility study reports.
- 3.16 Issue acceptance certificate for basic design of the electricity development projects, issue project completion certificate on the electricity development projects to serve domestic and export demand in accordance with procedure and the Lao Electric Power Technical Standard.
- 3.17 Participate in as a member in Administrative Committee during project construction and operation stage.
- 3.18 Manage, monitor, construct, inspect and operate energy development projects including state projects, state enterprise and private enterprise projects and dispatch technical staff to the project site during the construction period.
- 3.19 Research and consider proposal of development of, and monitor and inspect construction of dams for hydropower generation, power plants, transmission lines, substations, distribution lines and electrical equipment in accordance with electricity technical standards and safety standards.
- 3.20 Research and establish regulations on energy generation from dams whose water is jointly used in order to guarantee energy generation during dry and rainy seasons.
- 3.21 Corporate with regard to regulation, management and energy efficiency and conservation with the international organizations such as: ASEAN, GMS WB and ADB.
- 3.22 Manage, monitor, inspect and test power facilities or electricity compliances that are produced domestically or imported from abroad.
- 3.23 Examine, inspect technical quality of oil and gas that are imported or produced in the Lao PDR.
- 3.24 Promote and manage supply, distribution, services and energy consumption to make them comply with technical standards, safety, effectiveness and energy saving.
- 3.25 Issue certificate to administrators or managers of factories or buildings that use energy effectively, save energy, and issue trade-mark for energy saving.
- 3.26 Manage, monitor, inspect and check usage of energy in order to give award for outstanding energy saving to enterprises, factories or buildings that use energy effectively and save energy.
- 3.27 Coordinate or work with international organizations in accordance with its rights and duties or as assigned by the Minister of Energy and Mines.

- 3.28 Report, seek directive advice and apply for work authorizations concerning management of energy activities.
- 3.29 Appoint or propose to appoint personnel within the department to carry out task in accordance with rights that are within its responsibilities.

Part III Organizational Structure and Personnel

Article 04: Personnel Structure.

- 4.1 Department of Energy Management consists of the Director General who is appointed or dismissed from its position by Prime Minister in accordance with proposal of Central Party Committee based upon the unanimous agreement with the Minister of Energy and Mines.
 - Director General of the Department is responsible directly to the Minister of Energy and Mines for successful or fairer implementation of its rights and duties that are set forth in Article 2 and 3 of these articles
 - Director General of the Department who signs all departments' documents, in case of absence, Director General of the Department shall temporary dedicates its power to any deputy who acts on his behalf.
- 4.2 Department of Energy Management consists of some deputies that are appointed or dismissed from its position by the Minister of Energy and Mines in accordance with the Personnel Department's proposal, based upon unanimous agreement with Central Party Committee. Deputies are responsible for assisting the Director General of the Department in advising and leading all general tasks of the department and is deeply responsible for any particular task as assigned by the Director General of Department.
- 4.3 Department of Energy Management consists of heads of divisions, their deputies who are appointed or dismissed by the Minister of Energy and Mines in accordance with proposal of Personnel Department, and also consists of staff and some administrators as appropriate.

Article 05: Organizational Structure.

- 5.1 Administration Division.
- 5.2 Energy Enterprise Management Division
- 5.3 Power Export Project Management Division
- 5.4 State-Owned Enterprises Management Division

Article 06: Detailed duties of each division

6.1 Administration Division.

- 6.1.1 Draft annual budget plan, monitor budget spending of the department in order to make proposal to the Cabinet Office of the Ministry of Energy and Mines.
- 6.1.2 Carry out the personnel administration tasks, and receive, dispatch, manage, distribute and follow-up documents, and monitor number of personnel.
- 6.1.3 Manage and propose a personnel training plan in accordance with regulation and policy set forth by the high level.
- 6.1.4 Arrange and administer office supplies, material assets and other supplies of the department.
- 6.1.5 Carry out protocol duties and administer services as official task of the department.
- 6.1.6 Consolidate plans and make weekly, monthly, semester and annual summary reports of the department.
- 6.1.7 Draft and process documents that are related to the personnel of the department traveling to perform duty both domestically and abroad.
- 6.1.8 Contact and coordinate with regard to administration and management with various divisions of the department and outside organizations as assigned by the department.
- 6.1.9 Provide facilities and give advice to all parties that come in to contact the department.
- 6.1.10 Contact and coordinate with the locals in facilitating high authority, such as various ministry staff and all energy development project developers that implement their official task at locality.
- 6.1.11 Carry out its management task and closely follow-up usage of loan and technical assistance grant in accordance with regulations.
- 6.1.12 Collect and consolidate energy data both internal and foreign and make advice on and propaganda of various data of the department.
- 6.1.13 Establish and manage database.
- 6.1.14 Summarize activities of work, and make monthly, semester and annual budget usages reports to the Ministry regularly.
- 6.1.15 Implement other tasks as assigned by the department.

6.2 Energy Enterprise Management Division.

6.2.1 Study, research, establish or improve the articles and various regulations that are related to management of private enterprise's tasks.

- 6.2.2 Study, research, and make manual, advice, article, regulations and various technical standards concerning equipment, electrical appliance and effective usage of energy, energy saving, safety exactly in accordance with the technical standard.
- 6.2.3 Manage, follow up and inspect those who operate energy enterprise of private sector with regard to whether it is consistent with the set article and various regulations concerning energy enterprise operations of the energy sector.
- 6.2.4 Research, consider and issue authorization and extend, suspend, stop energy business operations.
- 6.2.5 Research and give technical comments on electricity network expansion of the medium and low voltage system, including follow-up inspection of construction of electricity network system of the private companies with regard to whether it correctly follows electricity technical standard.
- 6.2.6 Manage, monitor, inspect and test power facilities and electricity compliances that are produced domestically or imported from abroad.
- 6.2.7 Examine, inspect technical quality of oil and gas that are imported or produced in the Lao PDR.
- 6.2.8 Promote, follow-up, inspect and check saving and effective usage of energy for the industries, buildings, household and others.
- 6.2.9 Coordinate with concerned parties to set the middle price of various electrical appliances appropriated between supplier and consumer.
- 6.2.10 Play a role of the coordination point on regulations, management and energy efficiency and conservation with various international organizations such as: ASEAN, GMS, WB and ADB.
- 6.2.11 Participate in negotiation of the memorandum of understanding and other agreements concerning expansion of electricity network system in accordance with regulations or as assigned by the department.
- 6.2.12 Implement propaganda, technical training and various regulations that are related to administration, management of energy business and more efficient energy usage, energy saving and safely usage of energy in factories, buildings and accommodations.
- 6.2.13 Research and consider on issue of trade-stickers on the electrical equipment and factories, buildings and accommodations that use energy efficiently and save energy.
- 6.2.14 Coordinate with the concerned sectors for researching and considering solving various problems in operating of energy enterprise of private sector.
- 6.2.15 Report to seek advice and apply for authorization from the department for all works concerning administration and management of private sector.
- 6.2.16 Implement other tasks as assigned by the department.

- 6.3 State Owned Enterprises Management Division.
 - 6.3.1 Study, research, improve or set articles and various regulations that are related to administration and management of state owned enterprises.
 - 6.3.2 Study, research, improve and give advice on or set articles, regulation or the standards of energy management in such fields as: generation, transmission, distribution, services and energy use.
 - 6.3.3 As GOL engineer in administration-management, make follow up inspection of construction and operation of energy development project of state owned enterprises and the private energy development projects that serve internally in accordance with its level and in accordance with regulations or as assigned by the department.
 - 6.3.4 Assign staff to the project site during construction period of the electricity development project.
 - 6.3.5 Manage, follow up, or inspect whether energy enterprise operation of state owned enterprise is consistent with articles and various regulations concerning energy enterprise operation of the energy sector.
 - 6.3.6 Promote, manage, follow up, inspect and check generation, transmission, distribution, services and energy usage correctly in accordance with the technical standard, efficiency, energy saving and safety.
 - 6.3.7 Research and give technical comment on proposal of construction of transmission lines system, substation, in medium and low voltages including inspection of construction by state owned enterprises or private enterprises in accordance with the electric power technical standard.
 - 6.3.8 Support, manage, follow up, inspect on demand side management.
 - 6.3.9 Research, give technical comment on, follow up construction and issue certificate for basic design before construction project development and issue certificate of completion of construction prior to generation and management for operation of the state owned enterprises and private projects that supply domestically.
 - 6.3.10 Study, research and give technical comments concerning the draft of the Project Development Agreement, the Concession Agreement and other agreements concerning energy development project of state owned enterprises and private electricity projects that serve internally in accordance with regulation or as assigned by the department.
 - 6.3.11 Participate in negotiation of memorandum of understanding, project development agreement, concession agreement and others concerning energy development projects of state owned enterprises and private projects that serve internally in accordance with regulation or as assigned by the department.

- 6.3.12 Play a role of coordinator as a regulator with international organizations such as: ASEAN, GMS, WB, ADB.
- 6.3.13 Contact and coordinate all parties concerning task of the management of state owned enterprises, private enterprises to seek of fund in accordance with regulations or as assigned by the department.
- 6.3.14 Coordinate the concerned sectors in order to research, considering solving problems in operations of state owned energy enterprises, private and energy consumers.
- 6.3.15 Support, promote the state owned enterprises of energy development project such as: producer, deliverer, distributor and energy consumer for sustainable development.
- 6.3.16 Study, research and set regulations on electricity generation from the dams which water is used jointly to ensure energy generation in both dry and rain seasons.
- 6.3.17 Advise on, disseminate guidelines, regulations and technical standards in managing energy and using energy safely and effectively, and saving energy.
- 6.3.18 Build technical database concerning generation and operation project development that serve internally.
- 6.3.19 Report for seeking directive advice and apply for authorization from the department for various work authorization concerning management of state owned enterprises and private projects that serve internally.
- 6.3.20 Implementation of other task as assigned by the department.

6.4 Power Export Project Management Division

- 6.4.1 Study, research, establish and improve the Lao Electric Power Technical Standards (LEPTS) and regulations in order to be involved in management and inspection of energy development projects for export.
- 6.4.2 As the GOL Engineer in order to manage and inspect construction and operations of energy development project for export in accordance with regulations and assigned by the department.
- 6.4.3 Provide technical staff to the project site during construction period of the project development.
- 6.4.4 Research, provide technical comments on the feasibility study report and issue certificate of acceptance for the basic design of project development of private sector for export in accordance with the Lao Electricity Technical Standards as set forth.
- 6.4.5 Research and provide technical comments and issue completion certificate for construction of the electricity development project of private sector for

- exporting in accordance with procedure of the Lao Electricity Power Technical Standards as set forth.
- 6.4.6 Research and provide technical comment on transmission lines system and substation projects in order to monitor and inspect the electricity project for exporting in accordance with the technical standards.
- 6.4.7 Coordinate the concerned sectors to study, consider solving problems in private enterprise operation for export.
- 6.4.8 Contact and coordinate internal and foreign enterprises concerning private management for export in accordance with regulations or as assigned by the department.
- 6.4.9 Study, research and provide technical comment concerning the Project Development Agreement, the Concession Agreement and other agreements concerning private energy development project for exporting in accordance with regulations or as assigned by the department.
- 6.4.10 Participate in negotiation of Memorandum of Understanding, Project Development Agreement, Concession Agreement and other agreements concerning private energy development project for export -in accordance with regulation or as assigned by the department.
- 6.4.11 Study, research and set regulation on electricity generation from dams which water are jointly used in order to ensure electricity generation in both dry and rainy seasons.
- 6.4.12 Establish technical database in generation and operation of electricity development project for export.
- 6.4.13 Disseminate guidance, rules, regulations and procedures related to private management for export.
- 6.4.14 Coordinate and closely cooperate with international organizations in accordance with regulations or as assigned by the department.
- 6.4.15 Report on seeking advice and apply for authorization of implementation of tasks concerning private management for export
- 6.4.16 Implementation of other tasks as assigned by the department.

Part IV Work method

Article 07: Work Method.

7.1 Implement one chief regime principle in accordance with diversification of management system based upon Central-Democracy principle, lead by group of committee, individuals responsible for clearly dividing work and responsibility, and

- assigning rights to solve problem at each level, to each individual clearly with dividing them appropriately.
- 7.2 Activity should strictly follow the directive policy of the Party, the strategy for energy development plan of the Ministry of Energy and Mines to make detailed plan of each project and orderly work plan, concentrate and learn from the past lesson.
- 7.3 Implement report regime, consultation meeting regime, inspection regime regularly, and give feedback to and seek the advice from the high level regularly.
- 7.4 Coordinate various departments under the Ministry of Energy and Mines and various organizations concerned in accordance with its responsibility to ensure that energy plan of energy sector are implemented soundly and effectively.
- 7.5 Accept weekly feedback and hold monthly meetings within the department.

Part V Final Provisions

- **Article 08:** Department of Energy Management has its own stamp to serve official purposes.
- **Article 09:** Department of Energy Management with all concerned parties shall acknowledge and implement these articles strictly.
- **Article 10:** These articles are effective immediately after duly signed and replaces all earlier agreements and decision that contradicts with these articles.

The Minister of Energy and Mines

Signed and Sealed

Soulivong Daravong



Lao People's Democratic Republic Peace, Independence, Democratic Unity and Prosperity

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Ministry of Energy and Mines

Ref. No.: 0543/EM Vientiane Capital City, date: 10/05/2012

Administration Decision

Minister of Energy and Mines on the Establishment and the activities of the Institute of Renewable Energy Promotion

- Referring to the Prime Minister Decree No. : 327/PM, date 21/10/2011 on the establishment and the activities of the Ministry of Energy and Mines
- Referring to the Personnel Department's application proposal No.: 270/EM.PD, date: 08/05/2012

Minister of Energy and Mines has issued the Administration Decision:

Part I Location and Role

Article 01: Location and Roles.

Institute of Renewable Energy Promotion (**IREP**) is the institute for promotion and technology management in the established system of the Ministry of Energy and Mines that has the role to assist the Minister of Energy and Mines at the area of promotion, development of renewable energy, energy saving and effective use of energy nationwide.

Part II

Duties and Rights

Article 02: General Duties.

- 2.1 Implement the strategy of Lao Renewable Energy Policy and make it become reality in accordance with the Government as set forth in directive.
- 2.2 Promote and Develop renewable energy:
 - 2.2.1 Promote and develop small electricity productions for connection with transmission line network or for specific usage that has installed capacity equal to or less than 15 MW.
 - 2.2.2 Promote and develop heat energy for industry, community and family use.
 - 2.2.3 Promote and develop bio-diesel, biogas and others.
 - 2.2.4 Establish the experiment and learning center and services to the people and implement pilot projects of renewable energy.
 - 2.2.5 Give advice, make manuals about production and usage, give trainings and strengthen staff concerning renewable energy.
- 2.3 Promote and develop Rural Electrification:
 - 2.3.1 Build, improve and implement master plan for rural electrification projects.
 - 2.3.2 Promote, develop, monitor, inspect and manage off-grid projects.
 - 2.3.3 Promote, develop, monitor, inspect and manage rural electrification projects, including operations of pilot projects in rural areas.
 - 2.3.4 Create manuals and give advice on electricity usage safety.
 - 2.3.5 Give training on how to use and maintain various types of small electricity system in rural areas.
- 2.4 Promote to conserve energy and save energy:
 - 2.4.1 Build and develop regulations, advisory, manual concerning conservation and energy saving with regard to non-hydropower energy (heat energy from sun, biomass and others).
 - 2.4.2 Promote usage of effective and safe stove, and develop production of such stove.
 - 2.4.3 Build and implement pilot projects for energy conservation.
 - 2.4.4 Contact and join together with other concerned parties both domestic and international, in order to promote clean development mechanism and climate change adaptation.
 - 2.4.5 Give training and build awareness concerning energy conservation.
- 2.5 Management, Administration, Information, Data on Renewable Energy
 - 2.5.1 Build and improve database on renewable energy and rural electrification.

- 2.5.2 Strengthen the locality in collecting data and building database.
- 2.5.3 Build database network on renewable energy and rural electrification.
- 2.5.4 Search for fund for usage and sound management of rural electrification effectively.
- 2.5.5 Execute, document and draw-up plan, budget and materials for the management of the institute.
- 2.5.6 Submit summarize reports concerning work activities of the institution from time to time to the Ministry of Energy and Mines regularly.

2.6 Other Miscellaneous.

- 2.6.1 Participate and join together with concerned parties in research, and set price policy of the renewable energy such as solar energy price, wind energy price, bio-fuel price and biomass price.
- 2.6.2 Give comments for improving of policy and strategy, develop renewable energy plan, law, procedures and so forth, various regulation of energy division and others in order to promote investment in the renewable energy, promote rural electrification and promote energy conservation and efficiency.
- 2.6.3 Contact and join together with ministries, organizations and the concerned localities for following up and inspecting development of renewable energy projects, promoting rural electrification and the energy saving in accordance with the set forth regulation or as assigned by the Minister of Energy and Mines.
- 2.6.4 Give technical comments on investment, analyze benefits on feasibility study, environment, finance and domestic energy market, promote and develop renewable energy, rural electrification and energy saving in accordance with the regulations.
- 2.6.5 Study, collect data and build database, disseminate and give advice on the concerned data, information, news on renewable energy, promotion and development of rural electrification and energy saving.
- 2.6.6 Contain, reshuffle, train, replenish and manage staff personnel of the institute in accordance with the regulations.
- 2.6.7 Provide technical services and some necessary information concerning renewable energy task, renewable energy to serve rural areas and energy saving in accordance with the regulations.
- 2.6.8 Join in and cooperate with international financial organizations on the renewable energy, selected energy, rural electrification development, and be the central contact point for renewable energy, energy saving and others as assigned by the Minister of Energy and Mines.
- 2.6.9 Implement other tasks as assigned by the high level.

Article 03: Rights.

- 3.1 Set various work duties, rights and detailed responsibilities of various divisions of the institution.
- 3.2 Propose to improve established mechanism of the institute, propose to appoint division heads and deputy division heads, and appoint and reshuffle duties at each level starting from working units within the institution.
- 3.3 Train, replenish, supervise and manage staff personnel within the institution. Monitor, inspect and research policy on praising those staff that show outstanding performances and put on discipline those who commit wrongdoing in accordance with the regulations.
- 3.4 Sign all official documents, give notice and collect data concerning promotion of renewable energy development, renewable energy to serve rural areas and energy saving in accordance with its role or as assigned by the Minister of Energy and Mines.
- 3.5 Disseminate and advice on data, news, various activities, procedures, other regulations and so forth that are related to administration and management of renewable energy to serve rural areas and energy saving.
- 3.6 Propose to improve various activities, technical standard, procedures, various regulations and so forth and that are related to management of usage of renewable energy to serve rural areas and energy saving.
- 3.7 Give support to investors in renewable energy development projects, renewable energy to serve rural areas and energy saving that have incorporated usage together with resources up to the most benefits, along with minimizing impact to environment and society to the best minimized level.
- 3.8 Propose to the Energy and Mines Committee to consider various measures, to those companies that operate renewable energy projects to serve rural areas and energy saving as well as those who had violated the regulations and law and so forth, various regulations of the energy division or neglect to implement their duties as set forth in the various agreements.
- 3.9 Contact jointly with various concerned parties, both domestic and foreign that are related to work of renewable energy development, promote development of rural electrification to serve rural areas and energy saving at the institution level in accordance with the regulations or as assigned by the Minister of Energy and Mines.
- 3.10 Visit the field and give technical advice to the renewable energy development projects to serve rural areas and energy saving during the implementation of pilot projects until the operation period starts.
- 3.11 Incorporate and make cooperation work with international organizations in accordance with the regulation or as assigned by the Minister of Energy and Mines.
- 3.12 Report, seek advice and apply for authorization to implement various tasks concerning administration and management of renewable energy to serve rural areas and energy saving to or from the Minster of Energy and Mines.

Part III

Organizational Structure and Personnel

Article 04: Personnel Structure.

- 4.1 The Institute of Renewable Energy Promotion consists of the Director General that is appointed or dismiss by the Prime Minister in accordance with proposal of Central Party Committee, based upon unanimous agreement with the Minster of Energy and Mines.
 - Director General is responsible directly to the Minister of Energy and Mines for successful or fairer implementation of its rights and duties that are set forth in Article 2 and 3 of these articles.
 - Director General who signs all departments' documents, in case of absence, Director General shall temporary dedicates its power to any deputy who acts on his behalf.
- 4.2 The Institute of Renewable Energy Promotion consists of some deputies that are appointed or dismissed from its position by the Minister of Energy and Mines in accordance with the Personnel Department's proposal, based upon unanimous agreement with Central Party Committee. Deputies are responsible for assisting the Director General in advising and leading all general tasks of the department and is deeply responsible for any particular task as assigned by the Director General.
- 4.3 The Institute of Renewable Energy Promotion consists of heads of divisions, their deputies who are appointed or dismissed by the Minister of Energy and Mines in accordance with proposal of Personnel Department, and also consists of staff and some administrators as appropriate.

Article 05: Establishment of Structure.

The Institute of Renewable Energy Promotion consists of 4 divisions as:

- 5.1 Administration Division
- 5.2 Renewable Development Division
- 5.3 Rural Electrification Division
- 5.4 Energy Efficiently and Conservation Division

Article 06: Detailed Duties of each Division.

6.1 Administration Division

6.1.1 Draw up annual budget, monitor, manage and use the institute's budget to be submitted to the Administration Office of the Ministry of Energy and Mines.

- 6.1.2 Carry out the personnel administration tasks, and receive, dispatch, manage, distribute and follow-up documents, and monitor number of personnel.
- 6.1.3 Manage and propose a personnel training plan in accordance with regulation and policy set forth by the high level.
- 6.1.4 Arrange and administer office supplies, material assets and other supplies of the department.
- 6.1.5 Carry out protocol duties and administer services as official task of the department.
- 6.1.6 Consolidate plans and make weekly, monthly, semester and annual summary reports of the department.
- 6.1.7 Draft and process documents that are related to the personnel of the department traveling to perform duty both domestically and abroad.
- 6.1.8 Facilitate and give advice to those who contacted with the institute about its work.
- 6.1.9 Contact and coordinate with the locals in facilitating high authority, such as various ministry staff and all energy development project developers that implement their official task at locality.
- 6.1.10 Contact and corporate with the concerned parties related to the institution both domestic and abroad in accordance with the regulations or as assigned by the high level.
- 6.1.11 Carry out its management task and closely follow-up usage of loan and technical assistance grant in accordance with regulations.
- 6.1.12 Consolidate renewable energy statistic data, renewable energy to serve the rural areas, rural electrification and the country energy saving plan and advice, disseminate and provide the various data services of the institution.
- 6.1.13 Make summary reports concerning activities of the institution from time to time to the Ministry regularly.
- 6.1.14 Play a role of the Secretariat Office for fund according to the assigned task:
 - * Build and set actual documents and mechanism for setting up the Renewable Energy Fund.
 - * Study activities plan, annual income-expenditure plan and technical standards, to propose to the Consultation Counsel Fund Committee and the Broad of Executive Fund Managers Committee for consideration and approval.
 - * Execute the fund in accordance with the procedure as set forth in various regulations that the institute has officially authorized.
 - * Prepare all documents concerning agreements and signed project documents on various projects prior to proposal to the Broad of Executive Fund Managers Committee to sign, together with Electricite Du Laos and

- other individuals in accordance with approval of the Consultation Fund Counsel.
- * Implement tasks, follow-up and monitor for collecting fund to the institute.
- * Prepare monthly, bi-annual and annual reports to the Executive Manager of Fund Committee and the Fund Consultation Counsel.
- * Carry out other tasks as assigned by the institution.

6.2 Renewable Energy Division.

- 6.2.1 Draft and amend laws on renewable energy, technical standards, procedure, regulations and various advices that are involved with renewable energy to propose to the institution for consideration.
- 6.2.2 Study and draft work plan and projects for developing renewable energy for each type in accordance with the strategy development plan as set forth by the state.
- 6.2.3 Study and propose pilot projects of renewable energy and various experimental projects that are related to renewable energy sector that lead to implementation and commercialization.
- 6.2.4 Promote the renewable energy especially on bio-fuel, biomass and various small size electricity businesses for them to be self-sufficient and connected to the Electricite Du Laos system.
- 6.2.5 Take charge of, and corporate with the concerned divisions to study and promote, selected type of energy for transportation sector.
- 6.2.6 Study and give technical advice in relation to investment, analysis of the benefits on the economic technology, finance, buying-selling and the country's marketing in the promotion tasks and the renewable energy development in accordance with the regulations.
- 6.2.7 Study, collect data and build database, disseminate and give advice on the concerned data and information on renewable energy such as: small hydropower equal to or less than 15 MW, solar power, wind power, biomass, and waste from city, industry factories and others.
- 6.2.8 Monitor and follow-up, give advice and training on how to use and maintain renewable energy system at the locality.
- 6.2.9 Contact and corporate with ministries, organizations, localities and other concerned parties for follow-up and inspection of renewable energy development projects in accordance with the regulation or as assigned by the institution.
- 6.2.10 Promote the development of electrification by renewable energy projects in supporting the local development.
- 6.2.11 Implement other tasks as assigned by the institution.

6.3 Rural Electrification Division

- 6.3.1 Study, prepare, improve and give advice on the technical regulation for off-grid system procedures and various regulations that are related to management of the usage of the off-grid system.
- 6.3.2 Study and prepare plan, work plan and projects for developing and the rural electrification extension.
- 6.3.3 Research and propose pilot projects of rural electricity extension and other pilot projects that are related to rural electrification for the commercial practices.
- 6.3.4 Draft and improve master plan concerning rural electrification.
- 6.3.5 Research and give technical advice on funds, analysis of benefits on economical technology, finance, buying-selling and the country's domestic energy market in promoting and developing off-grid electrification system in accordance with the regulations.
- 6.3.6 Study, collect data and build-up database, disseminate and give advice concerning various data and information on off-grid electrification system in accordance with the regulation.
- 6.3.7 Monitor and establish implementation of rural electrification in accordance with the plan of project supported by the international organizations.
- 6.3.8 Follow-up, inspect, give advice and train how to use and maintain off-grid electrification system at the locality and rural areas.
- 6.3.9 Contact and corporate with ministries, organizations and the concerned locality in order to monitor and inspect rural electrification projects in accordance with the regulation or as assigned by the institution.
- 6.3.10 Carry out other task as assigned by the institution.

6.4 Energy Efficiency and Conservation Division

- 6.4.1 Study and draft policy, strategy on energy conservation.
- 6.4.2 Set procedures, regulations and give various advices on energy conservation.
- 6.4.3 Study and draft work plan and project for developing and promoting to energy conservation.
- 6.4.4 Research proper energy saving and conservation of various experimental energy projects concerning conservation and effective use of energy in order for them to reach the stage of commercialization.
- 6.4.5 Research and give technical advice concerning the funds, analysis of the economical technology, finance, buying-selling and the domestic electricity market in the field of the promotion tasks for energy conservation.
- 6.4.6 Study, collect data and set up database, disseminate, give advice and provide data services concerning the energy conservation.
- 6.4.7 Monitor, inspect and give advice on the usage and maintenance of energy conservation system for all sectors that use the said energy.

- 6.4.8 Promote the energy efficient stoves and development of the production.
- 6.4.9 Contract and corporate with ministries, organizations, the localities and concerned parties in order to monitor and inspect energy conservation projects in accordance with the regulations or as assigned by the institution.
- 6.4.10 Contact and corporate with all concerned parties both domestic and international for promoting and implementing clean development mechanism and climate change adaptation.
- 6.4.11 Train and build awareness, and disseminate energy conservation and saving.
- 6.4.12 Implement other tasks as assigned by the institution.

<u>Part IV</u> Work Method

Article 07: Work Method.

- 7.1 Implement one chief regime principle in accordance with diversification of management system based upon Central-Democracy principle, lead by group of committee, individuals responsible for clearly dividing work and responsibility, and assigning rights to solve problem at each level, to each individual clearly with dividing them appropriately.
- 7.2 Activity should strictly follow the directive policy of the Party, the strategy for energy development plan of the Ministry of Energy and Mines to make detailed plan of each project and orderly work plan, concentrate and learn from the past lesson.
- 7.3 Implement report regime, consultation meeting regime, inspection regime regularly, and give feedback to and seek the advice from the high level regularly.
- 7.4 Coordinate various departments under the Ministry of Energy and Mines and various organizations concerned in accordance with its responsibility to ensure that energy plan of energy sector are implemented soundly and effectively.
- 7.5 Accept weekly feedback and hold monthly meetings within the institute.

<u>Part V</u> <u>Final Provision</u>

<u>Article 08</u>: Institute of Renewable Energy Promotion has its own stamp to serve official purposes.

<u>Article 09</u>: The Institute of Renewable Energy Promotion with all concerned parties shall acknowledge and implement these articles strictly.

<u>Article 10</u>: These articles are effective immediately after duly signed and replaces all earlier agreements and decision that contradicts with these articles.

The Minister of Energy and Mines

Signed and Sealed

Soulivong Daravong



Technical Assistance for Capacity Building in the Hydropower and Mining Sectors prepared by the World Bank

Component 1. Joint Hydropower and Mining Learning	Program	. (US\$ 2.26 million)
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This component aims to build critically needed capacity and generate public awareness across the hydropower and

mining sectors. The provision of adequate skills and training for government staff and the next generation of leaders for the two sectors would remove critical bottlenecks to the development of both sectors. Subcomponent a. To provide for learning in cross-cutting issues as well as training specific to the two sectors, the project will fund higher-level courses of a continuing-education nature **Continuing Learning** Program for Sector (such as contract management, financial appraisal, project supervision, environmental Professionals. and social management, etc.), as well as sector-specific hands-on training on technical issues. The continuing-learning program will target government staff and public/private sector practitioners at three levels: senior management to be equipped with skills necessary for strategic vision and planning for both sectors; mid-level staff charged with analytical responsibilities in terms of economic, financial and technical assessments of proposals; and provincial level staff whose capacities for follow-up on the field level are to be improved. MEM will make use of existing facilities to carry out the training Subcomponent b. This component will support advanced formal education at the National University of Education Lao PDR (NUOL) and selected technical colleges, to assist development of the next Sector Support. generation of hydropower and mining engineers and a skilled labour force. The support of the Project for these educational institutions will supplement programs funded from other donors and sources (the ADB, for example) but with specific application to the academic disciplines required for training in the hydropower and mining sectors. Subcomponents include: support to the NUOL to develop the technical engineering curricula for recently established hydropower and mine engineering degrees (in connection to the environmental and social education programs to be supported by a sub-grant under the LEnS Additional Financing as well as the ADB/AusAIDsupported Integrated Water Resources Management Project; promote professor and student exchange programs with universities in the region; and upgrade library, laboratory, and teaching resources; and technical training programs for skilled workers, through two established technical colleges specializing in hydropower, and one college charged with education of mine professionals. All of these institutions are in urgent need of upgrading their curricula and teaching facilities and equipment. Subcomponent c. This component will entail the establishment of a small library at the MEM where information may be made available for public awareness, as well as outreach Outreach Information Sharing programs which will be used and be adapted to the existing procedures at the central for Stakeholders. and provincial levels for dissemination of information. In addition to the library, the component will support upgrading of the MEM's centralized web-site for on-line publication of sector documents and information. The outreach strategy also entails systematic translation into the Lao language so as to be comprehensible to all stakeholders. The library will also serve as a legislation register that will house and keep track of changes to relevant government legislative instruments. Five pilot information centers, located within the provincial department for Energy and Mines, are proposed: Vientiane, Odomxay, Louangphabang, Khammoune and

Component 2: Hydropower Sector Development. (US\$ 2.71 million)

and mining investments.

The hydropower component aims at capacity building in support of sustainable hydropower development in Lao PDR. Activities will cover the entire value chain, from planning, concessioning, construction, and operation to revenue management.

The planned information centers will be established within existing ministry premises and will not entail land acquisition. These information centers will also conduct outreach activities with communities in areas that are particularly impacted by hydro

Cubaamma	This commonant will assist the covernment
Subcomponent a.	 This component will assist the government agencies to: (i) review the economic benefits and financial returns of potential hydropower.
Hydropower Planning.	sites, and update the least-cost system expansion plan (2005) for hydropower development, taking into account potential environmental and social costs and benefits, in the context of power trade with GMS countries, and meet domestic load growth, including assessment of the benefits and costs of hydropower.
	construction on the Mekong River;
	(ii) develop the Planning for a National Hydrological Data Collection and Processing System to support hydropower development planning and optimization, including installation of critical gauge stations along the Nam Ou
	River to provide input data; and (iii) update the existing models developed under various projects by the Mekong
	River Commission (MRC) and ADB for cascaded hydropower developmen planning, and apply the planning tools on the Nam Ou River and conductraining programs to build up knowledge and capacity in the MEM and associated government agencies to promote integrated river basin planning practice in the country, taking into consideration of environmental and social requirements, benefits and impacts.
Subcomponent b.	This component will provide technical assistance to the Department of Energy
Hydropower	Promotion and Development (DEPD) on project supervision to ensure project
Concession Management.	 construction and operation complying with the CA signed. In particular, consulting services will be provided to help DEPD in
Managemeni.	(i) Capacity building institution which is to focus on establishment of systems and
	manpower requirements within the DEB
	(ii) Capacity building on technical aspect which is to focus on the monitoring of
	implementation and other related technical issues of Concession Agreement (iii) Capacity building on financial aspect which is to focus on financial modeling
	and monitoring
	(iv) Capacity building on legal aspect which is to focus on the contractual aspects of Concession Agreement
Subcomponent c.	This component will provide technical assistance to the DOE to:
Hydropower	(i) adjust the NPSH in line with the new ESIA Decree and the recent institutiona
management and implementation of	restructuring and develop/update operational regulations and procedures to enable effective implementation of the NPSH;
the NPSH.	(ii) update and implement the MEM's internal guidelines, technical standards and administrative procedures to facilitate effective enforcement and monitoring of the NPSH; and
	(iii) support the DOE and selected PDEMs in three to four key provinces (Attapeu/Chamapasak, Vientiane, and Bolikhamxay) for implementation of the Action Plan developed under LEnS to forge effective implementation of the NPSH.
	Sector Development. (US\$ 2.31 million)
	le funding for three subcomponents pertaining to the mining sector.
Subcomponent a. Improvement of	 Clear laws and regulations for the mining sector, along with internationally competitive taxation, are the key to developing the sector. While the Government has
Sector Governance	made considerable progress in these areas, including adoption of a new Minerals Law
and the Enabling	in December 2008, the legislative and regulatory framework needs to be completed.
Environment.	• The project will provide legal advisory support to:
	 (i) completion of the on-going legislation process by providing funding for senior legal advisors to draft detailed mining regulations covering several aspects of mine title issuance and registry, occupational health and safety, artisanal and small scale mining, environmental and social protection, classification or
	mineral resources and reserves, guidelines for prospecting and exploration, and
	the use and commercialization of mineral products; (ii) develop a national mining development policy;
	(iii) prepare a standard mineral development agreement which can be used by investors, and
	(iv) promote models for corporate social responsibility, and risk mitigation and community benefit-sharing approaches (such as community developmen funds).
	The Project will support the dissemination of the Minerals Law and regulations through funding of printing, translation, and other expenses related to public information and awareness-raising, including in impacted communities. In addition

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Subcomponent b.	the project will provide funding for the Government to commission a study on the financial flows of mining companies, with a view to improving reporting and accuracy. The study will also provide a means for the consultants to train the MOF staff in analysis of company profit and loss statements in order to improve tax administration. • To support implementation of the new laws, regulations, and taxation instruments by
Strengthening of	the relevant sector agencies—principally within the MEM and the MOF—the project
Government	will fund technical assistance and logistical support to:
Oversight Capacity.	(i) provide training on the use of a monitoring and evaluation (M&E) template, which was developed under a previous Institutional Development Fund (IDF) grant;
	(ii) reinforce the mine inspection functions within the MEM, to ensure compliance with relevant occupational health and safety, environmental and social safeguards, and production requirements, as per the new Minerals Law and regulations;
	(iii) elaborate a community consultation and disclosure program, to promote understanding of the legal rights and obligations of local communities and developers in the mining sector; and
	(iv) reinforce the mine cadastre and mine title registry functions of the Department of Mines (DOM), specifically to provide the hardware and software required for transition from the present coordinate reporting system to a block reporting
	system.
Subcomponent c.	• In order to attract and retain new minerals investment, Lao PDR needs to develop and
Program to Promote	upgrade its geological information base. The provision of adequate and accurate data,
Minerals	information, and maps of the geology and earth system of the country is essential to
Development.	assist new exploration for mineral deposits and to help the Government with better land use planning. This information will be regularly updated and made publically
	available at no or nominal cost to any interested party.
	The project will provide funding for consultancy services and logistical support to:
	(i) provide geological and mineralogical inputs to the current modernization and upgrade of the existing geographical information systems (GIS), and widely disseminate the information they collect;
	(ii) provide field training in applied geological mapping at a 1:200,000 scale covering the mineral potential of a portion of Savannahket province; and
	(iii) acquire and provide training in the use of laboratory and field equipment, including geo-chemical testing and analytical equipment, to enable the Department of Geology (DGEO) to test for the quality and quantity of minerals produced and exported by developers.
	The funding provided by the Project for the upgrading of the geological database and promotional activities will be enhanced by parallel funding of the Finland government through which technical assistance will be provided by the Finnish Geological Survey.

Geological Survey.

Component 4. Project Administration and Management. (US\$ 0.72 million)

The project will support consultancy services for the Project Secretariat established within the MEM for coordination and management of project implementation, and acquisition of logistical and equipment support necessary for its smooth functioning.

Source: The World Bank (2010), Project Appraisal Document—Technical Assistance for Capacity Building in the Hydropower and Mining Sectors (Report No: 50918-LA), January 12, 2010, Washington, DC

Ongoing projects of the Asian Development Bank

Small and Mini Hyd	lroelectric Development Program
Type of assistance	Technical assistance
Schedule	Approval: 14 January 2009
	Signing: 9 February 2009
	Effectively: 9 February 2009
	Closing: 31 December 2012
Fund source	Total: US\$1,880,000-
	Technical Assistance Special Fund: US\$600,000-
	ATF – Finnida Grant: US\$1,000,000-
	Counterpart: US\$280,000
Description	The Project proposes to assist the MEM in:
	 (v) preparing a policy for implementing sections of the amended Electricity Law related to tariff setting, to encourage development of medium to mini hydroelectric power projects to provide electricity from a clean and renewable source of energy for domestic use, and to allow the Government to approve such development proposals; (vi) after screening and ranking identified projects, prepare a feasibility study of one
	or two small or mini hydropower (with an installed capacity of up to 5 MW each) projects that would benefit from the work under (i); and
	(vii) preparing the necessary documentation for Clean Development Mechanism (CDM) registration that would serve as a model for replication by other small-scale hydroelectric power project developments.
	• This is in line with the ADB's Strategy 2020 and the country strategy and program for
	Lao PDR, which encourages the development of environmentally friendly generating facilities to tackle climate change and promote clean energy, and is also consistent with
	the government's energy sector plan to provide electricity to 90% of the population by
	2020, and the EDL's energy strategy and road map on power generation.
Greater Mekong Su	bregion Northern Power Transmission Project
Type of assistance	Grant
Schedule	Approval: 26 January 2010
Selledate	Signing: 24 February 2010
	Effectively: 23 November 2010
	Closing: 30 June 2014
Fund source	Total: US\$27,435,000-
	Asian Development Fund: US\$20,000,000
	Counterpart: US\$7,435,000
Description	The project will:
	(i) construct 398 kilometers (km) of 115-kilovolt (kV) transmission lines with associated 115/22 kV substations, and erect about 1,100 km of new 22 kV medium- and low-voltage distribution lines to expand access to grid electricity to consumers in western Vientiane, Xaignabouli, and Phongsali provinces of the Lao PDR;
	(ii) provide no interest credit to poor households in the project areas to help them connect to the distribution grid; and
	(iii) provide consulting services, including a project implementation consultant to the EDL and advisory services to the Ministry of Energy and Mines (MEM).
	The construction of the transmission and distribution facilities comprises three modules. The ADB will finance module 1, and Korea Eximbank will finance modules 2
	and 3.
	Module 1 consists of: (i) approximately 08 kilometers single circuit on double circuit towars transmission.
	(i) approximately 98 kilometers single circuit on double circuit towers transmission line from Paklay to Nonhai;
	(ii) a 20 mega volt ampere (MVA) new substation in Paklay;
	(iii) the extension of an existing substation in Nonhai; and
	(iv) the extension of an existing substation in Xayabury;
	• Module 2 consists of:
	(i) approximately 122.74 kilometers single circuit on double circuit towers
	transmission line from Paklay to Xayabury; (ii) approximately 74.6 kilometers single girevit on single girevit towar 115kV.
	(ii) approximately 74.6 kilometers single circuit on single circuit tower 115kV transmission line from Paklay to the Lao-Thai border near Kenthao for

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	connection with the Thali substation located in the territory of Thailand; (iii) approximately 263 km 22 kV feeders from the Paklay substation, 156 km 22 kV feeders from the Nonhai substation, and 336 km 22 kV feeders from the Xayabury substation, all for related medium and low voltage distribution; and (iv) necessary connection from the Xayabury substation to 7,020 households, from the Nonhai substation to 7,553 households, and from the Xayabury substation to 1,541 households. • Module 3 consists of: (i) approximately 102.4 km single circuit on double circuit towers transmission line from Namo to Boun Neua; (ii) a 20 mega volt ampere new substation (transformer feeder) in Boun Neua; (iii) a new 115kV switching station in Namo; (iv) approximately 361 km 22 kV feeders from the Boun Neua substation for related medium and low voltage distribution; and (v) necessary connection from the Boun Neua substation to 2,645 households. The consulting services will be financed by ADB.
	Development in Remote Communities Project
Type of assistance	Technical assistance
Schedule	Approval: 9 September 2011 Signing: 11 November 2011 Effectively: 11 November 2011 Closing: 31 May 2014
Fund source	Total: US\$1,000,000- Japan Fund for Poverty Reduction: US\$1,000,000-
Description	 The proposed Project will implement 5.5 Mega Watts (MW) of distributed off-grid capacity with (i) solar photovoltaic (PV) home systems; and (ii) mini-grids powered by RETs (PV, micro/pico-hydro and mini-wind). It will also include institutional and beneficiary capacity building in procurement, operation and maintenance (O&M), and monitoring.
Greater Mekong Su	bregion Nam Ngum 3 Hydropower Project
Type of assistance	Loan / technical assistance
Schedule	Approval: Loan 2818, Loan 2819 and TA on 3 November 2011 Signing: TA on 9 January 2012 Effectively: TA on 9 January 2012 Closing: Loans 2818 and 2819 on 30 June 2019, and TA on 31 December 2017
Fund source	
Description	 The ADB will provide two project loans to the Government of the Lao PDR to support the development of the Nam Ngum 3 Hydropower Project and associated dedicated transmission facilities in the Lao PDR for exporting electricity to Thailand. The government will use the funds for its equity share in the 440-megawatt (MW) build-own-operate transfer Nam Ngum 3 hydropower plant (NN3). The proposed project will:
	 (i) potentially provide revenue flows to the government in the form of taxes, royalties, and dividends currently estimated at \$771 million over the 27 year concession period; (ii) increase regional cooperation in the Greater Mekong Subregion (GMS); (iii) promote economic growth in the Lao PDR through private sector investment, technology transfer, employment generation, and local infrastructure development; and
	 (iv) ensure sustainable development in northeast Thailand by achieving energy security and reducing greenhouse gas emissions. The Nam Ngum 3 Power Company (NN3PC) will sell to the Electricity Generating Authority of Thailand (EGAT) on average 2,072 gigawatt-hours (GWh) annually from NN3, which, if generated by the Thai power system, would annually create 1 million tons of carbon-dioxide emissions.
	The proposed NN3 would be the second large-scale hydropower plant to receive ADB financing in the Lao PDR, following Nam Theun 2, which was approved in 2005.

Source: ADB



List of required competency

List of competency necessary for assuming the role of secretariat

Drafting

Promote compliance with legislations in the power sector as well as other related sectors. It includes demonstrating compliance with legislation and related public sector guidelines and procedures and encouraging and assisting others:

to comply with uniformity in drafting style, and to make the resulting statutes clear, simple and easy to understand and use; and

to use and apply useful legal information about current legislation of the power sector.

Organization

Effective management, organization and prioritization of office functions as well as the workday/week/month for people, management and other stake-holders.

Sample competency includes:

to develop and use systems to organize and keep track of information or work progress;

to identify what needs to be done and takes action before being asked or required to;

to organize information or materials for others;

to prepare carefully for meetings, travel, and conferences for others;

to prioritize tasks to meet deadlines even in a fast paced, and changing environment through frequent interruptions;

to review and check carefully the accuracy of information in work reports provided by management, or other individuals; and

to carefully track, monitor and purchase office necessities and inventory to ensure the committee activities functionality.

Communication

Clearly conveying and receiving messages to meet the needs of others. This involves listening, interpreting and delivering verbal, non-verbal, written and electronic messages

Sample competency includes:

to listen attentively to ideas and concerns of others;

to speak clearly and can be easily understood;

to demonstrate ability to provide explanation and/or options to resolve difficult or confrontational situations;

to express ideas clearly and concisely in writing;

to use appropriate business style writing;

to be able to explain issues clearly and accurately, policies, procedures and other pertinent information to others;

to compose/ proofread/ edit clearly and concisely documents such as letters, memos and e-mail;

to demonstrate correct use of grammar, spelling and punctuation in all produced documents;

to be able to relay/redirect complete and accurate messages to appropriate persons/departments; and

to keep his/her manager informed about progress and problems; avoid surprises.

Service Delivery

Understanding and meeting the needs of clients. Clients include members of the Steering Committee, Taskforces and other concerned parties related to preparation of the NPDP.

Sample competency includes:

to be able to explain issues clearly and accurately, policies, procedures and other pertinent information to others;

to be able to relay/redirect complete and accurate messages to appropriate persons/departments;

to compose/ proofread/ edit clearly and concisely documents such as letters, memos and e-mail;

to demonstrate ability to provide explanation and/or options to resolve difficult or confrontational situations;

to demonstrate correct use of grammar, spelling and punctuation in all produced documents;

to express ideas clearly and concisely in writing;

to keep his/her manager informed about progress and problems; avoid surprises; and

to listen attentively to ideas and concerns of others.

List of competency necessary for assuming the role of secretariat

Adaptability

Personal willingness and ability to work in, and adapt to change

Sample competency includes:

- to understand and accept other points of view and recognizes the value of different approaches;
- to switch to a different strategy when an initially selected one is unsuccessful;
- to demonstrate openness to new organizational structures, procedures and technology;
- to accept change even when there is ambiguity;
- to step into co-workers tasks when needed or required;
- to work creatively within standard procedures to fit a specific situation;
- to apply special techniques to manage situations involving stress or change; and
- to take on new tasks willingly.

Interpersonal

Working cooperatively and effectively to achieve concrete results

Sample competency includes:

- to accept change even when there is ambiguity;
- to apply special techniques to manage situations involving stress or change;
- to demonstrate openness to new organizational structures, procedures and technology;
- to step into co-workers tasks when needed or required;
- to switch to a different strategy when an initially selected one is unsuccessful; and
- to take on new tasks willingly.

Technology

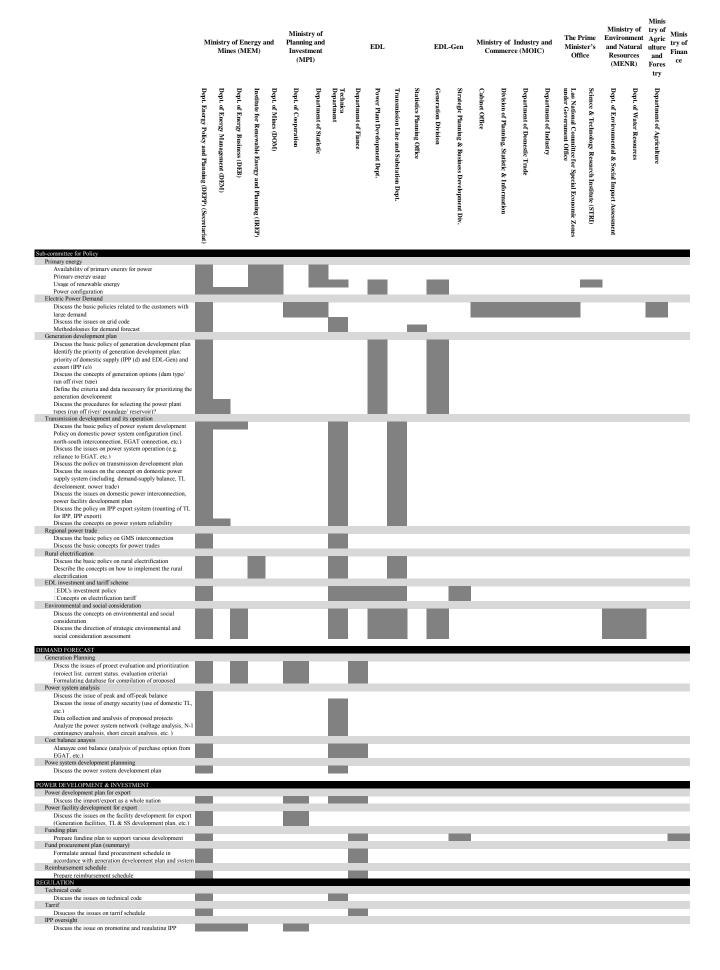
Ability to accurately and thoroughly utilize office technology and to demonstrate practical knowledge of Information Management, E-mail Management and Privacy Protection Issues.

Sample competency includes:

- to apply effectively technical knowledge to solve a range of problems with office software such as MS Office;
- to be able to establish and maintain electronic & paper filing systems so that information can be readily retrieved;
- to demonstrate ability to use office software to create; and
- to format and edit forms and presentations.

Appendix IV

Agencies and ministries roles



Appendix V

Description of WT meeting

Number	#1	#2	#3	#4
Date:	January 22,2013	Feb 12, 2013	March 28-29, 2013	March 12, 2013
Participants	7 from DEPP	7 from DEPP	4 from DEPP	5 from DEPP
		6 other participants from DEM, IREP EDL and EDL-Gen		2 Japanese LT Experts
Theme		Demand Forecasting		Generation Planning
Narrative	• The selection of the	 Continuation from #1. 	• Continuation from #2	New topic on Generation
	discussion theme was	 Provided explanation on the 	 Controlled discussion 	Planning
	initiated by the Director	information of the Study and	facilitated by Japanese	• Use of water shall be better
	General of MEM.	the purpose of the work	Experts	coordinated along the water
	 Discussion topics include: 	team meeting,		shed.
	explanation of the JICA	 Current forecast is over 		
	Study including the purpose,	estimate. Particularly those		
	the current status, etc. It	of large demand.		
	was also presented that the	 Local authority contact with 		
	formulation of Work Team	EDL for data collection.		
	and the meeting's purpose,	Such estimation is not based		
	etc. The procedures and	on the installation schedule.		
	expectation as well as roles	Only reported to EDL based		
	for preparation of NPDP	on the installed capacity.		
	were presented.			
Conclusion/	Specific actions for	 Accuracy of data collection 	 Data sources on large 	 Explanation of the current
Actions to be	improvement of data	shall be much improved.	demands clarified.	situation
taken	collection shall be carried	(EDL is able to do so.)	 No need of direct contact 	 Need of resolving seasonal
	out by EDL.	 Approaches for the analysis 	from MEM because EDL	fluctuation
	 Review of data, analysis 	shall be improved through	has contacted key persons.	
	using them, etc. may be	the outcomes from the study.	 Data accuracy and 	
	carried out by experts, if	It was proposed that	dependability based on the	
	necessary.	quarterly meeting aiming at	schedule is	
	 In need of data & draft for 	improving the reporting		
	making decision.	from local authority is		
		proposed.		

	Extension of the contract	with EGAT (1000MW)	proposed.	Renew and reconsider the	export/import tariff,	Oversight to EDL must be	strengthened										
#4	•			•		•											
	Include the important	stakeholders to the	preparation process of	NPDP	Stakeholders identified,	Contact person identified	and listed.	Utilizing the existing	reporting mechanism so to	maintain information flow	from provinces. Financing	such mechanism by ensuring	budget to the activities.				
#3	•				•	•		•									
2	Further training to meet the	necessity and requirement to	carry out the proposed	actions sought.	Next topic would be on the	power Supply.	Estimation's accuracy is	important. The policy	related to large industry	(how to measure, how to	exclude & include) shall be	even discussed in greater	detail.	Improvement of data	collection methods	necessary.	
#2	•				•		•							•			
	Next meeting is scheduled	Feb. The theme is	improvem3ent of data	collection mechanism.	Review the data submitted	from local authorities.											
#1	•				•												
Number	Preparation	for the next	meeting, etc.														

Appendix VI

List of resources (1)

		Pric	rity
	Description of Capacity Development	DEPP	EDL
POLICY FORMULATION			
Primary energy	Discuss the availability of primary energy for power	Н	n/a
, 0,	Discuss the concept of primary energy usage		
	Discuss the concept of the usage of renewable energy		
Electric Power Demand	Cbncept of power configuration Discuss the basic policies related to the customers with large demand	Н	Н
Electric Fower Demand	Discuss the issues on grid code	"	- ''
	Methodologies for demand forecast		
Generation development plan	Discuss the basic policy of generation development plan	Н	Н
	Identify the priority of generation development plan: priority of domestic		
	supply (IPP (d) and EDL-Gen) and export (IPP (e)) Discuss the concepts of generation options (dam type/ run off river type)		
	Define the criteria and data necessary for prioritizing the generation		
	development		
	Discuss the procedures for selecting the power plant types (run off river/		
Transmission development and its operation	poundage/ reservoir)? Discuss the basic policy of power system development	Н	Н
Transmission development and no operation	Policy on domestic power system configuration (incl. north-south		
	interconnection, EGAT connection, etc.)		
	Discuss the issues on power system operation (e.g. reliance to EGAT,		
	Discuss the policy on transmission development plan Discuss the issues on the concept on domestic power supply system		
	(including demand-supply balance, TL development, power trade)		
	Discuss the issues on domestic power interconnection, power facility		
	development plan		
	Discuss the policy on IPP export system (rounting of TL for IPP, IPP Discuss the concepts on power system reliability		
Regional power trade	Discuss the basic policy on GMS interconnection	Н	Н
	Discuss the basic concepts for power trades		
Rural electrification	Discuss the basic policy on rural electrification	Н	n/a
EDI investment and tariff coheres	Describe the concepts on how to implement the rural electrification	Н	Н
EDL investment and tariff scheme	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	П	П
Environmental and social consideration	Discuss the concepts on environmental and social consideration	Н	Н
	Discuss the direction of strategic environmental and social		
	consideration assessment		
DEMAND FORECAST			
Seminar for demand forecast	Off-JT in Vientiane planned in April 2 to 4, 2013	Н	Н
	Discuss the use of econometric model and its software		
	Practice usage of the model		
Generation Planning	Follow-up by IEEJ if necessary Discss the issues of proect evaluation and prioritization (project list,		
Constant in in in ing	current status. evaluation criteria)	Н	Н
	Formulating database for compilation of proposed projects		
SYSTEM PLANNING			
Power system analysis	Discuss the issue of peak and off-peak balance	L	Н
1 ower system analysis	Discuss the issue of energy security (use of domestic TL, etc.)	-	
	Data collection and analysis of proposed projects		
	Analyze the power system network (voltage analysis, N-1 contingency		
	analvsis, short circuit analvsis, etc.) OJT on power system analysis software		
Cost balance anaysis	Alanayze cost balance (analysis of purchase option from EGAT, etc.)	L	Н
Powe system development plannning	, ,	L	Н
DOWED DEVELOPMENT & TRADE (ENAME)			
POWER DEVELOPMENT & TRADE/ FINANCE Power development plan for export	Discuss the import/export as a whole nation	L	Н
Power facility development for export	Discuss the importexport as a whole nation Discuss the issues on the facility development for export (Generation		
and the second s	facilities, TL & SS development plan, etc.)	L	Н
Funding plan	Prepare funding plan to support various development plan.	L	Н
Fund procurement plan (summary)	Formulate annual fund procurement schedule in accordance with	L	Н
Reimbursement schedule	generation development plan and system expansion plan Prepare reimbursement schedule	L	Н
. Combursoment somedule	sps. 5 formula comodulo	_	
REGULATION			
Technical code	Discuss the issues on technical code	L	Н
Tarrif IPP oversight	Disucuss the issues on tarrif schedule Discuss the issue on promoting and regulating IPP investers	L L	H H
ii i oversigiit	2.00000 the lood on promoting and regulating in 1 investers	_	

List of resources (2)

Priority Type of Training and Cost Resources Availability Cost Land Start Cost Land			_				_			
Establishing Priorities and Setting Goals		-							•	
Effective Meeting Management H		LMH	OJT	Cost	Off J1	Γ Cost	Laos	Japan	Others	Remarks
Effective Meeting Management H	ORGANIZATIONAL DEVELOPMENT									
Effective Meeting Management Effective Meeting Management H			,		,		,	,		One of important facilitation skills to
Negotiation	Establishing Friorities and Setting Social	н	/	Н	/	н	n/a	/	/	be strengthen
Negotiation H V H V H N Na N	Effective Meeting Management									
Negotiation		Н	✓	Н	×	n/a	n/a	✓	✓	
Decision Making M / H × n/a n/a / y Communication Skills M / H / H n/a / y This may be acquired through WT meaning Moviplace Conflict M / H / H n/a / y Time Management M / H / H n/a / y Time Management M / H / H n/a / y Time Management M / H / H n/a / y The Management M / H / H n/a / y This may be acquired through WT meeting activities Workplace English as a Second Language (ESL) Developing Effective Teams L / H / H n/a / y Workplace English as a Second Language (ESL) Workplace English as a Second Language (ESL) Budgeting and Financial Analysis H / H / H n/a / y Project Management M / H / H n/a / y Short off-JT is not sufficient for meeting the meeting activities may be carried out from time to time. ESL is important but shall be acquired by y aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest and the standard independently by aelf-financed or DEPP. Streadhest Communication Skils M / H / M / M / M / M / M / M / M / M /										
Decision Making M V H V L Na Na Na V V T Managing Workplace Conflict M V H V L Na Na V V T The Management M V H V H Na Na V V T The Project does not involve interaction with developers at this project does not involv	Negotiation	Н	/	Н	/	Н	n/a	/	/	
Communication Skills M V H V H n/a V This may be acquired through WT meeting activities may be acquired through WT meeting activities and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H n/a V Tribles and Professionalism for Public Employees L V H V H N/A V Tribles Insues may be taking on Ethical issues may be taking on Ethical issues may be taking on Ethical issues may be taking activities may be carried out from time to time. ESL is important but shall be acquired independently by self-figured or external support. **LEADERSHIP DEVELOPMENT/ SUPERVISORY SKILLS** **Budgeting and Financial Analysis** H V H V H N/A N/A N/A N/A V TRIBLES** **Project Management H V H V H N/A N/A N/A V TRIBLES** **Project Management H V H V H N/A N/A N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V H V M N/A V TRIBLES** **Project Management M V M V M N/A V M M N/	Decision Making	М	1	н	×	n/a	n/a	1	1	meeting activities
Managing Workplace Conflict Miles Management Miles M	_							-		
Time Management Ethics and Professionalism for Public Employees Developing Effective Teams L V H V H V H V R V F F F F F F F F F F F F F F F F F		M			,			,		This may be acquired through WT
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Employees L V H V H n/a V T T Emblais issues may be taking into consideration by external Personal Pe										
Developing Effective Teams C	Employees	L	/	Н	/	н	n/a	✓	/	
Workplace English as a Second Language (ESL) Workplace English as a Second Language (ESL) Leadership Development/ Supervisory Skills Budgeting and Financial Analysis H										
Workplace English as a Second Language (ESL)	Developing Effective Teams	L	✓	Н	/	Н	n/a	✓	✓	
(ESL) L V H V H V K V S acquired independently by self-financed or external support EADERSHIP DEVELOPMENT/ SUPERVISORY SKILLS Budgeting and Financial Analysis H V H V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Sreadsheet skills as prerequisit Project Management H V H V H V M n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Sreadsheet skills as prerequisit Note of the financial Analysis H V H V H V M n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Policision Making Skills M V H V M n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Decision Making Skills M V H V M n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Decision Making Skills M V H V M n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Tools for Enhancing Employee Motivation L V H V L n/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Discipline and Documentation of Employees L V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Tools for Enhancing Employee Motivation L V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. CUSTOMER FOCUSED APPROACHES/ QUALITY TECHNOLOGY Professional Report Writing H V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. Active Listening M V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. MS Office: Word, Excel, Access, H V H V H N/a V V Short off-JT is not sufficient for meeting the needs of DEPP. May be necessary in the long-term. Low in immidiate needs	Workplace English as a Second Language									
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Budgeting and Financial Analysis H	(232)									financed or external support
Budgeting and Financial Analysis H	LEADERSHIP DEVELOPMENT/ SUPERVISORY	SKILLS								
H		ORILLO								Short off-JT is not sufficient for
Project Management	Budgeting and Financial Analysis	Н	✓	Н	1	Н	n/a	✓	✓	meeting the needs of DEPP.
Conflict Resolution and Management M V H V M n/a V V meeting the needs of DEPP. Conflict Resolution and Management M V H V M n/a V V M M N/a W M M N/a W M M N/a W M M N/a W M M M N/a W M M M M M M M M M M M M M M M M M M										
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Building Positive Communication Skills	Conflict Resolution and Management	М	/	Н	/	M	n/a	/	/	moding the needs of BELL.
Delegation	5	M	/	Н	/	L	n/a	1	/	
Team Building	Decision Making Skills	М	/	Н	1	M	n/a	✓	1	
Managing Change L	Delegation	М	1	Н	/	M	n/a	✓	✓	
Hiring, Retention, and Termination Basics L	Team Building	M	1	Н	/	L	n/a	/	/	
Tools for Enhancing Employee Motivation Coaching and Counseling L V H V M n/a V V Discipline and Documentation of Employees L V H X n/a n/a V V Discipline and Documentation of Employees L V H X n/a n/a V V Giving Constructive Feedback and L V H V L n/a V V Hiring Retention and Termination L V H V H n/a V V Interviewing Skills L V H V H n/a V V Performance Appraisals L V H V H n/a V V CUSTOMER FOCUSED APPROACHES/ QUALITY TECHNOLOGY Professional Report Writing H V H V H n/a V V Issues in Customer Satisfaction L V H V H n/a V V Issues in Customer Satisfaction L V H V H n/a V V Benchmarking L V H V H n/a V V Benchmarking L V H V H n/a V V Total Quality Management MS Office: Word, Excel, Access, H V H V H N/a V M Introduction to the PC M V H V H N/a V M MS Project MS Project L V H V H N/a V M MS Project MS N N N N N N N N N N N N N N N N N N N	Managing Change	L	1	Н	/	M	n/a	/	/	
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Discipline and Documentation of Employees L	Tools for Enhancing Employee Motivation	L	/	Н	1	L	n/a	✓	✓	
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Hiring Retention and Termination L Hiring Retention and Termination L H H H H H H H H H H H H	Discipline and Documentation of Employees	L	1	Н	×	n/a	n/a	✓	✓	
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Work Process Improvement H	Professional Report Writing	Н	✓	Н	1	Н	n/a	✓	✓	
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MS Office: Word, Excel, Access, H H H H H N/a H N/a N/a Short off-JT is not sufficient for meeting the needs of DEPP. Short off-JT is not sufficient for meeting the needs of DEPP. H Introduction to the PC Auto CAD L H H H H N/a H N/a May be necessary in the long-term. Low in immidiate needs MS Project L H H H N/a H N/a V Short off-JT is not sufficient for meeting the needs of DEPP. May be necessary in the long-term. Low in immidiate needs	Total Quality Managomone	_	-		-			•	-	
GIS Introduction to the PC Auto CAD PowerPoint and Outlook MS Project H V H V H N/a V M meeting the needs of DEPP. H V H V H N/a V M May be necessary in the long-term. Low in immidiate needs H V H V H N/a V M May be necessary in the long-term. Low in immidiate needs	OFFICE TECHNOLOGY & SOFTWARE TRAININ	1G								
GIS M M H NA H NA H NA H NA MAY H NA MAY H NA MAY May be necessary in the long-term. Low in immidiate needs MS Project L H H NA NA	MS Office: Word, Excel, Access,	Н	/	Н	/	Н	n/a	1	1	
Introduction to the PC Auto CAD L H H H n/a May be necessary in the long-term. Low in immidiate needs MS Project L H H H N/a H N/a V May be necessary in the long-term. Low in immidiate needs L H H H N/A V V May be necessary in the long-term. Low in immidiate needs	010									meeting the needs of DEPP.
Auto CAD L										
PowerPoint and Outlook L										May be necessary in the long-term
MS Project L ✓ H ✓ H n/a ✓ ✓	AUIU CAD	L	/	Н	/	Н	n/a	✓	1	
ine riojest	PowerPoint and Outlook	L	✓	Н	1	Н	n/a	✓	1	
Windows L ✓ H ✓ H n/a ✓ ✓	MS Project	L	✓	Н	/	Н	n/a	✓	✓	
	Windows	L	✓	Н	1	Н	n/a	✓	1	

Note: L:Low, M:Middle, H:High, \checkmark : available, x:not available, n/a: not applicable

Appendix VII

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ



ລັດວິສາຫະກິດໄຟຟ້າລາວ ຝ່າຍກໍສ້າງເຂື່ອນ

ເລກທີ່....../ຟຟລ/ກສຂ/ສຫຼພ ນະຄອນຫຼວງວງງຈັນ, ວັນທີ......

		, 							ŀ		}			
				Installed	Installed Capacity	EDL		EDL-GEN 25%	25%	Domestic	#ic			
2	Power Plant	Location	Part	Inst.Cap	Energy	Inst.Cap		۵		۵	Energy	COD	Progress	Developer
				(MM)	(GWh)	(WW)	(GWh)	(MM)	(GWh)	(MW)	(GWh)			
-	င်္ခံစသຂອງ EDL ဏႊ EDL-GEN ဖိုသံၫိန္ခ်င္သည	ໃຊ້ແລ້ວ												
٦	Nam Dong	Luangprabang	Northern	1.0	5.0	1.0	5.0	0.0	0.0	1.0	5.0	1970	Existing	EDI
2	Nam Ko	Oudomxay	Northern	1.5	8.0	1.5	8.0	0.0	0.0	1.5	8.0	9661	Existing	EDI
3	Nam Ngay	Phongsaly	Northern	1.2	5.2	1.2	5.2	0.0	0.0	1.2	1.5	2001	Existing	TG3
4	Nam Song (Ex)	Vientiane	Central	0.9	25.0	0.9	25.0	0.0	0.0	0.9	25.0	2012	Existing	T03
2	Nam Ngum 1	Vientiane	Central	155.0	1002.0	116.3	751.5	38.8	250.5	155.0	1,002.0	1661	Existing	EDI-EDI_GEN
9	Nam Luek	Vientiane	Central	0.09	218.0	45.0	163.5	15.0	54.5	0.09	218.0	2000		EDL-EDL_GEN
7	Nam Mang 3	Vientiane	Central	40.0	150.0	30.0	112.5	10.0	37.5	40.0	150.0	2005		EDI-EDI_GEN
∞	Xeset 1	Saravan	Southern	45.0	133.9	33.8	100.4	11.3	33.5	45.0	133.9	1991	Existing	EDL-EDL_GEN
6	Xeset2	Saravan	Southern	76.0	309.0	57.0	231.8	19.0	77.3	76.0	309.0	2009		EDL-EDL_GEN
10	Xelabam	Champasak	Southern	5.0	21.5	3.8	16.1	1.3	5.4	5.0	21.5	6961		EDL-EDL_GEN
	Sub Total (I):			390.7	1,877.60	295.45	1,419.00	95.25	458.60	390.70	1,873.90			
=	ໂຄງການຂອງ EDL ທີ່ກຳລັງກໍ່ສ້າງ					ļ								
-	Nam Khan 2	Luangprabang	Northern	130.0	558.0					130.0	558.0	2015	Under Construction	T03
2	Nam Khan 3	Luangprabang	Northern	9.09	240.8					0.09	240.8	2016	Under Construction	EDL
3	Nam Chiane	Xiengkhuang	Northern	104.0	448.2					104.0	448.2	2016	Under Construction	EDI.
4	Nam Sana	Vientiane	Central	14.0	49.6					14.0	49.6	2014	Under Construction	103
2	Houaylamphanh Ngai	Xekong	Central	88.0	500.0	ļ				88.0	500.0	2015	Under Construction	EDI
9	Nam Hinboun	Khammouan	Central	30.00	197.00					30.0	197.0	2016	Under Construction	EDI.
7	Xeset 3	Saravan	Southern	23.0	86.10					23.0	86.10		FS Completed	EDL
	Sub Total (II):			449.00	2,079.70					449.00	2,079.70			
						I					ļ			
Ξ	ໂຄງການຂອງ EDL ທີ່ກຳລັງສຶກສາ													
-	Nam Boun 2	Phongsaly	Northern	15.0	0.09					15.0	0.09	2015	Pre Feasibility Study	EDI
2	Nam Ngao	Borkeo	Northern	20.0	85.2					20.0	85.2	2018	Pre Feasibility Study	EDL and PEA ENCOM
3	Nam Phak	Oudomxai	Northern	30.0	110.0					30.0	110.0	2015	Pre Feasibility Study	EDI
4	Nam Ngum-Nam ken	Xayabouly	Northern	70.0	370.0					70.0	370.0	2020	Desk Study	EDI
2	Nam Ngum 1 (Ex)	Vientiane	Central	40.0	56.24					40.0	46.24	2017	FS Ongoing	EDI
9	Kengsevaten	Borlikhamxai	Central	54.0	200.0					54.0	213.0	2016	FS Ongoing	EDL
7	Xe don 2,3	Salavan	Southern	20.00	80.00					20.0	80.0	2018	ສະເໜີແລ້ວ	EDI
8	Xeset 4	Salavan	Southern	10.00	110.00					10.0	110.0	2018	Pre FS	EDL
6	Selabam (Ex)	Champasak	Southern	7.70	37.10					7.7	37.1	2013	Not progress	EDL
	Sub Total (III):			266.70	1,108.56					266.70	1,111.52			

ແຕນຟັດທະນາແຫຼ່ງຕະລິດພະລັງງານໄຟຟ້າແຕ່ ປີ 2012 ຫາປີ 2025

				ballotadi	Installed Capacity			FDI-CEN 25%	7050	Domestic	rti.			
Ž	Power Plant	noiton	Port	not Cap	Fnerav	CC C taul	Fnercy	het Can	20	lnet Can	Fnercy		Progress	20000000
2			5	(WW)	(GWh)	(WW)	(GWh)	(W W		(MW)	(GWh))		
2	ເຂື່ອນຂອງ IPP ທີ່ນຳໃຊ້ແລ້ວ					,	(1					
	IPP(d)													
1	Nam Nhone	Borkeo	Northern	3.0	12.0					3.0	12.0	2011	Existing	Lao Company 10%, MK Dynamic Resource Development 90%.
2	Nam Tha 3	Luangnamtha	Northern	1.2	5.5					1.2	5.5	2011	Existing	
3	Nam Ngum 5	Luangprabang	Northern	120.0	507.0					120.0	507.0	2012	Existing	EDL 15%, Sinohydro 85%.
4	Nam Lik 1/2	Vientiane	Central	100.0	435.0					100.0	435.0	2010	Existing	EDL 10%, CWE (China) 90%
5	Nam Gnuang 8	Borlikhamxai	Central	0.09	316.0					0.09	316.0	2012	Existing	EDL 60%, GMS Laos 20%, Statkraf 20%.
	Sub Total (IV)1:			284.20	1,275.50					284.20	1,275.50			
4.2	IPP(e)													
														EDL 25%, CH. Kanchang 28.5%, PT Construction
-	C WIIDN WON	Vientiane	Centro	6150	23000							2010	Existing	and Irrigation (Lao) 4%, Ratchabury (Thai) 25%,
)	3										Bangkok Expressway PLC (Thai) 12.5%, TEAM 1%, Shalanak Grains IIISA) 4%.
2	Nam Phao	Borlikhamxai	Central	1.7	9.0					1.7	0.6	2011	Existing	Simouana Group 87%. Phathana Khetphoudoi 13%
	Theun Hinboun	Khammouan	Central	220.0	1,620.0								Existing	EDL 60%, GMS Laos 20%, Nordic 20%.
4	Nam Theun 2	Khammouan	Central	1,088.0	0.000,9					75.0	300.1	2009	Existing	LHSE 25% (Lαo), EDF 40%, EGCO 35%,
5	ноиау Но	Attapeu	Southern	152.0	617.0					2.0	8.0	1999	Existing	EDL 20%, Glow Co., Ltd 67.25%, Hammer I and 8 Development 10 75%
7	Xavan 3	19000	Courthorn	25000	U6 C86					25.0	070	2012	llador Ossofination	EDI 159 VI D Michael 959
	Sub Total (1973:			2336 70	11 528 90					103 70	413.10	7107		LUC 10/8, 451 (*101110111) 00/8:
	:-(a) bio coo			2 1070/2	2000					2	2			
>	ໂຄງການຂອງ IPP ທີ່ຢູ່ໃນໄລຍະບະຕິບັດສັນຍາສຳປະທານ (ໄລຍະກໍ່ສັກ)	ດສັນຍາສຳປະທານ (ໄລຍະກໍສ້າ	9											
5.1	IPP(d)													
-	Nam Long	Luangnamtha	Northern	5.0	30.0					5.0	30.0	2013	Under Construction	EDL 20%; Luangpaseuth (Laos) 80%
2	Nam Sim	Houaphanh	Northern	8.0	29.4					8.0	29.4	2013	Under Construction	Energy Development AS (Norway) 80%; ECI 20%
3	Nam Ou 2	Luangprabang	Northern	120.0	546.0					120.0	546.0	2017	Under Construction	EDL 20%; Sinohydro (China) 80%
4	Nam Ou 5	Phongsaly	Northern	240.0	1,049.0					240.0	1,049.0	2017	Under Construction	EDL 20%; Sinohydro (China) 80%
2	Nam Ou 6	Phongsaly	Northern	180.0	739.0					180.0	739.0	2017	Under Construction	EDL 20%; Sinohydro (China) 80%
9	Nam Ngiep 2	Xiengkhuang	Northern	180.0	723.0					180.0	723.0	2015	Under Construction	EDL 20%, CWE (China) 80%
	Nam Ngiep 3A	Xieng Khuang	N ortheun	40.0	153.0					40.0	153.0	2013	Under Construction	Phongxubthavy (Laos)
8	Tadsalen	Savannakhet	Southern	3.2	17.0					3.2	17.0	2013	Under Construction	SCI Electric Manufactorer Co., (Thai) 100%
6	Xe Namnoy 1	Attapeu	Southern	15.0	70.118						70.118	2013	Under Construction	Phongxubthavy (Laos)
	Sub Total (V)1:			791.20	3,356.52					791.20	3,356.52			
5.2	(e)ddi													
														EDL 20%; CH. Kanchana 30%; EDL-Gen 12.5%;
-	Mekong Xayabouly	Xayabouly	Northern	1,285.0	6,103.8					0.09	420.0	2020		Natec Synergy 25%; PT Construction 5%;
														Bangkok Expressway Public 7.5%
c	e fiabil bacach	Allodowy	Northern	1 878 0	0 686 61					1000	200.8	2015	Inder Construction	LHSE (Lao) 20%, Ratchabury (Thai) 40%,
		, and and a		0.0/0/1	12,247.0					0.00	0.000	6102		Banpu (Thai) 40%.
3	Theun Hinboun (Ex)	Borlikhamxai	Central	220	1,440.0					0.0	0.0	2012.0	Under Construction	EDL 60%, GMS Laos 20%, Statkraf 20%.
4	Xekaman 1+Xanxai	Attapen	Southern	290.0	1,096.0						240.0	2014	Under Construction	EDL 15%, VLP (Vietnam) 85%.
	Sub Total (V)2:	<u> </u>		3,673.00	20,888.80	_		_		224.00	1,360.80	1		

ແຕນພັດທະນາແຫຼ່ງຕະລິດພະລັງງານໄຟຟ້າແຕ່ ປີ 2012 ຫາປີ 2025

				Installed	Installed Capacity	EDL		EDL-GEN 25%	O	Domestic			
<u>8</u>	Power Plant	Location	Part	Inst.Cap	>	Inst.Cap	Energy	Inst.Cap Energy	Inst. C	Energy	COD	Progress	Developer
				(MM)	(GWh)	(MM)	(GWh)	(MM) (GWh)	(WW) (r	(GWh)			
>	ໂຄງການຂອງ IPP ທີ່ຢູ່ໃນໄລຍະການປະຕິບັດວຽກກະກຽນ ແລະ ປະຕິບັດສັນຍາພັດທະນາໂຄງການ (PDA)	ຕື່ບັດວງກກະກຽມ ແລະ ປະຕິບັ	ດສັນຍາພັດທະ	ນ າໂຄງ ການ (PE	(Ar								
-	Nam Naum 3	Vientiane	Central	460.0	2.047.0						2015		LHSE 23%, GMS Power 27%,
					!								Ratchabury (Thai) 25%, MARUBENI 25%.
2	Nam Ngiep1	Bolikhamxai	Central	272.0	1,515.0				22.0	122.0	2018		Kansai(Japan), LHSE (Lao), EGATi (Thai)
3	Xekatam	Champasak	Southern	61.6	381.0				61.6	381.0			Kansai Electric (Japan)
4	Don Sahong (Mekong)	Champasak	Southern	240.00	1,756.00				240.0	1,756.0	2020		EDL 20%; Mega First Corporation Berhad (malaysia)
5	Nam Mo	Xienkhuang	Northern	120.0	503.4				15.5	9'09			Hanoi Construction Invesment, Trading
)											and Techlogy Joint Stock Company (HCIT)
9	Nam Lik 1	Vientiane	Central	0.09	249.0				9.09	249.0	2015		EDL 10%; Hydro Engineering 40%; PTI International 40%; Possco Enaineerina & Construction 10%
7	Sekong 4	Sekong	Southern	300:00	1,901.00				90.09	318.0	2020		LHSE; Region Oll Russia
80	Nam Kong 1	Sekong	Southern	75.00	469.00				75.0	469.0	2020		LHSE; Region Oil Russia
6	Xepian-Xenamnoy	Champasak	Southern	390.00	1,788.00				40.0	178.8	2018		SK 26%, KOREA WESTERN POWER CO., Ltd 25%,
:		-	:	4									Karchabury (Indi) 23%, LHSE (Lao) 24%
10	Sekong 5	Sekong	Southern	330.00	1,613.00				190.0	1,131.0	2020		EDL; Region Oil Russia
Ξ	Nam Phak	Champasak	Southern	140.0	200.0				140.0	200.0	2016		EDL 20%; Kobe Green Power (KGP) 80%
12	Nam Beng	Oudomxai	Northern	34.0	137.0				34.0	137.0	2015		EDL 20%, China Natinal Electrical Eauloment Cooporation 80%
13	Nam Mana 1	Bolikhamxai	Central	64.0	224.8				64.0	224.8	2015		FDI 10%: Donafana 75%: A&C 10.45%: ജൂഖന 4.25%
14	Nam Tha 1	Luangnamtha	Northern	168.0	756.0				168.0	756.0	2015	FS Ongoing	China Southern Grid Co., Ltd
15	Nam Seung 1	Luangprabang	Northern	42.0	167.00				42.0	167.0		FS Ongoing	Bruthai International Co., Ltd
16	Nam Seung 2	Luangprabang	Northern	0.96	442.4				0.96	442.4	2018	FS Ongoing	Bruthai International Co., Ltd
17	Nam Pha	Borkeo/Luangnamtha	Northern	130.0	594.0				130.0	594.0	2017	FS; PDA	EDL 20%; Asai Pacific Business Link HND Berhard
18	Mekong Lathseua (Phoungoy)	Champasak	Southern	651.0	3,278.0				651.0	3,278.0	2020	FS; PDA	Charoen Energy and Water Asia Co., Ltd
19	Mekong (Pak Beng)	Oudomxai	Northern	921.0	4,775.0				150.0	0.099	2020	FS; PDA	Datang International Power Cooperation
20	Mekong (Sanakham)	Vientiane	Central	0.099	3,696.7				200.0	1,120.0	2020	FS; PDA	Datang International Power Cooperation
21	Nam Kong 2	Attapeu	Southern	00.99	263.00				9.99	263.0	2014	CA	EDL 20%; Hoang Anh Gai Lai Co., (HAGL)
22	Nam Xam 1	Houaphanh	Northern	94.0	323.1				94.0	323.1	2015	FS; PDA	EDL 20%; Sai Gon Invesment Group (SIG)
23	Nam Xam 3	Houaphanh	Northern	196.0	635.8				196.0	635.8	2015	FS; PDA	EDL 20%; Sai Gon Invesment Group (SIG)
24	Nam Phai	Vientiane	Central	0.98	419.50				86.0	419.50	2016	CA	EDL 20%; Norinco Internationnal Cooperation Ltd.,
3	Nam Phoun	Xayabuly	Northern	20.0	245.79			1	50.0	245.8	2017	MOU	Sok Corporation
97.	Nam Pot	Xienkhuang	Northern	14.5	70.53				15.0	74 501 40	201/	PreFS	ACE Consultant
	300 10101 (41):			0,721.10	20,121,02				2,740.10	=			
	ໂຄກການຂອງ IPP ທີ່ກ່າວວ່າສຶກສາຄວາມເບັນໄປໄດ້ ຫຼື ໄລຍະປະຕິບັດບົດບັນທຶກຄວາມເຂົ້າໃຈ (MOU)	ນເປັນໄປໃດ້ ຫຼື ໃລຍະປະຕິບັດປົດ	ເບັນທຶກຄວາມເ	.දි.? (MOU)				_					
-	Nam Ham	Xayabuly	Northern	5.0	16.0				5.0	16.0	2014	S	EDL 30%, Pea Encom 67%, Cobrie 3%
2	Xeneua	Khammouan	Central	53.00	209.00				53.0	209.5	2018	MOU ໝົດກຳນົດ	Phonesak Group (Laos/Thai)
3	Xekaman 4	Attapeu	Southern	80.0	315.8				80.0	315.8	2020	МОИ	Viet-Lao Power Company
4	Nam Feung 1	Vientiane	Central	28.00	113.20				28.0	113.2	2022	່ບໍ່ມີຄວາມຄືບໜ້າ (ຢຸດ)	Yunnan Provincial Power Invesment
5	Nam Bak 1	Vientiane	Central	163.0	744.0						2015	FS ပဲ့ມີຄວາມຄືບໜ້າ (ຢຸດ)	Southeast Asia Energy Ltd., (To be Transference to EDL)
9	Nam Bak 2	Vientiane	Central	40-45	205.0						2015	FS ပံ့ມີຄວາມຄືບໜ້າ (ຢຸດ)	Southeast Asia Energy Ltd., (To be Transference to EDL)
7	Mekong Paklai	Xayabouly	Northern	1,320.0	6,460.0				132.0	646.0	2020		Sinohydro Corporation Ltd and China National Electrics IMP & EXP.Corp (CEIEC).
∞	Mekong (Laung Prabang)	Luangprabang	Northern	1,200.0	7,380.0				114.0	598.9	2020	ຜູ້ພັດທະນາສະເໜີຕໍ່ສັນຍາ MOU ເພີ້ມອີກ 10	ຜູ້ພັດທະນາສະເໜີດ່ສັນຍາ MOU ເພີ້ມອີກ 1(Petro Vietnam Power Corporation (PV Power)
6	Dak E Men	Xekong	Southern	130.0	526.2						2020	ຜູ້ພັດທະນາສະເໜີຕໍ່ສັນຍາ MOU ເພີ້ມອີກ 1	Vief-Lao Power Company
10	Xekong 3 A (Upper)	Xekong	Southern	105.0	419.78				105.0	419.78	2020	FS; PDA	Sonda Corporation
11	Xekong 3 B (Lower)	Xekong	Southern	100.0	393.53				100.0	393.53	2020	FS; PDA	Sonda Corporation

ແຜນຟັດທະນາແຫຼ່ງຕະລິດພະລັງງານໄຟຟ້າແຕ່ ປີ 2012 ຫາປີ 2025

No Power Plant			- DOLIDIGII	Installed Capacity		_	EDL-GEN 25%	.2%	Domestic	·O			
	Location	Part	Inst.Cap	Energy	Inst.Cap	Energy	Inst.Cap Er	Energy Ins	Inst. Cap	Energy	COD	Progress	Developer
			(MM)	(GWh)	(MM)	(GWh)	(MM)	(GWh)	(MM)	(GWh)			
12 Mekong (Bankoum)	Champasak	Southern	1,872.0	8,431.15					187.2	843.1		ຜູ້ພັດທະນາສະເໜີຕໍ່ສັນຍາ MOU	Asia Crop Holding Ltd., and Italian Thai
13 Nam Ngum 4	Xieng Khuang	Northern	220.0	822.2					33.0	165.0	2020 F	Pre FS	Sai Gon Invesment Group (SIG)
14 Namma 1,2,3	Houaphanh	Northern	149.0	902:0					22.4	75.8	2020 F	Pre FS (ပဲ့ມີຄວາມຄືບໜ້າ)	Linh Linh JFC Electrical (Vietnam)
15 Thakho (Mekong)	Champasak	Southern	50.00	360.00					50.0	360.0	2020 F	Pre FS (ပဲ့ມີຄວາມຄືບໜ້າ)	EDL/Lah'rone (France)
16 Nam Kong 3	Attapeu	Southern	45.00	170.24					45.0	170.2	2014	CA	Hoang Anh Gai Lai Co., (HAGL)
17 Nam Neun	Huaphanh	Northern	92:00	280.00					65.0	280.0	2020 N	MOU ໝົດກຳນົດ (ບໍ່ມີຄວາມຄືບໜ້າ)	Indochina Consulting Co., Ltd (Korea)
18 Nam Ngiep (മ്രീമുഡ്)	Xieng Khuang	Northern	25.00	90.09					25.0	0.09			Phongxubthavy (Laos)
19 Nam Mouan	Borlikhamxai	Central	124.00	524.00					30.0	100.0	2018 F		Chubu Electric Poewer Co., Inc (Japan)
20 Nam Mo 1 (Nam Kanh)	Xieng Khuang	Northern	55.0	222.03					55.0	222.0	2018 N	MOU	EDL 12.77%; EVN International
21 Xepiane Houay Soy	Attapeu	Southern	115.00	283.00					11.6	29.0	2016 F	FS; PDA nyu CA	EDL 20%; Houay Ho Power Company Limited
22 Xekong (Downstream)	Xekong	Southern	76.00	387.80						387.8	2020		V&H Corporation (Lao)
23 Nam Phouan	Vientiane	Central	52.50	205.00					52.5	205.0		FS; PDA	Velcan Energy (France)
24 Nam Pouy	Xayabuly	Northern	90.09	294.00					0.09	294.0	9	ຜູ້ພັດທະນາສະເໜີຂໍຕໍ່ MOU	Mudayaya Corporation Berhard (MCB), Malaysai
	_	Southern	25.00	176.00						176.0	2022 r	ງໂຄງການ; MOU	Velcan Energy (France) and EIC (Lao)
26 Xelanong 1	Savannakhet	Southern	0.09	300.0						300.0		MOU	SUN PAPER HOLDING (China)
27 Nam Et 1,2,3	Houaphanh	Northern	420.0	2,180.7					90.09	300.0	2020 N	MOU	Hoang Anh Gai Lai Mineral Jiont Stock Co.,
28 Xexou	Attapen	Southern	59.00	280.00					59.0	280.0	2020	ກຳລັງສຶກສາຄວາມເບັນໄດ້ຂອງໂຄງການ; MO Hoang Anh Gai Lai Co., (HAGL)	Hoang Anh Gai Lai Co., (HAGL)
29 Nam Leng	Phongsaly	Northern	50.00	240.00					50.0	240.0	2020 N	MOU	Venture Capital and Equipment Inc., (VCI)
30 Nam Theun 1	Borlikhamxai	Central	523.0	2,016.0					50.0	250.0	2019 F	FS	Phonesak Group (Laos/Thai)
31 Nam Nga	Luangprabang	Northern	80.00	280.00					80.0	280.0	2020	င်္ဆေည MOU 11/04/2012	ບໍ່ສື່ສັດດວງຈະເລີນ ກໍ່ສ້າງຈຳກັດ (ລາວ)
32 Nam San 3A, 3B (48+43)MW	Xieng Khuang	Northern	91.0	540.0					91.0	540.0	2018 c	ເຊັນ MOU 13/06/2012; FS	Phongxubthavy (Laos)
33 Xe BangHieng 1	Savannakhet	Southern	50.00	197.00					50.0	197.0	2020 N	MOU	
34 Xe BangHieng 2A (Tad Sakhoy)	Savannakhet	Southern	12.50	90.89					12.5	0.89			Daosavanh Group (Lao Company)
	Saravan	Southern	54.40	222.50						222.50		າປ ກັບ EDL 24/10/2011	EDL- KOREA WATER RESOURCES COPORATION (K-Water)
36 Nam Ou 1	Luangprabang	Northern	160.0	798.9						798.9			Sinohydro Corporation Ltd and China National
37 Nam Ou 3	Luangprabang	Northern	150.0	709.6					150.0	9.602	2018 F		Sinohydro Corporation Ltd and China National
38 Nam Ou 4	Phongsaly	Northern	116.0	569.0						569.0		FS; CA	Sinohydro Corporation Ltd and China National
39 Nam Ou 7	Phongsaly	Northern	190.0	915.4					190.0	915.4			Sinohydro Corporation Ltd and China National
40 Nam Ngum (Down)	Vientiane	Central	90.09	300.00						300.0		}ెం¢; MOU	
	Vientiane	Central	20.00	80.00					20.0	80.0		Sar; FS	
	Vientiane	Central	25.00	110.00						110.0		S	
	Salavan	Southern	45.00	170.00					1	170.0			CHINA GEZHOUBA GROUP COMPANY LIMITED (CGGC)
	Sekong	Southern	300.00	2,100.00						2,100.0			Phonesak Group (Laos/Thai)
45 Xebang Novane 2	Saravan	Southern	80.00	290.00					\dashv	262.0	2021	১৯:	
Sub lofal (VII):			8,663.40	41,970.03				Š	3,032.55	14,773.06			
and the HI CMI of the transport of the t	access in all all all all all all all all all al								F				
The Thirty The Time	Viscosite (MOO) MOREO	9	ç	G	$\frac{1}{ }$	$\frac{1}{ }$		1	001	0	T		hidas las
	Alengkriodrig	Normern	71.0	30,01					0.21	0.00	0102		Hydro Ldo
	Vientiane		0.5.	28.00					0.0	0.07		Origer Construction	DSN (LGO)
		5	99 5	00.02	l		1		000	20.0	Ī	Istraction	Saliditistay Roda Bollallig Collisiocilori Co.; Ela
	Vientiane	Central	5.00	19.70						19.7			
	Khammouan	Central	20.00	100.00						100.0			Nonghai Group (Lao)
6 Houy Por 1	Saravan	Southern	9.50	90.00					9.5	0.09		(Under Construction)	Houay Por Power Co., Ltd
	Saravan	Southern	5.00	22.00					_	22.0			VASE (Laos)
8 Houay Phok	Attapeu	Southern	12.00	90.09					12.0	00:09	2017 N	MOU; FS	Hydro Lao

ແຜນຟັດທະນາແຫຼ່ງຕະລິດພະລັງງານໄຟຟ້າແຕ່ ປີ 2012 ຫາປີ 2025

١														
				Installed	Installed Capacity	EDL		EDL-GEN 25%	√ 25%	Domestic	stic			
ž	o Power Plant	Location	Part	Inst.Cap	Energy	Inst.Cap	Energy	Inst.Cap	Energy	Inst. Cap Energy	Energy	COD	Progress	Developer
				(MM)	(GWh)	(MM)	(GWh)	(ww)	(GWh)	(MM)	(GWh)			
٥	i sample of the same is) or	or other	0	27.30					C u	0.7.0	3100	33	PAXAKONE ROAD AND BRIDGE
`		Apsociation 1		3	00:/7					0.	S: /2		ס	CONSTRUCTION CO., LTD (LAO)
	Sub Total (VIII):			88.50	493.00					88.50	493.00			
≃	IX ໂຄງການພະລັງງານທົດແທນ ແລະ ເຂື່ອນຂະໜາດນ້ອຍ	ານຂະໜາດນ້ອຍ												
_	Small hydropower plants			100.00	500.00					100.0	500.0		Planning	
2	2 Solars			15.00	27.40					15.0	27.4		Planning	

3zgC:

۱				
0/0	ລາຍລະອາດ	ຈຳນວນ	MW	GWh
_	ເຊື່ອນທີ່ນາໃຊ້ແລ້ວ			
1.1	ເຂື່ອນທີ່ມີແລ້ວຂອງ EDL ແລະ EDL-Gen	10	390.70	1,877.60
1.2	ເຊື່ອນທີ່ມີແລ້ວຂອງ IPP	11	2,610.90	12,804.40
	Total:	21	3,001.60	14,682.00
=	ເຂື່ອນທີ່ກ່າລັງກໍ່ສ້າງ			
2.1	ໂຄງການຂອງ EDL	7	449.00	2,079.70
2.2		13	4,464.20	24,245.32
	Total:	20	4,913.20	26,325.02
Ш	ໂຄງການທີ່ກຳລັງສຶກສາ			
3.1	ໂຄງການຂອງ EDL	9	266.70	1,108.56
	Total:	6	266.70	1,108.56
2	ໂຄງການທີ່ເຊັນ MOU ແລ້ວ			
4.1		45	8,663.40	41,970.03
	Total:	45	8,663.40	41,970.03
>	ໂຄງການທີ່ກຳລັງປະຕິບັດສັນຍາ PDA			
5.1	ໂຄງການຂອງ IPP	26	5,721.10	28,751.02
	Total:	26	5,721.10	28,751.02
>	ໂຄງການ ຂອງ IPP ທີ່ເຊັນ MOU ກັບແຂວງ			
6.1	ໂຄງການຂອງ IPP	9	88.50	493.00
₹	Small Hydropower Plan		100.0	500.0
=	VIII Renewable		15.00	27.40
	Grand Total:	130	22,769.50	113,857.03

- **ເອກະສານອ້າງຢິງ:** ສະຖິຕິໄຟຜ້າ ປີ 2011 ຂອງລົດວິສາຫະກິດໄຟຜ້ກລາວ ບົດລາຍງານນານເຄື່ອນໄຫວວຽກງານ ຂອງກົມທຸລະກິດພະລັງງານ ປະຈຳ 6 ເດືອນ ຕົ້ນປີ 2012 (ກະຊວງພະລັງງານ ແລະ ບໍ່ແຮ່) ບົດວິພາກເສດຖະກິດ-ເຕັກນິກ ຂອງໂຄງການ

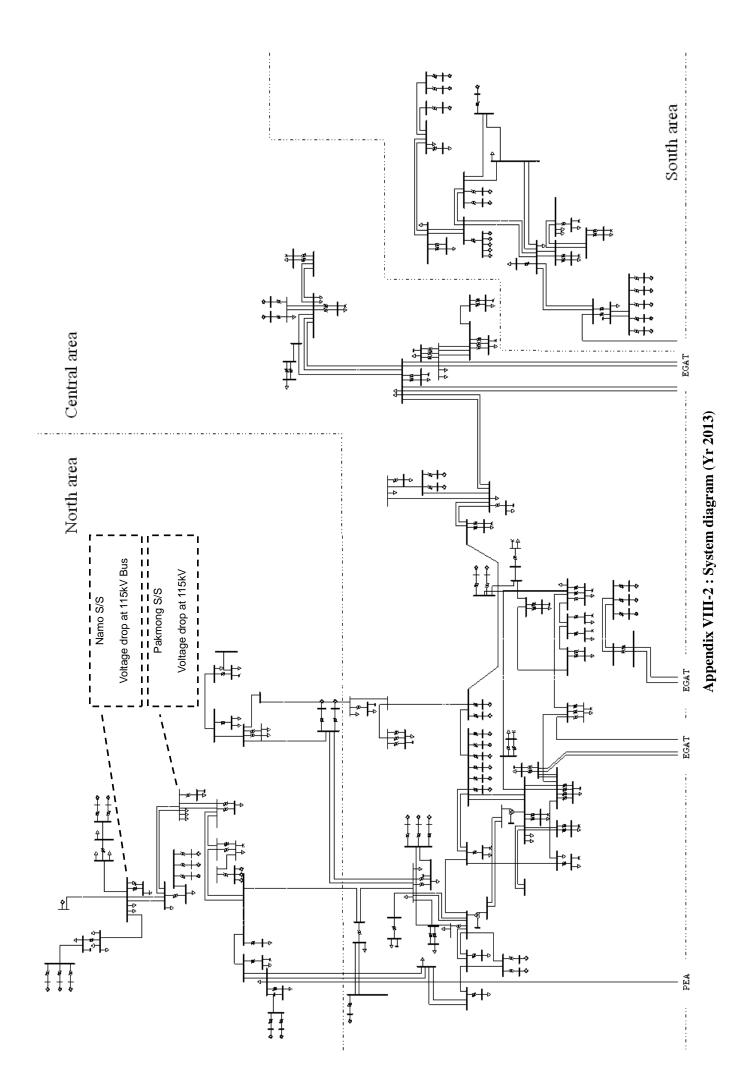
ຫົວໜ້າຝ່າຍກໍ່ສ້າງເຂື່ອນ

ຫົວໜ້າຫ້ອງການສຶກສາ ແຫຼ່ງຜະລິດພະລັງງານໄຟຟ້າ

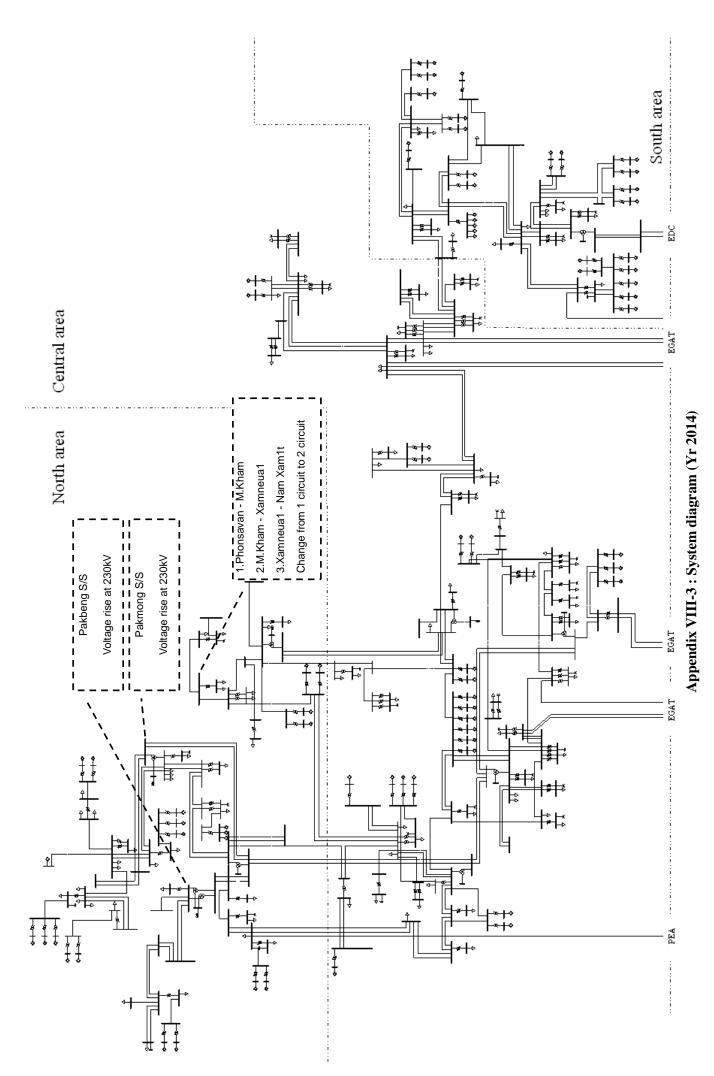
กุษตภิมมิจกาลนาย อาจะโลก . ญั นาม 308. บ้าณเด็กราก, เมื่อๆใช้สังกายมาก. มะตอบพูดวายวบุทั้ม ฮนป อาจ โลก (เชติย์-2) ปลา 1957 รู้ 1451 ปลา 1851 รู้ 25 สามา 1858 รู้ 257744. เชื่อมาระ คศากปฏิชัติย์ อาณา และ เจอประเทษ

Appendix VIII

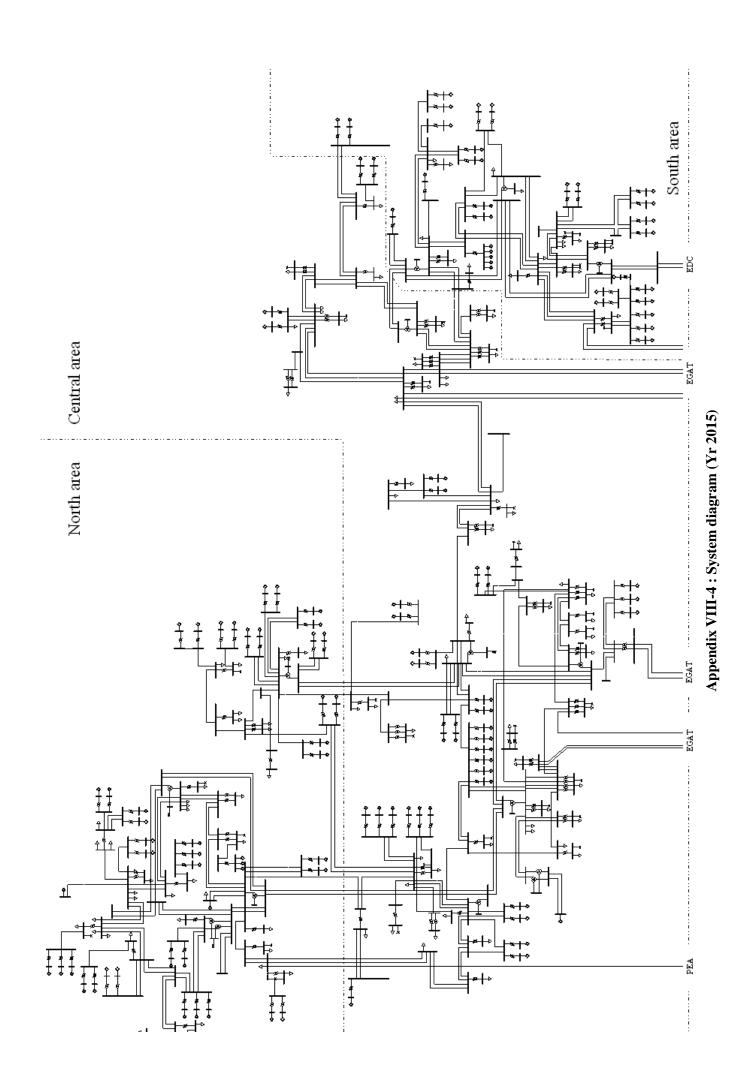
Appendix VIII-1 : System diagram (Yr 2012)



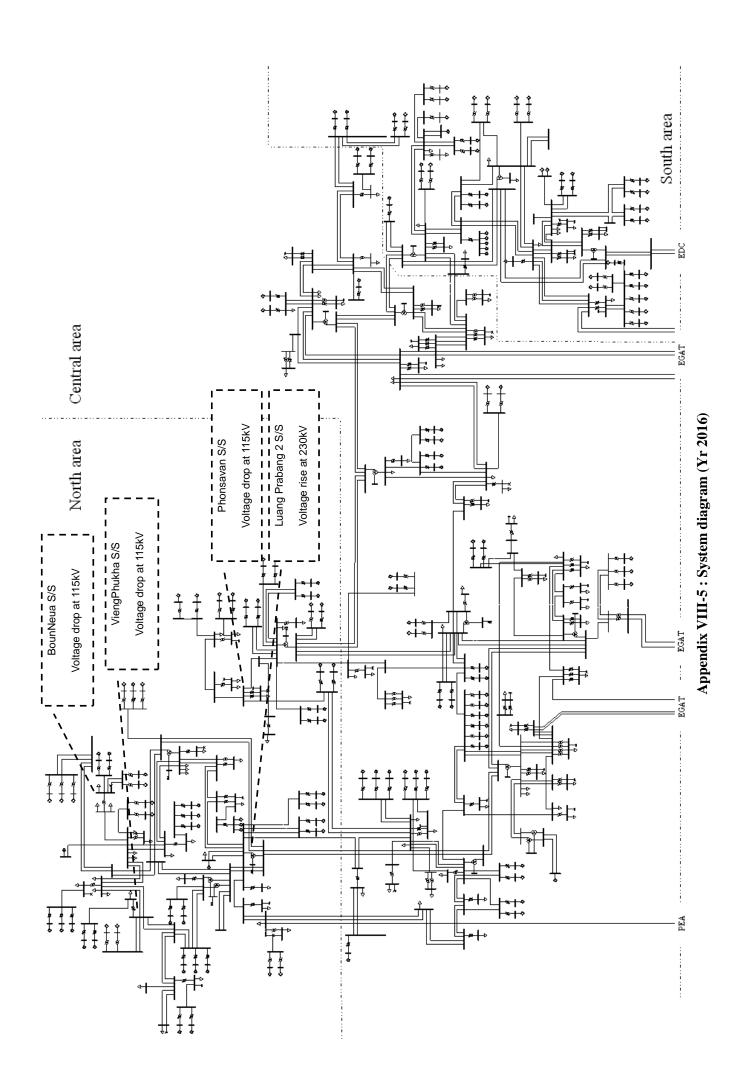
VIII-2



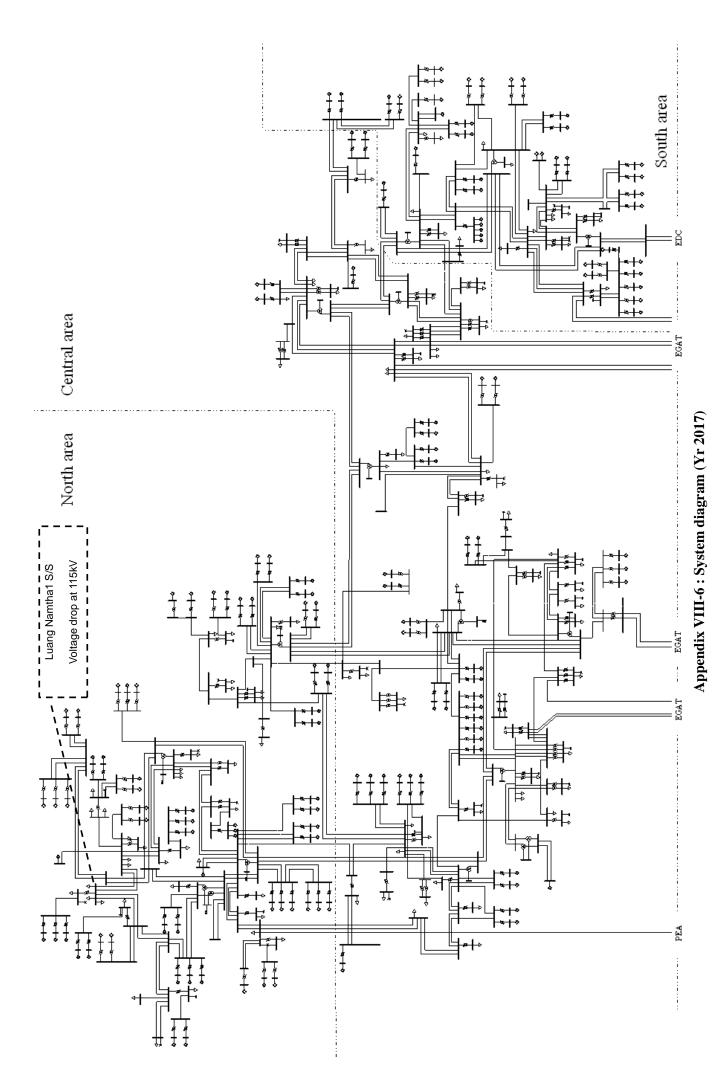
VIII-3



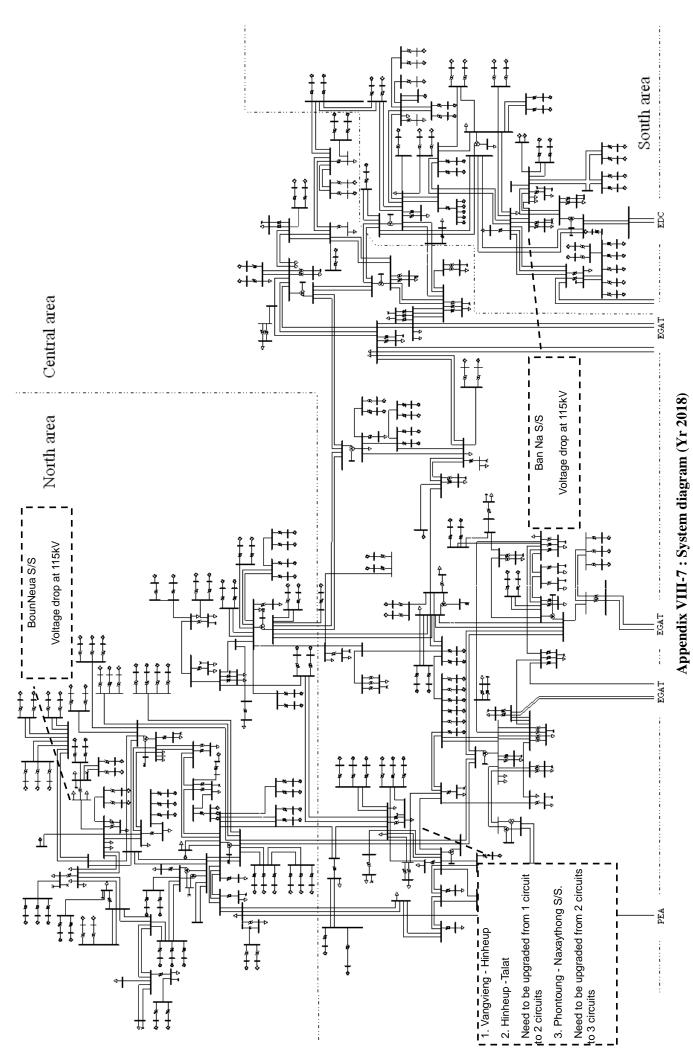
VIII-4



VIII-5

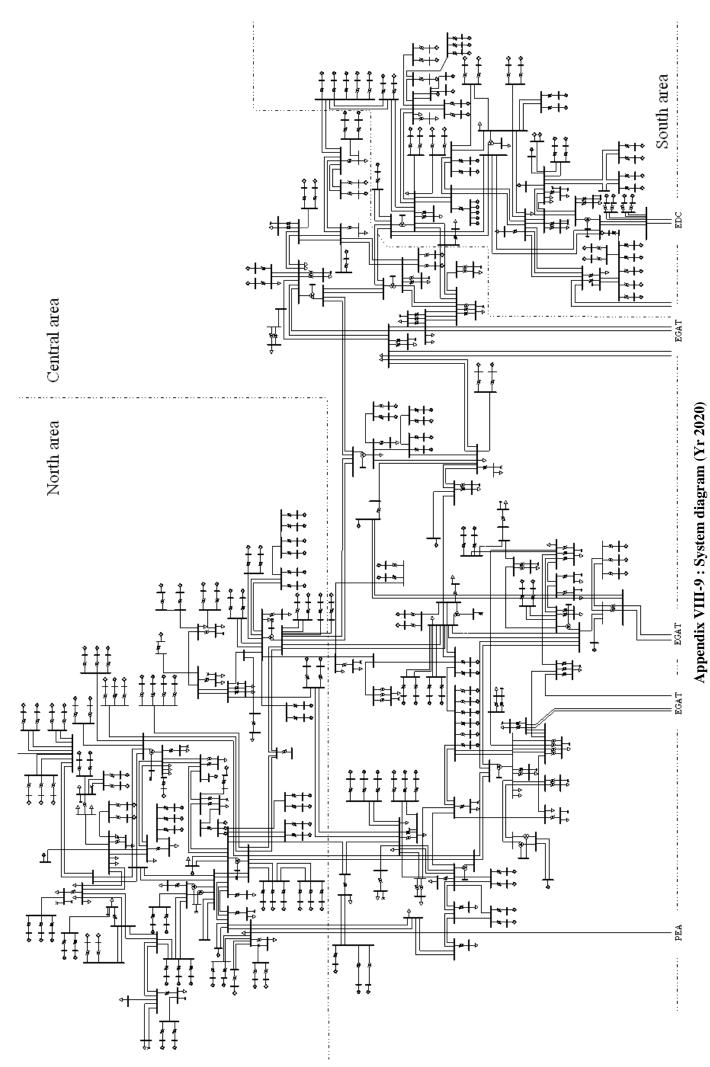


VIII-6



VIII-7

VIII-8



VIII-9

Table VIII-1: Monthly demand forecast (GWh) (with TL losses, excluding large industry) from 2012 to 2014

	Provinces	No. Name of Substations	Com. year																		013 2013))							- 1			
1 P	PHONGSALI	Sub Total		Jan 0.4	† †	Mar 0.3	•	May 0.4	Jun 0.4	Jul 0.5	Aug 0.5	Sep 0.5	Oct 0.5	Nov 0.5	Dec 0.5	Jan 0.5	Feb 0.5	Mar 0.4	Apr M 0.5	ay J 0.5	un Jul 0.6 0.6	Aug 0.6	Sep Oc 0.6		Dec 0.6 0.6	1 1	Feb 0.6	Mar 0.5	Apr 0.6	May 0.7	Jun 0.8	Jul 0.8	Aug 0.8	Sep 0.8	Oct 0.8	0.8 O
		L Residential Sector		0.4		0.3	0.3	0.4	0.4	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.6 0.6	0.6	· •	0.6 (0.6	0.7	0.6	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8
2 B	BOKEO	1 Boun Neua Sub Total	2013	3.5	3.2	3.1	3.6	4.0	4.1	4.1	4.3	4.5	4.6	4.7	4.1	0.5 4.9	0.5 4.5	0.4 4.4	0.5 5.0	0.5 5.6	0.6 0.6 5.7 5.7	0.6 6.0	0.6 6.2	·····	0.6 0.6 5.5 5.7	~ _	0.6 6.4	0.5 6.2	0.6 7.1	0.7 8.0		0.8 8.0	0.8 8.5	0.8 8.8	0.8 9.0	0.8 0 9.2 8
- [L Residential Sector		3.5				4.0	4.1	4.1	4.3		4.6	4.7	4.1	4.9	4.5	4.4	5.0	5.6	5.7 5.7	\$ \$		3	5.5 5.7	7.0	6.4	6.2	7.1	8.0	8.1	8.0	8.5	8.8	9.0	9.2
3 L	LUANGNAMTHA	1 Houayxay Sub Total	2014	2.9	2.7	2.9	3.2	3.7	3.7	3.6	3.8	4.0	3.8	3.5	3.6	3.5	3.3	3.5	3.8	4.4	4.5 4.4	4.6	4.8	4.6	1.2 4.4	7.0 1 5.4	6.4 5.1	6.2 5.4	7.1 5.9	8.0 6.9	8.1 7.0	8.0 6.8	8.5 7.2	8.8 7.6	9.0 7.2	9.2 8 6.6 0
		L Residential Sector		2.9	2.7	2.9	3.2	3.7	3.7	3.6	3.8	4.0	3.8	3.5	3.6	3.5	3.3	3.5	3.8	4.4	4.5 4.4	4.6	4.8	4.6	1.2 4.4	5.4	5.1	5.4	5.9	6.9	7.0	6.8	7.2	7.6	7.2	6.6
		1 Luangnamtha 1 2 Luangnamtha 2	2009 2014	2.9	2.7	2.9	3.2	3.7	3.7	3.6	3.8	4.0	3.8	3.5	3.6	3.5	3.3	3.5	3.8	4.4	4.5 4.4	4.6	4.8	4.6	1.2 4.4	2.7	2.6	2.7	3.0	3.5	3.5	3.4	3.6	3.8	3.6	3.3
4 O	OUDOMXAI	Sub Total		2.1		2.1		2.2	2.6	2.8	2.5		2.7	2.5	2.6	3.8	4.9	3.8	4.9	4.2	4.9 5.2	4.7		5.0	1.7 4.7	6.7	8.5	6.7	8.5	7.2			8.2	9.0	8.7	8.2
		L Residential Sector 1 Oudomxay	2009	2.1 1.4			2.6 1.9	2.2 1.6	2.6 1.8	2.8 2.0	2.5 1.8		2.7 1.9	2.5 1.8	2.6	3.8	4.9 3.4	3.8 2.7	4.9 3.4	4.2 2.9	4.9 5.2 3.4 3.7			3	1.7 4.7 3.3 3.3		8.5 4.3	6.7 3.3	8.5 4.3	7.2 3.6		9.1 4.5	8.2 4.1	9.0 4.5	8.7 4.4	8.2 8 4.1 4
		2 Namo	2012	0.6	1 1			0.7	0.8	0.8	0.8		0.8	0.8	0.8	1.2	1.5	1.1	1.5	1.2	1.5 1.6	1.4			.4 1.4	1 1	2.1	1.7	2.1	1.8	2.1	2.3	2.0	2.2	2.2	2.0
5 11	HUAPHANH	3 M Houn Sub Total	2014	1 0	1.7	1.7	1.8	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1 2.1	2.2	2.4	22 /	12 12	1.7	2.1	1.7	2.1	1.8	2.1	2.3	2.0 2.6	2.2	2.2	2.0
э п	IUAFHANI	L Residential Sector		1.8 1.8		1.7 1.7	1.8	1.8	1.8 1.8	3	1.9 1.9		2.0 2.0	2.0 2.0	2.0	2.0	2.0 2.0	2.0 2.0	2.1	2.1	2.1 2.1 2.1 2.1	: :			2.3 2.3 2.3 2.3		2.3	2.4 2.4	2.5 2.5	2.5 2.5		2.5 2.5		2.8 2.8	2.8 2.8	2.7
, v	XIENG KHUANG	1 Xam Neua 1 Sub Total	2012	1.8	1.8	1.8 3.3	1.8 3.5	1.8 3.5	1.8 3.5	1.8	1.8	1.8 3.4	1.8 3.5	1.8 3.5	1.8 3.9	2.0	2.0	2.0 3.9	2.0	2.0	2.0 2.0 4.1 3.6	2.0 3.8	2.0	2.0	2.0 2.0	·	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4 8.0	2.4	2.4 2 8.2 9
0 А	HENG KHUANG	L Residential Sector		3.3			3.5	3.5	3.5	3.1	3.3		3.5	3.5	3.9	3.8	3.3	3.9	4.0	4.0	4.1 3.6			3	l.1 4.5 l.1 4.5	3 3	6.7 6.7	7.8 7.8	8.1 8.1	8.1 8.1	8.2 8.2	7.3 7.3	7.8 7.8	8.0	8.1 8.1	8.2 8.2
		1 Phonsvan	2003	2.1		3		2.3	2.3	2.0	2.2		2.3		2.5	2.5	2.2	2.5	2.6	2.6	2.6 2.4	1 1	1	3	2.6 2.9		4.3	5.1	5.2	5.3			3	5.2	5.3	5.3
		2 M Kham 3 Thavieng	2012 2015	1.2	1.0	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.4	1.3	1.2	1.4	1.4	1.4	1.4 1.3	1.3	1.4	1.4	.4 1.6	5. 2.7	2.3	2.7	2.8	2.8	2.9	2.6	2.7	2.8	2.8	2.9
7 L	LUANG PRABANG	Sub Total		9.9				12.1	12.4	12.5	12.4		11.7	10.9	10.6	12.9	12.3	13.2		15.7	16.1 16.2				13.8		15.8	17.1	18.6	20.3				20.2	19.7	18.3 1
		L Residential Sector 1 Luangprabang 1	1994	9.9 7.4	1 1		11.1 8.3	12.1 9.1	12.4 9.3	12.5 9.3	12.4 9.3		11.7 8.8	10.9 8.2	10.6 8.0	12.9 9.0	12.3 8.6	13.2 9.3			16.1 16.2 11.3 11.4	1 1			1.2 13.8 0.9 9.7	1 1	15.8 7.9	17.1 8.5	18.6 9.3	20.3 10.2	20.8 10.4	20.9 10.5	20.9 10.5	20.2 10.1	19.7 9.8	18.3 17 9.1 8
		2 Pakmong	2009	1.0				1.2	1.2	1.2	1.2		1.2	1.1	1.1	1.3	1.2	1.3	1.4	1.6	1.6 1.6	1.6	3	1	.4 1.4	1 1	1.6	1.7	1.9	2.0		2.1	2.1	2.0	2.0	1.8
		3 Sansouk	2012	1.5	1.4	1.5	1.7	1.8	1.9	1.9	1.9	1.8	1.8	1.6	1.6	2.6	2.5	2.6	2.9	3.1	3.2 3.2	3.2	3.1	3.0	2.8 2.8	3.3	3.2	3.4	3.7	4.1	4.2	4.2 4.2	4.2	4.0	3.9	3.7
8 X	XAYABULY	4 Luangprabang 2 Sub Total	2014	5.7	5.6	6.2	6.6	6.6	6.9	7.0	7.0	6.9	6.7	5.9	6.1	6.3	6.2	6.9	7.3	7.4	7.6 7.8	7.8	7.6	7.5	5.6 6.8	3.3 7.3	3.2 7.1	3.4 8.0	3.7 8.5	4.1 8.5	4.2 8.8	4.2 8.9	4.2 8.9	4.0 8.8	3.9 8.6	7.6
		L Residential Sector		5.7	5.6	6.2	6.6	6.6	6.9	7.0	7.0	6.9	6.7	5.9	6.1	6.3	6.2	6.9	7.3	7.4	7.6 7.8	7.8	7.6	7.5	5.6 6.8	7.3	7.1	8.0	8.5	8.5	8.8	8.9	8.9	8.8	8.6	7.6
		1 Sayaboury 2 Paklay	2003 2013	2.8	3 2.8	3.1	3.3	3.3	3.4	3.5	3.5	3.4	3.3	2.9	3.1	3.2	3.1	3.5	3.7	3.7	3.8 3.9	3.9	3.8	3.7	3.4	4.4 2.9	4.3 2.9	4.8 3.2	5.1 3.4	5.1 3.4	5.3 3.5	5.4 3.6	5.4 3.6	5.3 3.5	5.2 3.4	4.5 4 3.0 3
		2 Pakiay 3 Hongsa	2013																			L				2.9	2.9	3.2	5.4	3.4	3.3	3.0	ا0.د	3.3	3.4	. 0.د
9 V	VIETIANE PROVINCE	Sub Total		57.2		3		65.5	68.9	63.9	63.9		69.3	68.1	68.2	63.9	62.0	63.6			77.0 71.4	1	3	3	5.2 76.2	1 1	72.3	74.1	72.0	85.4			83.3	94.2	90.4	88.8
		L Residential Sector		57.2 40.5		56.9 40.2	55.2 38.6	65.5 48.8	68.9 52.2	63.9 47.2	63.9 47.2		69.3 52.7	68.1 51.5	68.2 51.5	63.9 45.1	62.0 43.2	63.6 44.7			77.0 71.4 58.2 52.6				5.2 76.2 7.3 57.4		72.3 53.4	74.1 55.2	72.0 53.1	85.4 66.5		83.3 64.4	83.3 64.3	94.2 75.3	90.4 71.5	88.8 88 69.9 70
		1 Vangvieng	1994	21.1				24.2	25.5	23.6	23.6	26.7	25.6	25.2	25.2	23.7	23.0	23.5			28.5 26.4			3	3.2 28.2	3 3	26.8	27.4	26.7	31.6			30.8	34.8	33.4	32.9 32
		Houaysai Gold/copper Mining, Vangvieng District		8.4		8.3	8.0	10.1	10.8	9.8	9.8	11.5	10.9	10.7	10.7	9.3	8.9	9.3	1	11.3	12.0 10.9			. 3	.9 11.9		11.1	11.4	11.0	13.8 18.6	14.7 19.8	13.3	13.3	15.6	14.8	14.5
		Cement Factory at Vangvieng(Extension) 2 Phonsoung	1990	11.3 12.6		11.3 12.5	10.8 12.2	13.7 14.4	14.6 15.1	13.2 14.1	13.2 14.0		14.7 15.2	14.4 15.0	14.4 15.0	12.6 14.1	12.1 13.6	12.5 14.0		15.2 16.1	16.3 14.7 16.9 15.7	14.7		3	5.1 16.1 5.8 16.8	3 3	15.0 15.9	15.5 16.3	14.9 15.8	18.8	19.8	18.0 18.3	18.0 18.3	21.1 20.7	20.0 19.9	19.6 19 19.5 19
		3 Ban Don	2003	4.6	4.4	4.5	4.4	5.2	5.5	5.1	5.1	5.8	5.5	5.4	5.5	5.1	5.0	5.1	4.9	5.9	6.2 5.7	5.7	6.5	6.2	5.1 6.1	1	5.8	5.9	5.8	6.8	7.2	6.7	6.7	7.5	7.2	7.1
		4 Non Hai 5 Thalat	2003 2006	5.7 11.4	3	5.7 11.4	5.5 11.0	6.5 13.1	6.9 13.8	6.4 12.8	6.4 12.8	7.2 14.4	6.9 13.9	6.8 13.6	6.8	6.4 12.8	6.2 12.4	6.4 12.7	6.2 12.4	7.3 14.6	7.7 7.1 15.4 14.3	7.1 14.3	8.1 16.2 1	7.81 7.5.5 1:	7.6 7.6 5.2 15.2	1	7.2 14.5	7.4 14.8	7.2 14.4	8.5 17.1	9.0 18.0	8.3 16.7	8.3 16.7	9.4 18.8	9.0 18.1	8.9 8 17.8 1
		PBI	2000	16.6		3		16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	18.8	18.8	18.8		18.8	18.8 18.8		3	1	3.8 18.8	1 1	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
10 1	CHENTEL NE CAD	6 Hinheup	2012	1.7	·	1.7	1.7	2.0	2.1	1.9	1.9	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.2	2.3 2.1	2.1	2.4	2.3	2.3 2.3	3 2.2	2.2	2.2	2.2	2.6	2.7	2.5	2.5	2.8	2.7	2.7
10 V	VIENTIANE CAP	Sub Total L Residential Sector		96.3 96.3			113.1 113.1	123.1 123.1	120.8 120.8	119.3 119.3	119.5 119.5		117.9 117.9	113.6 113.6	109.7 109.7	114.8	113.6 108.1	125.3 119.8			142.6 140.9 137.1 135.5			9.3 134 3.8 12	3.9 124.6 1.9 124.6		143.5 128.9	157.5 142.9	167.8 153.2	181.4 166.8	178.2 163.6	176.2 161.6	176.4 161.8		174.3 159.7	168.4 163 153.8 148
		1 Phontong	1968	42.4	41.9	46.4	49.8	54.2	53.1	52.5	52.6	52.1	51.9	50.0	48.3	40.5	40.0	44.3	47.5	51.7	50.7 50.1	50.2	49.8 4	9.5 4	7.7 46.1	47.0	46.4	51.4	55.2	60.0	58.9	58.2	58.3	57.8	57.5	55.4 53
		2 Thanaleng 3 Tha Ngon	1977 1989	22.1 8.7		3		28.3 11.1	27.8 10.9	27.4 10.7	27.5 10.8		27.1 10.6	26.1 10.2	25.2 9.9	15.3	15.1 8.6	16.8 9.6		19.6 11.2	19.2 19.0 11.0 10.8	3		1	3.1 17.4 0.3 10.0	1 1	18.0 10.3	20.0 11.4	21.5 12.3	23.4 13.3	3	22.6 12.9	22.7 12.9	22.5 12.8	22.4 12.8	21.5 20 12.3 1
		4 Khok sa at	2004	13.5				17.2	16.9	16.7	16.7	16.6	16.5	15.9	15.4	14.2	14.0	15.6		18.2	17.8 17.6	17.6		3	5.8 16.2	1 1	16.8	18.6	19.9	21.7		21.0	21.0	20.9	20.8	20.0
		5 Naxaythong	2006	9.6	9.5	10.6	11.3	12.3	12.1	11.9	11.9	11.8	11.8	11.4	11.0	7.1	7.0	7.8	8.4	9.1	8.9 8.8	1	1	3	8.4 8.1		8.4	9.3	10.0	10.8		10.5	10.5	10.4	10.4	10.0
		6 Pak Thang 7 Nong Viengkham	2013 2013													5.5	5.4 5.5	6.0	6.4	7.0 7.1	6.9 6.8 7.0 6.9	6.8 6.9			5.4 6.2 5.6 6.4	3 3	6.4 6.6	7.1 7.3	7.7 7.8	8.3 8.5		8.1 8.2	8.1 8.3	8.0 8.2	8.0 8.1	7.7 7.8
		8 Don Koi	2013													10.1	9.9	11.0		12.9	12.6 12.5)	12.4 1	2.3 1	.9 11.5		11.9	13.1	14.1	15.3				14.8	14.7	14.2
		9 Na Bong 1 10 Iron melting factory, at Ban Hai Village (Tha Ngon),	2013 2013													2.4	2.4	2.6	2.8	3.1	3.0 3.0	3.0	3.0	2.9	2.8 2.7		4.1	4.6	4.9	5.3 14.6	5.2 14.6	5.2 14.6	5.2 14.6	5.1	5.1	4.9
11 B	BOLIKHAMXAY	Sub Total	2013	8.3	8.4	8.1	9.6	9.5	9.3	8.8	9.2	9.4	9.3	9.3	8.6	9.3	9.4	9.0	10.8	5.5 10.6	5.5 5.5 10.4 9.8	10.3	5.5 10.5 1	0.4 10).5 5.5).4 9.7	·,	10.8	10.4	14.6 12.4	12.2			14.6	14.6 12.1	14.6 12.0	14.6 14 11.9 1
		L Residential Sector		8.3	8.4	8.1	9.6	9.5	9.3	8.8	9.2	9.4	9.3	9.3	8.6	9.3	9.4	9.0	10.8	10.6	10.4 9.8	10.3	10.5	0.4 10).4 9.7	10.7	10.8	10.4	12.4	12.2	12.0	11.3	11.8	12.1	12.0	11.9 1
		1 Pakxan 2 Tha Bok	2000 2015	6.2	6.3	6.0	7.2	7.1	7.0	6.6	6.9	7.1	7.0	6.9	6.5	7.0	7.1	6.8	8.1	7.9	7.8 7.4	7.7	7.9	7.8	7.8 7.2	2 8.0	8.1	7.8	9.3	9.1	9.0	8.5	8.8	9.1	9.0	8.9
		3 Khonsong	2012	1.2	1.3	1.2	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.6	1.6	1.6 1.5	1.5	1.6	1.6	.6 1.4	1.6	1.6	1.6	1.9	1.8	1.8	1.7	1.8	1.8	1.8	1.8
12 5	KHAMMOUAN	4 Thasala	2012	0.8				0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.1	1.0 1.0	1.0	1.1		.0 1.0	·	1.1	1.0	1.2	1.2			1.2	1.2	1.2	1.2
12 K	HAMMOUAN	Sub Total L Residential Sector		18.2 18.2			21.1 21.1	19.3 19.3	19.0 19.0	18.8 18.8	18.0 18.0		18.0 18.0	17.8 17.8	18.9 18.9	19.7 19.7	19.3 19.3	20.8 20.8		1	20.5 20.3 20.5 20.3	6 6	- 1	3	0.3 20.5 0.3 20.5	3 3	21.4 21.4	23.1	25.3 25.3	23.3 23.3	22.8 22.8	22.6 22.6	21.7 21.7	23.3 23.3	21.7 21.7	21.4 22 21.4 22
		1 Thakhek	2003	13.7	13.4	14.4	15.8	14.5	14.2	14.1	13.5	14.6	13.5	13.3	14.2	14.8	14.4	15.6	17.1	15.7	15.4 15.3	14.6	15.7 1	4.6 1	15.4	16.5	16.1	17.4	19.0	17.5	17.1	17.0	16.2	17.5	16.3	16.1
		Mahaxai 2.1 Potassium at Yang Koung Village (Ngom Ma Lat) Thakhel	2009	2.9	2.8	3.1	3.4	3.1	3.0	3.0	2.9	3.1	2.9	2.8	3.0	3.2	3.1	3.3	3.6	3.3	3.3 3.3	3.1	3.4	3.1	3.1 3.3	3.5	3.4	3.7	4.1	3.7	3.7	3.6	3.5	3.7	3.5	3.4
		3 Nam Theun 2 (Substation)	2009	1.6	1.6	1.7	1.9	1.7	1.7	1.7	1.6	1.7	1.6	1.6	1.7	1.8	1.7	1.9	2.1	1.9	1.8 1.8	1.8	1.9	1.8	.7 1.8	3 2.0	1.9	2.1	2.3	2.1	2.1	2.0	1.9	2.1	2.0	1.9
13 S	SVANNAKHET	Sub Total		49.8	1 1	3		58.6	56.9		56.4		55.1	55.3	55.3	51.4	55.4	56.8			58.9 56.9	3 3	3		7.3 57.3		59.5	61.1	65.1	65.6				61.6	61.4	61.7 6
		L Residential Sector 1 Pakbo		25.3 11.4				34.1 15.3	32.3 14.5	30.4 13.7	31.8 14.3		30.6 13.8	30.8 13.8	30.8 13.9	26.9 12.1	30.8 13.9	32.3 14.5			34.4 32.4 15.5 14.6				2.7 32.8 4.7 14.8		35.0 10.5	36.6 11.0	40.6 12.2	41.1 12.3		36.7 11.0	38.4 11.5	37.0 11.1	36.9 11.1	37.1 3° 11.1 1
			1996				10.1	10.2	9.7	9.1	9.6		9.2	9.2	9.2	8.1	9.3	9.7			10.3 9.7	: :		3	0.8 9.8		6.3	6.6	7.3	7.4		6.6	6.9	6.7	6.6	6.7
		2 Keng Kok	1996 2004	7.6	8.7		8.4	8.5	8.1	7.6	8.0	7.7	7.6	7.7	7.7	6.7	7.7	8.1	8.9	9.1	8.6 8.1	8.5	8.2	8.1	3.2 8.2		12.2	12.8	14.2	14.4 7.0			13.5	13.0	12.9	13.0 13
		2 Keng Kok 3 Nong Deun	2004 2012	7.6 6.3		7.6	0.4						i i	1	- 1											5.2	5.9	6.2	6.9							
		2 Keng Kok	2004			7.6	6.4										1	1	1								- 1	- 1	- 1	7.0	6.6	6.2		6.3	6.3	6.3
		2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong	2004 2012 2014 2015 2015	6.3	7.2																												6.5	6.3		
14 °C	'ARAVAN	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing	2004 2012 2014 2015 2015	6.3	7.2	24.5	24.5	24.5	24.5	24.5	24.5		24.5	24.5	24.5	24.5	24.5	24.5			24.5 24.5				l.5 24.5		24.5	24.5	24.5	24.5	24.5	24.5	6.5 24.5	6.3 24.5	24.5	24.5 24
14 S	SARAVAN	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong	2004 2012 2014 2015 2015	6.3	7.2 24.5 7.3	24.5 7.5	24.5 7.7		24.5 6.9 6.9		24.5 6.0 6.0	6.0	24.5 5.9 5.9	6.5	24.5 6.9 6.9	24.5 9.2 9.2	24.5 9.5 9.5	24.5 9.7 9.7	24.5 10.0 10.0	24.5 9.6 9.6	24.5 24.5 8.9 8.4 8.9 8.4	7.8	7.8	7.7	1.5 24.5 3.5 9.0 3.5 9.0	10.8	24.5 11.2 11.2	24.5 11.4 11.4	24.5 11.8 11.8		24.5 10.5	24.5 9.9	6.5 24.5 9.2	6.3		
14 S	SARAVAN	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total Residential Sector 1 Saravan	2004 2012 2014 2015 2015 2005	24.5 7.1	7.2 24.5 7.3 7.3	24.5 7.5 7.5	24.5 7.7 7.7	24.5	6.9	6.5 6.5	6.0	6.0 6.0	5.9	6.5 6.5	6.9	9.2	9.5	9.7	10.0	9.6	8.9 8.4	7.8 7.8	7.8 7.8	7.7 S	3.5 9.0	10.8 10.8 7.5	11.2 11.2 7.8	11.4 11.4 8.0	11.8 11.8 8.2	24.5 11.2 11.2 7.8	24.5 10.5 10.5 7.3	24.5 9.9 9.9 6.9	6.5 24.5 9.2 9.2 6.4	6.3 24.5 9.2 9.2 6.4	24.5 9.0 9.0 6.3	24.5 24 9.9 10 9.9 10 7.0
		2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total Residential Sector 1 Saravan 2 Taothan	2004 2012 2014 2015 2015 2005	24.5 7.1 7.1 7.1	7.2 24.5 7.3 7.3 7.3	24.5 7.5 7.5 7.5	24.5 7.7 7.7 7.7	24.5 7.3 7.3 7.3	6.9 6.9 6.9	6.5 6.5 6.5	6.0 6.0 6.0	6.0 6.0 6.0	5.9 5.9 5.9	6.5 6.5 6.5	6.9 6.9 6.9	9.2 9.2 9.2	9.5 9.5 9.5	9.7 9.7 9.7	10.0 10.0 10.0	9.6 9.6 9.6	8.9 8.4 8.9 8.4 8.9 8.4	7.8 7.8 7.8	7.8 7.8 7.8	7.7 7.7 7.7	3.5 9.0 3.5 9.0 3.5 9.0	10.8 10.8 7.5 3.2	11.2 11.2 7.8 3.4	11.4 11.4 8.0 3.4	11.8 11.8 8.2 3.5	24.5 11.2 11.2 7.8 3.4	24.5 10.5 10.5 7.3 3.1	24.5 9.9 9.9 6.9 3.0	24.5 9.2 9.2 6.4 2.7	6.3 24.5 9.2 9.2 6.4 2.8	24.5 9.0 9.0 6.3 2.7	24.5 24 9.9 10 9.9 10 7.0 3
	SARAVAN SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total Residential Sector 1 Saravan	2004 2012 2014 2015 2015 2005	24.5 7.1 7.1	7.2 24.5 7.3 7.3 7.3	24.5 7.5 7.5 7.5	24.5 7.7 7.7 7.7 1.3	24.5 7.3 7.3	6.9 6.9	6.5 6.5 6.5	6.0 6.0	6.0 6.0 6.0	5.9 5.9	6.5 6.5 6.5	6.9 6.9	9.2 9.2	9.5 9.5	9.7 9.7	10.0 10.0	9.6 9.6	8.9 8.4 8.9 8.4	7.8 7.8 7.8	7.8 7.8 7.8	7.7 1 7.7 1 7.7 1	3.5 9.0 3.5 9.0	10.8 10.8 7.5 3.2 3.9	11.2 11.2 7.8	11.4 11.4 8.0	11.8 11.8 8.2	24.5 11.2 11.2 7.8	24.5 10.5 10.5 7.3 3.1	24.5 9.9 9.9 6.9	24.5 9.2 9.2 6.4 2.7	6.3 24.5 9.2 9.2 6.4	24.5 9.0 9.0 6.3	24.5 24 9.9 10 9.9 10 7.0
15 S	SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total Residential Sector 1 Secong	2004 2012 2014 2015 2015 2005	24.5 7.1 7.1 7.1 1.1 1.1	7.2 24.5 7.3 7.3 7.3 1.1 1.1	24.5 7.5 7.5 7.5 1.2 1.2 1.2	24.5 7.7 7.7 7.7 1.3 1.3 1.3	24.5 7.3 7.3 7.3 1.3 1.3	6.9 6.9 6.9 1.3 1.3	6.5 6.5 6.5 1.2 1.2	6.0 6.0 6.0 1.3 1.3	6.0 6.0 6.0 1.3 1.3	5.9 5.9 5.9 1.3 1.3	6.5 6.5 6.5 1.3 1.3	6.9 6.9 6.9 1.3 1.3	9.2 9.2 9.2 1.3 1.3	9.5 9.5 9.5 1.2 1.2	9.7 9.7 9.7 1.4 1.4 1.4	10.0 10.0 10.0 1.6 1.6 1.6	9.6 9.6 9.6 1.5 1.5	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4	7.8 7.8 7.8 1.5 1.5	7.8 7.8 7.8 1.5 1.5	7.7 7.7 7.7 1.5 1.5 1.5	3.5 9.0 3.5 9.0 3.5 9.0 5 1.6 5 1.6	10.8 10.8 7.5 3.2 3.9 3.9 3.9	11.2 11.2 7.8 3.4 3.7 3.7 3.7	11.4 11.4 8.0 3.4 4.3 4.3	11.8 11.8 8.2 3.5 4.7 4.7	24.5 11.2 11.2 7.8 3.4 4.5 4.5 4.5	24.5 10.5 10.5 7.3 3.1 4.7 4.7	24.5 9.9 9.9 6.9 3.0 4.3 4.3 4.3	24.5 9.2 9.2 6.4 2.7 4.5 4.5	6.3 24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5	24.5 9.0 9.0 6.3 2.7 4.6 4.6 4.6	24.5 2.9.9 10 9.9 10 7.0 3.0 3 4.6 4.6 4.6 4.6 4.6
15 S		2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total I. Residential Sector 1 Sub Total Sub Total Sub Total Sub Total Sub Total	2004 2012 2014 2015 2015 2005 2011 2014	24.5 7.1 7.1 7.1 1.1 1.1 1.1 18.1	7.2 24.5 7.3 7.3 7.3 1.1 1.1 1.1 18.9	24.5 7.5 7.5 7.5 1.2 1.2 1.2	24.5 7.7 7.7 7.7 1.3 1.3 1.3 21.8	24.5 7.3 7.3 7.3 1.3 1.3 1.3 22.4	6.9 6.9 6.9 1.3 1.3 20.5	6.5 6.5 6.5 1.2 1.2 1.2 1.9.6	6.0 6.0 6.0 1.3 1.3 1.3	6.0 6.0 6.0 1.3 1.3 1.3	5.9 5.9 5.9 1.3 1.3 1.3	6.5 6.5 6.5 1.3 1.3 1.3	6.9 6.9 6.9 1.3 1.3 1.3	9.2 9.2 9.2 1.3 1.3 1.3 20.1	9.5 9.5 9.5 1.2 1.2 1.2 21.0	9.7 9.7 9.7 1.4 1.4 1.4 21.7	10.0 10.0 10.0 1.6 1.6 1.6 24.2	9.6 9.6 9.6 1.5 1.5 1.5 24.9	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 1.6 1.4 22.8 21.7	7.8 7.8 7.8 1.5 1.5 1.5 21.6	7.8 7.8 7.8 1.5 1.5 1.5 21.4	7.7 7.7 7.7 1.5 1.5 1.5 9.6	3.5 9.0 3.5 9.0 3.5 9.0 5 1.6 5 1.6 0.7 19.4	10.8 10.8 7.5 3.2 3.9 3.9 3.9 22.3	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3	11.4 11.4 8.0 3.4 4.3 4.3 4.3 24.1	11.8 11.8 8.2 3.5 4.7 4.7 4.7 26.8	24.5 11.2 11.2 7.8 3.4 4.5 4.5 4.5 27.6	24.5 10.5 10.5 7.3 3.1 4.7 4.7 4.7 25.2	24.5 9.9 9.9 6.9 3.0 4.3 4.3 4.3 24.1	6.5 24.5 9.2 9.2 6.4 2.7 4.5 4.5 4.5 23.9	6.3 24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7	24.5 9.0 9.0 6.3 2.7 4.6 4.6 4.6 21.7	24.5 2.9 10 9.9 10 7.0 3.0 4.6 4.6 4.6 4.6 4.6 4.6 21.8 2.0 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1
15 S	SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total Residential Sector 1 Secong	2004 2012 2014 2015 2015 2005 2011 2014	24.5 7.1 7.1 7.1 1.1 1.1	7.2 3 24.5 7.3 7.3 7.3 1.1 1.1 1.1 1.8,9 18,9	24.5 7.5 7.5 7.5 1.2 1.2 1.2 19.6 19.6	24.5 7.7 7.7 7.7 1.3 1.3 1.3 21.8 21.8	24.5 7.3 7.3 7.3 1.3 1.3	6.9 6.9 6.9 1.3 1.3	6.5 6.5 6.5 1.2 1.2	6.0 6.0 6.0 1.3 1.3	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2	5.9 5.9 5.9 1.3 1.3	6.5 6.5 6.5 1.3 1.3	6.9 6.9 6.9 1.3 1.3	9.2 9.2 9.2 1.3 1.3	9.5 9.5 9.5 1.2 1.2	9.7 9.7 9.7 1.4 1.4 1.4	10.0 10.0 10.0 1.6 1.6 1.6 24.2 24.2	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4	7.8 7.8 7.8 1.5 1.5 1.5 21.6 21.6	7.8 7.8 7.8 1.5 1.5 1.5 21.4 21.4	7.7 7.7 7.7 1.5 1.5 1.5 1.5 9.6 19	3.5 9.0 3.5 9.0 3.5 9.0 5 1.6 5 1.6	10.8 10.8 10.8 7.5 3.2 5 3.9 5 3.9 5 3.9 22.3 22.3	11.2 11.2 7.8 3.4 3.7 3.7 3.7	11.4 11.4 8.0 3.4 4.3 4.3	11.8 11.8 8.2 3.5 4.7 4.7	24.5 11.2 11.2 7.8 3.4 4.5 4.5 4.5	24.5 10.5 10.5 7.3 3.1 4.7 4.7 4.7 25.2 25.2	24.5 9.9 9.9 6.9 3.0 4.3 4.3 4.3 24.1 24.1	24.5 9.2 9.2 6.4 2.7 4.5 4.5	6.3 24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5	24.5 9.0 9.0 6.3 2.7 4.6 4.6 4.6	24.5 2.9.9 10 9.9 10 7.0 3.0 3 4.6 4.6 4.6 4.6 4.6
15 S	SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total I. Residential Sector 1 Sekong Sub Total I. Residential Sector 1 Sekong Sub Total I. Residential Sector 1 Sekong Sub Total	2004 2012 2014 2015 2015 2005 2011 2014 2012	24.5 7.1 7.1 7.1 1.1 1.1 18.1 18.1 18.1 11.2 2.7	5 24.5 7.3 7.3 7.3 7.3 1.1 1.1 1.1 18.9 11.7 2.8	24.5 7.5 7.5 7.5 1.2 1.2 19.6 19.6 12.1 2.9	24.5 7.7 7.7 7.7 1.3 1.3 1.3 21.8 21.8 21.8 3.3	24.5 7.3 7.3 7.3 1.3 1.3 1.3 22.4 22.4 13.9 3.4	6.9 6.9 6.9 1.3 1.3 20.5 20.5 12.7 3.1	6.5 6.5 6.5 1.2 1.2 1.2 19.6 19.6 12.1 2.9	6.0 6.0 6.0 1.3 1.3 1.3 19.4 19.4 12.0 2.9	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2 11.9 2.9	5.9 5.9 5.9 1.3 1.3 1.3 17.6 17.6 10.9 2.6	6.5 6.5 6.5 1.3 1.3 1.7 17.7 17.7 11.0 2.7	6.9 6.9 6.9 1.3 1.3 1.3 17.4 17.4 10.8 2.6	9.2 9.2 9.2 1.3 1.3 20.1 20.1	9.5 9.5 9.5 1.2 1.2 1.2 21.0 21.0	9.7 9.7 9.7 1.4 1.4 1.4 21.7 21.7 13.5 3.3	10.0 10.0 10.0 1.6 1.6 1.6 24.2 24.2 15.0 3.6	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9 15.5 3.7	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 22.8 21.7 22.8 21.7 3.4 3.3	7.8 7.8 7.8 1.5 1.5 1.5 21.6 21.6 13.4 3.2	7.8 7.8 7.8 1.5 1.5 1.5 21.4 121.4 13.2 3.2	7.7 7.7 7.7 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	3.5 9.0 3.5 9.0 3.5 9.0 3.5 1.6 3.5 1.6 3.7 19.4 3.7 19.4 3.0 2.9	10.8 10.8 7.5 3.2 3.9 3.9 3.9 22.3 22.3 13.8 3.3	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3 23.3 14.4 3.5	11.4 11.4 8.0 3.4 4.3 4.3 4.3 24.1 24.1 14.9 3.6	11.8 11.8 8.2 3.5 4.7 4.7 4.7 26.8 26.8 16.6 4.0	24.5 11.2 11.2 7.8 3.4 4.5 4.5 4.5 27.6 27.6 17.1 4.1	24.5 10.5 10.5 7.3 3.1 4.7 4.7 4.7 25.2 25.2 15.6 3.8	24.5 9.9 9.9 6.9 3.0 4.3 4.3 4.3 24.1 24.1 15.0 3.6	24.5 9.2 9.2 6.4 2.7 4.5 4.5 23.9 23.9 14.8 3.6	24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7 23.7 14.7 3.6	24.5 9.0 9.0 6.3 2.7 4.6 4.6 21.7 21.7 13.5 3.3	24.5 2.9.9 10 9.9 10 7.0 7.0 7.0 3.0 6.4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4
15 S	SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total I. Residential Sector 1 Sekong Sub Total I. Residential Sector 1 Sekong Sub Total 3 Ban Hat	2004 2012 2014 2015 2015 2005 2011 2014 2012 1991 2005 2005	24.5 7.1 7.1 7.1 1.1 18.1 18.1 11.2 2.7,7	5 24.5 7.3 7.3 7.3 1.1 1.1 18.9 18.9 11.7 2.8 1.7	24.5 7.5 7.5 7.5 1.2 1.2 19.6 19.6 12.1 2.9 1.8	24.5 7.7 7.7 7.7 1.3 1.3 21.8 21.8 3.3 2.0	24.5 7.3 7.3 7.3 1.3 1.3 1.3 22.4 22.4 13.9 3.4 2.0	6.9 6.9 6.9 1.3 1.3 20.5 20.5 12.7 3.1 1.8	6.5 6.5 6.5 1.2 1.2 1.2 19.6 19.6 12.1 2.9 1.8	6.0 6.0 6.0 1.3 1.3 1.3 19.4 12.0 2.9 1.7	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2 11.9 2.9 1.7	5.9 5.9 5.9 1.3 1.3 17.6 17.6 10.9 2.6 1.6	6.5 6.5 6.5 1.3 1.3 17.7 17.7 11.0 2.7 1.6	6.9 6.9 6.9 1.3 1.3 17.4 17.4 10.8 2.6 1.6	9.2 9.2 9.2 1.3 1.3 20.1 20.1 12.5	9.5 9.5 9.5 1.2 1.2 1.2 21.0 21.0 13.0 3.2 1.9	9.7 9.7 9.7 1.4 1.4 1.4 21.7 21.7 13.5	10.0 10.0 10.0 1.6 1.6 1.6 24.2 24.2 15.0 3.6 2.2	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9 15.5 3.7 2.2	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 22.8 21.7 22.8 21.7 14.1 13.5 3.4 3.3 2.0 2.0	7.8 7.8 7.8 1.5 1.5 21.6 21.6 13.4 3.2 1.9	7.8 7.8 7.8 1.5 1.5 1.5 21.4 21.4 13.2 1.3 3.2 1.9	7.7 7.7 7.7 1.5 1.5 1.5 9.6 19 2.1 2.9 1.8	3.5 9.0 3.5 9.0 3.5 9.0 3.5 1.6 3.5 1.6 3.7 19.4 3.7 19.4 3.0 2.9 3.8 1.7	10.8 10.8 7.5 3.2 3.9 3.9 5 3.9 22.3 13.8 3.3 7 2.0	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3 23.3 14.4 3.5 2.1	11.4 11.4 8.0 3.4 4.3 4.3 4.3 24.1 24.1 14.9 3.6 2.2	11.8 11.8 8.2 3.5 4.7 4.7 4.7 26.8 26.8 16.6 4.0 2.4	24.5 11.2 7.8 3.4 4.5 4.5 27.6 27.6 17.1 4.1 2.5	24.5 10.5 10.5 7.3 3.1 4.7 4.7 25.2 25.2 15.6 3.8 2.3	24.5 9.9 9.9 6.9 3.0 4.3 4.3 24.1 24.1 15.0 3.6 2.2	24.5 9.2 9.2 6.4 2.7 4.5 4.5 23.9 23.9 14.8 3.6 2.2	24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7 23.7 14.7 3.6 2.1	24.5 9.0 9.0 6.3 2.7 4.6 4.6 21.7 21.7 13.5 3.3 2.0	24.5 2.99 10 7.0 3.0 3.0 4.6 4.6 4.6 4.6 21.8 2 21.8 2 21.8 2 3.3 3 3.3 2.0
15 S	SEKONG CHAMPASAK	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total I. Residential Sector 1 Saravan 2 Taothan Sub Total I. Residential Sector 1 Sekong Sub Total I. Residential Sector 1 Sekong Sub Total I. Residential Sector 1 Sekong Sub Total	2004 2012 2014 2015 2015 2005 2011 2014 2012	24.5 7.1 7.1 7.1 1.1 1.1 18.1 18.1 18.1 11.2 2.7	3 7.2 3 24.5 7.3 7.3 7.3 1.1 1.1 1.1 1.1 1.1 1.1 2.8 3 1.7 2.8 5 1.7 1.5	24.5 7.5 7.5 7.5 1.2 1.2 19.6 19.6 12.1 2.9 1.8	24.5 7.7 7.7 7.7 1.3 1.3 1.3 21.8 21.8 21.8 3.3	24.5 7.3 7.3 7.3 1.3 1.3 1.3 22.4 22.4 13.9 3.4	6.9 6.9 6.9 1.3 1.3 20.5 20.5 12.7 3.1	6.5 6.5 6.5 1.2 1.2 1.2 19.6 19.6 12.1 2.9	6.0 6.0 6.0 1.3 1.3 1.3 19.4 19.4 12.0 2.9	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2 11.9 2.9 1.7	5.9 5.9 5.9 1.3 1.3 1.3 17.6 17.6 10.9 2.6	6.5 6.5 6.5 1.3 1.3 1.7 17.7 17.7 11.0 2.7	6.9 6.9 6.9 1.3 1.3 1.3 17.4 17.4 10.8 2.6	9.2 9.2 9.2 1.3 1.3 20.1 20.1 12.5	9.5 9.5 9.5 1.2 1.2 1.2 21.0 21.0 13.0	9.7 9.7 9.7 1.4 1.4 21.7 21.7 13.5 3.3 2.0	10.0 10.0 10.0 1.6 1.6 1.6 24.2 24.2 15.0 3.6	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9 15.5 3.7	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 22.8 21.7 22.8 21.7 3.4 3.3	7.8 7.8 7.8 1.5 1.5 1.5 21.6 21.6 13.4 3.2	7.8 7.8 7.8 1.5 1.5 1.5 21.4 21.4 13.2 1.3 3.2 1.9	7.7 7.7 7.7 1.5 1.5 1.5 1.5 9.6 19	3.5 9.0 3.5 9.0 3.5 9.0 3.5 1.6 3.5 1.6 3.7 19.4 3.7 19.4 3.0 2.9	10.8 10.8 7.5 3.2 5 3.9 5 3.9 5 22.3 122.3 13.8 3.3 7 2.0 5 1.8	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3 23.3 14.4 3.5	11.4 11.4 8.0 3.4 4.3 4.3 4.3 24.1 24.1 14.9 3.6	11.8 11.8 8.2 3.5 4.7 4.7 4.7 26.8 26.8 16.6 4.0	24.5 11.2 11.2 7.8 3.4 4.5 4.5 4.5 27.6 27.6 17.1 4.1	24.5 10.5 10.5 7.3 3.1 4.7 4.7 25.2 25.2 15.6 3.8 2.3	24.5 9.9 9.9 6.9 3.0 4.3 4.3 24.1 24.1 15.0 3.6 2.2	24.5 9.2 9.2 6.4 2.7 4.5 4.5 23.9 23.9 14.8 3.6	24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7 23.7 14.7 3.6	24.5 9.0 9.0 6.3 2.7 4.6 4.6 21.7 21.7 13.5 3.3	24.5 2.9.9 10 9.9 10 7.0 7.0 7.0 3.0 6.4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4
15 S	SEKONG	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total Residential Sector 1 Saravan 2 Taothan Sub Total Residential Sector 1 Sekong Sub Total Residential Sector 1 Sekong Sub Total Residential Sector 1 Bang Yo 2 Ban Na 3 Ban Hat 4 Pakxong 5 Ban Jiangxai Sub Total	2004 2012 2014 2015 2015 2015 2005 2011 2014 2012	6.3 24.5 7.1 7.1 1.1 1.1 1.1.1 18.1 18.1 19.1 1.4 1.1 2.1	7.2 5 24.5 7.3 7.3 7.3 1.1 1.1 1.1 18.9 18.9 18.9 1.17 2.18 5 1.7 1.5 1.1	24.5 7.5 7.5 7.5 1.2 1.2 19.6 19.6 12.1 2.9 1.8 1.6 1.2	24.5 7.7 7.7 7.7 1.3 1.3 21.8 21.8 13.5 3.3 2.0 1.7 1.3	24.5 7.3 7.3 7.3 1.3 1.3 22.4 22.4 13.9 3.4 2.0 1.8 1.3	6.9 6.9 6.9 1.3 1.3 20.5 20.5 12.7 3.1 1.8 1.6 1.2	6.5 6.5 6.5 1.2 1.2 1.2 19.6 19.6 12.1 2.9 1.8 1.6 1.2	6.0 6.0 6.0 1.3 1.3 1.3 19.4 19.4 12.0 2.9 1.7 1.6 1.2 2.4	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2 11.9 2.9 1.7 1.5 1.2	5.9 5.9 5.9 1.3 1.3 17.6 17.6 10.9 2.6 1.4 1.1 2.4	6.5 6.5 6.5 1.3 1.3 1.7.7 17.7 11.0 2.7 1.6 1.4 1.1	6.9 6.9 6.9 1.3 1.3 1.3 17.4 17.4 10.8 2.6 1.6 1.4 1.0 2.2	9.2 9.2 9.2 1.3 1.3 1.3 20.1 20.1 12.5 3.0 1.8 1.6 1.2	9.5 9.5 9.5 9.5 1.2 1.2 1.2 21.0 21.0 13.0 3.2 1.9 1.7 1.3	9.7 9.7 9.7 9.7 1.4 1.4 1.4 21.7 21.7 13.5 3.3 2.0 1.7 1.3	10.0 10.0 10.0 11.6 1.6 1.6 24.2 24.2 15.0 3.6 2.2 1.9 1.5	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9 15.5 3.7 2.2 2.0 1.5 3.1	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 22.8 21.7 22.8 21.7 14.1 13.5 2.0 2.0 2.0 1.8 1.7 1.4 1.3 3.0 3.0	7.8 7.8 7.8 1.5 1.5 21.6 21.6 21.6 13.4 3.2 1.9 1.7 1.3	7.8 7.8 7.8 7.8 1.5 1.5 1.5 21.4 113.2 1.3 3.2 1.9 1.7 1.3 2.8	7.7 7.7 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	3.5 9.0 3.5 9.0 3.5 9.0 3.5 1.6 5.5 1.6 5.5 1.6 7.7 19.4 7.7 19.4 7.7 19.4 7.8 1.7 7.9 19.4 7.0 2.9 7.0 2.9 7.0 1.6 7.0 1.6	10.8 10.8 7.5 3.2 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 5.3.9 6.3.9 7.5.9 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3 23.3 14.4 3.5 2.1 1.9 1.4 3.0	11.4 11.4 8.0 3.4 4.3 4.3 24.1 24.1 14.9 3.6 2.2 1.9 1.4	11.8 11.8 8.2 3.5 4.7 4.7 26.8 26.8 16.6 4.0 2.4 2.1 1.6	24.5 11.2 11.2 7.8 3.4 4.5 4.5 27.6 27.6 17.1 4.1 2.5 2.2 1.7	24.5 10.5 10.5 7.3 3.1 4.7 4.7 4.7 25.2 25.2 15.6 3.8 2.3 2.0 1.5	24.5 9.9 9.9 3.0 4.3 4.3 24.1 24.1 15.0 3.6 2.2 1.9 1.4 3.5	6.5 24.5 9.2 9.2 6.4 2.7 4.5 4.5 4.5 23.9 23.9 14.8 3.6 2.2 1.9 1.4 3.4	24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7 23.7 23.7 14.7 3.6 2.1 1.9	24.5 9.0 9.0 6.3 2.7 4.6 4.6 21.7 21.7 13.5 3.3 2.0 1.7 1.3	24.5 2.99 10 7.0 3.0 3.0 4.6 4.6 4.6 4.6 4.18 2.21.8 2.20 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 3.2 2.0 1.7 1.3 1.3 3.2 2.0 1.7 1.3 1.3 3.2 2.0 1.7 1.3 1.3 1.2 1.3 1.2 1.3 1.2 1.3 1.3 1.2 1.3 1.3 1.2 1.3 1.3 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3
15 S	SEKONG CHAMPASAK	2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing Sub Total Residential Sector 1 Saravan 2 Taothan Sub Total Residential Sector 1 Sekong Sub Total L Residential Sector 1 Sekong Sub Total L Residential Sector 1 Bang Yo 2 Ban Na 3 Ban Hat 4 Pakxong 5 Ban Jiangxai	2004 2012 2014 2015 2015 2015 2005 2011 2014 2012	6.3 24.5 7.1 7.1 1.1 1.1 1.1.1 18.1 11.2 2.7 1.6 1.4 1.1	7.2 7.3 7.3 7.3 7.3 1.1 1.1 1.1 1.8.9 18.9 11.7 2.8 1.7 1.5 1.1 2.1	24.5 7.5 7.5 7.5 1.2 1.2 19.6 19.6 12.1 2.9 1.8 1.6 1.2	24.5 7.7 7.7 7.7 1.3 1.3 1.3 21.8 13.5 3.3 2.0 1.7 1.3	24.5 7.3 7.3 7.3 1.3 1.3 1.3 22.4 22.9 3.4 2.0 1.8 1.3	6.9 6.9 6.9 1.3 1.3 20.5 20.5 12.7 3.1 1.8 1.6 1.2	6.5 6.5 6.5 1.2 1.2 1.2 19.6 19.6 12.1 2.9 1.8 1.6	6.0 6.0 6.0 1.3 1.3 1.3 19.4 19.4 12.0 2.9 1.7 1.6	6.0 6.0 6.0 1.3 1.3 1.3 19.2 19.2 11.9 2.9 1.7 1.5 1.2	5.9 5.9 5.9 1.3 1.3 17.6 17.6 10.9 2.6 1.6 1.4 1.1	6.5 6.5 6.5 1.3 1.3 1.3 17.7 17.7 11.0 2.7 1.6 1.4	6.9 6.9 6.9 1.3 1.3 17.4 17.4 10.8 2.6 1.6 1.4	9.2 9.2 9.2 9.2 1.3 1.3 20.1 20.1 12.5 3.0 1.8 1.6 1.2	9.5 9.5 9.5 1.2 1.2 21.0 21.0 13.0 3.2 1.9 1.7 1.3	9.7 9.7 9.7 1.4 1.4 21.7 21.7 13.5 3.3 2.0 1.7 1.3	10.0 10.0 10.0 1.6 1.6 1.6 24.2 24.2 15.0 3.6 2.2 1.9	9.6 9.6 9.6 1.5 1.5 1.5 24.9 24.9 15.5 3.7 2.2 2.0 1.5	8.9 8.4 8.9 8.4 1.6 1.4 1.6 1.4 1.6 1.4 22.8 21.7 22.8 21.7 14.1 13.5 3.4 3.3 2.0 2.0 1.8 1.7 1.4 1.3	7.8 7.8 7.8 1.5 1.5 21.6 21.6 13.4 3.2 1.9 1.7 1.3 2.9 2.9	7.8 7.8 7.8 7.8 1.5 1.5 1.5 21.4 113.2 1.3 3.2 1.9 1.7 1.3 2.8	7.7 7.7 7.7 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.6 1.9 1.8 1.6 1.2 2.8 2.8	3.5 9.0 3.5 9.0 3.5 9.0 3.5 1.6 3.5 1.6 3.7 19.4 3.7 19.4 3.0 2.9 3.0 2.9 3.0 1.6 3.0 1.6 3	10.8 10.8 10.8 7.5 3.2 5 3.9 5 3.9 5 3.9 5 22.3 22.3 13.8 7 2.0 1.8 2 3.0 5 3.0	11.2 11.2 7.8 3.4 3.7 3.7 3.7 23.3 23.3 14.4 3.5 2.1 1.9 1.4	11.4 11.4 8.0 3.4 4.3 4.3 24.1 24.1 14.9 3.6 2.2 1.9	11.8 11.8 8.2 3.5 4.7 4.7 4.7 26.8 26.8 16.6 4.0 2.4 2.1 1.6	24.5 11.2 11.2 7.8 3.4 4.5 4.5 27.6 27.6 17.1 4.1 2.5 2.2	24.5 10.5 10.5 7.3 3.1 4.7 4.7 4.7 25.2 25.2 15.6 3.8 2.3 2.0 1.5	24.5 9.9 9.9 3.0 4.3 4.3 24.1 15.0 3.6 2.2 1.9 1.4 3.5 3.5	24.5 9.2 9.2 6.4 2.7 4.5 4.5 23.9 23.9 14.8 3.6 2.2 1.9 1.4	24.5 9.2 9.2 6.4 2.8 4.5 4.5 4.5 23.7 23.7 14.7 3.6 2.1 1.9	24.5 9.0 9.0 6.3 2.7 4.6 4.6 4.6 21.7 21.7 13.5 3.3 2.0 1.7 1.3	24.5 2.99 10 9.9 10 7.0 3.0 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6

	Provinces	No. Name of Substations	Com. years	s 2015 Jan	•	2015 Mar	2015 2 Apr N				2015 Aug	2015 2 Sep (2015 Dec	2016 Jan		2016 Mar		_		2016 201 Jul Au		16 2016 ep Oct		2016 Dec					2017 May		2017 20 Jul A		2017 201' Sep Oct		
1	PHONGSALI	Sub Total		3.5	3.4	2.9	3.2	3.5	4.0	4.3	4.2	4.3	4.2	4.3	4.2	7.	.3 7.0	5.9	6.6	7.2	8.3	9.0	8.7	8.9 8	.8 8.9	8.8	9.7	9.4	7.9	8.9	9.7	11.1	12.0	11.7	11.9 11	.7 12	2.0 11.7
	:	L Residential Sector 1 Boun Neua	2013	3.5 3.5	3.4 3.4		3.2	3.5	4.0 4.0	4.3	4.2 4.2	4.3 4.3	4.2	4.3	4.2	7.		5.9 5.9	6.6 6.6	7.2	8.3 8.3		8.7 8.7		.8 8.9 .8 8.9	8	1	9.4 9.4	7.9 7.9	8.9 8.9	9.7 9.7	11.1 11.1	:	11.7 11.7	11.9 11 11.9 11		2.0 11.7 2.0 11.7
2	ВОКЕО	Sub Total	1010	8.3	7.6		8.4	9.4	9.6	9.5	10.0		10.7	10.9	9.6	10.	2 9.4	9.0	10.4	11.6	11.9			12.9 13		ł	-		11.6	-				15.9		.0 17	7.3 15.3
		L Residential Sector 1 Houayxay	2014	8.3 8.3				9.4 9.4	9.6 9.6	9.5 9.5	10.0 10.0	10.5 10.5	10.7 10.7	10.9 10.9	9.6 9.6	10.1		9.0 9.0	10.4 10.4	11.6 11.6	11.9 11.9			12.9 13 12.9 13		1	3	12.1 12.1	11.6 11.6	13.4 13.4	15.0 15.0	15.3 15.3	15.1 15.1	15.9 15.9		7.0 17 7.0 17	7.3 15.3 7.3 15.3
3	LUANGNAMTHA	Sub Total	2014	7.3	4			9.3	9.5	9.2	9.7	10.2	9.7	8.9	9.2			10.4	11.3	13.2	13.5		#: 	14.5 13						····		16.0	15.5	16.3			7.5 15.5 5.0 15.5
	į	L Residential Sector 1 Luangnamtha 1	2009	7.3 3.6	1	:	1	9.3 4.6	9.5 4.7	9.2 4.6	9.7 4.8	10.2 5.1	9.7 4.8	8.9 4.4	9.2 4.6			10.4 5.2	11.3 5.7	13.2	13.5 6.7		3.8 6.9	14.5 13 7.2 6	.8 12.7 .9 6.3	\$	3	11.6 5.8	12.3 6.2	13.4 6.7	15.7 7.8	16.0 8.0	15.5 7.7	16.3 8.2	8	5.3 15 3.2 7	5.0 15.5 7.5 7.7
		2 Luangnamtha 2	2014	3.6	1	:	4.0	4.6	4.7	4.6	4.8	5.1	4.8	4.4	4.6	5.	2 4.9	5.2	5.7	6.6	6.7	6.5	6.9	1	.9 6.3	1	6.1	5.8	6.2	6.7	7.8 7.8		7.7	8.2	8.6		7.5 7.7 7.5 7.7
4	OUDOMXAI	Sub Total L Residential Sector		12.6		1		13.6	16.0	17.1	15.4	16.9	16.4	15.4	15.5			17.6	1 1	19.2 19.2	22.5			23.8 23	1	1	1 .	3		: 3				24.1	26.3 25		3.9 24.2
		1 Oudomxay	2009	12.6 6.3	1		3	13.6	16.0 8.0	17.1 8.5	15.4 7.7		16.4 8.2	15.4 7.7	15.5 7.8			17.6 8.8	22.6 11.3	9.6	22.5 11.2			23.8 23 11.9 11		3	3 3		19.5 9.8	25.1 12.5	21.2 10.6	24.9 12.4		24.1 12.0	26.3 25 13.2 12		3.9 24.2 2.0 12.1
		2 Namo	2012	3.1		1		3.4	4.0 4.0	4.3	3.9	3	4.1	3.8	3.9			4.4	5.7 5.7	4.8	5.6			3	.8 5.4	1	1 1	1	4.9 4.9	: :	5.3 5.3		6.7	6.0		3	6.0
5	HUAPHANH	3 M Houn Sub Total	2014	3.1 2.8		·		2.8	2.8	4.3 2.8	3.9 3.0	4.2 3.2	4.1 3.2	3.8	3.9	4.4 3.		3.1	3.2	3.2	3.2	6.0 3.2	5.4 3.4		.8 5.4 .6 3.5	4		6.3 3.3	4.9 3.4	6.3 3.6	3.6	6.2 3.5	6.7 3.6	3.8			6.0 6.1 3.9 4.0
	:	L Residential Sector		2.8	2.6	2.7	2.8	2.8	2.8	2.8	3.0	3.2	3.2	3.1	3.1			3.1	3.2	3.2	3.2	3.2	3.4	3.6 3	.6 3.5	3.5	3.5	3.3		3.6	3.6	3.5	3.6	3.8	4.1	1.0 3	3.9 4.0
6	XIENG KHUANG	1 Xam Neua 1 Sub Total	2012	2.8 17.3	ļ	2.0	2.8 18.1	2.8 18.2	2.8 18.4	2.8	2.8 17.4	2.8 18.0	18.2	2.8 18.5	2.8	3. 26.	.1 3.1	27.0	3.1 27.9	28.1	28.3	3.1 25.3 2	3.1 6.9	3.1 3 27.7 28	.1 2.1	3.1 31.6	3.5 34.1		3.5 34.6	3.5 35.7	3.5 35.9		3.5 32.4	3.5 34.4			3.5 3.5 6.4 40.4
		L Residential Sector		17.3	15.0	17.5	18.1	18.2	18.4	16.4	17.4	18.0	18.2	18.5	20.5	26.	.7 23.1	27.0	27.9	28.1	28.3	25.3 2	6.9	27.7 28	.1 28.5	31.6	34.1	29.6	34.6	35.7	35.9	36.2	32.4	34.4	35.4 36	.0 36	5.4 40.4
		1 Phonsvan 2 M Kham	2003 2012	8.6 5.2				9.1 5.2	9.2 5.2	8.2 5.2	8.7 5.2	9.0 5.2	9.1 5.2	9.2 5.2	10.2 5.2			14.9 8.1	15.4 8.4	15.5 8.4	15.6 8.5		3	15.2 15 8.3 8	.5 15.7 .4 8.5		1				19.8 10.8		17.8 9.7	18.9 10.3	1	0.8 20 0.8 10	0.0 22.2 0.9 12.1
		3 Thavieng	2015	3.5				3.9	4.0	3.0	3.5	3.8	3.9	4.1	5.1	4.0		4.1	4.2	4.2	4.2	- 1	4.0	3	.2 4.3	4.7	1	4.4	5.2	5.4	5.4	5.4	4.9	5.2		3	5.5 6.1
7	LUANG PRABANG	Sub Total L Residential Sector		21.2 21.2				25.9 25.9	26.5 26.5	26.7 26.7	26.7 26.7		25.1 25.1	23.3 23.3	22.7 22.7	24. 24.		25.5 25.5	27.8 27.8	30.4 30.4	31.1 31.1			30.2 29 30.2 29	1			3	27.5 27.5		32.7 32.7	33.5 33.5		33.7 33.7	32.5 31 32.5 31		
		1 Luangprabang 1	1994	10.6				12.9	13.3	13.3	13.3	12.9	12.5	11.7	11.4			12.8	13.9	15.2	15.6		1	15.1 14	1	1	1 .	- 1	13.8		16.4		16.9	16.8	1	5.8 14	
		2 Pakmong	2009	2.1		1 1		2.6	2.7	2.7	2.7		2.5	2.3	2.3		1 1	2.6	2.8	3.0	3.1		3.1	1	.9 2.7				2.8	: :			3.4	3.4			2.9 2.9
		3 Sansouk 4 Luangprabang 2	2012 2014	4.2 4.2			4.7 4.7	5.2 5.2	5.3 5.3	5.3 5.3	5.3 5.3	5.1 5.1	5.0 5.0	4.7 4.7	4.5 4.5	5.0 5.0	.0 4.7 .0 4.7	5.1 5.1	5.6 5.6	6.1 6.1	6.2 6.2	6.3 6.3	6.3 6.3	6.0 5	.9 5.5 .9 5.5	5.3 5.3	5.4 5.4	5.1 5.1	5.5 5.5	6.0 6.0	6.5 6.5	6.7 6.7	6.7 6.7	6.7 6.7	6.5 6 6.5 6	5.3 5 5.3 5	5.9 5.7 5.9 5.7
8	XAYABULY	Sub Total		8.1	8.0		3	9.4	9.8	9.9	10.0	9.8	9.6	8.4	8.7	10.		11.3	12.0	12.0	12.5			12.4 12		3				16.0		16.6		16.9			4.3 14.8
		L Residential Sector 1 Sayaboury	2003	8.1 4.1	1	1		9.4 4.7	9.8 4.9	9.9 5.0	10.0 5.0	1	9.6 4.8	8.4 4.2	8.7 4.4	10		11.3 5.7	12.0 6.0	12.0	12.5 6.2		- 8	12.4 12 6.2 6	.2 10.7 .1 5.4	1	1 1	1	15.1 7.5	16.0 8.0	16.0 8.0		16.9 8.4	16.9 8.4	16.6 16 8.3 8		4.3 14.8 7.1 7.4
		2 Paklay	2013	2.6	2.5	2.9	3.0	3.0	3.1	3.2	3.2	3.1	3.1	2.7	2.8			3.6	3.8	3.8	4.0	4.0	3	4.0 3	.9 3.4	3.6	4.4	4.3	4.8	5.1	5.1	5.3	5.4	5.4	5.3	5.2 4	4.6 4.7
9	VIETIANE PROVINCE	3 Hongsa Sub Total	2015	1.5 82.1		4	1.7 79.3	1.7 94.0	1.8 98.9	1.8 91.7	1.8 91.7	1.8 103.7	1.7 99.5	1.5 97.8	1.6 97.9	102.	9 1.8 8 99.8	2.0 102.3	2.2 99.4	2.2 117.8	2.2 123.9			2.2 2 29.9 124	.2 1.9 .7 122.5				2.7 106.3	2.9 103.3	2.9 122.5	3.0 128.8	3.0 119.5	3.0 119.4	3.0 2 135.1 129		2.6 2.7 7.4 127.5
-		L Residential Sector		82.1	79.6	81.6	79.3	94.0	98.9	91.7	91.7	103.7	99.5	97.8	97.9	102.	.8 99.8	102.3	99.4	117.8	123.9	114.9 11	4.9 1	29.9 124	.7 122.5	122.7	106.9	103.7	106.3	103.3	122.5	128.8	119.5	119.4	135.1 129	0.6 127	7.4 127.5
		1 Vangvieng	1994	63.0 30.4	1		3	75.0 34.8	79.8 36.6	72.7 33.9	72.7 33.9	84.7 38.4	80.5 36.8	78.8 36.2	78.9 36.2	83.º 38.º		83.2 37.8	80.3 36.8	98.7 43.6	104.8 45.8			10.8 105 48.1 46		3	3 3	3	87.1 39.3	: 3	103.2 45.3			100.2 44.2	115.8 110 50.0 48		
		Houaysai Gold/copper Mining, Vangvieng District	1994	13.1	1	1	1	15.5	16.5	15.1	15.0	3	16.7	16.3	16.3	17.		17.2	16.6	20.4	21.7			22.9 21		1		17.5		17.4	21.4	22.7		20.7	24.0 22		
		Cement Factory at Vangvieng(Extension)	1000	17.7	1	1	1 1	21.0	22.4	20.4	20.3		22.5	22.1	22.1	23.		23.3	22.5	27.6	29.3		- 1	31.0 29	1	3	3		24.4		28.9			28.1	32.4 30		0.3 30.3
		2 Phonsoung 3 Ban Don	1990 2003	18.1 6.6	1	:		7.5	21.7 7.9	7.3	20.2 7.3		21.9 8.0	21.5 7.8	21.5 7.8	22.0		22.5 8.2	21.9 7.9	25.9 9.4	27.3 9.9			28.6 27 10.4 10		1	1 :	- 1	23.4 8.5	22.7 8.3	26.9 9.8		26.3 9.6	26.3 9.6	29.7 28 10.8 10		8.0 28.0 0.2 10.2
		4 Non Hai	2003	8.2				9.4	9.9	9.2	9.2		10.0	9.8	9.8	10.		10.2	9.9	11.8	12.4			13.0 12	1				10.6		12.2			11.9		.0 12	
		5 Thalat PBI	2006	16.4 19.0	1	1		18.8 19.0	19.8 19.0	18.3 19.0	18.3 19.0		19.9 19.0	19.6 19.0	19.6 19.0			20.5 19.1	19.9 19.1	23.6 19.1	24.8 19.1		3	26.0 24 19.1 19	1	1	1 :	1	21.3 19.2	20.7 19.2	24.5 19.2		23.9 19.2	23.9 19.2		i.9 25 i.2 19	5.5 25.5 9.2 19.2
		6 Hinheup	2012	2.5	2.4	2.4	2.4	2.8	3.0	2.8	2.8	3.1	3.0	2.9	2.9	3.	.1 3.0	3.1	3.0	3.5	3.7	3.4	3.4	3.9 3	.7 3.7	3.7	3.2	3.1	3.2	3.1	3.7	3.9	3.6	3.6	4.1	3.9	3.8 3.8
10	VIENTIANE CAP	Sub Total L Residential Sector		172.4 150.5			3	214.3 192.4	210.6 188.7	208.3 186.4	208.6 186.7		206.1 184.2	199.4 177.5	193.4 171.5	195. 166.		211.2 182.0		241.6	237.5 208.3			33.6 232 04.4 203		3	215.7 186.5	213.5 184.3	233.5 204.3	248.3 219.1	267.7 238.5	263.1 233.9		260.6 231.4	258.6 257 229.4 228		
		1 Phontong	1968	54.2	53.5	59.4	63.6	69.3	67.9	67.1	67.2	66.6	66.3	63.9	61.7	59.	.8 59.1	65.5	70.3	76.5	75.0	74.1 7	4.2	73.6 73	.2 70.5	68.2	3	66.4	73.6	78.9	85.9	84.2	83.2	83.3	82.6 82	2.2 79	9.2 76.5
		2 Thanaleng 3 Tha Ngon	1977 1989	21.1 12.0	1	1		26.9 15.4	26.4 15.1	26.1 14.9	26.1 14.9	3	25.8 14.7	24.8 14.2	24.0 13.7	23.: 13.:		25.5 14.6	27.3 15.6	29.7 17.0	29.2 16.7	- 1	3	28.6 28 16.3 16	1	1	(;	- 1	28.6 16.3		33.4 19.1	32.7 18.7	32.4 18.5	32.4 18.5	32.1 32 18.4 18		0.8 29.8 7.6 17.0
		4 Khok sa at	2004	19.6	3	:		25.0	24.5	24.2	24.3		23.9	23.1	22.3	21.		23.7	25.4	27.6	27.1			26.6 26		1	3		:		31.0	: :	30.0	30.1	29.8 29	3	8.6 27.6
		5 Naxaythong	2006	9.8	1	1 1		12.5	12.3	12.1	12.1		12.0	11.5	11.1		1 1	11.8	12.7	13.8	13.5	- 1	1	13.3 13	1					: (15.0		3	4.3 13.8
		6 Pak Thang 7 Nong Viengkham	2013 2013	7.5 7.7		1	1 1	9.6 9.8	9.4 9.6	9.3 9.5	9.3 9.5		9.2 9.4	8.9 9.1	8.6 8.7	8		9.1	9.8 10.0	10.6 10.8	10.4 10.6	i	1	10.2 10 10.4 10	1	}	3	3	10.2 10.4	: 3	1		- 1	11.6 11.8	11.5 11 11.7 11	- 1	1.0 10.6 1.2 10.8
		8 Don Koi	2013	14.3	14.1	15.7	16.8	18.3	17.9	17.7	17.7	17.6	17.5	16.9	16.3	15.	.8 15.6	17.3	18.5	20.2	19.8	19.6 1		19.4 19	.3 18.6	18.0	17.7	17.5	19.4	20.8	22.7	22.2	22.0	22.0	21.8 21	.7 20	0.9 20.2
		9 Na Bong 1 10 Iron melting factory, at Ban Hai Village (Tha Ngon),	2013 2013	4.4 21.9				5.6 21.9	5.5 21.9	5.4 21.9	5.4 21.9	5.4 21.9	5.3 21.9	5.1 21.9	5.0 21.9	4.5 29.1		5.3 29.2	5.7 29.2	6.2	6.0 29.2	6.0 29.2 2	6.0 9.2	5.9 5 29.2 29	.9 5.7 .2 29.2			5.3 29.2	5.9 29.2	6.4 29.2	6.9 29.2	6.8 29.2	6.7 29.2	6.7 29.2	6.7 6 29.2 29	}	6.4 6.2 9.2 29.2
11	BOLIKHAMXAY	Sub Total		11.9	12.0	11.5	13.7	13.5	13.3	12.5	13.1	13.4	13.3	13.2	12.3	13.	.2 13.4	12.8	15.3	15.0	14.8	13.9 1	4.6	14.9 14	.8 14.7	13.7	14.6	14.8	14.2	16.9	16.7	16.4	15.4	16.1	16.5 16	5.4 16	6.3 15.2
	:	L Residential Sector 1 Pakxan	2000	11.9				13.5	13.3 8.6	12.5	13.1 8.5	13.4 8.7	13.3	13.2 8.6	12.3 8.0	13.		12.8 8.3	15.3 10.0	15.0 9.8	14.8 9.6		1	14.9 14 9.7 9	.8 14.7 .6 9.6	8	1		14.2 9.2		16.7 10.8		15.4 10.0	16.1 10.5			6.3 15.2 0.6 9.9
		2 Tha Bok	2015	1.8	3			2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.8			1.9	2.3	2.3	2.2		2.2		.2 2.2		3		2.1	2.5	2.5	2.5	2.3	2.4	2.5		2.4 2.3
		3 Khonsong 4 Thasala	2012 2012	1.5 0.8				1.8	1.7	1.6	1.7	1.7 0.9	1.7	1.7	1.6	1.7	7 1.7	1.7	2.0	2.0	1.9	1.8	1.9	1.9 1	.9 1.9	1.8	1.9	1.9	1.8	2.2	2.2	2.1	2.0	2.1	2.2	2.1 2	2.1 2.0
12	KHAMMOUAN	4 Thasaia Sub Total	2012	40.6	·	·		43.1	42.3	41.9	40.1		40.1	39.7	42.2			55.5	60.7	55.8	54.7	1.0 54.2 5	1.0	1.0 1 56.0 51	.0 1.0 .9 51.3	1.0 54.6	62.9	61.4	1.0 66.4	72.6	1.2 66.7	65.5	64.9	62.1	1.2 66.9 62	.1 1 2.1 61	1.1 1.1 1.4 65.3
	:	L Residential Sector 1 Thakhek	2002	40.6	1	1		43.1	42.3	41.9	40.1		40.1	39.7	42.2	52.		55.5	60.7	55.8	54.7		1	56.0 51	1	1			66.4	72.6		65.5		62.1	66.9 62		1.4 65.3
		1 Thakhek 2 Mahaxai	2003 2009	30.5 6.5	1			32.3 6.9	31.7 6.8	31.4 6.7	30.1 6.4	: :	30.1 6.4	29.7 6.3	31.6 6.7	39.4 8.4	1 1	41.6 8.9	45.5 9.7	41.8 8.9	41.0 8.8			42.0 38 9.0 8	.9 38.5 .3 8.2	1	1		49.8 10.6	: :	50.0 10.7		48.6 10.4	46.6 9.9			5.0 49.0 9.8 10.4
		2.1 Potassium at Yang Koung Village (Ngom Ma Lat) Thakhek	2014				4.0		2.0		2 -	2.0	2	2-			7				4.6		4.7	5.0	7									_			
13	SVANNAKHET	3 Nam Theun 2 (Substation) Sub Total	2009	3.7 58.4	·	÷	69.7	70.2	67.9	3.8 65.3	3.6 67.3	3.9 65.7	65.5	3.6 65.8	65.9	70.	.7 4.6 .5 76.2	78.2	5.5 83.2	83.8	4.9 81.2	4.9 78.3 8	4.7 30.5	5.0 4 78.7 78	.7 4.6 .6 78.9	4.9 78.9	5.7 75.0	5.5 81.3	6.0 83.5	6.5 89.1	6.0 89.8	5.9 86.9	5.8 83.7	5.6 86.1	6.0 ± 84.1 83	5.6 5 5.9 84	5.5 5.9 4.3 84.3
		L Residential Sector		33.9	38.9	40.7	45.1	45.7	43.4	40.8	42.7	41.2	41.0	41.3	41.3	38.	.1 43.8	45.8	50.8	51.4	48.8	45.9 4	8.1	46.3 46	.1 46.4	46.5	42.6	48.9	51.1	56.7	57.4	54.5	51.3	53.7	51.7 51	.5 51	1.9 51.9
		1 Pakbo 2 Keng Kok	1996 2004	10.2 6.1				13.7 8.2	13.0 7.8	12.2 7.3	12.8 7.7		12.3 7.4	12.4 7.4	12.4 7.4		: 1	13.7 8.2	15.2 9.1	15.4 9.3	14.6 8.8		4.4 8.7	13.9 13 8.3 8	.8 13.9 .3 8.4	1			15.3 9.2		17.2 10.3		15.4 9.2	16.1 9.7			5.6 15.6 9.3 9.3
		3 Nong Deun	2012	11.9	13.6	14.2	15.8	16.0	15.2	14.3	15.0	14.4	14.4	14.4	14.5	13.	.3 15.3	16.0	17.8	18.0	17.1	16.1 1	1	16.2 16	.2 16.3	16.3	14.9	17.1	17.9	19.8	20.1	19.1	17.9	18.8	18.1 18	3.0 18	8.2 18.2
		4 Ban na (Seno) 5 M Phin	2014 2015	3.4 1.7		1	4.5 2.3	4.6 2.3	4.3 2.2	4.1 2.0	4.3 2.1	4.1 2.1	4.1 2.1	4.1 2.1	4.1 2.1	3.5 1.5		4.6 2.3	5.1 2.5	5.1 2.6	4.9 2.4		4.8 2.4		.6 4.6 .3 2.3			4.9 2.4	5.1 2.6	5.7 2.8	5.7 2.9	5.5 2.7	5.1 2.6	5.4 2.7	- 1		5.2 5.2 2.6 2.6
		6 M Nong	2015	0.7	0.8	0.8		0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.	.8 0.9	0.9	1.0	1.0	1.0	0.9	1.0		.9 0.9			1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.0	.0 1	1.0 1.0
14	SARAVAN	7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total	2005	24.5			24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	32.		32.4	32.4	32.4	32.4	32.4 3	2.4	32.4 32	.4 32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4	32.4		2.4 32	
14	UMAM TAIT	Sub Total L Residential Sector		12.3 12.3				12.8 12.8	11.9 11.9	11.3 11.3	10.4 10.4	10.5 10.5	10.3 10.3	11.3 11.3	12.0 12.0			15.7 15.7	16.2 16.2	15.4 15.4	14.4 14.4			12.6 12 12.6 12		3		- 1				16.9 16.9		14.8 14.8			5.0 17.0 5.0 17.0
		1 Saravan	2011	8.6	8.9	9.1	9.4	8.9	8.3	7.9	7.3	7.3	7.2	7.9	8.4	10.	.4 10.8	11.0	11.3	10.8	10.1			8.8 8	.7 9.6	10.2	12.1	12.6	12.8	13.3	12.6	11.8	11.2	10.3).2 11	1.2 11.9
15	SEKONG	2 Taothan Sub Total	2014	3.7 5.9	·	·	4.0 7.2	3.8 6.9	7.2	3.4 6.6	3.1 6.8	3.1 6.9	7.0	3.4 7.0	3.6 7.2	4.4		4.7, 8.4	4.9 9.3	4.6 8.8	4.3 9.2	4.1 8.4	3.8 8.8		.7 4.1 .9 9.0	4.4 9.3	5.2 9.3	5.4 8.9	5.5 10.2	5.7 11.3	5.4 10.7	5.1 11.3	4.8 10.3	4.4 10.7	4.4 4 10.8 10		4.8 5.1 1.0 11.3
	:	L Residential Sector		5.9	5.7	6.5	7.2	6.9	7.2	6.6	6.8	6.9	7.0	7.0	7.2			8.4	9.3	8.8	9.2		8.8	0.5	.9 9.0	9.3	9.3	8.9	10.2	11.3	10.7	11.3	10.3	10.7	10.8).9 11	1.0 11.3
16	CHAMPASAK	1 Sekong Sub Total	2012	5.9 24.7	·	·	7.2 29.7	6.9 30.5	7.2 27.9	6.6 26.6	6.8 26.4	6.9 26.2	7.0	7.0 24.1	7.2	7. 27.	.6 7.3 .5 28.7	8.4 29.7	9.3 33.1	8.8 34.0	9.2 31.1	8.4 29.7 2	8.8 9.4	8.9 8 29.2 26	.9 9.0 .7 26.9	f		8.9 31.7	10.2 32.8	11.3 36.6	10.7 37.7	11.3 34.4	10.3 32.9	10.7 32.6	10.8 10 32.3 29	0.9 11 0.6 29	1.0 11.3 9.7 29.3
10	CILIDIA ADAR	L Residential Sector		24.7				30.5	27.9	26.6	26.4	26.2 26.2	24.0	24.1	23.7	27.		29.7 29.7	33.1	34.0	31.1			29.2 26 29.2 26				31.7	32.8 32.8	36.6 36.6	37.7 37.7	34.4	32.9 32.9	32.6	32.3 29		
		1 Bang Yo	1991	15.3	15.9	16.5	18.4	18.9	17.3	16.5	16.4	16.2	14.9	14.9	14.7	17.	.0 17.8	18.4	20.5	21.1	19.3	18.4 1	8.3	18.1 16	.6 16.7	16.4	18.9	19.7	20.3	22.7	23.4	21.3	20.4	20.2	20.0 18	3.3 18	8.4 18.1
		2 Ban Na 3 Ban Hat	2005 2005	3.7 2.2				4.6 2.7	4.2 2.5	4.0 2.4	4.0 2.4	1	3.6 2.2	3.6 2.2	3.6 2.1	4. 2.:		4.4 2.7	5.0 3.0	5.1	4.7 2.8		4.4 2.6	1	.0 4.0 .4 2.4	1	1	4.8 2.9	4.9 3.0	5.5 3.3	5.6 3.4	5.2 3.1	4.9 3.0	4.9 2.9			4.5 4.4 2.7 2.6
		4 Pakxong	2011	2.0	2.1	2.1		2.4	2.2	2.1	2.1		1.9	1.9	1.9			2.4	2.6	2.7	2.5				.1 2.1	1				2.9	3.0	2.7	2.6	2.6			2.4 2.3
17	ATTAPEU	5 Ban Jiangxai Sub Total	2011	1.5 3.5	4	1.0	1.8 4.2	1.8 4.2	1.7 4.1	1.6 4.1	1.6 4.0	1.6 3.9	1.4 3.8	1.4 3.7	1.4 3.6	1.0 4.0	.6 1.7 .0 4.0	1.8 4.0	2.0 4.9	2.0 4.9	1.9 4.7	1.8 4.8	1.8 4.6	1.7 1 4.5 4	.6 1.6 .5 4.3	1.6 4.2	1.8 4.6	1.9 4.6	2.0 4.6	2.2 5.5	2.3 5.6	2.1 5.4	2.0 5.4	2.0 5.3	1.9 1 5.1 5	.8 1 .1 5	1.8 1.8 5.0 4.8
.,	.IIIM EU	L Residential Sector		3.5			4.2	4.2	4.1	4.1	4.0	3.9	3.8	3.7	3.6	4.0	1 1	4.0	4.9 4.9	4.9	4.7	4.8	4.6	· ·	.5 4.3	7	·	4.6 4.6	4.6 4.6	, 5.5 5.5	5.6 5.6	5.4 5.4	5.4	5.3	5.1	ě.	5.0 4.8
		1 Saphaothong	2006	3.5	4		4.2	4.2	4.1	4.1	4.0	3.9	3.8	3.7	3.6	4.0	<u> </u>	4.0	4.9	4.9	4.7	4.8	4.6		.5 4.3	4.2	4.6	4.6	4.6	5.5	5.6	5.4	5.4	5.3	5.1 5		5.0 4.8
		TOTAL	1	492.7	492.7	518.5	552.5	581.7	580.6	564.4	564.8	579.0	566.7	554.8	551.9	598.	.9 598.2	627.7	668.2	/02.1	702.8	683.2 68	5.4 7	บ2.3 687	.2 673.2	671.4	669.6	668.0	701.9	748.6	785.1	785.7	764.0	/04.4	784.9 76	.1 752	2.5 751.1

	Provinces	No. Name of Substations	Com. years	s 2018 Jan					2018 Jun	2018 Jul	2018 2 Aug	2018 Sep		2018 Nov	2018 Dec	2019 Jan	2019 Feb	2019 Mar		2019 May	2019 Jun	2019 Jul			019 20 0ct N	019 20 ov De	-					2020 May	2020 Jun	2020 Jul	2020 Aug			2020	t: GWh 2020 Dec
1	PHONGSALI	Sub Total L Residential Sector		13.6 13.6	13.2	11.1 11.1	12.4 12.4	13.5 13.5	15.5 15.5	16.8 16.8	16.3 16.3	16.6 16.6	16.4 16.4	16.7 16.7	16.4 16.4	15.4 15.4	14.9	12.6 12.6	14.0	15.3 15.3	17.6	19.0 19.0	18.5 18.5		18.6	18.9	8.6	18.2	17.6 17.6	14.8 14.8	16.6	-	20.8 20.8		21.9 21.9	22.3 22.3	21.9 21.9	22.3 22.3	21.9 21.9
	BOKEO	1 Boun Neua	2013	13.6	13.2	11.1	12.4	13.5	15.5	16.8	16.3	16.6	16.4	16.7	16.4	15.4	14.9	12.6	14.0	15.3	17.6	19.0	18.5	18.9	18.6	18.9	8.6	18.2	17.6	14.8	16.6	18.1	20.8	22.5	21.9	22.3	21.9	22.3	21.9
2	1	Sub Total L Residential Sector		16.1 16.1	14.8	14.3 14.3	16.4 16.4	18.4 18.4	18.7 18.7	18.5 18.5	19.5 19.5	20.4 20.4	20.8 20.8	21.2 21.2	18.7	16.8 16.8	15.4	14.9 14.9	17.0	19.1	19.5	19.3	20.3 20.3	21.2	21.7	22.1	9.5	17.5	16.1 16.1	15.5 15.5	17.8	20.0	20.4 20.4	20.1	21.2 21.2	22.2 22.2	22.6 22.6	23.1 23.1	20.3
3	LUANGNAMTHA	1 Houayxay Sub Total	2014	16.1 15.0	14.8 14.2	14.3 15.1	16.4 16.4	18.4 19.2	18.7 19.6	18.5 19.0	19.5 20.0	20.4	20.8	21.2 18.4	18.7 19.0	16.8 16.1		14.9 16.1	17.0 17.5	19.1 20.5	19.5 20.9	19.3 20.2	20.3						16.1 16.2	15.5 17.2	17.8 18.8	20.0 21.9	20.4 22.3	20.1 21.7	21.2	22.2 24.0	22.6 22.9	23.1 21.0	20.3 21.7
]	L Residential Sector 1 Luangnamtha 1	2009	15.0 7.5	1 1	15.1 7.5	16.4 8.2	19.2 9.6	19.6 9.8	19.0 9.5	20.0 10.0	21.0 10.5	20.0 10.0	18.4 9.2	19.0 9.5	16.1 8.0	15.1 7.6	16.1 8.1	17.5 8.8	20.5 10.2	20.9 10.4	20.2 10.1	21.4 10.7	22.4 11.2	21.4 10.7		1	17.2 8.6	16.2 8.1	17.2 8.6	18.8 9.4	21.9 11.0	22.3 11.2	21.7 10.8	22.9 11.4	24.0 12.0	22.9 11.4	21.0 10.5	21.7 10.8
	OUDOMXAI	2 Luangnamtha 2 Sub Total	2014	7.5	7.1	7.5	8.2	9.6	9.8	9.5	10.0	10.5	10.0	9.2	9.5	8.0	7.6	8.1	8.8	10.2	10.4	10.1	10.7	11.2	10.7	9.8	0.1	8.6	8.1	8.6	9.4	11.0	11.2	10.8	11.4	12.0	11.4	10.5	10.8
4	OUDOMXAI	L Residential Sector		22.5 22.5	28.7	22.4 22.4	28.7 28.7	24.3 24.3	28.5 28.5	30.6 30.6	27.6 27.6	30.2 30.2	29.3 29.3	27.4 27.4	27.8	25.4 25.4	32.4	25.3 25.3	32.5	27.5 27.5	32.3	34.5 34.5	31.2 31.2		33.1	31.0	31.4 2	26.6	34.0 34.0	26.5 26.5	34.0 34.0	28.8	33.8 33.8	36.1 36.1	32.6 32.6	35.7 35.7	34.7 34.7	32.5 32.5	32.9 32.9
		1 Oudomxay 2 Namo	2009 2012	11.2 5.6	1 1	11.2 5.6	14.4 7.2	12.2 6.1	14.3 7.1	15.3 7.6	13.8 6.9	15.1 7.6	14.6 7.3	13.7 6.9	13.9 7.0	12.7 6.4	16.2 8.1	12.7 6.3	16.2 8.1	13.8 6.9	16.1 8.1	17.3 8.6	15.6 7.8	17.1 8.5	16.6 8.3			13.3 6.6	17.0 8.5	13.3 6.6	17.0 8.5	14.4 7.2	16.9 8.4	18.1 9.0	16.3 8.2	17.9 8.9	17.3 8.7	16.2 8.1	16.4 8.2
5	HUAPHANH	3 M Houn Sub Total	2014	5.6 3.9	7.2 3.7	5.6 3.8	7.2 4.0	6.1 4.0	7.1 3.9	7.6 4.0	6.9 4.2	7.6 4.5	7.3 4.5	6.9 4.4	7.0 4.4	6.4 4.3	8.1 4.1	6.3 4.3	8.1 4.4	6.9 4.4	8.1 4.4	8.6 4.4	7.8 4.7	8.5 5.0	8.3 4.9	7.8 4.8	7.9 4.9	6.6 4.8	8.5 4.6	6.6 4.7	8.5 4.9	7.2 4.9	8.4 4.8	9.0 4.9	8.2 5.2	8.9 5.6	8.7 5.5	8.1 5.4	8.2 5.4
	:	L Residential Sector	2012	3.9		3.8	4.0	4.0	3.9	4.0	4.2	4.5	4.5	4.4	4.4	4.3	4.1	4.3	4.4	4.4	4.4	4.4	4.7	5.0	4.9			4.8	4.6 5.4	4.7 5.4	4.9 5.4	4.9 5.4	4.8 5.4	4.9	5.2	5.6	5.5	5.4	5.4
6	XIENG KHUANG	1 Xam Neua 1 Sub Total	2012	40.2	34.9	40.8	42.2	42.4	42.8	38.2	40.5	41.8	42.4	43.0	47.7	4.3 47.6	1	48.3	1 1	50.2	50.6	4.3	48.0	49.5	50.2	50.9	-T	49.3	42.8	49.9		51.9	52.4	46.8	5.4 49.6	51.2	52.0	52.7	58.4 58.4
	-	L Residential Sector 1 Phonsvan	2003	40.2 22.1		40.8 22.4	42.2 23.2	42.4 23.3	42.8 23.5	38.2 21.0	40.5 22.3	41.8 23.0	42.4 23.3	43.0 23.7	47.7 26.2	47.6 26.2	41.3 22.7	48.3 26.6	49.9 27.4	50.2 27.6	50.6 27.8	45.2 24.9	48.0 26.4	49.5 27.2					42.8 23.5	49.9 27.5	51.6 28.4	51.9 28.6	52.4 28.8	46.8 25.7	49.6 27.3	51.2 28.2	52.0 28.6	52.7 29.0	58.4 32.1
		2 M Kham 3 Thavieng	2012 2015	12.1 6.0	10.5	12.2 6.1	12.6	12.7 6.4	12.8	11.5 5.7	12.2 6.1	12.5 6.3	12.7 6.4	12.9 6.5	14.3 7.2	14.3 7.1	12.4	14.5		15.1 7.5	15.2 7.6	13.6 6.8	14.4 7.2	14.9 7.4	15.1 7.5	15.3 1 7.6		14.8 7.4	12.8 6.4	15.0 7.5	15.5 7.7	15.6 7.8	15.7 7.9	14.0 7.0	14.9 7.4	15.4 7.7	15.6 7.8	15.8 7.9	17.5 8.8
7	LUANG PRABANG	Sub Total	2013	28.9	27.5	29.7	32.3	35.3	36.1	36.4	36.3	35.1	34.2	31.8	31.0	31.0	29.6	31.9	34.8	37.9	38.9	39.1	39.0	37.7	36.7	34.2	33.3	33.5	31.9	34.4	37.5	40.9	41.9	42.2	42.1	40.7	39.6	36.9	35.9
		L Residential Sector 1 Luangprabang 1	1994	28.9 14.4	1	29.7 14.8	32.3 16.2	35.3 17.6	36.1 18.1	36.4 18.2	36.3 18.2	35.1 17.5	34.2 17.1	31.8 15.9	31.0 15.5	31.0 15.5	29.6 14.8	31.9 15.9	1 1	37.9 19.0	38.9 19.4	39.1 19.5	39.0 19.5	37.7 18.8					31.9 15.9	34.4 17.2	37.5 18.8	40.9 20.5	41.9 21.0	42.2 21.1	42.1 21.1	40.7 20.3	39.6 19.8	36.9 18.4	35.9 18.0
		2 Pakmong 3 Sansouk	2009 2012	2.9 5.8	1	3.0 5.9	3.2 6.5	3.5 7.1	3.6 7.2	3.6 7.3	3.6 7.3	3.5 7.0	3.4 6.8	3.2 6.4	3.1 6.2	3.1 6.2	3.0 5.9	3.2 6.4	3.5	3.8 7.6	3.9 7.8	3.9 7.8	3.9 7.8	3.8 7.5	3.7 7.3			3.3 6.7	3.2 6.4	3.4 6.9	3.8 7.5	4.1 8.2	4.2 8.4	4.2 8.4	4.2 8.4	4.1 8.1	4.0 7.9	3.7 7.4	3.6 7.2
8	XAYABULY	4 Luangprabang 2 Sub Total	2014	5.8 16.0	5.5	5.9 17.6	6.5	7.1	7.2	7.3 19.6	7.3 19.6	7.0 19.3	6.8 18.9	6.4 16.6	6.2 17.2	6.2 18.3	5.9	6.4	7.0	7.6 21.3	7.8	7.8 22.4	7.8 22.5	7.5	7.3	6.8	6.7	6.7	6.4	6.9	7.5 25.1	8.2 25.1	8.4	8.4 26.5	8.4	8.1	7.9	7.4	7.2
0		L Residential Sector		16.0	15.7	17.6	18.6	18.6	19.3	19.6	19.6	19.3	18.9	16.6	17.2	18.3	17.9	20.1	21.2	21.3	1	22.4	22.5	22.1	21.6	19.0	9.7 2	21.6	21.2	23.7	25.1	25.1	26.1 26.1	26.5	26.5	26.1	25.5	22.4	23.3
		1 Sayaboury 2 Paklay	2003 2013	8.0 5.1	5.0	8.8 5.6	9.3 5.9	9.3 6.0	9.7 6.2	9.8 6.3	9.8 6.3	9.7 6.2	9.4 6.0	8.3 5.3	8.6 5.5	9.1 5.9	9.0 5.7	10.0 6.4	10.6	10.6 6.8	11.1 7.1	11.2 7.2	11.2 7.2	11.0 7.1	10.8 6.9		6.3	6.9	10.6 6.8	11.9 7.6	8.0	12.6 8.0	13.1 8.4	13.2 8.5	13.3 8.5	13.0 8.3	12.7 8.2	11.2 7.2	11.6 7.4
9	VIETIANE PROVINCE	3 Hongsa Sub Total	2015	2.9 112.3	{	3.2 111.7	3.3 108.5	3.4 128.7	3.5 135.3	3.5 125.5	3.5 125.5	3.5 141.9	3.4 136.2	3.0 133.8	3.1 134.0	3.3 116.2	3.2 112.8	3.6 115.6	3.8 112.3	3.8 133.2	4.0 140.0	4.0 129.9	4.0 129.9	4.0 146.9 1	3.9 41.0 1	3.4 38.5 13		3.9 18.9 1	3.8 15.4	4.3 118.2	4.5 114.9	4.5 136.2	4.7 143.2	4.8 132.9	4.8 132.8	4.7 150.2	4.6 144.1	4.0 141.7	4.2 141.8
		I. Residential Sector		112.3 93.0	109.0	111.7	108.5	128.7	135.3	125.5 106.2	125.5	141.9 122.6	136.2	133.8		116.2 96.8	112.8	115.6 96.2	112.3	133.2 113.8	140.0 120.6	129.9	129.9	146.9 1	41.0 1	38.5 13	88.6 11	18.9 1	15.4 95.9	118.2 98.7		136.2	143.2 123.7		132.8 113.3	150.2 130.7	144.1	141.7	141.8
		1 Vangvieng	1994	41.6	40.3	92.4 41.3	40.2	109.4 47.6	116.0 50.1	46.4	46.4	52.5	116.9 50.4	114.5 49.5	49.6	43.0	41.7	42.8	41.6	49.3	51.8	110.5 48.1	110.5 48.0	54.3	52.2	51.3	51.3 4	44.0	42.7	43.7	42.5	116.7 50.4	53.0	49.2	49.1	55.6	124.7 53.3	122.2 52.4	122.3 52.5
		Houaysai Gold/copper Mining, Vangvieng District Cement Factory at Vangvieng(Extension)		19.2 26.0		19.1 25.9	18.5 25.0	22.6 30.6	24.0 32.5	22.0 29.7	22.0 29.7	25.4 34.3	24.2 32.7	23.7 32.1	23.7 32.1	20.0 27.1		19.9 26.9	1 1	23.5 31.9	25.0 33.8	22.9 30.9	22.9 30.9	26.4 35.7	- 1			1	19.8 26.8	20.4 27.6	19.7 26.7	24.2 32.7	25.6 34.6	23.5 31.7	23.5	27.1 36.6	25.8 34.9	25.3 34.2	25.3 34.2
		2 Phonsoung 3 Ban Don	1990 2003	24.7 9.0	1 1	24.6 8.9	23.9 8.7	28.3 10.3	29.8 10.8	27.6 10.0	27.6 10.0	31.2 11.4	30.0 10.9	29.4 10.7	29.5 10.7	25.6 9.3	24.8 9.0	25.4 9.2	24.7 9.0	29.3 10.7	30.8 11.2	28.6 10.4	28.6 10.4	32.3 11.8				26.1 9.5	25.4 9.2	26.0 9.5	25.3 9.2	30.0 10.9	31.5 11.5	29.2 10.6	29.2 10.6	33.0 12.0	31.7 11.5	31.2 11.3	31.2 11.3
		4 Non Hai	2003	11.2	10.9	11.2	10.9	12.9	13.5	12.6	12.5	14.2	13.6	13.4	13.4	11.6	11.3	11.6	11.2	13.3	14.0	13.0	13.0	14.7	14.1	13.9	3.9 1	11.9	11.5	11.8	11.5	13.6	14.3	13.3	13.3	15.0	14.4	14.2	14.2
		5 Thalat PBI	2006	22.5 19.3	1 1	22.3 19.3	21.7 19.3	25.7 19.3	27.1 19.3	25.1 19.3	25.1 19.3	28.4 19.3	27.2 19.3	26.8 19.3	26.8 19.3	23.2 19.4	1	23.1 19.4	1 1	26.6 19.4	28.0 19.4	26.0 19.4	26.0 19.4	29.4 19.4		}	1	3	23.1 19.5	23.6 19.5	23.0 19.5	27.2 19.5	28.6 19.5	26.6 19.5	26.6 19.5	30.0 19.5	28.8 19.5	28.3 19.5	28.4 19.5
10	VIENTIANE CAP	6 Hinheup Sub Total	2012	3.4 230.5	·	3.4 249.7	3.3 265.7	3.9 286.6	4.1 281.6	3.8 278.5	3.8 278.9	4.3 276.8	4.1 275.6	4.0 266.5	4.0 258.6	3.5 249.5	3.4 246.9	3.5 270.6		4.0 310.9	4.2 305.5	3.9	3.9	4.4 300.2 2	4.2 98.9 2	4.2 89.0 28	7.2	3.6 72.4 2	3.5 269.6	3.5 295.6	3.4 314.9	4.1 340.2	4.3 334.1	4.0 330.5	4.0 330.9	4.5 328.3	4.3 326.9	4.2 316.0	4.3 306.3
	:	L Residential Sector 1 Phontong	1968	201.3 72.5	198.9	220.5 79.4	236.5 85.1	257.4 92.6	252.4 90.9	249.3 89.8	249.7 89.9	247.6 89.1	246.4 88.7	237.3 85.4	229.4 82.6	220.3 79.3	217.7 78.4	241.4 86.9	258.8 93.2	281.7 101.4	276.3 99.5	272.9 98.3	273.3 98.4				51.1 24	43.2 2	240.4 86.5	266.4 95.9	285.7 102.9	311.0 111.9	304.9 109.8	301.3 108.5	301.7 108.6	299.1 107.7	297.7 107.2	286.8 103.2	277.1 99.8
		2 Thanaleng	1977	28.2	27.8	30.9	33.1	36.0	35.3	34.9	35.0	34.7	34.5	33.2	32.1	30.8	30.5	33.8	36.2	39.4	38.7	38.2	38.3	37.9	37.8	36.4	35.2	34.0	33.6	37.3	40.0	43.5	42.7	42.2	42.2	41.9	41.7	40.1	38.8
		3 Tha Ngon 4 Khok sa at	1989 2004	16.1 26.2	25.9	17.6 28.7	18.9 30.7	20.6 33.5	20.2 32.8	19.9 32.4	20.0 32.5	19.8 32.2	19.7 32.0	19.0 30.9	29.8	17.6 28.6	28.3	19.3 31.4	33.6	22.5 36.6	22.1 35.9	21.8 35.5	21.9 35.5	35.2	35.1	33.8	32.6	31.6	19.2 31.2	21.3 34.6		24.9 40.4	24.4 39.6		24.1 39.2	23.9 38.9	23.8 38.7	22.9 37.3	22.2 36.0
		5 Naxaythong 6 Pak Thang	2006 2013	13.1 10.1		14.3 11.0	15.4 11.8	16.7 12.9	16.4 12.6	16.2 12.5	16.2 12.5	16.1 12.4	16.0 12.3	15.4 11.9	14.9 11.5	14.3 11.0	14.2 10.9	15.7 12.1	16.8 12.9	18.3 14.1	18.0 13.8	17.7 13.6	17.8 13.7	17.6 13.5		1		1	15.6 12.0	17.3 13.3	18.6 14.3	20.2 15.5	19.8 15.2	19.6 15.1	19.6 15.1	19.4 15.0	19.3 14.9	18.6 14.3	18.0 13.9
		7 Nong Viengkham 8 Don Koi	2013 2013	10.3 19.1		11.2 20.9	12.1 22.5	13.1 24.4	12.9 24.0	12.7 23.7	12.7 23.7	12.6 23.5	12.6 23.4	12.1 22.5	11.7 21.8	11.2 20.9		12.3 22.9		14.4 26.8	14.1 26.2	13.9 25.9	13.9 26.0	13.8 25.7					12.3 22.8	13.6 25.3	14.6 27.1	15.9 29.5	15.6 29.0		15.4 28.7	15.3 28.4	15.2 28.3	14.6 27.2	14.1 26.3
		9 Na Bong 1 10 Iron melting factory, at Ban Hai Village (Tha Ngon),	2013	5.8	5.8	6.4	6.9	7.5	7.3	7.2	7.2	7.2	7.1	6.9	6.7	6.4	6.3	7.0	7.5	8.2	8.0	7.9	7.9	7.9	7.8	7.5	7.3	7.1	7.0	7.7	8.3	9.0	8.8	8.7	8.7	8.7	8.6	8.3	8.0
11	BOLIKHAMXAY	Sub Total	2013	29.2 16.2	16.4	29.2 15.7	29.2 18.8	29.2 18.4	29.2 18.1	29.2 17.1	29.2 17.9	29.2 18.3	29.2 18.2	29.2 18.0	29.2 16.8	29.2 17.9	18.1	29.2 17.4	20.8	29.2 20.4	29.2 20.0	29.2 18.9	29.2 19.7	20.3	20.1			19.9	29.2 20.1	29.2 19.3	29.2 23.0	29.2 22.6	29.2 22.2	29.2 21.0	29.2 21.9	29.2 22.5	29.2 22.3	29.2 22.1	29.2 20.6
	:	L Residential Sector 1 Pakxan	2000	16.2 10.5		15.7 10.2	18.8 12.2	18.4 12.0	18.1 11.8	17.1 11.1	17.9 11.6	18.3 11.9	18.2 11.8	18.0 11.7	16.8 10.9	17.9 11.7		17.4 11.3		20.4 13.3	20.0 13.0	18.9 12.3	19.7 12.8		- 1				20.1 13.1	19.3 12.5	23.0 15.0	22.6 14.7	22.2 14.5	21.0 13.6	21.9 14.2	22.5 14.6	22.3 14.5	22.1 14.4	20.6 13.4
		2 Tha Bok 3 Khonsong	2015 2012	2.4 2.1	3	2.4 2.0	2.8	2.8	2.7	2.6 2.2	2.7 2.3	2.7 2.4	2.7 2.4	2.7 2.3	2.5 2.2	2.7 2.3	2.7 2.4	2.6 2.3	1	3.1 2.7	3.0 2.6	2.8 2.5	3.0 2.6	3.0 2.6	3.0 2.6	1	2.8 2.4	3.0 2.6	3.0 2.6	2.9 2.5	3.5 3.0	3.4 2.9	3.3 2.9	3.1 2.7	3.3 2.8	3.4 2.9	3.3 2.9	3.3 2.9	3.1 2.7
12	KHAMMOUAN	4 Thasala	2012	1.1	1.1	1.1	1.3	1.3	1.3	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.3	1.2	1.5	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.3	1.6	1.6	1.6	1.5	1.5	1.6	1.6	1.5	1.4
14	KHAMMOUAN	Sub Total L Residential Sector		67.4 67.4	65.8	71.1 71.1	77.8 77.8	71.5 71.5	70.2 70.2	69.5 69.5	66.5 66.5	71.7 71.7	66.6 66.6	65.8 65.8	70.0	72.3 72.3	70.6	76.3	83.5	76.7 76.7	75.2 75.2	74.5	71.4 71.4	76.9	71.4	70.6	75.1	75.4	73.6 73.6	79.5 79.5		79.9 79.9	78.4 78.4	77.7	74.4 74.4	80.2 80.2	74.4 74.4	73.5 73.5	78.2
		1 Thakhek 2 Mahaxai	2003 2009	50.6 10.8	1	53.3 11.4	58.4 12.5	53.6 11.4	52.6 11.2	52.1 11.1	49.9 10.6	53.8 11.5	49.9 10.6	49.3 10.5		54.2 11.6	1	57.2 12.2		57.5 12.3		55.9 11.9	53.5 11.4						55.2 11.8	59.6 12.7		59.9 12.8	58.8 12.5		55.8 11.9	60.1 12.8	55.8 11.9	55.2 11.8	
		2.1 Potassium at Yang Koung Village (Ngom Ma Lat) Thakhek 3 Nam Theun 2 (Substation)	2014 2009	61	5.0	6.4	7.0	6.4	6.3	63	6.0	6.5	6.0	5 0	63	6.5	6.4	60	7.5	6.9	6.8	6.7	6.4	6.9	6.4	6.3	6.8	6.8	6.6	72	7 R	7 2	7 1	7.0	6.7	7.2	6.7	6.6	7.0
13	SVANNAKHET	Sub Total L Residential Sector		80.5		90.1	96.3	97.1	93.9	90.2	92.9	90.7	90.5	90.9 57.9				97.1		104.9			100.3		97.6				01.8	104.9			109.7		108.5	105.8	105.5	106.0	
	-	1 Pakbo	1996	47.5 14.2	16.3	57.0 17.1	63.2 19.0	64.0 19.2	60.8 18.2	57.2 17.1	59.9 18.0	57.7 17.3	57.5 17.2	57.8 17.3	17.4	52.8 15.8	18.2	63.4 19.0	21.1	71.2 21.4	3	63.6 19.1	66.6 20.0	19.2	19.2	19.3	9.3 1	17.6	67.5 20.2	70.6 21.2			75.3 22.6		74.1 22.2	71.4 21.4	71.1 21.3	71.6 21.5	21.5
		2 Keng Kok 3 Nong Deun	2004 2012	8.5 16.6	1 1	10.3 19.9	11.4 22.1	11.5 22.4	10.9 21.3	10.3 20.0	10.8 21.0	10.4 20.2	10.3 20.1	10.4 20.2	10.4 20.3	9.5 18.5	1	11.4 22.2		12.8 24.9	12.2 23.7	11.4 22.3	12.0 23.3						12.1 23.6	12.7 24.7	14.1 27.4	14.3 27.8	13.5 26.3	12.7 24.8	13.3 25.9	12.9 25.0	12.8 24.9	12.9 25.1	12.9 25.1
		4 Ban na (Seno) 5 M Phin	2014 2015	4.7 2.4	5.4	5.7 2.8	6.3	6.4	6.1	5.7 2.9	6.0 3.0	5.8 2.9	5.7 2.9	5.8 2.9	5.8	5.3 2.6	6.1	6.3	7.0	7.1 3.6	6.8	6.4	6.7 3.3	6.4 3.2	6.4 3.2	6.4	6.4	5.9 2.9	6.7 3.4	7.1 3.5	7.8 3.9	7.9 4.0	7.5 3.8	7.1 3.5	7.4 3.7	7.1 3.6	7.1 3.6	7.2 3.6	
		6 M Nong	2015	0.9	1.1	1.1	1.3	1.3	1.2	1.1	1.2	1.2	1.1	1.2		1.1	1.2	1.3	1.4	1.4 33.7	1.4	1.3	1.3	1.3	1.3	1.3		1.2	1.3	1.4	1.6	1.6	1.5	1.4	1.5	1.4	1.4	1.4	1.4
14	SARAVAN	7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total	2005	17.9	18.6	33.1 19.0	19.6	33.1 18.7	17.4	16.5	33.1 15.3	33.1 15.3	15.0	33.1 16.6	17.6	33.7 18.5		19.6		19.3	33.7 18.0	55.7 17.0	15.8	33.7 15.8	15.5	17.1	8.2	19.2	34.4 19.9	34.4 20.3	34.4 21.0	34.4 20.0	34.4 18.6		16.3	34.4 16.4	34.4 16.0	34.4 17.7	34.4 18.8
		L Residential Sector 1 Saravan	2011	17.9 12.5		19.0 13.3	19.6 13.7	18.7 13.1	17.4 12.2	16.5 11.5	15.3 10.7	15.3 10.7	15.0 10.5	16.6 11.6	17.6 12.3	18.5 13.0		19.6 13.7		19.3 13.5	18.0 12.6	17.0 11.9	15.8 11.0	15.8 11.1	1			1	19.9 14.0	20.3 14.2	21.0 14.7	20.0 14.0	18.6 13.0		16.3 11.4	16.4 11.5	16.0 11.2	17.7 12.4	18.8 13.2
15	SEKONG	2 Taothan Sub Total	2014	5.4 18.7	5.6	5.7	5.9 22.8	5.6 21.7	5.2 22.8	4.9 20.8	4.6 21.6	4.6 21.8	4.5 22.0	5.0 22.3	5.3 22.8	5.6 23.2	5.8	5.9 25.6	6.1	5.8 26.9	5.4	5.1	4.7 26.8	4.7	4.6	5.1	5.5	5.8	6.0 23.0	6.1 26.6	6.3	6.0 27.9	5.6 29.2	5.3	4.9 27.8	4.9 28.0	4.8 28.3	5.3 28.6	5.7
		L Residential Sector		18.7	17.9	20.7	22.8	21.7	22.8	20.8	21.6	21.8	22.0	22.3	22.8	23.2	22.2	25.6	28.3	26.9	28.2	25.7	26.8	27.0	27.3	27.6	28.3 2	24.1	23.0	26.6	29.3	27.9	29.2	26.7	27.8	28.0	28.3	28.6	29.3
16	CHAMPASAK	1 Sekong Sub Total	2012	18.7 33.6	3·	20.7 36.2	22.8 40.4	21.7 41.6	22.8 37.9	20.8 36.3	21.6 35.9	21.8 35.6	22.0 32.6	22.3 32.8	32.3	23.2 36.9	38.5	25.6 39.8	44.4	26.9 45.7	28.2 41.7	25.7 39.8	26.8 39.5					40.6	23.0 42.3	26.6 43.8			29.2 45.8		27.8 43.4	28.0 43.0	28.3 39.4	28.6 39.6	
		I. Residential Sector 1 Bang Yo	1991	33.6 20.8	35.0	36.2 22.5	40.4 25.0	41.6 25.8	37.9 23.5	36.3 22.5	35.9 22.3	35.6 22.1	32.6 20.2	32.8 20.3		36.9 22.9		39.8 24.7		45.7 28.3	41.7 25.8	39.8 24.7	39.5 24.5	39.1	35.9	1	1	40.6	42.3 26.2	43.8 27.1	48.8 30.2	50.2 31.1	45.8 28.4		43.4 26.9	43.0 26.7	39.4 24.4	39.6 24.6	39.0 24.2
		2 Ban Na	2005	5.0	5.3	5.4	6.1	6.2	5.7	5.4	5.4	5.3	4.9	4.9	4.8	5.5	5.8	6.0	6.7	6.9	6.3	6.0	5.9	5.9	5.4	5.4	5.3	6.1	6.3	6.6	7.3	7.5	6.9	6.6	6.5	6.5	5.9	5.9	5.9
		3 Ban Hat 4 Pakxong	2005 2011	3.0 2.7	2.8	3.3 2.9	3.6	3.7	3.4	3.3 2.9	3.2 2.9	3.2 2.8	2.9 2.6	3.0 2.6	2.9 2.6	3.3 3.0	3.5 3.1	3.6 3.2	4.0 3.5	4.1 3.7	3.8 3.3	3.6 3.2	3.6 3.2	3.5 3.1	3.2 2.9	2.9	2.8	3.6	3.8 3.4	3.9 3.5	4.4 3.9	4.5 4.0	4.1 3.7	3.9 3.5	3.9 3.5	3.9 3.4	3.5 3.2	3.6 3.2	3.5 3.1
17	ATTAPEU	5 Ban Jiangxai Sub Total	2011	2.0 5.2	2.1	2.2 5.2	2.4 6.3	2.5 6.3	2.3 6.2	2.2 6.2	2.2 6.0	2.1 5.8	2.0 5.8	2.0 5.6	1.9 5.5	2.2 5.9	2.3	2.4 5.9	2.7 7.1	2.7 7.2	2.5 7.0	2.4 7.0	2.4 6.8	2.3 6.6	2.2 6.5		2.1 6.2	2.4 6.7	2.5 6.7	2.6 6.6	2.9 8.1	3.0 8.1	2.7 7.9	2.6 7.9	2.6 7.7	2.6 7.5	2.4 7.4	2.4 7.2	2.3 7.0
		L Residential Sector 1 Saphaothong	2006	5.2	5.3	5.2	6.3	6.3	6.2	6.2	6.0	5.8	5.8 5.8	5.6 5.6	5.5 5.5	5.9		5.9 5.9	7.1	7.2		7.0 7.0	6.8	6.6	6.5		6.2	6.7 6.7	6.7 6.7	6.6 6.6	8.1 8.1	8.1 8.1	7.9 7.9	7.9	7.7	7.5 7.5	7.4 7.4	7.2 7.2	
	1	TOTAL	4000	738.6	736.4				867.8	<u>0.2</u> ;				J.0 831 8		2.9	799.5					916.6	0.8	941.6						901.7				984.0		1009.6		968.7	

Table VIII-4 : Monthly demand forecast (MW) (with TL losses, excluding large industry) from 2012 to 2014

1	Provinces	No. Name of Substations	Com. years	s 2012	2012	2012 20	012 201	2012	2012	2012	2012	2012	2012	2012 2	013 2	2013 20	013 201	3 2013	2013	2013 2013	2013 20	13 201	3 2013	2014 2	014 2	014 2014	2014	2014	2014	2014	2014	2014 20	14 201
	DILONGG A L I	0.177.1		Jan		Mar A	•	y Jun	Jul	Aug	Sep	Oct	Nov			*	Iar Api	· May	Jun	Jul Aug	Sep C	ct No	v Dec	Jan 1	eb M	1ar Apr	May	Jun	Jul .	-	Sep (Oct No	ov Dec
1	PHONGSALI	Sub Total L Residential Sector		1.3	3 1	0.9 0.9	1	1.0 1. 1.0 1.			1.6	1.3	1.4	1.4	1.6	1.7	1.2	1.3 1. 1.3 1.	1 :	1.9 1. 1.9 1.	2.0	1	1.8 1.7 1.8 1.7	2.0 2.0	2.2 2.2	1.5 1 1.5 1	.6 1.6 .6 1.6	2.0 2.0	2.4 2.4	2.5	2.6 2.6	2.1	2.3 2 2.3 2
	DOTTE O	1 Boun Neua	2013		11.0						15.0			- 10.0	1.6	1.7	1.2	.3 1.	2 1.5	1.9 1.	2.0	1.6	1.8 1.7	2.0	2.2	1.5 1	.6 1.6	2.0		2.5	2.6	2.1	2.3 2
2	вокео	Sub Total L Residential Sector		11.8 11.8	1	1		0.2 11. 0.2 11.	3		15.2 15.2	12.7 12.7	14.1 14.1		15.7 15.7		12.6 13 12.6 13	3.7 13. 3.7 13.		17.0 19. 17.0 19.	1 1	1	9.0 16.5 9.0 16.5	21.3 21.3	21.4	17.2 18 17.2 18	3 1			25.9 25.9	27.6 27.6	- 1	26.1 22 26.1 22
		1 Houayxay	2014																					21.3	21.4	17.2 18	.9 19.3	20.9	23.1	25.9	27.6	23.6	26.1 22
3	LUANGNAMTHA	Sub Total L Residential Sector		9.6 9.6	1	8.7 8.7		9.3 10. 9.3 10.			13.8	10.7 10.7	10.7 10.7	3	11.0 11.0).3 10.).3 10.		1	3 3	1	2.4 12.6 2.4 12.6	16.5 16.5	17.1 17.1	15.2 15 15.2 15				22.2 22.2	23.7 23.7	1	18.8 19 18.8 19
		1 Luangnamtha 1	2009	9.6	3	8.7		9.3 10.				10.7	10.7		11.0			0.3 10.		3			2.4 12.6	8.3	8.6	7.6 7	.9 8.4	9.1	9.9	11.1	11.8	9.4	9.4 9
4 (OUDOMXAI	2 Luangnamtha 2 Sub Total	2014	6.9	9.7	6.2	7.4	5.7 7.	1 8.8	8.6	9.5	7.5	7.7	7.6	12.2	17.1	11.1 13	3.4 10.	3 12.9	15.7 15.	16.8	13.5 1	3.7 13.7	8.3 20.4	8.6 28.5	7.6 7 18.6 22	-	9.1 21.8	9.9 26.2	11.1 25.1	11.8 28.0	9.4 22.8	9.4 9 23.1 23
7	OUDOMAAI	L Residential Sector		6.9		6.2		5.7 7.			9.5	7.5	7.7	7.6	12.2			3.4 10. 3.4 10.					3.7 13.7	20.4	28.5	18.6 22				25.1			23.1 23
		1 Oudomxay	2009	4.8	1	4.3		4.0 5.			6.7	5.2	5.4	5.4	8.6	12.0		0.4 7.	1 :		1 1		9.6 9.6	10.2	14.3	9.3 11	1 1			12.6			11.6 11
		2 Namo 3 M Houn	2012 2014	2.1	2.9	1.9	2.2	1.7 2.	1 2.6	2.6	2.9	2.2	2.3	2.3	3.7	5.1	3.3	1.0 3.	1 3.9	4.7 4.	5.1	4.0	4.1 4.1	5.1 5.1	7.1 7.1	4.6 5 4.6 5		5.5 5.5	6.5 6.5	6.3	7.0 7.0	5.7 5.7	5.8 5 5.8 5
5	HUAPHANH	Sub Total		5.2		6.6		5.4 5.	1		6.3	5.9	6.2	5.9	5.9	6.0		5.0 6.	-1	6.1 6.	7.0	1	6.9 6.6	6.7	6.9	8.1 6				7.1	8.1	7.6	7.9 7
		L Residential Sector 1 Xam Neua 1	2012	5.2 5.2		6.6 5.2		5.4 5. 5.2 5.			6.3 5.2	5.9	5.2	5.9	5.9	6.0	7.2	5.0 6.	1 6.3 9 5.9	6.1 6. 5.9 5	7.0		6.9 6.6 5.9 5.9	6.7 6.7	6.9 6.7	8.1 6 6.7 6	.9 7.0 .7 6.7			7.1	8.1 6.7	7.6 6.7	7.9 7 6.7 6
6	XIENG KHUANG	Sub Total	2012	8.2	-{	8.9		8.6 9.	=-;	9.0	9.6	9.3	9.3	9.4	9.2	9.2).3 9.		9.4 10.	10.8		0.5 10.7	18.3	18.2	19.7 20			18.5	19.9			20.7 21
		L Residential Sector	****	8.2		8.9		8.6 9.			9.6	9.3	9.3	9.4	9.2	- 1).3 9.	- 1	9.4 10.			0.5 10.7	18.3	18.2	19.7 20			18.5	19.9			20.7 21
		1 Phonsvan 2 M Kham	2003 2012	5.3 2.9		5.8 3.1		5.6 5. 3.0 3.			6.3	6.1	6.0 3.2	6.1 3.3	6.0 3.2	6.0 3.2		5.7 6. 3.6 3.	1 1	6.1 6. 3.3 3.	1		6.8 6.9 3.7 3.7	11.9 6.4	11.8 6.4	12.8 13 6.9 7				12.9 7.0	13.8 7.4		13.4 13 7.2 7
		3 Thavieng	2015				3.2	3.0				3.5	J.2	2.2	3.2		3.0		. 3.0	3.5	3.0	2.7	3.7	0		0.2			0.0	7.0			
7	LUANG PRABANG	Sub Total L Residential Sector		24.7		3		28.1 28.			33.5	29.4	29.2	27.4	31.5	3		36.					7.2 34.8 7.2 34.8	39.7	41.1	39.2 42				47.8 47.8			46.8 43
		1 Luangprabang 1	1994	24.7 18.5	3 (28.1 28. 21.1 21.			33.5 25.1	29.4 22.0	29.2 21.9	27.4 20.5	31.5 22.0			36. 3.4 25.	- 1				7.2 34.8 6.0 24.4	39.7 19.9	41.1 20.6	39.2 42 19.6 21			45.6 22.8	23.9			46.8 43 23.4 21
		2 Pakmong	2009	2.5	2.5	2.4	2.6	2.8 2.	8 2.8	2.9	3.4	2.9	2.9	2.7	3.1	3.3	3.1	3.3	6 3.6	3.6 3.	3 4.2	3.7	3.7 3.5	4.0	4.1	3.9 4	.2 4.6	4.6	4.6	4.8	5.3	4.7	4.7 4
		3 Sansouk 4 Luangprabang 2	2012 2014	3.7	3.8	3.6	3.9	4.2 4.	2 4.2	4.4	5.0	4.4	4.4	4.1	6.3	6.5	6.2	5.7 7.	2 7.3	7.2 7.	8.5	7.5	7.4 7.0	7.9 7.9	8.2 8.2	7.8 8 7.8 8	1	9.3	9.1 9.1	9.6 9.6	10.7 10.7	9.5 9.5	9.4 8 9.4 8
8	XAYABULY	Sub Total		14.2	14.7	14.5	15.9 1	4.6 15.	9 15.8	16.2	16.4	16.0	14.9	15.3	15.5	16.1	15.9 17	7.4 16.	1 17.4	17.3 17.	3 17.9	17.5 1	6.3 16.7	17.5	18.2	18.0 19	···	19.8	19.7	20.2	20.3	19.8	18.4 18
		L Residential Sector	2002	14.2				4.6 15.			16.4	16.0	14.9	15.3	15.5			7.4 16.		17.3 17.			6.3 16.7	17.5	18.2	18.0 19				20.2	20.3		18.4 18
		1 Sayaboury 2 Paklay	2003 2013	7.1	7.4	7.3	7.9	7.3 7.	9 7.9	8.1	8.2	8.0	7.4	7.6	9.3 6.2	9.7 6.5).5 9. 7.0 6.		10.4 10. 6.9 7.			9.8 10.0 6.5 6.7	10.5 7.0	10.9 7.3	10.8 11 7.2 7	.8 11.0 .9 7.3			12.1 8.1	12.2 8.1		11.0 11 7.3 7
		3 Hongsa	2015																														
9	VIETIANE PROVINCE	Sub Total L Residential Sector		141.4 126.4				52.2 178. 57.2 163.				160.8 145.8	160.1 145.1				68.2 159 48.2 139						1.0 198.0 1.0 178.0			199.8 190 169.8 160	1 1			209.2 179.2			16.1 233 86.1 203
				120.4	144.0	134.7	20.5	77.2 103.	3 102.0	140.5	174.0	143.0	143.1	102.0	137.0	137.2	13.	102.	100.0	177.7 133.	, 171	01.5	1.0 170.0	100.7	102.4	100	., 100.7	200.7	202.5	177.2	217.0	100.5	203
		1 Vangvieng	1994	46.8	1			60.		52.1	64.4	53.9	53.7	59.9	51.6		54.8 51	1	1 :	65.7 57.			9.6 65.8	59.4		62.8 59	1 1		74.9	66.3	81.2		68.9 75
		Houaysai Gold/copper Mining, Vangvieng District Cement Factory at Vangvieng(Extension)		17.9 24.2	1 1			22.2 25. 30.0 34.			27.7 37.5	21.9 29.6	21.8	25.3 34.2	20.6 27.9		1	0.6 25. 7.9 34.	1 :	28.5 23. 38.5 32.	1 1	1	5.0 28.6 3.9 38.6	25.0 33.8	29.5 39.9	26.9 25 36.3 33	1 1	34.5 46.7	33.6 45.5	28.8 39.0	37.2 50.3		30.2 33 40.9 45
		2 Phonsoung	1990	27.8	31.9	29.7	27.8 3	36.	0 35.8	31.0	38.3	32.1	31.9	35.6	30.7	35.0	32.6).7 35.	7 39.6	39.1 34.	42.1	35.5 3	5.4 39.2	35.3	40.1	37.4 35	.4 41.1	45.5	44.6	39.4	48.3	41.0	40.9 44
		3 Ban Don 4 Non Hai	2003 2003	10.1 12.6	1 1			1.8 13. 4.7 16.		11.3 14.1	13.9 17.4	11.7 14.6	11.6 14.5	13.0 16.2	11.2 14.0		1	1.2 13. 1.0 16.		14.2 12. 17.8 15.	1 1	3	2.9 14.2 6.1 17.8	12.9 16.1	14.6 18.2	13.6 12 17.0 16	1 1	16.5 20.7	16.2 20.3	14.3 17.9	17.6 22.0		14.9 16 18.6 20
		5 Thalat	2006	25.3				9.4 32.			34.8	29.2	29.0	32.4	27.9			7.9 32.	1	35.5 31.	1 1		2.2 35.6	32.1	36.5	34.0 32				35.8			37.2 40
		6 Hinheup	2012	3.8	1	4.0	1	4.4 4.			5.2	4.4	4.4	4.9	4.2	4.8		1.2 4.		5.3 4.	11	1	4.8 5.3	4.8	5.5	5.1 4			6.1	5.4	6.6		5.6 6
		PBI 6.1 Iron melting factory, at Vangvieng District (sinhouang)	2012	40.0 15.0	3			0.0 40. 5.0 15.		40.0 15.0	40.0 15.0	40.0 15.0	40.0 15.0	40.0 15.0	40.0 20.0		40.0 40			40.0 40. 20.0 20) 40.0) 20.0	40.0 4 20.0 2	0.0 40.0 0.0 20.0	40.0 30.0	40.0 30.0	40.0 40 30.0 30		40.0 30.0	40.0 30.0	40.0 30.0	40.0 30.0		40.0 40 30.0 30
10	VIENTIANE CAPITAL	Sub Total		219.5	¢			52.0 250.		250.7	270.8	281.7	238.8		245.5	250.6	253.2 272	2.8 294.	5 282.2	287.0 282.	303.6 3	14.0 26	9.2 273.2			298.9 322			338.7	333.3	357.5		18.7 321
		L Residential Sector	10/0	219.5		1	1	52.0 250.	(250.7	270.8	281.7	238.8		245.5	1	253.2 272		1 :	287.0 282.	1 1	1	9.2 273.2	1		298.9 322		334.5		333.3			18.7 321
		1 Phontong 2 Thanaleng	1968 1977	96.6 50.5	1			5.3 110. 60.3 57.			119.2 62.3	123.9 64.8	105.1 54.9	107.3 56.1	90.8 34.4		93.7 101 35.4 38		1 1	106.2 104. 40.2 39.	3 3	3	9.6 101.1 7.7 38.3	103.9 40.4		107.6 116 41.8 45		120.4 46.8		120.0 46.7			14.7 115 44.6 45
		3 Tha Ngon	1989	19.8	20.1	20.3	21.8 2	23.6 22.	5 23.0	22.6	24.4	25.4	21.5	21.9	19.6	20.0	20.3	1.8 23.	6 22.6	23.0 22.	24.3	25.1 2	1.5 21.9	23.1	23.7	23.9 25	.8 27.8	26.8	27.1	26.7	28.6	29.4	25.5 25
		4 Khok sa at 5 Naxaythong	2004 2006	30.7 21.9			1	6.7 35. 6.2 25.			37.9 27.1	39.4 28.2	33.4 23.9	34.1 24.4	31.9 16.0		32.9 35 16.5 17	5.5 38. 7.7 19.		37.3 36. 18.7 18.	1	1	5.0 35.5 7.5 17.8	37.5 18.8	38.5 19.2	38.9 41 19.4 21				43.3	1		41.4 41 20.7 20
		6 Pak Thang	2013	21.9	22.3	22.3	24.2 2	26.2 25.	0, 23.3	23.1	27.1	20.2	23.9	24.4)	12.3			3.6 14.	3 :				3.5 13.7	14.4		14.9 16				16.7			15.9 16
		7 Nong Viengkham	2013												12.5			3.9 15.					3.7 13.9	14.7		15.2 16				17.0	18.2		16.3 16
		8 Don Koi 9 Na Bong 1	2013 2013												22.6 5.4	23.1	23.3 25	5.1 27.	1 :	26.4 25.	27.9 2 6.7		4.8 25.1 5.9 6.0	26.5 9.2	27.2 9.5	27.5 29 9.6 10				30.7 10.7	32.9 11.4		29.3 29 10.2 10
11	BOLIKHAMXAY	Sub Total		18.3	20.8	17.0	21.1 2	20.0 19.	8 19.2	19.7	21.8	20.4	22.6	20.8	20.2			3.4 22.	2 22.0				4.8 22.8	22.9		21.4 26				24.8			28.0 25
		L Residential Sector 1 Pakxan	2000	18.3	£ 1			0.0 19. 5.0 14.				20.4	22.6		20.2			3.4 22. 7.5 16.					4.8 22.8			21.4 26				24.8			28.0 25
		2 Tha Bok	2015	13.7	15.6	12.7	15.8 1	5.0 14.	9 14.4	14.8	16.3	15.3	16.9	15.6	15.1	17.2	14.1	10.	6 16.5	15.9 16.	18.0	16.9 1	8.6 17.1	17.2	19.5	16.1 19	.9 18.9	18.8	18.0	18.6	20.4	19.2	21.0 19
		3 Khonsong	2012	2.7		2.5		3.0 3.				3.1	3.4	3.1	3.0	3.4		3.5	- 1				3.7 3.4	3.4	3.9	3.2 4				3.7	4.1	3.8	4.2 3
12	KHAMMOUAN	4 Thasala Sub Total	2012	1.8 36.2		1.7 38.6		2.0 2. 1.0 40.	~~~~~		2.2 41.9	2.0 43.6	2.3	2.1 40.1	2.0 39.0	2.3 43.1	1.7	2.3 2. 0.0 44.					2.5 2.3 1.2 43.0	2.3 43.1	2.6 47.5	2.1 2 45.8 54	.7 2.5 .0 48.4			2.5 44.2	2.7 49.5	2.6 50.5	2.8 2 45.4 47
12	anninoen (L Residential Sector		36.2		3	1	1.0 40.	1 :	37.4	41.9	43.6	38.4	40.1	39.0		41.5 49	1	1 :	1	1 1		1.2 43.0	43.1		45.8 54	1 1			44.2	49.5	1	45.4 47
		1 Thakhek	2003	27.2				30.8				32.7	28.8		29.2		1	5.8 33.	1 :	3			0.9 32.2	32.3		34.4 40				33.2		1	34.1 35
		2 Mahaxai 3 Nam Theun 2 (Substation)	2009 2009	5.8 3.3		6.2 3.5	7.3	6.6 6. 3.7 3.	4 6.3 6 3.5		6.7 3.8	7.0	6.1	6.4 3.6	6.2 3.5	6.9 3.9	6.6	7.8 7. 1.4 4.	0 6.9 0 3.9	6.8 6. 3.8 3.	7.2 5 4.0		6.6 6.9 3.7 3.9	6.9 3.9	7.6 4.3	7.3 8 4.1 4	3 8	7.6 4.3	7.4 4.2	7.1 4.0	7.9 4.5	8.1 4.5	7.3 7 4.1 4
13	SVANNAKHET	Sub Total		126.6	142.2			1.2 125.				129.9	138.9		128.9		25.5 136						2.0 135.6			133.9 145				155.8			51.2 144
		L Residential Sector 1 Pakbo	1996	70.6	1			5.2 69. 3.8 31.		87.6 39.4	68.2 30.7	73.9 33.3	82.9 37.3		72.9 32.8		69.5 80 31.3 36).2 79. 5.1 35.				3	6.0 79.6 8.7 35.8	80.2 24.1		77.9 89 23.4 27				99.8	80.6 24.2		95.2 88 28.6 26
		2 Keng Kok	2004	31.8 21.2	£ 1		1	3.8 31. 2.6 20.				22.2	24.9		21.9			5.1 55. 1.1 23.				- 1	8.7 35.8 5.8 23.9	24.1 14.4	29.6 17.7	23.4 27 14.0 16				29.9 18.0			28.6 26 17.1 15
		3 Nong Deun	2012	17.6	8 1	3	3	8.8 17.				18.5	20.7		18.2		17.4 20		3 :				1.5 19.9	28.1	34.5	27.3 31	.4 31.0	28.9	33.0	34.9	28.2	30.1	33.3 30
		4 Ban na (Seno) 5 M Phin	2014 2015																					13.6	16.8	13.2 15	.3 15.0	14.0	16.0	17.0	13.7	14.6	16.2 15
		6 M Nong	2015																														
14	SARAVAN	7 Xepon Gold/Copper Minning at Vilabury District (Existi Sub Total	ing) 2005	56.0				6.0 56.		,	56.0	56.0 14.6	56.0	56.0 20.0	56.0			56.					6.0 56.0	56.0		56.0 56				56.0	56.0		56.0 56
14	JAKA TAH	L Residential Sector		20.4	5			7.5 16. 7.5 16.				14.6	19.7 19.7		25.7 25.7			3.3 22. 3.3 22.					4.7 26.2 4.7 26.2	29.1 29.1		25.0 26 25.0 26				21.9 21.9		- 1	28.0 29 28.0 29
		1 Saravan	2011	20.4				7.5 16.				14.6	19.7					3.3 22.					4.7 26.2	20.4	19.4	17.5 18	.8 18.1	17.2	16.1	15.4	15.4	14.9	19.6 20
15	SEKONG	2 Taothan Sub Total	2014	3.2	2.7	2.7	3.1	3.0 3.	3 2.9	3.2	3.2	3.2	3.0	4.0	3.6	3.1	3.2	3.7 3.	5 3.8	3.4 3.	3.7	3.7	4.5 4.6	8.7 10.5	8.3 9.2	7.5 8 9.4 10				6.6 10.7	6.6 10.8	6.4 10.8	8.4 8 13.0 13
-		L Residential Sector		3.2	2.7	2.7	3.1	3.0 3.	3 2.9	3.2		3.2	3.9	4.0	3.6	3.1	3.2	3.7 3.	5 3.8	3.4 3.		3.7	4.5 4.6	10.5	9.2	9.4 10	.8 10.3	11.1	9.9	10.7	10.8	10.8	13.0 13
16	CHAMDACAV	1 Sekong	2012	3.2		2.7		3.0 3.	3 2.9		3.2	3.2	3.9	4.0	3.6	3.1	3.2	3.7 3.	5 3.8		3.7		4.5 4.6	10.5	9.2	9.4 10			9.9	10.7	10.8		13.0 13
10	CHAMPASAK	Sub Total L.Residential Sector		52.4 52.4				i3.6 49. i3.6 49.	3		47.9 47.9	43.5 43.5	53.4 53.4	52.6 52.6	56.3 56.3		48.3 56 48.3 56						7.3 56.3 7.3 56.3	60.4 60.4		52.8 61 52.8 61	3 3		55.9 55.9	57.3 57.3	56.8 56.8	8	61.5 60 61.5 60
		1 Bang Yo	1991	32.5	30.0	27.4	31.8 3	33.2 30.	9 29.2	30.1	29.7	27.0	33.1	32.6	34.9	32.8	30.0 34	1.8 36.	2 33.8	31.9 32.	32.4	29.4 3	5.6 34.9	37.5	35.8	32.8 38	.0 39.5	36.8	34.7	35.5	35.2	31.9	38.1 37
		2 Ban Na 3 Ban Hat	2005 2005	7.9 4.7	3	6.6 4.0		8.0 7. 4.8 4.			7.2 4.3	6.5 3.9	8.0 4.8	7.9 4.7	8.4 5.1	7.9 4.8	1	3.4 8. 5.0 5.			1		8.6 8.5 5.2 5.1	9.1 5.4	8.7 5.2	7.9 9 4.8 5				8.6 5.2	8.5 5.1	7.7 4.6	9.2 9 5.5 5
		4 Pakxong	2005	4.7		3.5		4.8 4.	- 3		3.8	3.5	4.3	4.7	4.5	4.8		1.5 4.	1 :	3	3 3		4.6 4.5	4.8	4.6	4.8 3	1 :		: :	4.6	4.5		3.3 3 4.9 4
	AMPADDI	5 Ban Jiangxai	2011	3.1	2.9	2.6		3.2 3.			2.9	2.6	3.2	3.2	3.4	3.2	2.9	3.4 3.	5 3.3		3.1		3.4 3.4	3.6	3.5	3.2 3				3.4	3.4	3.1	3.7 3
17	ATTAPEU	Sub Total L Residential Sector		4.9 4.9		4.9 4.9		6.2 6. 6.2 6.				5.3	5.4	4.7 4.7	5.7 5.7	5.9 5.9		5.5 7. 5.5 7.					6.3 5.5 6.3 5.5	6.6 6.6	6.9 6.9		.6 8.4 .6 8.4			8.1 8.1	8.5 8.5		7.3 6 7.3 6
İ		\$	1	1	1	1	1	1	1				2.7			2.7				- 1	1 1		6.3 5.5	6.6			3 5			V.1			7.3 6
		1 Saphaothong TOTAL	2006	4.9 705		701		6.2 6. 780 77		6.1 778	6.4 826	5.3 796	775	4.7 787	5.7 787	5.9 837	5.7 6 785 8	5.5 7. 36 87					0.3 3.3 369 878	930	6.9 992		.6 8.4 95 1036			8.1 1036	8.5 1103	7.2	/.5; C

	Provinces	No. Nan	me of Substations	Com. years									015 2		015 201			2016	4					6 2016		-	- 1				2017 2		2017 2		2017 20		017 20
1 1	PHONGSALI		Sub Total		Jan 10.2				-	Jun 10.1	Jul 12.0	Aug 5	Sep (12.8		11.8 1		n Feb 20.4 21.			May 16.7		Jul Au 24.1 2	-	p Oct 5.6 21.7		Dec 22.8	Jan 26.2	Feb 28.0	Mar 20.1	Apr 21.8	22.0	Jun 26.7		Aug 5 31.7		28.3	30.8
		L Residential Sector			10.2	10.9	7.7	8.3	8.2	10.1	12.0	12.4	12.8	- 3	11.8 1	1.3 2	20.4 21.	7 15.5	16.7	16.7	20.4	24.1 2	4.6	5.6 21.7	23.7	22.8	26.2	28.0	20.1	21.8	22.0	26.7	31.2	31.7	33.0	28.3	30.8
2 1	BOKEO	1 Boun Neua	Sub Total	2013	10.2 24.2	~~~~~	7.7 19.8	8.3 21.8		10.1 24.2	12.0 26.5	12.4 29.5	12.8 31.4	10.7 27.2	11.8 1 30.0 2:		20.4 21. 28.6 28.	7 15.5 9 23.6	·}	16.7 27.0	20.4			5.6 21.7 7.1 32.6		22.8 30.8	26.2 35.5	28.0 35.8	20.1	21.8 32.8	22.0 34.0	26.7 36.7	31.2 39.1	31.7 43.1		28.3 40.9	30.8 44.7
_ [L Residential Sector			24.2	24.4	19.8	21.8	22.4	24.2	26.5	29.5	31.4	27.2	30.0 2	5.8 2	28.6 28.	9 23.€	26.2	27.0	29.2	31.4	4.8	7.1 32.6	35.8	30.8	35.5	35.8	29.4	32.8	34.0	36.7	39.1	43.1	46.0	40.9	44.7
3 1	LUANGNAMTHA	1 Houayxay	Sub Total	2014	24.2	~ ~~~~~				24.2	26.5 25.5	29.5 28.5	31.4	27.2 24.6	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		28.6 28. 29.1 30.		adjament and a second	27.0 30.7	~~~~			7.1 32.6 1.7 34.2		30.8 34.0	35.5 33.1	35.8 34.3	29.4 31.1	32.8 33.0	34.0 35.6	36.7 38.3	39.1 40.1	43.1 44.3		40.9 39.4	44.7 38.6
		I. Residential Sector			21.2	2 22.0	19.7	20.6	22.0	23.8	25.5	28.5	30.4	24.6	24.4 2	4.7 2	9.1 30.	1 27.1	28.6	30.7	33.1	35.1 3	8.9	1.7 34.2	33.7	34.0	33.1	34.3	31.1	33.0	35.6	38.3	40.1	44.3	47.5	39.4	38.6
		1 Luangnamtha 1 2 Luangnamtha 2		2009 2014	10.6	1 1	9.8 9.8	1	11.0	11.9	12.8	14.2 14.2	15.2	12.3		1	4.5 15. 4.5 15.	1 13.6	5 14.3	15.3 15.3	1			0.9 17.1 0.9 17.1	1	17.0 17.0	16.5 16.5	17.2 17.2	15.6 15.6	16.5 16.5	17.8 17.8	19.2 19.2	20.1	22.1 22.1		19.7 19.7	19.3 19.3
4 (OUDOMXAI	2 Eddingstanda 2	Sub Total		36.7				32.2	40.1	47.5	45.3	50.6	41.7			9.6 69.	7 46.0	57.1	44.5		17.5		8.4 57.1		57.0	52.8	74.2	49.3	61.6	48.2	59.7	69.0	65.1			61.7
		L Residential Sector 1 Oudomxay		2009	36.7 18.4			:		40.1 20.1	47.5 23.8	45.3 22.7	50.6 25.3				19.6 69. 24.8 34.	1	3 3	44.5 22.2				8.4 57.1 4.2 28.6		57.0 28.5	52.8 26.4	74.2 37.1	49.3 24.7	61.6 30.8	48.2 24.1	59.7 29.9	69.0 34.5	65.1 32.6			61.7 30.9
		2 Namo		2012	9.2			1		10.0	11.9	11.3	12.7				2.4 17.	1	1 1	11.1	13.8			7.1 14.3			13.2	18.5	12.3	15.4	12.1	14.9	17.2	16.3		15.4	15.4
5 1	HUAPHANH	3 M Houn	Sub Total	2014	9.2		<u> </u>	·	8.1 7.6	10.0 7.9	11.9 7.7	11.3 7.8	12.7 8.9	10.4 8.4		·····	2.4 17. 8.1 8.	4 11.5 4 9.4	14.3	11.1 8.4	13.8 8.6		~~~	7.1 14.3 9.8 9.2		14.2	13.2 8.8	18.5	12.3 10.0	15.4 9.1	12.1 9.0	14.9 9.3	17.2 9.1	16.3 9.3	18.2 10.5	15.4 10.0	15.4 10.3
ا د	HUAPHANH	L Residential Sector	Sub Total		7.4			1		7.9	7.7	7.8	8.9	8.4	- 1	1	8.1 8. 8.1 8.	1		8.4	1			9.8 9.2 9.8 9.2			8.8	9.1 9.1	10.0	9.1	9.0	9.3	9.1	9.3		10.0	10.3
	VIENC VIII ANG	1 Xam Neua 1	CL T-4-1	2012	7.4			ļ		7.4	7.4	7.4	7.4	7.4		7.4	8.1 8.	1 8.1	8.1	8.1	8.1			8.1 8.1		8.1	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
0	XIENG KHUANG	L Residential Sector	Sub Total		40.2			44.7 44.7		44.6 44.6	40.5 40.5	43.5	46.5 46.5	- 1	3		60.8 60. 60.8 60.	1		64.3 64.3		1		9.8 67.8 9.8 67.8	1 :	70.8 70.8	76.3 76.3	75.3 75.3	81.0 81.0	84.3 84.3	80.7 80.7	84.4 84.4	76.0 76.0	81.5 81.5		1	85.8 85.8
		1 Phonsvan		2003	20.1				21.3	22.3	20.2	21.8	23.2				33.4 33.	1		35.4		1		8.4 37.3		38.9	42.0	41.4	44.6	46.4	44.4	46.4	41.8	44.8	1		47.2
		2 M Kham 3 Thavieng		2012 2015	12.1					12.1 10.2	12.1	12.1	12.1 11.2	12.1 10.5	12.1 1: 10.6 1	1	8.2 18. 9.1 9.		3 3	19.3	20.2	1	9.6 2 9.8 1	0.9 20.3 0.5 10.2		21.2 10.6	22.9	22.6 11.3	24.3 12.2	25.3 12.6	24.2 12.1	25.3 12.7	22.8 11.4	24.5 12.2		25.4 12.7	25.7 12.9
7 1	LUANG PRABANG		Sub Total		49.6	~~~~~~~				58.4	57.4	59.9	66.2		······································		57.0 59.	~	<u> </u>	66.3				5.7 67.8		,	60.2	62.6	60.0	65.5	70.3	72.0	70.6	73.2		71.6	70.3
		L Residential Sector		1994	49.6	1		53.4		58.4	57.4	59.9	66.2				57.0 59.		3	66.3		1	1	5.7 67.8			60.2 30.1	62.6	60.0	65.5	70.3	72.0	70.6	73.2		71.6	70.3
		1 Luangprabang 1 2 Pakmong		2009	24.8	1 1		1		29.2 5.8	28.7 5.7	29.9 6.0	33.1 6.6	29.5 5.9			28.5 29. 5.7 5.	1	1 1	33.1 6.6	33.8 6.8	1	1	7.8 33.9 7.6 6.8	1 :	31.3 6.3	6.0	31.3 6.3	30.0 6.0	32.8 6.6	35.2 7.0	36.0 7.2	35.3 7.1	36.6 7.3	39.8 8.0	35.8 7.2	35.2 7.0
		3 Sansouk		2012	9.9	1 1		1		11.7	11.5	12.0	13.2		3	1	1.4 11.	8 11.3	12.3	13.3	13.5		1	5.1 13.6		12.5	12.0	12.5	12.0	13.1	14.1	14.4	14.1	14.6	15.9	14.3	14.1
8 3	XAYABULY	4 Luangprabang 2	Sub Total	2014	9.9					11.7 21.8	11.5 21.6	12.0 22.1	13.2 22.3	11.8 21.6			1.4 11. 23.7 24.	8 11.3 9 24.7	3 12.3 7 27.0	13.3 25.2	13.5 27.3		3.8 1 7.6 2	5.1 13.6 7.9 27.0		12.5 25.5	12.0 31.0	12.5 32.7	12.0 32.5	13.1 35.5	14.1 33.3	14.4 35.9	14.1 35.6	14.6 36.3	15.9 36.7	14.3 35.4	14.1 32.7
0	ANTABOLI	I. Residential Sector	Sub Total		19.0			1		21.8	21.6	22.1	22.3				23.7 24.	1	3 3	25.2				7.9 27.0		25.5	31.0	32.7	32.5	35.5	33.3	35.9	35.6	36.3		35.4	32.7
		1 Sayaboury		2003	9.5	1 1				10.9	10.8	11.0	11.1	10.8	3	1	1.8 12.	1		12.6			1	3.9 13.5			15.5	16.3	16.2	17.8	16.6	18.0	17.8	18.2		17.7	16.4
		2 Paklay 3 Hongsa		2013 2015	6.1	1 1		i		7.0	6.9	7.1 4.0	7.1 4.0	6.9 3.9	6.4 3.6	6.6 3.7	7.6 8. 4.3 4.	7.9	8.6 4.9	8.1 4.5	8.7 4.9	1	8.8 5.0	8.9 8.6 5.0 4.9	1 1	8.2 4.6	9.9 5.6	10.5 5.9	10.4 5.8	11.4 6.4	10.6 6.0	11.5 6.5	11.4 6.4	11.6 6.5	11.7 6.6	11.3 6.4	10.5 5.9
9 1	VIETIANE PROVINCE		Sub Total		224.7	7 247.5		1		274.1	268.1						6.2 343.	1	1 1	350.6		367.5 34		3.4 352.5	352.6	371.8	612.0		621.4	611.9		673.5					650.5
		L Residential Sector			174.7	7 197.5	183.7	174.7	202.7	224.1	218.1	194.8	237.9	203.4	03.3 220	0.6 21	6.2 243.	5 226.4	216.2	250.6	276.7	267.5 24	1.1 29	3.4 252.5	252.6	271.8	222.0	249.0	231.4	221.9	257.1	283.5	272.2	247.6	300.3 2	260.1	260.5 2
		1 Vangvieng		1994	64.6	73.1	68.0	64.6	75.0	82.9	80.7	72.1	88.0	75.3	75.2 8	1.6 8	90.	1 83.8	80.0	92.7	102.4	99.0	9.2 10	8.6 93.4	93.5	100.6	82.1	92.1	85.6	82.1	95.1	104.9	100.7	91.6	111.1	96.2	96.4 1
			Mining, Vangvieng District		27.9					38.1	36.9	32.0	41.0				6.5 42.			43.6		1	- 1	2.5 44.0			37.7	43.3	39.6	37.7	44.9	50.4	48.1	43.0			45.6
		Cement Factory at Vans 2 Phonsoung	gvieng(Extension)	1990	37.7 38.4			1		51.6 49.3	49.9 48.0	43.3 42.9	55.4 52.3	1	ì	1	19.3 57. 17.6 53.	1	1 1	59.0 55.1	66.3 60.9	1	1	1.0 59.5 4.5 55.6	1 :		50.9 48.8	58.5 54.8	53.6 50.9	50.9 48.8	60.8 56.6	68.2 62.4	65.0 59.9	58.1 54.5	1		61.7 57.3
		3 Ban Don		2003	14.0			14.0	16.2	17.9	17.4	15.6	19.0	16.3	16.3 1	7.6 1	7.3 19.		17.3	20.1	22.1			3.5 20.2	20.2	21.7	17.8	19.9	18.5	17.8	20.6	22.7	21.8	19.8			20.8
		4 Non Hai 5 Thalat		2003 2006	17.5 34.9	1 1		17.5 34.9		22.4 44.8	21.8 43.6	19.5 39.0	23.8 47.6		20.3 2: 40.7 4		21.6 24. 3.2 48.	1	1	25.1 50.1	27.7 55.3	1	1	9.3 25.3 8.7 50.5		27.2 54.4	22.2 44.4	24.9 49.8	23.1 46.3	22.2 44.4	25.7 51.4	28.3 56.7	27.2 54.4	24.8 49.5		26.0 52.0	26.0 52.1
		6 Hinheup		2012	5.2	1 1		i .		6.7	6.5	5.8	7.1	6.1	ŧ	1	6.5 7.	1		7.5				8.8 7.6	3 :	: 3	6.7	7.5	6.9	6.7	7.7	8.5	8.2	7.4	9.0	7.8	7.8
		PBI			40.0					40.0	40.0	40.0	40.0				0.0 40.		40.0	40.0	40.0	40.0 4		0.0 40.0	1	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
10 3	VIENTIANE CAPITAL	6.1 Iron melting factory, at	Vangvieng District (sinhouang) Sub Total	2012	328.1		50.0 341.2	50.0 369.1	50.0 397.1	50.0 383.4	50.0 386.7	50.0 381.0	50.0 107.3	50.0 417.0	50.0 50 65.0 36		00.0 100. 57.1 369.		0 100.0 404.1	100.0 434.0	100.0 420.5	100.0 10 422.5 41	V.V	0.0 100.0 4.1 452.5	·}	100.0 399.4	390.0 395.2	390.0 411.1	390.0 414.4	390.0 449.8		390.0 469.1	390.0 469.4	390.0 463.6	270.0	390.0 3 499.3 4	390.0 3 445.8 4
10	, 111,	L Residential Sector	Sub Total		328.1				397.1	383.4	386.7				65.0 36			1		434.0				4.1 452.5		399.4	395.2	411.1	414.4	449.8		469.1					445.8 4
		1 Phontong		1968 1977	118.1	1 1				138.0 53.7	139.2						28.6 133. 50.0 51.			156.2		1	1	9.9 162.9	1 :		142.3 55.3	148.0 57.6	149.2 58.0	161.9 63.0	173.7 67.5	168.9	169.0 65.7		- 1		160.5 1
		2 Thanaleng 3 Tha Ngon		1977	45.9 26.2					30.7	54.1 30.9	53.3 30.5	57.0 32.6		51.1 5 29.2 2		50.0 51. 28.6 29.	1		60.8 34.7	58.9 33.6			2.2 63.3 5.5 36.2	1 :	: 3	31.6	32.9	33.1	36.0	38.6	65.7 37.5	37.6	64.9 37.1	1	69.9 39.9	62.4 35.7
		4 Khok sa at		2004	42.7					49.8	50.3	49.5	52.9	54.2	47.4 4	7.6 4	48.	1		56.4		1		7.7 58.8	1 1	51.9	51.4	53.4	53.9	58.5	62.7	61.0	61.0	60.3	1	64.9	58.0
		5 Naxaythong 6 Pak Thang		2006 2013	21.3 16.4					24.9 19.2	25.1 19.3						23.2 24. 7.9 18.		3 3	28.2				8.9 29.4 2.2 22.6	3	: 3	25.7 19.8	26.7 20.6	26.9 20.7	29.2 22.5	31.4 24.1	30.5 23.5	30.5 23.5	30.1 23.2	3		29.0 22.3
		7 Nong Viengkham		2013	16.7	7 17.2	17.4	18.8	20.3	19.6	19.7	19.4	20.8	21.3		8.7 1	8.2 18.	19.0	20.6	22.1	21.4	21.5	1.3	2.6 23.1	20.4	20.4	20.2	21.0	21.1	22.9	24.6	23.9	23.9	23.6	25.1	25.5	22.7
		8 Don Koi 9 Na Bong 1		2013	31.2					36.4	36.7	36.2	38.7				35.		1 1	41.2				2.2 43.0			37.5	39.1	39.4	42.7	45.8	44.6	44.6	44.0	- 1		42.3
11 1	BOLIKHAMXAY	9 Na Bong 1	Sub Total	2013	9.5 25.1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u> </u>	dan		11.1 27.6	11.2 26.4	11.0 27.2	11.8 29.8	12.1 28.1	····		0.4 10. 27.6 31.			12.6 30.6	12.2 30.5		~~~~	2.9 13.1 2.7 30.9			11.5 30.2	11.9 34.2	12.0 28.5	13.0 35.3	14.0 33.5	13.6 33.4	13.6 31.8	13.4 32.9		14.5 33.8	12.9 36.5
		L Residential Sector			25.1	1 1		1		27.6	26.4	27.2	29.8	3	3		27.6 31.		1 1	30.6	1	1	- 1	2.7 30.9	1 1		30.2	34.2	28.5	35.3	33.5	33.4	31.8	32.9		33.8	36.5
		1 Pakxan 2 Tha Bok		2000 2015	16.3			:		17.9 4.1	17.1 4.0	17.7 4.1	19.4 4.5	18.2 4.2	3	1	8.0 20. 4.1 4.	1	1 1	19.9 4.6	1	1	1	1.3 20.1 4.9 4.6		19.9 4.6	19.7 4.5	22.2 5.1	18.5 4.3	23.0	21.8 5.0	21.7 5.0	20.7 4.8	21.4	23.3 5.4	22.0 5.1	23.7 5.5
		3 Khonsong		2012	3.3	1 1		i		3.6	3.4	3.5	3.9	3.6		3.6	3.6 4.			4.0	1		1	4.3 4.0	1	4.0	3.9	4.4	3.7	4.6	4.4	4.3	4.1	4.3	4.7	4.4	4.7
12 1	KHAMMOUAN	4 Thasala	Sub Total	2012	1.8		1.6	2.0	1.9	1.9	1.8	1.9	2.1	2.0	2.1	2.0	1.9 2.	2 1.8	3 2.3	2.1	2.1		2.1	2.3 2.2		2.1	2.1	2.4	2.0	2.5	2.3	2.3	2.2	2.3	2.5 138.2 1	2.4	2.6
12	KHAMWOUAN	L Residential Sector	Sub Total		79.3 79.3			1		87.3 87.3	85.4 85.4	81.2 81.2	90.9 90.9			6.8 10 6.8 10)2.1 112.)2.1 112.	1	3 3	113.7 113.7	112.1 112.1	1	1	6.6 116.7 6.6 116.7	1	111.2 111.2	121.4 121.4	133.3 133.3	128.8 128.8	150.6 150.6	134.7 134.7	133.1 133.1	129.8 129.8	123.5 123.5		- 1	126.7 1 126.7 1
		1 Thakhek		2003	59.5					65.5	64.0	60.9	68.2				6.5 84.	1	3 3	85.3	84.1	1		7.5 87.5	3		91.0	100.0	96.6	112.9	101.0	99.8	97.3				95.0
		2 Mahaxai 3 Nam Theun 2 (Substation	on)	2009 2009	12.7 7.1					14.0 7.9	13.7	13.0	14.5 8.2	14.7 8.3		1	6.3 18. 9.2 10.		3 3	18.2 10.2	17.9 10.1	1	- 1	8.7 18.7 0.5 10.5		17.8 10.0	19.4 10.9	21.3 12.0	20.6 11.6	24.1 13.6	21.5 12.1	21.3 12.0	20.8 11.7	19.8 11.1	3	21.9 12.3	20.3
13	SVANNAKHET		Sub Total		142.7	7 162.8	141.6	154.7	153.1	147.0	158.2		144.6		59.4 15:	2.3 16	8.8 191.	2 169.2	183.7	182.0	175.5	186.0 19	·····	2.6 177.6	187.7	180.2	177.0	201.6	179.1	195.1	193.1	186.3	195.9	202.6	183.0 1	187.6	198.1 1
		I. Residential Sector 1 Pakbo		1996	86.7	1 1		1		91.0	102.2	108.0	88.6 26.6	3		1	94.8 117. 28.4 35.	1		108.0		1	1	8.6 103.6	3	106.2	103.0 30.9	127.6 38.3	105.1 31.5	121.1		112.3	121.9 36.6	128.6	109.0 1	1	124.1 1
		2 Keng Kok		2004	26.0 15.6	1 1		1		27.3 16.4	30.6 18.4	32.4 19.4	26.6 16.0				28.4 35. 7.1 21.	1	1	32.4 19.4	i	1	1	9.6 31.1 7.8 18.6	1	31.9 19.1	30.9 18.5	23.0	31.5 18.9	36.3 21.8	35.7 21.4	33.7 20.2	21.9	38.6 23.1	1	34.1 20.5	37.2 22.3
		3 Nong Deun		2012	30.3	37.4	30.0	34.5	34.0	31.8	35.8	37.8	31.0	32.8	36.2 3	3.7 3	33.2 41.	1	38.4	37.8	35.5	39.2 4	1.4	4.5 36.3	39.8	37.2	36.1	44.7	36.8	42.4	41.7	39.3	42.7	45.0	38.1	39.8	43.4
		4 Ban na (Seno) 5 M Phin		2014 2015	8.7 4.3	1 1				9.1 4.5	10.2 5.1	10.8 5.4	8.9 4.4	9.4 4.7		9.6 4.8	9.5 11. 4.7 5.	7 9.5	5 11.0 3 5.5	10.8 5.4	10.1 5.1		- 1	9.9 10.4 4.9 5.2		10.6 5.3	10.3 5.2	12.8 6.4	10.5 5.3	12.1 6.1	11.9 6.0	11.2 5.6	12.2 6.1	12.9	10.9 5.4	11.4 5.7	6.2
		6 M Nong		2015	1.7	7 2.1	1.7	2.0	1.9	1.8	2.0	2.2	1.8	1.9	2.1	1.9	1.9 2.	1	2.2	2.2		2.2	2.4	2.0 2.1	2.3	2.1	2.1	2.6	2.1	2.4	2.4	2.2	2.4	2.6	2.2	2.3	2.5
14 '	SADAVAN	7 Xepon Gold/Copper Mi	inning at Vilabury District (Existing)	2005	56.0	~ ~	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0 50		4.0 74.	74.0	74.0	74.0	74.0		4.0 7	4.0 74.0		74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0
14	SARAVAN	L Residential Sector	Sub Total		32.2 32.2			1		27.6 27.6	25.6 25.6	- 1	24.6 24.6				37.7 37. 37.7 37.		3 3	34.3 34.3	1	1		9.2 28.3 9.2 28.3			42.9 42.9	42.7 42.7	38.6 38.6	41.5 41.5	39.5 39.5	37.8 37.8	35.0 35.0	33.3 33.3			41.1
		1 Saravan		2011	22.5	21.8	19.6	21.1	20.2	19.3	18.0	17.1	17.2		21.6 2	2.8 2	26.4 25.	9 23.4	25.2	24.0	22.9	21.3 2	0.3	0.5 19.8	25.3	26.7	30.0	29.9	27.0	29.1	27.6	26.4	24.5	23.3	23.5	22.7	28.8
15	SEKONG	2 Taothan	Sub Total	2014	9.6	+		+	8.7 15.5	8.3 16.7	7.7	7.3	7.4 16.3	7.2		9.8 1 9.6 1	1.3 11. 9.3 17.		1	10.3 19.6	9.8			8.8 8.5 0.5 20.4	1	11.4 24.3	12.9 22.9	12.8 21.0	11.6 21.6	12.5 24.7	23.5	11.3 25.2	10.5 22.6	10.0	10.1 24.6	9.7 24.4	12.3 28.3
-		L Residential Sector			15.5	13.8	14.2	16.2	15.5	16.7	15.0	16.1	16.3	16.2	19.2	9.6 1	9.3 17.	5 17.9	20.5	19.6		18.9 2	0.2	0.5 20.4	23.9	24.3	22.9	21.0	21.6	24.7	23.5	25.2	22.6	24.1	24.6	24.4	28.3
16	CHAMDASAV	1 Sekong	Sub Total	2012	15.5					16.7	15.0	16.1	16.3				9.3 17.			19.6	21.0		~	0.5 20.4		24.3	22.9	21.0	21.6	24.7	23.5	25.2	22.6	24.1		24.4	28.3
10	CHAMPASAK	I. Residential Sector	Sub Total		64.7 64.7	1 1		1		64.5 64.5	60.7	62.0 62.0	61.6 61.6			- 1	69.9 69. 69.9 69.	1	1	75.7 75.7	70.7 70.7	1	1	7.5 60.9 7.5 60.9	3	69.3 69.3	75.1 75.1	75.2 75.2	69.1 69.1	80.0 80.0	82.3 82.3	77.0 77.0	72.2 72.2	73.4 73.4	i	66.1 66.1	76.3 76.3
		1 Bang Yo		1991	40.1	38.9	35.7	41.4	42.8	40.0	37.6	38.4	38.2	34.6		9.9 4	13.4 42.	39.2	1 1	46.9	43.8	41.2 4	2.0	1.8 37.8	3 44.1	43.0	46.6	46.6	42.8	49.6	51.1	47.7	44.8	45.5	45.5	41.0	47.3
- 1		2 Ban Na 3 Ban Hat		2005 2005	9.7 5.8	1 1				9.7 5.8	9.1 5.5	9.3 5.6	9.2 5.5	8.4 5.0	9.9		0.5 10. 6.3 6.		11.0	11.4 6.8			- 1	0.1 9.1 6.1 5.5		10.4 6.2	11.3 6.8	11.3 6.8	10.4 6.2	12.0 7.2	12.4 7.4	11.5 6.9	10.8 6.5	11.0	11.0 6.6	9.9 6.0	11.4 6.9
				4000		o 3./				5.8	4.9	5.0	5.5 4.9	J.U 4.5		5.8	5.6 5.	1	5.9	6.8	5.7	1	5.4		1		6.8			1.4	1.4	0.9	0.5	0.0		5.0	6.1
		4 Pakxong		2011	5.2	5.0	4.6	5.3	3.3	5.21	7.7	5.0	7.7	4.5	3.31 .	J.1	5.0	J. J. J	3.7	0.1	5.1	5.5	J.T	5.4 4.9	5.7	5.5	0.0	6.0	5.5	6.4	6.6	6.2	5.8	5.9	5.9	5.5	
	A CHILA DELL'	3		1	5.2 3.9	3.8	3.5	4.0	4.1	3.9	3.6	3.7	3.7	3.3	3.9	3.9	4.2 4.	1 3.8	3 4.4	4.5	4.2	4.0	4.1	4.0 3.7	7 4.3	4.2	4.5	4.5	4.1	4.8	4.9	4.6	4.3	5.9 4.4	4.4	4.0	4.6
17	ATTAPEU	4 Pakxong	Sub Total	2011	5.2 3.9 7.6	3.8 5 8.0	3.5 7.7	4.0 8.8	4.1 9.6	3.9 10.3	3.6 8.2	3.7 9.3 9.3	3.7 9.7	3.3 8.3 8.3	3.9 8.4	3.9 7.5	4.2 4. 8.7 9.	1 3.8	3 4.4 7 10.2	4.5 10.9	4.2 11.7	4.0 9.4 1	4.1 0.6 1	4.0 3.7 1.0 9.5	7 4.3 5 9.6	4.2 8.6	4.5 9.8	4.5 10.4	4.1 9.8	4.8 11.5 11.5	12.3 12.3	4.6 13.0 13.0	5.8 4.3 10.7 10.7	5.9 4.4 11.8 11.8	4.4	4.0 10.7 10.7	4.6 10.8 10.8
17	ATTAPEU	4 Pakxong 5 Ban Jiangxai	Sub Total	2011	5.2 3.9	3.8 5 8.0 6 8.0 5 8.0	3.5 7.7 7.7 7.7	4.0 8.8 8.8 8.8	4.1 9.6 9.6 9.6	3.9 10.3 10.3 10.3	3.6	9.3 9.3 9.3 9.3	3.7 9.7 9.7 9.7	8.3 8.3	3.9 8.4 8.4 8.4	3.9 7.5 7.5 7.5	4.2 4. 8.7 9.	1 3.8 2 8.7 2 8.7 2 8.7	3 4.4 7 10.2 7 10.2 7 10.2	4.5	4.2 11.7 11.7 11.7	9.4 1 9.4 1 9.4 1 9.4 1	4.1 0.6 1 0.6 1 0.6 1	4.0 3.7	7 4.3 5 9.6 5 9.6 5 9.6	4.2 8.6 8.6 8.6	4.5	4.5	4.1	4.8 11.5 11.5 11.5 11.5	12.3 12.3	13.0 13.0	10.7 10.7	11.8 11.8	4.4 12.2 12.2 12.2	10.7 10.7	4.6 10.8 10.8 10.8 1989

Unit: MV

| Provinces | No. Name of Substations | Com. years | s 2018
Jan | | 2018
Mar | |
 | | | |
 | | | 2018
Dec | 2019 20
Jan F
 | | 019 201
Iar Ap | | |
 | | | |
 | | | | |
 | 2020
Mar | 2020
Apr | + |
 | | 0 2020
Aug | | | 2020
Nov
 | |
|--|---|--|--|--|--|--
--	--	--
--	--	---
--	--	--
---	--	--
--	--	--
--	--	--
---	--	---
--	--	
1 PHONGSALI	Sub Total L Residential Sector	
 | 36.4 | 42.0 | 42.5 | 44.3
 | 38.4 | 41.7 | 40.0 |
 | | | |
 | | | |
 | | 46.0 | 44.1
44.1 | 43.7 | 46.7
 | 34.1 | | |
 | | | | 5.1 48. |
 | |
| | 1 Boun Neua | 2013 | 35.2 | 37.6
37.6 | 27.1
27.1 | 29.7
29.7 | 30.0
30.0
 | 36.4
36.4 | 42.0
42.0 | 42.5
42.5 | 44.3
44.3
 | 38.4
38.4 | 41.7
41.7 | 40.0
40.0 |
 | | 1 | 1 | 1
 | - 5 | 1 | 1 | - 1
 | | 46.0
46.0 | 44.1 | 43.7
43.7 | 46.7
46.7
 | 34.1
34.1 | 37.7
37.7 | |
 | 1 | 1 | 52.8 5:
52.8 5: | i.1 48.
i.1 48. |
 | |
| 2 BOKEO | Sub Total L Residential Sector | | 41.8
41.8 | 3 3 | 34.9
34.9 | | 40.9
40.9
 | 44.0
44.0 | 46.4
46.4 | 50.9
50.9 | 54.3
54.3
 | 48.8
48.8 | 53.2
53.2 | 45.7
45.7 |
 | | | 9.9 4
9.9 4 | 3
 | 3 | 3 | |
 | | 53.8
53.8 | 46.2
46.2 | 42.2
42.2 | 42.7
42.7
 | 35.7
35.7 | 3 | |
 | | | 51.2 5
51.2 5 | |
 | 1 |
| | 1 Houayxay | 2014 | 41.8 | 1 1 | 34.9 | | 40.9
 | 44.0 | 46.4 | 50.9 | 54.3
 | 48.8 | 53.2 | 45.7 |
 | | | 1 | 3
 | 1 | 3 | | 1
 | 3 | 53.8 | 46.2 | 42.2 | 42.7
 | 35.7 | 40.6 | 1 | 1
 | | | | .9 50. |
 | 1 |
| 3 LUANGNAMTHA | Sub Total L Residential Sector | | 39.0 | | 36.9 | | 42.7
 | 45.9 | 47.5 | 52.2 | 56.1
 | 47.0 | 46.0 | 46.4 |
 | | | 1 | - 1
 | | | |
 | | 47.7 | 48.1 | 41.3 | 42.9
 | 39.6 | | 1 |
 | | | 1 | 0.4 50. | 1
 | 1 |
| | 1 Luangnamtha 1 | 2009 | 39.0
19.5 | | 36.9
18.5 | | 42.7
21.4
 | 45.9
22.9 | 47.5
23.8 | 52.2
26.1 | 56.1
28.0
 | 47.0
23.5 | 46.0
23.0 | 46.4
23.2 |
 | | | |
 | | 9.1 5
4.5 2 | |
 | | 47.7
23.8 | 48.1
24.0 | 41.3
20.6 | 42.9
21.5
 | 39.6
19.8 | 3 | |
 | | | 55.2 59
27.6 29 | 0.4 50.
0.7 25. |
 | |
| 4 OUDOMXAI | 2 Luangnamtha 2 | 2014 | 19.5 | | 18.5 | | 21.4
 | 22.9 | 23.8 | 26.1 | 28.0
 | 23.5 | 23.0 | 23.2 |
 | | | |
 | | | |
 | | 23.8 | 24.0 | 20.6 | 21.5
 | 19.8 | } | |
 | | | 27.6 2 | |
 | |
| 4 OUDOMXAI | Sub Total L Residential Sector | | 58.3
58.3 | | 54.9
54.9 | | 54.2
54.2
 | 67.0
67.0 | 76.5
76.5 | 71.9
71.9 | 80.5
80.5
 | 68.8
68.8 | 68.7
68.7 | 67.9
67.9 |
 | | | 1 1 |
 | | | |
 | | 75.4
75.4 | 74.5
74.5 | 63.9
63.9 | 90.0
90.0
 | 60.9
60.9 | 77.5
77.5 | 3 |
 | | | | 3.4 77.
3.4 77. |
 | 3 |
| | 1 Oudomxay | 2009 | 29.2 | | | | 27.1
 | 33.5 | 38.3 | 35.9 | 40.3
 | 34.4 | 34.4 | 34.0 |
 | | | |
 | | 1.9 3 | |
 | | 37.7 | 37.3 | 32.0 | 45.0
 | 30.5 | } | |
 | | | 3 | .2 38. | - 1
 | |
| | 2 Namo
3 M Houn | 2012
2014 | 14.6
14.6 | 1 | 13.7 | 1 | 13.5
13.5
 | 16.7
16.7 | 19.1
19.1 | 18.0
18.0 | 20.1
 | 17.2
17.2 | 17.2
17.2 | 17.0
17.0 |
 | 22.3
22.3 | | 1 |
 | | | |
 | | 18.9
18.9 | 18.6
18.6 | 16.0
16.0 | 22.5
22.5
 | 15.2
15.2 | 19.4
19.4 | 1 | 1
 | | 1.1 19
1.1 19 | 19.7 2:
19.7 2: | l.1 19.
l.1 19. | 3 19.1
3 19.1
 | 1 |
| 5 HUAPHANH | Sub Total | | 9.5 | 1 1 | 10.6 | | 9.8
 | 10.1 | 9.8 | 10.1 | 11.4
 | 10.8 | 11.1 | 10.7 | 10.3
 | 10.7 | | |
 | | | |
 | | 12.0 | 11.6 | 11.0 | 11.5
 | | | | 1
 | 1 | | | 12. |
 | |
| | L Residential Sector | 2012 | 9.5
9.5 | | 10.6 | 9.9 | 9.8
 | 10.1 | 9.8
9.5 | 10.1
9.5 | 11.4
9.5
 | 10.8 | 11.1
9.5 | 10.7
9.5 |
 | 10.7
10.3 | 1 | 1 | 1
 | | 1 | | - 1
 | | 12.0
10.3 | 11.6
10.3 | 11.0
12.8 | 11.5
12.8
 | 11.9
12.8 | 11.4
12.8 |) |
 | 1 | 1.4 11 | 11.7 1 | 3.2 12.
2.8 12. | 5 12.8
8 12.8
 | - 1 |
| 6 XIENG KHUANG | Sub Total | | 88.3 | 86.9 | 93.4 | | 93.4
 | 97.6 | 87.6 | 93.9 | 100.2
 | 97.6 | 99.2 | 103.1 | 102.6
 | 00.8 1 | 08.0 11 | 3.0 10 | 3.5 113
 | 3.3 10 | 1.3 10 | 8.5 11 | 5.8 1
 | 12.8 1 | 115.0 | 120.0 | 103.8 | 101.7
 | 108.9 | 114.1 | 1 109. | .7 114
 | .6 102 | |)9.2 11 | 8 | 1
 | 2 121. |
| | L Residential Sector 1 Phonsvan | 2003 | 88.3
48.6 | 1 | 93.4
51.4 | | 93.4
51.4
 | 97.6
53.7 | 87.6
48.2 | 93.9
51.6 | 100.2
55.1
 | 97.6
53.7 | 99.2
54.6 | 103.1
56.7 |
 | | | |
 | | 11.3 10
5.7 5 | |
 | | 63.3 | 120.0
66.0 | 103.8
57.1 | 101.7
55.9
 | 108.9
59.9 | } | 1 |
 | | 1 | 09.2 11
50.0 6 | 1 |
 | |
| | 2 M Kham | 2012 | 26.5 | | 28.0 | | 28.0
 | 29.3 | 26.3 | 28.2 | 30.1
 | 29.3 | 29.8 | 30.9 |
 | | | | 1
 | | | |
 | 33.8 | 34.5 | 36.0 | 31.1 | 30.5
 | | | |
 | 1 | 3 | 3 | .9 34. | 1
 | 1 |
| 7 LUANG PRABANG | 3 Thavieng Sub Total | 2015 | 13.3
63.7 | , | 14.0
63.6 | 14.6
69.7 | 14.0
74.7
 | 14.6
76.6 | 13.1
75.2 | 14.1
77.7 | 15.0
83.7
 | 14.6
75.7 | 14.9
74.2 | 15.5
69.7 |
 | 15.1
70.0 | | |
 | | | |
 | | 17.3
78.1 | 18.0
73.4 | 15.6
70.9 | 15.3
74.0
 | 16.3 | 17.1
78.4 | |
 | .4 13 | | 16.4 1° | 7.5 17.
2.2 84. | 0 17.4
1 82.2
 | 4 18.
2 77. |
| / LUANG F RABANG | L Residential Sector | | 63.7 | 1 1 | 63.6 | | 74.7
 | 76.6 | 75.2 | 77.7 | 83.7
 | 75.7 | 74.2 | 69.7 |
 | | | 3.9 7 | 1
 | 1 | | |
 | | 78.1 | 73.4 | 70.9 | 74.0
 | 71.2 | | 3 |
 | | | | 2.2 84. | 1
 | 1 |
| | 1 Luangprabang 1 | 1994 | 31.8 | 1 | 31.8 | i | 37.3
 | 38.3 | 37.6 | 38.8 | 41.8
 | 37.8 | 37.1 | 34.8 | - 1
 | | - 1 | i | 1
 | 1 | 3 | |
 | 1 | 39.0 | 36.7 | 35.4 | 37.0
 | 35.6 | | 1 |
 | 1 | 1 | 3 | 5.1 42. | 1
 | 1 |
| | 2 Pakmong
3 Sansouk | 2009
2012 | 6.4
12.7 | 6.6
13.3 | 6.4 | | 7.5
14.9
 | 7.7
15.3 | 7.5
15.0 | 7.8
15.5 | 8.4
16.7
 | 7.6
15.1 | 7.4
14.8 | 7.0
13.9 | 6.7
13.4
 | 7.0
14.0 | | |
 | 0.1 | | | 8.8
7.6
 | 8.0
16.0 | 7.8
15.6 | 7.3
14.7 | 7.1
14.2 | 7.4
14.8
 | 7.1
14.2 | 7.8
15.7 | | ,
 | | | | 0.2 8.
3.4 16. |
 | |
| | 4 Luangprabang 2 | 2014 | 12.7 | 13.3 | 12.7 | 13.9 | 14.9
 | 15.3 | 15.0 | 15.5 | 16.7
 | 15.1 | 14.8 | 13.9 | 13.4
 | 14.0 | 13.5 1 | 4.8 1 | 5.8 16
 | 6.3 1 | 6.0 1 | 5.4 1 | 7.6
 | 16.0 | 15.6 | 14.7 | 14.2 | 14.8
 | 14.2 | 15.7 | 7 16. | .8 17
 | .3 16 | 5.9 17 | 17.4 1 | 3.4 16. | 8 16.4
 | 4 15. |
| 8 XAYABULY | Sub Total L Residential Sector | | 35.3
35.3 | | 37.2
37.2 | | 38.2
38.2
 | 41.3 | 40.9
40.9 | 41.6
41.6 | 42.0
42.0
 | 40.5
40.5 | 37.4
37.4 | 38.1
38.1 |
 | | | | 3
 | 3 | 3 | |
 | | 42.0
42.0 | 42.7
42.7 | 45.8
45.8 | 48.6
48.6
 | 48.6
48.6 | } | |
 | | | | 1.9 52.
1.9 52. |
 | 1 |
| | 1 Sayaboury | 2003 | 17.7 | 18.7 | 18.6 | 20.3 | 19.1
 | 20.6 | 20.4 | 20.8 | 21.0
 | 20.3 | 18.7 | 19.0 | 19.8
 | 21.0 | 21.0 2 | 2.9 2 | 1.6 23
 | 3.3 2 | 3.1 2 | 3.4 2 | 3.7
 | 22.8 | 21.0 | 21.4 | 22.9 | 24.3
 | 24.3 | 26.6 | 6 25. | .1 27.
 | .1 26 | 5.8 27 | 27.1 2 | .5 26. | 4 24.3
 | 3 24. |
| | 2 Paklay
3 Hongsa | 2013
2015 | 11.3
6.4 | 12.0 | 11.9 | 13.0 | 12.2
 | 13.2
7.4 | 13.1
7.4 | 13.3
7.5 | 13.5
7.6
 | 13.0 | 12.0
6.7 | 12.2
6.9 |
 | 13.4
7.6 | - 1 | | i
 | 4.9 1
8.4 | 4.8 1 | | 5.2
8.5
 | 14.6 | 13.4 | 13.7 | 14.6 | 15.6
 | 15.5
8.7 | 17.0 | 0 16. | .1 17.
 | 1 | 3 | 3 | '.6 16.
0.9 9. | 1
 | - 1 |
| 9 VIETIANE PROVINCE | Sub Total | 2013 | 620.4 | 647.5 | | 620.3 |
 | | 670.2 | 647.1 | 700.7
 | 660.8 | 661.5 | 677.1 |
 | | | | 2.4 689
 | | 4.2 65 | |
 | 67.7 6 | 568.8 | 682.4 | 627.1 | 653.0
 | 634.2 | 627.0 | 0 663.9 |
 | | | 54.7 70 | |
 | |
| | L Residential Sector | | 230.4 | 257.5 | 239.2 | 230.3 | 266.6
 | 293.6 | 280.2 | 257.1 | 310.7
 | 270.8 | 271.5 | 287.1 | 235.6 2
 | 62.3 2 | 43.6 23 | 5.5 27 | 2.4 299
 | 9.6 28 | 4.2 26 | 2.9 31 | 6.8 2
 | 77.7 2 | 278.8 | 292.4 | 237.1 | 263.0
 | 244.2 | 237.0 | 273. | .9 300.
 | .9 283 | 3.7 264 | 54.7 31 | .9 280. | 3 281.
 | 7 293. |
| | 1 Vangvieng | 1994 | 85.2 | 95.3 | 88.5 | 85.2 | 98.7
 | 108.6 | 103.7 | 95.1 | 115.0
 | 100.2 | 100.5 | 106.2 | 87.2
 | 97.0 | 90.1 8 | 7.1 10 |).8 110
 | 0.8 10 | 5.1 9 | 7.3 11 | 7.2 1
 | 02.7 1 | 103.2 | 108.2 | 87.7 | 97.3
 | 90.4 | 87.7 | 7 101.: | .3 111.
 | .3 105 | 5.0 97 | 07.9 11 | .6 103. | 7 104.2
 | 2 108. |
| | Houaysai Gold/copper Mining, Vangvieng District | | 39.4 | 45.0 | 41.2 | 39.4 | 46.9
 | 52.5 | 49.7 | 44.9 | 56.0
 | 47.8 | 47.9 | 51.2 | 40.5
 | 46.0 | 42.1 4 | 0.5 4 | 3.1 53
 | 3.7 5 | 0.5 4 | 5.1 5 | 7.3
 | | 49.4 | 52.2 | 40.8 | 46.2
 | 42.3 | 40.8 | | 1
 | 1 | | 16.5 5 | .5 49. | 7 50.0
 | 0 52. |
| | Cement Factory at Vangvieng(Extension) 2 Phonsoung | 1990 | 53.3
50.7 | 60.9
56.6 | 55.8
52.6 | 53.3
50.7 | 63.5
58.7
 | 71.0
64.6 | 67.3
61.6 | 60.8
56.6 | 75.8
68.4
 | 64.6
59.6 | 64.8
59.7 | 69.2
63.2 |
 | | | |
 | | | |
 | | 66.9
61.3 | 70.7
64.3 | 55.2
52.2 | 62.4
57.9
 | 57.2
53.7 | 55.2
52.1 | |
 | 1 | 3 | | 7.8 67.
0.9 61. | 1
 | |
| | 3 Ban Don | 2003 | 18.4 | | 19.1 | 18.4 | 21.3
 | 23.5 | 22.4 | 20.6 | 24.9
 | 21.7 | 21.7 | 23.0 |
 | | | | 1
 | - 5 | 3 | |
 | - 1 | 22.3 | 23.4 | 19.0 | 21.0
 | 19.5 | | 1 |
 | 1 | 1 | 1 | 5.4 22. |
 | |
| | 4 Non Hai
5 Thalat | 2003 | 23.0 | 1 | 23.9 | - 1 | 26.7
 | 29.4 | 28.0 | 25.7 | 31.1
 | 27.1 | 27.2 | 28.7 |
 | | | | 3
 | | | |
 | | 27.9 | 29.2 | 23.7 | 26.3
 | 24.4 | 3 | § | 1
 | | - 1 | \$ | .8 28. | - 6
 | 3 |
| | 6 Hinheup | 2006
2012 | 46.1
6.9 | 51.5
7.7 | 47.8
7.2 | - | 53.3
 | 58.7
8.8 | 56.0
8.4 | 51.4
7.7 | 62.1
9.3
 | 54.2
8.1 | 54.3
8.1 | 57.4
8.6 | 47.1
7.1
 | 52.5
7.9 | - 1 | |
 | | | 1 | 9.5
 | 55.5
8.3 | 55.8
8.4 | 58.5
8.8 | 47.4
7.1 | 52.6
7.9
 | 48.8
7.3 | 47.4
7.1 | |
 | | | 3 | 3.6 56.
9.5 8. | 1
 | - 1 |
| | PBI | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0
 | 40.0 | 40.0 | 40.0 | 40.0
 | 40.0 | 40.0 | 40.0 |
 | | | |
 | | | |
 | | 40.0 | 40.0 | 40.0 | 40.0
 | 40.0 | 40.0 | 3 |
 | | | | 0.0 40. |
 | |
| 10 VIENTIANE CAPITAL | 6.1 Iron melting factory, at Vangvieng District (sinhouang) Sub Total | 2012 | 390.0
420.6 | 390.0
439.5 | 390.0
442.7 | | 390.0
515.5
 | | 390.0
501.4 | 390.0
495.8 | 390.0
525.0
 | 390.0
529.8 | 390.0
477.6 | 390.0
471.9 |
 | | | 0.0 39
2.6 55 |
 | | 0.0 39
3.3 53 | |
 | | 390.0
519.0 | 390.0
510.3 | 390.0
492.5 | 390.0
519.0
 | 390.0
522.2 | 390.0
569.9 | |
 | | | 90.0 39
36.1 61 | |
 | <u> </u> |
| | L Residential Sector | | 420.6 | | 442.7 | | 515.5
 | | 501.4 | 495.8 | 525.0
 | 529.8 | 477.6 | 471.9 |
 | | | | 3.8 547
 | | 3.3 53 | |
 | 70.5 | 519.0 | 510.3 | 492.5 | 519.0
 | 522.2 | 569.9 | | 1
 | | | 86.1 61 | |
 | |
| | 1 Phontong 2 Thanaleng | 1968
1977 | 151.4
58.9 | | 159.4
62.0 | - 1 | 185.6
72.2
 | 181.1
70.4 | 180.5
70.2 | 178.5
69.4 | 189.0
73.5
 | 190.7
74.2 | 171.9
66.9 | 169.9
66.1 |
 | | | 8.1 20
3.2 7 | 1
 | - 1 | 5.6 19
6.1 7 | |
 | - 1 | 72.7 | 183.7
71.4 | 177.3
69.0 | 186.9
72.7
 | 188.0
73.1 | 205.2
79.8 | 3 | 1
 | | 3 | 11.0 22:
32.1 8 | 2.1 222.
5.4 86. |
 | |
| | 3 Tha Ngon | 1989 | 33.6 | 35.2 | 35.4 | 38.5 | 41.2
 | 40.2 | 40.1 | 39.7 | 42.0
 | 42.4 | 38.2 | 37.8 | 36.3
 | 38.1 | 38.4 4 | 1.8 4 | 1.7 43
 | 3.8 4 | 3.5 4 | 3.0 4 | 5.4
 | 45.6 | 41.5 | 40.8 | 39.4 | 41.5
 | 41.8 | 45.6 | | .7 47
 | .8 47 | 3 | 3 | 0.3 49. | 4 45.3
 | 3 44. |
| | 4 Khok sa at
5 Naxaythong | 2004 | 54.7 | 57.1 | 57.5 | 62.6 | 67.0
 | 65.4 | 65.2 | 64.5 | 68.2
 | 68.9 | 62.1 | 61.3 |
 | | | 1 | 1
 | | | |
 | | 67.5
33.7 | 66.3
33.2 | 64.0
32.0 | 67.5
33.7
 | 67.9 | 74.1
37.0 | 1 |
 | | 1 | |).2 80.
).1 40. | 1
 | 1 |
| | | 2006 | 27.2 | 28.6 | 26.6 | |
 | 32.7 | 326 | 22.2 | 2/11
 | | | | |
 | | 2121 2 | 4.01 2 |
 | | | 5.0 |
 | | | 33.4 | 32.0 |
 | | | |
 | | o.+ o | 0.1 | |
 | |
| 1 1 | 6 Pak Thang | 2006
2013 | 27.3
21.0 | | 28.8
22.1 | 31.3 | 33.5
25.8
 | 32.7
25.1 | 32.6
25.1 | 32.2
24.8 | 34.1
26.2
 | 34.4
26.5 | 31.0
23.9 | 30.7
23.6 |
 | | | |
 | | | 5.9 2 |
 | 1 | 26.0 | 25.5 | 24.6 | 26.0
 | 33.9
26.1 | 1 | 5 30. |
 | .9 29 | 9.6 29 | 29.3 3 |).8] 30. | 9 28.3
 | 3 27. |
| | 6 Pak Thang
7 Nong Viengkham | 2013
2013 | 21.0
21.5 | 22.0
22.4 | 22.1
22.6 | 31.3
24.1
24.6 | 33.5
25.8
26.3
 | 25.1
25.7 | 25.1
25.6 | 24.8
25.3 | 26.2
26.8
 | 26.5
27.0 | 23.9
24.4 | 23.6
24.1 | 22.7
23.2
 | 23.8
24.3 | 24.0 2
24.5 2 | 6.1 2
6.7 2 | 7.9 27
3.5 27
 | 7.4 2
7.9 2 | 7.2 2
7.7 2 | 7.4 2 | 28.4
29.0
 | 28.5
29.1 | 26.0
26.5 | 26.0 | 25.1 | 26.0
26.5
 | | 28.5
29.1 | 1 31.0 | .4 29
.0 30
 | .5 30 |).2 29 | 29.9 3 | .5 31. | 5 28.9
 | 9 28. |
| | 6 Pak Thang | 2013 | 21.0 | 22.0
22.4
41.7 | 22.1 | 31.3
24.1 | 33.5
25.8
 | 25.1 | 25.1 | 24.8 | 26.2
 | 26.5 | 23.9 | 23.6 | 22.7
23.2
43.1
 | 23.8
24.3
45.3 | 24.0 2
24.5 2
45.6 4 | 6.1 2
6.7 2
9.6 5 | 7.9 27
3.5 27
3.1 52
 | 7.4 2
7.9 2
2.0 5 | 7.2 2
7.7 2
1.6 5 | 7.4 2
1.1 5 | 28.4
29.0
33.9
 | 28.5
29.1
54.2 | 26.0 | | | 26.0
 | 26.1 | 28.5 | 1 31.0 | .4 29.
.0 30.
.8 56.
 | .5 30
.8 56 | 0.2 29
5.2 55 | 29.9 3
55.7 5 | 3 | 5 28.9
6 53.8
 | 9 28.
8 52. |
| 11 BOLIKHAMXAY | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total | 2013
2013
2013 | 21.0
21.5
40.0
12.2
33.1 | 22.0
22.4
41.7
12.7
37.4 | 22.1
22.6
42.1
12.8
31.3 | 31.3
24.1
24.6
45.7
14.0
38.7 | 33.5
25.8
26.3
49.0
14.9
36.8
 | 25.1
25.7
47.8
14.6
36.7 | 25.1
25.6
47.6
14.5
34.8 | 24.8
25.3
47.1
14.4
36.0 | 26.2
26.8
49.9
15.2
39.1
 | 26.5
27.0
50.3
15.4
37.0 | 23.9
24.4
45.4
13.8
39.8 | 23.6
24.1
44.8
13.7
36.3 | 22.7
23.2
43.1
13.2
36.2
 | 23.8
24.3
45.3
13.8
40.8 | 24.0 2
24.5 2
45.6 4
13.9 1
34.2 4 | 6.1 2'
6.7 2'
9.6 5:
5.2 10
2.4 4 | 7.9 27
8.5 27
8.1 52
6.2 15
0.3 40
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3 | 7.2 2
7.7 2
1.6 5
5.8 1
8.0 3 | 7.4 2
1.1 5
5.6 1
9.4 4 | 28.4
29.0
63.9
6.5
 | 28.5
29.1
54.2
16.5
40.5 | 26.0
26.5
49.3
15.1
43.3 | 26.0
48.5
14.8
39.5 | 25.1
46.8
14.3
39.5 | 26.0
26.5
49.3
15.1
44.5
 | 26.1
26.6
49.6
15.1
37.5 | 28.5
29.1
54.1
16.5
46.4 | 1 31.0
1 57.3
5 17.0
4 44. | .4 29.
.0 30.
.8 56.
.6 17.
.1 44.
 | .5 30
.8 56
.3 17
.2 41 | 0.2 29
5.2 55
7.1 17
1.6 43 | 29.9 3
55.7 5
17.0 1
43.1 4 | .5 31.
3.6 58.
7.9 17.
5.6 44. | 5 28.9
6 53.8
9 16.4
2 47.1
 | 9 28.
8 52.
4 16.
1 42. |
| 11 BOLIKHAMXAY | 6 Pak Thang
7 Nong Viengkham
8 Don Koi
9 Na Bong 1 | 2013
2013
2013 | 21.0
21.5
40.0
12.2
33.1
33.1 | 22.0
22.4
41.7
12.7
37.4
37.4 | 22.1
22.6
42.1
12.8
31.3
31.3 | 31.3
24.1
24.6
45.7
14.0
38.7
38.7 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
 | 25.1
25.7
47.8
14.6
36.7
36.7 | 25.1
25.6
47.6
14.5
34.8
34.8 | 24.8
25.3
47.1
14.4
36.0
36.0 | 26.2
26.8
49.9
15.2
39.1
39.1
 | 26.5
27.0
50.3
15.4
37.0
37.0 | 23.9
24.4
45.4
13.8
39.8
39.8 | 23.6
24.1
44.8
13.7
36.3
36.3 | 22.7
23.2
43.1
13.2
36.2
36.2
 | 23.8
24.3
45.3
13.8
40.8
40.8 | 24.0 2
24.5 2
45.6 4
13.9 1
34.2 4
34.2 4 | 6.1 2'
6.7 2'
9.6 5:
5.2 1
2.4 4'
2.4 4' | 7.9 27
3.5 27
3.1 52
5.2 15
0.3 40
0.3 40
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3
0.3 3 | 7.2 2
7.7 2
1.6 5
5.8 1
8.0 3 | 7.4 2
1.1 5
5.6 1
9.4 4
9.4 4 | 8.4
9.0
6.5
6.5
2.7
 | 28.5
29.1
54.2
16.5
40.5 | 26.0
26.5
49.3
15.1
43.3
43.3 | 26.0
48.5
14.8
39.5
39.5 | 25.1
46.8
14.3
39.5
39.5 | 26.0
26.5
49.3
15.1
 | 26.1
26.6
49.6
15.1 | 28.5
29.1
54.1
16.5
46.4
46.4 | 1 31.0
1 57.3
5 17.0
4 44.
4 44. | .4 29
.0 30
.8 56
.6 17
.1 44
.1 44
 | .5 30
.8 56
.3 17
.2 41
.2 41 | 0.2 29
5.2 55
7.1 17
1.6 43
1.6 43 | 29.9 3
55.7 55
17.0 1
43.1 4
43.1 4 | .5 31.
3.6 58.
7.9 17.
5.6 44.
5.6 44. | 5 28.9
6 53.8
9 16.4
2 47.1
2 47.1
 | 9 28.
8 52.
4 16.
1 42.
1 42. |
| 11 BOLIKHAMXAY | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok | 2013
2013
2013
2013
2013
2000
2015 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5
5.0 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7 | 31.3
24.1
24.6
45.7
14.0
38.7
38.7
25.2
5.8 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9
5.5 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
5.4 | 26.2
26.8
49.9
15.2
39.1
39.1
25.4
5.9
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1
5.6 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8
6.0 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6
5.4 | 22.7
23.2
43.1
13.2
36.2
36.2
23.5
5.4
 | 23.8
24.3
45.3
13.8
40.8
40.8
26.5
6.1 | 24.0 2
24.5 2
45.6 4
13.9 1
34.2 4
34.2 4
22.3 2
5.1 | 6.1 2:
6.7 2:
9.6 5:
5.2 1:
2.4 4:
2.4 4:
7.6 2: | 7.9 27
3.5 27
3.1 52
5.2 15
0.3 40
5.2 26
5.0 6
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3
0.3 3
6.2 2 | 7.2 2
7.7 2
61.6 5
5.8 1
88.0 3
88.0 3
44.7 2
5.7 | 7.4 2
1.1 5
5.6 1
9.4 4
9.4 4
5.6 2 | 28.4
29.0
6.5
6.5
22.7
27.8
6.4
 | 28.5
29.1
54.2
16.5
40.5
40.5
26.3
6.1 | 26.0
26.5
49.3
15.1
43.3 | 26.0
48.5
14.8
39.5
39.5
25.7
5.9 | 25.1
46.8
14.3
39.5
39.5
25.7
5.9 | 26.0
26.5
49.3
15.1
44.5
44.5
29.0
6.7
 | 26.1
26.6
49.6
15.1
37.5
37.5 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2
7.0 | 1 31.0
1 57.3
5 17.4
4 44.
4 44.
2 28.3
0 6.0 | .4 29.
.0 30.
.8 56.
.6 17.
.1 44.
.1 44.
.7 28.
.6 6.
 | .5 30
.8 56
.3 17
.2 41
.2 41
.7 27
.6 6 | 0.2 29
5.2 55
7.1 17
1.6 43
1.6 43
7.0 28
6.2 6 | 29.9 3
55.7 55
17.0 1
143.1 44
143.1 44
28.0 36
6.5 | .5 31.
3.6 58.
7.9 17.
5.6 44.
5.6 44.
0.3 28.
7.0 6. | 5 28.5
6 53.8
9 16.4
2 47.1
2 47.1
8 30.6
6 7.1
 | 9 28.
8 52.
4 16.
1 42.
1 42.
6 27.
1 6. |
| 11 BOLIKHAMXAY | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total L Residential Sector 1 Pakxan | 2013
2013
2013
2013
2013 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3 | 31.3
24.1
24.6
45.7
14.0
38.7
38.7
25.2 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4 | 26.2
26.8
49.9
15.2
39.1
39.1
25.4
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6 | 22.7
23.2
43.1
13.2
36.2
36.2
23.5
5.4
 | 23.8
24.3
45.3
13.8
40.8
40.8
26.5 | 24.0 2
24.5 2
45.6 4
13.9 1
34.2 4
34.2 4
22.3 2
5.1 | 6.1 2:
6.7 2:
9.6 5:
5.2 1:
2.4 4:
2.4 4:
7.6 2:
6.4 | 7.9 27
3.5 27
3.1 52
5.2 15
0.3 40
5.2 26
5.0 6
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3
0.3 3
6.2 2 | 7.2 2
7.7 2
61.6 5
5.8 1
88.0 3
88.0 3
44.7 2
5.7 | 7.4 2
1.1 5
5.6 1
9.4 4
9.4 4
5.6 2 | 28.4
29.0
63.9
6.5
22.7
27.8
 | 28.5
29.1
54.2
16.5
40.5
40.5
26.3 | 26.0
26.5
49.3
15.1
43.3
43.3
28.1 | 26.0
48.5
14.8
39.5
39.5 | 25.1
46.8
14.3
39.5
39.5
25.7 | 26.0
26.5
49.3
15.1
44.5
44.5
29.0
 | 26.1
26.6
49.6
15.1
37.5
37.5 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2 | 1 31.0
1 57.3
5 17.4
4 44.
4 44.
2 28.3
6.0 | .4 29.
.0 30.
.8 56.
.6 17.
.1 44.
.1 44.
.7 28.
.6 6.
 | .5 30
.8 56
.3 17
.2 41
.2 41
.7 27
.6 6 | 0.2 29
5.2 55
7.1 17
1.6 43
1.6 43
7.0 28 | 29.9 3
55.7 55
17.0 1
143.1 44
143.1 44
28.0 36
6.5 | .5 31.
3.6 58.
7.9 17.
5.6 44.
5.6 44.
0.3 28. | 5 28.9
6 53.8
9 16.4
2 47.1
2 47.1
8 30.6
6 7.1
8 6.1
 | 9 28.
8 52.
4 16.
1 42.
1 42.
6 27.
1 6.
1 5. |
| 11 BOLIKHAMXAY 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total L Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total | 2013
2013
2013
2013
2013
2000
2015
2012 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5
5.0
4.3
2.3
129.3 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9
2.6 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
2.2 | 31.3
24.1
24.6
45.7
14.0
38.7
25.2
5.8
5.0
2.7 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
4.8
2.6
142.9
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9
5.5
4.8
2.6 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2
4.5
2.4
137.8 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
5.4 | 26.2
26.8
49.9
15.2
39.1
39.1
25.4
5.9
5.1
2.7
146.8
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1
5.6 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8
6.0
5.2
2.8
134.6 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6
5.4
4.7
2.5 | 22.7
23.2
43.1
13.2
36.2
36.2
23.5
5.4
4.7
2.5
137.9 1.
 | 23.8
24.3
45.3
13.8
40.8
40.8
26.5
6.1
5.3
2.9
51.1 | 24.0 2 24.5 2 45.6 4 13.9 1 34.2 4 34.2 4 22.3 2 5.1 4.5 2.4 46.2 17 | 6.1 2
6.7 2
9.6 5
5.2 1
2.4 4
7.6 2
6.4 5
5.5 3.0 0.0 15 | 7.9 27.
7.9 27.
3.5 27.
3.1 52.
5.2 15.
5.2 15.
6.2 26.
6.0 66.
5.2 5.
5.2 5.
5.2 5.
5.2 15.
6.2 26.
6.3 40.
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3
0.3 3
6.2 2
6.0 5
5.2 2
8 0.7 14 | 7.2 2
7.7 2
11.6 5
5.8 1
8.0 3
8.0 3
4.7 2
5.7 4.9 2.7 | 7.4 2
1.1 5
5.6 1
9.4 4
9.4 4
5.6 2
5.9 5
5.1 2.8 9.6 15 | 88.4
199.0
13.9
16.5
12.7
17.8
16.4
15.6
13.0
16.1
 | 28.5
29.1
54.2
16.5
40.5
40.5
40.5
26.3
6.1
5.3
2.8
2.8 | 26.0
26.5
49.3
15.1
43.3
43.3
28.1
6.5
5.6
3.0 | 26.0
48.5
14.8
39.5
39.5
25.7
5.9
5.1
2.8
148.5 | 25.1
46.8
14.3
39.5
39.5
25.7
5.9
5.1
2.8
142.3 | 26.0
26.5
49.3
15.1
44.5
29.0
6.7
5.8
3.1
155.7
 | 26.1
26.6
49.6
15.1
37.5
37.5 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2
7.0
6.0
3.3
174.9 | 1 31.0
1 57.3
5 17.0
4 44.
4 44.
2 28.0
0 6.0
5.3
3 3. | .4 29.
.0 30.
.8 56.
.6 17.
.1 44.
.7 28.
.6 6.
.7 5.
.1 3.
.1 155.
 | .5 30
.8 56
.3 17
.2 41
.2 41
.7 27
.6 6
.7 5
.1 2 | 0.2 29
5.2 55
7.1 17
1.6 43
1.6 43
7.0 28
5.2 6
5.4 5
2.9 3
0.8 143 | 29.9 3
55.7 5:
17.0 1'
13.1 44
13.1 44
28.0 3
6.5 5.6
3.0 : | .5 31.
3.6 58.
3.9 17.
6.6 44.
6.6 44.
0.3 28.
0.0 6.
6.1 5.
3.3 3.
0.7 155. | 5 28.9
6 53.8
9 16.4
2 47.1
2 47.1
8 30.6
6 7.1
8 6.1
1 3.3
 | 9 28.
8 52.
4 16.
1 42.
1 42.
6 27.
1 6.
1 5.
3 3. |
| | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala | 2013
2013
2013
2013
2013
2010
2010
2015
2012
2012 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5
5.0
4.3
2.3
129.3
129.3 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9
2.6
141.9
141.9 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
2.2
137.2 | 31.3
24.1
24.6
45.7
14.0
38.7
25.2
5.8
5.0
2.7
159.9 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
4.8
2.6
142.9
142.9
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9
5.5
4.8
2.6
141.6 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2
4.5
2.4
137.8
137.8 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
5.4
4.7
2.5 | 26.2
26.8
49.9
15.2
39.1
39.1
25.4
5.9
5.1
2.7
146.8
146.8
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1
5.6
4.8
2.6
144.3
144.3 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8
6.0
5.2
2.8
134.6
134.6 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6
5.4
4.7
2.5
139.8
139.8 | 22.7
23.2
43.1
13.2
36.2
36.2
23.5
5.4
4.7
2.5
137.9 1.
 | 23.8
24.3
45.3
13.8
40.8
40.8
26.5
6.1
5.3
2.9
51.1
1
51.1 | 24.0 2 24.5 2 45.6 4 13.9 1 34.2 4 34.2 4 22.3 2 5.1 4.5 2.4 46.2 17 46.2 17 | 6.1 2 2 5 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 2 1 5 5 5 5 | 7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.9 2
 | 7.4 2
7.9 2
2.0 5
5.9 1
0.3 3
0.3 3
0.3 3
6.2 2
6.0 5
5.2 2
8 | 27.2 2
27.7 2
11.6 5
5.8 1
88.0 3
88.0 3
44.7 2
5.7
4.9
2.7
6.6 13 | 7.4 2
1.1 5
5.6 1
1.5.6 1
9.4 4
9.4 4
9.5.6 2
5.5.9 2
5.1 2.8 1
1.1 5
1.1 5 | 28.4
19.0
13.9
16.5
12.7
17.8
16.4
16.1
16.1
1 | 28.5
29.1
54.2
16.5
40.5
40.5
26.3
6.1
5.3
2.8
52.1
1
 | 26.0
26.5
49.3
15.1
43.3
43.3
28.1
6.5
5.6
3.0
43.1
43.1 | 26.0
48.5
14.8
39.5
39.5
25.7
5.9
5.1
2.8
148.5
148.5 | 25.1
46.8
14.3
39.5
39.5
25.7
5.9
5.1
2.8
142.3
142.3 | 26.0
26.5
49.3
15.1
44.5
29.0
6.7
5.8
3.1
155.7
155.7 | 26.1
26.6
49.6
15.1
37.5
37.5
24.4
5.6
4.9
2.6
150.8
150.8 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2
7.0
6.0
3.3
174.9
 | 1 31.0
1 57.1
5 17.0
4 44.
4 44.
2 28.0
0 6.0
0 5.0
3 3.
9 156.
9 156. | .4 29.0
30.0 30.8
56.6 17.
.1 44.
.1 44.
.7 28.
.6 6.
.7 5.
.1 3.
.1 155.
.1 155. | .5 30
.8 56
.3 17
.2 41
.2 41
.7 27
.6 6
.7 5
.1 2
.3 150
.3 150
 | 0.2 29
5.2 55
7.1 17
1.6 43
1.6 43
7.0 28
5.2 6
5.4 5
2.9 3
0.8 143
0.8 143 | 29.9 3
55.7 5:
17.0 1'
133.1 44
133.1 44
28.0 3
6.5 5.6 6
3.0 :
13.8 16
13.8 16 | .5 31.
8.6 58.
7.9 17.
6.6 44.
6.6 44.
0.3 28.
0.0 6.
6.1 5.
3.3 3.
0.7 155. | 5 28.9
6 53.8
9 16.4
2 47.1
2 47.1
8 30.6
6 7.1
8 6.1
1 3.3
3 147.3
3 147.3 | 9 28.
8 52.
4 16.
1 42.
1 42.
6 27.
1 6.
1 5.
3 3.
3 152.
3 152.
 |
| | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai | 2013
2013
2013
2013
2013
2000
2015
2012
2012
2003
2009 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5
5.0
4.3
2.3
129.3 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9
2.6
141.9
106.4
22.7 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
2.2
137.2
102.9
21.9 | 31.3
24.1
24.6
45.7
14.0
38.7
25.2
5.8
5.0
2.7
159.9
159.9
25.6 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
4.8
2.6
142.9
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9
5.5
4.8
2.6
141.6 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2
4.5
2.4
137.8 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
5.4
4.7
2.5
131.3
131.3 | 26.2
26.8
49.9
15.2
39.1
39.1
25.4
5.9
5.1
2.7
146.8
110.1
23.5
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1
5.6
4.8
2.6
144.3
108.2
23.1 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8
6.0
5.2
2.8
134.6
101.0
21.5 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6
5.4
4.7
2.5
139.8
104.9
22.4 | 22.7
23.2
43.1
13.2
36.2
23.5
5.4
4.7
2.5
137.9 1.
137.9 1.
103.4 1
22.1
 | 23.8 24.3 45.3 13.8 40.8 40.8 26.5 6.1 5.3 2.9 51.1 113.3 124.2 | 24.0 2 24.5 2 45.6 4 13.9 1 34.2 4 34.2 4 22.3 2 5.1 4.5 2.4 46.2 17 46.2 17 46.2 17 23.4 2 23.4 2 23.4 2 | 6.1 2 6.7 2.9.6 5.2 10 2.4 44 7.6 2 6.4 6.4 6.4 6.5 5.5 3.0 6.0 15 7.5 11: 7.2 2.4 2.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6 | 7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.7.9 27.9 2
 | 7.4 22.7 7.9 22.0 55.9 1 30.3 3 30.3 3 6.2 2 6.0 55.2 2.8 | 7.2 2 2.7.7.7 2 2.11.6 5 5.8 1 8.0 3 8.0 3 44.7 2 2.7 4.9 2.7 4.9 9.9 10 33.4 2 2 3 3 4 2 2 | 7.4 2
1.1 5
5.6 1
9.4 4
9.4 4
9.4 4
9.5.6 2
5.5.9 5
5.1 1
2.2.8 15
15
15
12.8 2
15
15
15
15
15
15
15
15
16
17
18
18
18
18
18
18
18
18
18
18 | 28.4
29.0
33.9
6.5
22.7
27.8
6.4
5.6
3.0
66.1
1
7.1
1
15.0
 | 28.5
29.1
54.2
16.5
40.5
40.5
26.3
6.1
5.3
2.8
52.1 1
14.1 1
24.3 | 26.0
26.5
49.3
15.1
43.3
28.1
6.5
5.6
3.0
143.1
107.4
22.9 | 26.0
48.5
14.8
39.5
39.5
25.7
5.9
5.1
2.8
148.5
111.4
23.8 | 25.1
46.8
14.3
39.5
39.5
25.7
5.9
5.1
2.8
142.3 | 26.0
26.5
49.3
15.1
44.5
29.0
6.7
5.8
3.1
155.7
 | 26.1
26.6
49.6
15.1
37.5
37.5
24.4
5.6
4.9
2.6 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2
7.0
6.0
3.3
174.9
131.1
28.0 | 1 31.1 57.4 14.4 44.4 44.4 44.4 44.4 44.5 2 28.0 6.0 5.3 3 3.9 156. 9 156. 1 117. | .4 29.0
.0 30.0
.8 56.6
.6 177.1
.1 444.1
.7 28.6
.6 6.7
.7 5.1
.1 155.1
.1 155.1
.1 116.0
.0 24.
 | .5 30
.8 56
.3 17
.2 41
.7 27
.6 6 6
.7 5
.1 2
.3 150
.3 150
.3 150
.3 150
.8 24 | 0.2 29 5.2 55 7.1 17 1.6 43 1.6 42 7.0 28 5.2 6 5.2 6 2.9 3 0.8 143 3.1 107 | 29.9 3
55.7 5:
17.0 1'
13.1 44
13.1 44
28.0 3
6.5 5.6
3.0 : | .5 31.
.6 58.
.9 17.
.6 44.
.6 44.
.3 28.
.0 6.
.1 5.
.3 3.
.7 155.
.7 155.
.5 116. | 5 28.9
6 53.8
6 53.8
9 16.4
9 16.4
22 47
22 47
23 30.0
8 6
11 3.2
3 147
3 147
3 110.9
5 110.9
 | 9 28.
8 52.
4 16.
1 42.
1 42.
1 6 27.
1 6.
1 5.
3 3.
3 152.
3 152.
5 114.
6 24. |
| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) | 2013
2013
2013
2013
2013
2000
2015
2012
2012 | 21.0
21.5
40.0
12.2
33.1
21.5
5.0
4.3
2.3
129.3
129.3
97.0
20.7
11.6 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9
2.6
141.9
141.9
106.4
22.7
12.8 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
2.2
137.2
102.9
21.9
12.3 | 31.3
24.1
24.6
45.7
14.0
38.7
38.7
25.2
5.8
5.0
2.7
159.9
119.9
25.6
14.4 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
4.8
2.6
142.9
107.2
22.9
12.9
 | 25.1
25.7
47.8
14.6
36.7
23.9
5.5
4.8
2.6
141.6
106.2
22.6
12.7 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2
4.5
2.4
137.8
103.4
22.1
12.4 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
5.4
4.7
2.5
131.3
131.3
98.5
21.0
11.8 | 26.2
26.8
49.9
15.2
39.1
25.4
5.9
5.1
2.7
146.8
110.1
23.5
13.2
 | 26.5
27.0
50.3
15.4
37.0
37.0
24.1
5.6
4.8
2.6
144.3
108.2
23.1
13.0 | 23.9
24.4
45.4
13.8
39.8
39.8
25.8
6.0
5.2
2.8
134.6
101.0
21.5
12.1 | 23.6
24.1
44.8
13.7
36.3
36.3
23.6
5.4
4.7
2.5
139.8
104.9
22.4
12.6 | 22.7
23.2
43.1
13.2
36.2
36.2
23.5
5.4
4.7
2.5
137.9
1.03.4
1 22.1
12.4
 | 23.8 24.3 45.3 13.8 40.8 40.8 40.8 26.5 6.1 5.3 2.9 51.1 11.3.3 124.2 13.6 | 24.0 2 24.5 2 45.6 4 13.9 1 34.2 4 34.2 4 22.3 2 5.1 4.5 2 4 46.2 17 46.2 17 46.2 17 23.4 2 23.4 2 23.4 2 | 6.1 2 6.7 2 9.6 5.2 1. 2.4 44 2.4 44 7.6 2 6.4 5.5 3.0 0.0 15 7.5 11 7.2 2 5.3 1 | 7.9 27.7.9
27.7.9 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7. | 7.4 22.7.9 22.0 55.9 1 30.3 3 30.3 3 36.2 2 2.8 2.8 2.8 2.8 2.8 2.8 2.9 4.1 2 2 4.1 2 2 3.6 1 2 3.6 | 7.2 2 2.7.7.7 2 2.11.6 5 5.8 1 8.0 3 8.8.0 3 44.7 2 2.7 4.9 2.7 4.9 2.9 10 3.3.4 2 3.2 1 | 7.4 21.1 55.6 11.1 55.6 12.2 2.8 22.6 11.1 22.3 22.6 11.1 55.6 21.1 22.3 22.6 11.1 55.6 21.1 55.6 21.1 22.3 22.6 11.1 55.6 21.1 22.3 22.6 11.1 55.6 21.1 22.3 22.6 22.6 21.1 55.6 21.1 22.3 22.6 22.6 21.1 55.6 21.1 22.3 22.6 22.6 21.1 55.6 21.1 22.3 22.6 21.1 22.1 22.3 22.6 21.1 22.1 22.3 22.6 21.1 22.1 22.3 22.6 21.1 22.1 22.1 22.1 22.1 22.1 22.1 | 28.4
29.0
33.9
6.5
22.7
27.8
6.4
5.6
3.0
66.1
1
7.1
1
15.0
4.1
 | 28.5
29.1
54.2
16.5
40.5
40.5
26.3
6.1
5.3
2.8
2.8
2.8
114.1
124.3
13.7 | 26.0
26.5
49.3
15.1
43.3
43.3
28.1
6.5
5.6
3.0
143.1
143.1
107.4
22.9
12.9 | 26.0
48.5
14.8
39.5
39.5
25.7
5.9
5.1
2.8
148.5
111.4
23.8
13.4 | 25.1
46.8
14.3
39.5
39.5
25.7
5.9
5.1
2.8
142.3
106.7
22.8
12.8 | 26.0
26.5
49.3
15.1
44.5
29.0
6.7
5.8
3.1
155.7
116.8
24.9
14.0
 | 26.1
26.6
49.6
15.1
37.5
37.5
24.4
5.6
4.9
2.6
150.8
113.1
24.1
13.6 | 28.5
29.1
54.1
16.5
46.4
46.4
30.2
7.0
6.0
3.3
174.9
131.1
28.0
15.7 | 1 31.1 57.3 11 57.3 14 44.4 44.4 44.4 44.4 44.1 15.6 15.6 15.6 15.6 15.6 15.6 15.6 15 | .4 29.0
30.0
8 56.6
6 17.
1 44.1
1 44.7
7 28.6
6 6.5
1.1 3.1
1 155.
1 155.
1 116.0
24.1
 | .5 30
.8 56
.3 17
.2 41
.7 27
.6 6 6
.7 5
.1 2
.3 150
.3 150
.3 150
.5 113
.8 24
.0 13 | 29 55.2 55.2 55.2 55.2 55.2 55.2 55.4 | 29.9 3
55.7 5:
55.7 5:
17.0 1:
13.1 44
13.1 44
18.0 3
6.5 6.5
6.5 6.5
13.8 166
13.8 166
13.8 166
13.8 122
23.0 2.22.9 1. | | 55 28.95
66 53.86
99 16.22 47.1.
22 47.1.
22 47.1.
33 147.33
147.33 147. | 9 28.
8 52.
4 16.
1 42.
1 42.
1 6 27.
1 6.
1 5.
3 3.
3 152.
3 152.
5 114.
6 24.
3 13. |
| | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L. Residential Sector | 2013
2013
2013
2013
2013
2000
2015
2012
2012
2003
2009 | 21.0
21.5
40.0
12.2
33.1
33.1
21.5
5.0
4.3
2.3
129.3
129.3
97.0 | 22.0
22.4
41.7
12.7
37.4
37.4
24.3
5.6
4.9
2.6
141.9
141.9
106.4
22.7
12.8 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
2.2
137.2
102.9
21.9 | 31.3
24.1
24.6
45.7
14.0
38.7
38.7
25.2
5.8
5.0
2.7
159.9
119.9
25.6
14.4
208.9 | 33.5
25.8
26.3
49.0
14.9
36.8
36.8
23.9
5.5
4.8
2.6
142.9
142.9
107.2
 | 25.1
25.7
47.8
14.6
36.7
36.7
23.9
5.5
4.8
2.6
141.6
141.6
12.2
22.6
12.7 | 25.1
25.6
47.6
14.5
34.8
34.8
22.6
5.2
4.5
2.4
137.8
137.8
103.4 | 24.8
25.3
47.1
14.4
36.0
36.0
23.4
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| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong 1 Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Residential Sector 1 Thakbek 2 Mahaxai 3 Nam Theun 2 (Substation) | 2013
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5 114.
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| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L. Residential Sector | 2013
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97.0
20.7
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2.6
141.9
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22.7
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138.9
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25.0 | 22.1
22.6
42.1
12.8
31.3
31.3
20.3
4.7
4.1
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137.2
102.9
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21.9
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191.4
115.9 | 31.3
24.1
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6.7 2
9.6 5
5.2 1
2.4 44
2.4 44
2.4 5.5 3.0
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7.5 11
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27.7.9 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7.0 27.7. | 7.4 2,7.9 2,7.9 2,2.0 5,5.9 1,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.3 3,0.7 144,0.7 144,6 2,0.7 144,6 | 77.2 2 2 7.7.7 2 11.6 5 5 5.8 1 1 8.0 3 8.0 3 4.7 2 2.7 4.9 2.7 4.9 9.9 10 3.4 2 3.2 1 10.9 2 2.3 3.9 15 3.3 9 15 5.9 2 2 9 2 5 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10 | 7.4 21.1 55.6 11.1 55.6 12.2 8 2.8 2.8 2.8 2.8 2.8 2.8 2.8 2.8 2. | 28.4
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8 27. |
| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) | 2013
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 | 7.4 22.0 5.5.9 1.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 3.0.3 1.0.4 4.1 2.2 3.6 1.1 4.4 4.1 2.2 5.5.9 1.4 4.6 2.7.9 5.3.7 1.1 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 | 77.2 2 77.7 2 77 | 7.4 2
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| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total I. Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total I. Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total I. Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) | 2013
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| 12 KHAMMOUAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET 14 SARAVAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I L Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total L Residential Sector 1 Saravan 2 Taothan | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total L Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total L Residential Sector | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET 14 SARAVAN 15 SEKONG | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET 14 SARAVAN | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total I Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector 1 Sekong Sub Total | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET 14 SARAVAN 15 SEKONG | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I Sub Total Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector 1 Sekong Sub Total L Residential Sector 1 Sekong Sub Total L Residential Sector 1 Sekong Sub Total L Residential Sector | 2013
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| 12 KHAMMOUAN 13 SVANNAKHET 14 SARAVAN 15 SEKONG 16 CHAMPASAK | 6 Pak Thang 7 Nong Viengkham 8 Don Koi 9 Na Bong I L Residential Sector 1 Pakxan 2 Tha Bok 3 Khonsong 4 Thasala Sub Total L Residential Sector 1 Thakhek 2 Mahaxai 3 Nam Theun 2 (Substation) Sub Total L Residential Sector 1 Pakbo 2 Keng Kok 3 Nong Deun 4 Ban na (Seno) 5 M Phin 6 M Nong 7 Xepon Gold/Copper Minning at Vilabury District (Existing) Sub Total L Residential Sector 1 Saravan 2 Taothan Sub Total L Residential Sector 1 Sector | 2013
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Appendix IX

Outline, schedule and participants of technical seminars

1. Technical seminar on the technical methodologies to revise current PDP

(1) Outline of the seminar

The technical seminar was held on October 10 2012 for the study team to present the methodology for the PDP revision with some measures which enhance the accuracy and credibility of the PDP. In the seminar, it was decided that the details of the econometric model in demand forecast, project evaluation in generation planning, demand/supply analysis and system

analysis would be discussed on the working level (OJTs).

(2) Schedule and participants

<Schedule>

Date and time: From 13:30 to 16:30, October 10, 2012

Participants: In total 23 (including 4 from DEPP, 3 from EDL, 3 from EDL-Gen and 2 from

JICA Laos office).

Venue: MEM meeting room

2. Technical seminar on the technical methodologies to revise current PDP

(1) Outline

The seminar for Technology Transfer on demand forecast was held for three days in the first week of April 2013. The purpose of the seminar was for the C/Ps to acquire the skills of the usage of the "Economate" together with the concept of newly introduced demand forecast

methodology.

(2) Schedule and participants

The seminar was held for three days with participants 5 from DEPP and 4 from EDL as shown

in the Table IX-1.

IX-1

Table IX-1: Schedule for technology transfer

MONTH		A > 7		TIME	AOFNIDA	DI AGE	PARTICIPANT
MONTH	יט	AY		TIME	AGENDA	PLACE	DEPP*1 & EDL*2
MAR	31	SUN					
	1	MON			A short meeting (Confirmation of Schedule and groupings)	DEPP	Mr.Litthanoulok (DEPP)
				9:00-9:30	Introduction (Object and Content of Tec.Transfer)	DEPP	All Members (DEPP&EDL)
			AM	9:30-11:30*1	Explanation and Exercise (Estimation and Model Building)	DEPP	A team (1st lesson)
	2	TUE		3.00 11.0041	Q&A and Exercise	DLIT	A team (1st lesson)
			PM	1:30-3:30*2	Explanation and Exercise (Estimation and Model Building)	DEPP	B team (1st lesson)
				1.00 0.00 2	Q&A and Exercise	52.1	B todin (10t 1000011)
APR			AM	9:30-11:30	Explanation and Exercise (Simulation and Reporting)	DEPP	B team (2nd lesson)
		WED	Aivi	3.00 11.00	Q&A and Exercise	DLIT	b team (2nd lesson)
	3	WED	PM	1:30-3:30	Explanation and Exercise (Simulation and Reporting)	DEPP	A team (2nd lesson)
			1 141	1.00 0.00	Q&A and Exercise	DEIT	A count (Zira losson)
	4	THU	АМ	9:30-11:30	Explanation of ieej Energy Model in Economate Version (for follow-up) *4	DEPP	Mr.Litthanoulok and at al. (Only DEPP)
			PM	1:30-3:00	Problems and issues to be improved as a whole of PDP (Discussions)	EDL	Mr.viengthong and at al. (Only EDL)

 $^{*1 \}quad \mathsf{DEPP} \quad \mathsf{The \ assigned \ staffs \ led \ by \ Mr.Litthanoulok} \ (5\mathsf{persons \ at \ most})$

^{*2} EDL The assigned staffs led by Mr.Viengthong (4persons at most)

^{*3} All the members need to be divided into 2 groups (A team and B team) if the total are more than five.

^{*4} Instructions and training as regard to "IEEJ ENRGY MODEL" formulated in the other JICA Project