

**Government of the  
Lao People's Democratic Republic**

**ECONOMIC IMPACT STUDY OF  
NAM THEUN 2 DAM PROJECT**

**Volume II**

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## Table of Contents

### Annex 1: Cost/benefit analysis of Nam Theun 2

Introduction .....	1
1. Methodology .....	2
1.1 What items to include and the timing allocation of included items .....	3
1.2 Differences between market prices and economic costs .....	5
1.3 The time value of money .....	7
2. Definition of the “Base Case” .....	9
2.1 Costs and Benefits in the Base Case .....	10
2.2 Base Case Results .....	10
3. Sensitivity and Scenario Analysis .....	12
4. Avoided Cost of Power for Thailand .....	21
4.1 Cost Estimates of Competing Resources .....	21
4.2 Developments Affecting the Price of Gas-Fired Generation .....	22
4.3 Thai Power Demand Forecasts .....	23
4.4 Supply of Natural Gas .....	25
5. Appendix 1: Cost/Benefit Results .....	26
6. Appendix 2: Cost Detail .....	32

### Annex 2: Valuing the social and environmental impacts of the Nam Theun 2 Hydroelectricity Project: A preliminary assessment

Introduction .....	1
1. Categorization of Impacts .....	2
1.1 The Inundation Area .....	2
1.2 The Nakai-Nam Theun National Biological Conservation Area .....	3
1.3 Downstream/Nam Theun .....	5
1.4 Downstream/Xe Bang Fai Basin .....	5
1.5 Downstream/Water Quality .....	6
1.6 Construction Area .....	6
1.7 Resettlement Area .....	6
1.8 Regional Health Impacts .....	6
2. Valuing Social and Environmental Tasks .....	7

3.	Preliminary Estimates for the Cost and Effectiveness of Mitigation Measures . . .	8
3.1	The Inundation Area . . . . .	8
3.2	Aquatic Ecosystems . . . . .	13
3.3	Nakai-Nam Theun National Biological Conservation Area . . . . .	14
3.4	Downstream Impacts on Local Inhabitants . . . . .	15
3.5	Downstream/Water Quality . . . . .	15
3.6	Construction and Resettlement . . . . .	16
3.7	Regional Health Impacts . . . . .	16
4.	Preliminary Estimates for the Cost and Effectiveness of Mitigation Measures . .	17
4.1	Resettlement . . . . .	17
4.2	Biodiversity . . . . .	18
4.3	Downstream Impacts . . . . .	19
4.4	Regional Health . . . . .	19
4.5	Water Quality . . . . .	20
4.6	Costs Associated with Construction . . . . .	20
4.7	Project Benefits as Mitigation Measures . . . . .	20
5.	Mitigation, Compensation, and Residual Damages . . . . .	21
6.	Institutional Analysis: Key Aspects . . . . .	23
6.1	Design and Planning . . . . .	24
6.2	Financing Mechanism . . . . .	24
6.3	Legal Structures . . . . .	25
6.4	Social Aspects and Participation . . . . .	25
6.5	Technical Expertise . . . . .	25
6.6	Implementation . . . . .	26
6.7	Monitoring and Review . . . . .	26
7.	Institutions and Mitigation Actions . . . . .	26
7.1	Resettlement . . . . .	26
7.2	Downstream Channel . . . . .	27
7.3	Mitigation of Construction Impacts and Regional Health . . . . .	27
7.4	Increased Protection of the NBCA . . . . .	27
8.	Sedimentation. . . . .	28
9.	Conclusions . . . . .	29



### **Annex 3: Microeconomic and institutional capacity analysis of Nam Theun 2**

Introduction .....	1
1. Preconstruction activities .....	1
1.1 Direct impacts .....	1
1.2 Indirect impacts .....	2
1.3 Rural development activities .....	2
2. Construction project impacts on local and regional markets .....	2
2.1 Potential institutional/infrastructural bottlenecks .....	3
2.2 Price impacts - consumer goods & services .....	3
2.3 Direct employment impacts .....	4
2.4 Indirect impacts .....	4
2.5 Social impacts .....	5
2.6 Biodiversity impacts .....	5
3. Institutional capacity .....	6
3.1 Resettlement Committee .....	6
3.2 Provincial authorities .....	10
3.3 MOAF .....	11
3.4 Ministry of Health .....	12
3.5 Ministry of Education .....	12
3.6 BPKP .....	13
4. Preliminary findings and recommendations .....	20
4.1 Project impacts on local and regional markets .....	20
4.2 Impact of demographic pressures .....	21
4.3 Institutional Capacity .....	21

### **Annex 4: Macroeconomic Forecasts**

Introduction .....	1
1. Background .....	1
2. Microeconomic scenarios .....	3
3. Base-case scenario .....	3
4. Nam Theun 2 scenarios .....	7
5. Net incremental government revenues .....	9
6. Impact on external balances .....	10
7. Macroeconomic risks .....	13
8. GOL implementation capacity .....	18
9. Income utilization scenarios .....	21
10. Poverty and poverty alleviation in Laos .....	23
11. Nam Theun 2 and poverty alleviation .....	25
12. Model of reform .....	30

**Annex 5: Financial Risk Analysis**

Introduction ..... 1

1. Financial and Contractual Arrangements ..... 1

    1.1 Concession Agreement ..... 2

    1.2 Power Purchase Agreement ..... 4

    1.3 Turnkey Contract ..... 5

    1.4 Operating and Maintenance Agreement ..... 7

    1.5 GOL’s Role as Shareholder ..... 7

    1.6 Current Project-Negotiations Status ..... 8

2. Project Financing Plan and Financial Model ..... 9

3. Risk Allocation Framework ..... 11

4. Summary of Financial Model Sensitivity Analyses ..... 12

5. Outline of the Principal Negotiating Points Available to the GOL ..... 14

6. Risk Allocation Matrix ..... 15

**Annex 6: List of Meetings Held**

**Annex 7: Bibliography**

**Annex 8: Inception Report and Terms of Reference**

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## **Annex 1**

### **Cost/Benefit Analysis of Nam Theun 2**

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**Annex 1:**  
**Cost/Benefit Analysis of Nam Theun 2**

**Introduction**

1. This section defines the scope of the cost/benefit analysis for Nam Theun 2 (NT2). The relevant perspectives or "boundaries" as given in the Terms of Reference are described. Summary level costs and benefits are defined. A general description of the economic rate of return calculation is given. The variables on which sensitivity tests are conducted are listed. Finally, those items that are beyond the scope of this analysis as currently structured are noted. This overview presents the information in summary form; more detailed data, methodological explanations, and results follow in the main body of the analysis.
2. For analytical purposes, overall costs are categorized as follows: pre-construction costs, construction, environmental and social, and financial. Tables are included in the Appendix which detail cost categories and estimates. To summarize, pre-construction costs include all development costs, returns, and fees incurred prior to the start of project construction. Construction costs are mainly the physical construction of NT2, but also include such things as insurance and contingency funds. Budgeted environmental and social costs are included in other budget items for the IRR calculation, but for exposition are also documented separately in tables showing cost detail. Unbudgeted environmental and social costs are estimated to gauge the potential effect of cost over-runs that may be incurred. In addition an opportunity cost of land is estimated for changes in timber revenues and carbon values. Unmitigated environmental and social costs and the opportunity costs of land are collectively referred to as externalities. Financial items include interest payments and financial fees. An additional source of costs include the lost power generation from Theun-Hinboun. NT2 will divert water away from the Nam Theun river and therefore reduce the amount of power generated and sold by the downstream Theun-Hinboun. The value of this lost generation is included as a cost.
3. This cost/benefit analysis calculates the internal rate of return (IRR) and net present value (NPV) for the Nam Theun 2 (NT2) project both from the perspective of the project as a whole and from the perspective of Laos (GOL). From the project perspective the benefits are represented by power revenue. Costs include all those costs such as construction, environmental and social, operation and maintenance, or financial that ultimately will fall within the responsibility of the project. Preconstruction costs are considered sunk costs and therefore not included from the project perspective.
4. From the perspective of the GOL, benefits include the dividend payments received by the GOL, royalties and tax payments received from the sale of power from NT2. Costs include those payments the GOL will make to secure the equity share in NT2. Costs will also include the portion of preconstruction the GOL will be responsible for in compensating the developers. This cost would not occur to GOL without the project, so from the GOL perspective, it is not a sunk cost. Additional costs may be incurred for items that are external to the corporate entity responsible for the project (NTEC) such as unmitigated environmental and social or resettlement costs or the opportunity cost of land. In the GOL perspective, only the government's lost revenue from Theun-Hinboun is counted.

5. To account for future uncertainty, sensitivity tests are conducted for the following variables: generation output, tariffs, unmitigated environmental and social costs, inflation, and construction costs. Ranges for these variables are estimated and the results are recalculated.
6. Additionally, a Regional perspective is analyzed by comparing the NT2 project with alternative projects that might substitute to meet Thailand's energy demand.
7. Given data and schedule limitations, certain aspects of cost/benefit theory are beyond the scope of this analysis. In addition, the lack of final settlement on several important items, such as tariffs or project configuration, make an analytical treatment problematic. In order to complete a base case analysis in a timely manner, some contingencies and variables must be excluded from quantitative analysis. Although these limitations may prevent quantitative analysis, this does not imply that these aspects are irrelevant and should not be considered in the final decision analysis.
8. An aspect of cost/benefit theory beyond the scope of this analysis is income distribution analysis as registered through weighting factors on shadow prices. A linear programming derivation of shadow prices also is not within the scope of analysis. Instead, the potential for tariff, tax, exchange rate, and labor market distortions is reviewed. A similar procedure is followed for discount rates.
9. Certain items may have impacts on the decision analysis for NT2, but the lack of available data within the schedule of this analysis prevents quantitative analysis. These include recreation and tourism effects and irrigation effects. Sedimentation, the filling of the reservoir with debris and the resulting loss of reservoir capacity, may pose a risk to future NT2 generation output and therefore the revenues and benefits associated with NT2. Unfortunately, no comprehensive data nor studies were available to the project team at the time of this report. Information from the developers indicate that sedimentation risk may be small or occur only in the distant future when the effect on benefits would be minimized by the discounting procedure used in cost/benefit analysis. It is important to emphasize that the inability to quantitatively assess these impacts within the given limitations of this analysis does not imply that these effects are irrelevant.

## 1. Methodology

10. In this report, the IRR and NPV are estimated from an economic viewpoint. The economic view addresses the issue of the value of the resource to the overall economy. This is related to, but different from, the issue posed in the financial view. The financial view looks at the specific investment criteria related to the project. Various authors have succinctly noted the fundamentally different questions to be addressed from the economic and financial view:

In public investment decision making, considerations of both financial and economic profitability are important. While economic profitability indicates the true worth of a project to the entire economy, financial profitability provides a

measure of whether the enterprise can operate the project in a commercially viable manner,<sup>1</sup>

Or as alternatively stated:

A 'financial' appraisal of a project is made either to determine its capacity to service debt and contribute to subsequent investment by the borrower, or to determine the return to the investor. An 'economic' appraisal or 'cost-benefit analysis' is aimed at determining whether or not the project is in the national interest.

11. To summarize the methodology for the economic view, the issues are grouped into three broad areas:

- What items are included, and the timing allocation of included items
- Differences between market prices and economic costs
- The time value of money

#### **1.1 What items to include and the timing allocation of included items**

12. Certain items are not included in an economic appraisal that are often shown on financial statements. These items include transfer payments, sunk costs, and items of purely financial nature not inherent to the project such as interest, amortization, and depreciation. Externalities are items that have real costs or benefits but are not borne by the financial entity, such as a private business that produces the cost or benefit. Externalities should be included in the economic view if they fall within the boundary of the economic entity which is typically a global perspective, a country, or a government. Examples of these items and the arguments advanced for their inclusion or exclusion are described in the following section.

13. Transfers are items that do not represent a direct claim on a country's resources, but merely a redistribution among owners of the control of resources. Taxes and subsidies are often cited as examples. The payment of taxes or subsidies redistributes money among owners but does not affect the total amount of resources available to a country.

14. From the project perspective, taxes and dividends represent transfers of wealth among the parties, not a net use of resources. Therefore taxes and dividends are not included in the project perspective. From the GOL perspective, taxes and dividends represent an inflow to the GOL directly from the project. Therefore taxes and dividends are included as benefits to the GOL.

15. Sunk costs are costs that occurred prior to a given decision point on future investment. These costs are not impacted by the decision, are not relevant to future planning, and are excluded from economic analysis. From the project perspective, preconstruction costs have already been incurred. These are sunk costs and should not be counted. However, the nature of the agreements involving NT2 indicates that should the project go forward, these costs will be

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<sup>1</sup> Public Investment Criteria: Financial and Economic Internal Rates of Return. Ifzal Ali, Asian Development Bank, 1990.

reimbursed. The reimbursement of these costs will be shared by the GOL. Because this reimbursement will occur with the project, but not without, they are not sunk costs from the GOL perspective and are included in the GOL perspective. Agreements indicate that these costs will be borne 50% at financial closing and 50% at the start of operation. Because resources will have to be foregone to make this reimbursement, the preconstruction costs are counted for the GOL at these two points in time.

16. Interest, amortization, and depreciation charges are typically not included in an economic view. The argument against including interest is that it represents a purely financial transaction, not an inherent cost of the specific project. Depreciation and amortization are items that are fully counted in the original capital expenditures. Depreciation and amortization are in effect rescheduling of the capital expenditures. From an economic view, these costs should be counted when the actual expenditure is incurred because this is when the resource is in effect drawn from the economy, not when the accounting formula reschedules the costs. As noted by Squire and van der Tak,

The economic analysis does not, in general, need to concern itself with the financing of the investment: that is, with the sources of funds and how they are repaid. Again, depreciation allowances may not correspond to actual use of resources, and should therefore be excluded from the cost stream.<sup>2</sup>

In another article, van der Tak states explicitly how financial items are to be treated:

In the calculation of costs, only actual expenditures on goods and services should be included and these should be entered in the year in which they occur. Financial charges and accounting items, such as interest, depreciation and amortization, should be excluded. Depreciation and interest on capital investment are taken into account by the discounting procedure itself. Amortization and interest on loans are financial items dependent on specific terms of financing and not inherent in the nature of the project. They are not relevant for the economic appraisal.<sup>3</sup>

17. Following this reasoning, actual construction costs at the time of construction are counted as costs from the project perspective. Interest, amortization, and depreciation expenses are excluded. However, the GOL perspective presents a case in which the economic and financial view are inextricably woven together. Direct benefits flowing to the GOL include taxes and dividend payments. These payments are calculated from the financial statements of NTEC which necessarily include interest and amortization expenses. To accurately calculate tax and dividend payments to the GOL, interest and amortization expense must be treated correctly in these financial statements.

18. While financial interest payments may not be inherent in the nature of the project, they are inherent in the amount of benefits flowing to the GOL; therefore, it is proper to treat interest as a financial expense in calculating tax and dividends. Interest is therefore shown on the financial

<sup>2</sup> Economic Analysis of Projects. Lyn Squire and Herman G. van der Tak, 1975.

<sup>3</sup> The Economic Choice Between Hydroelectric and Thermal Power Developments. Herman G. van der Tak, 1966.



statements of NTEC and affects the taxes and dividends received by the GOL. In this instance, because of its impact through financial statements, interest is counted at the time of actual repayment, not at the time the original cost was incurred—during construction. The reason for counting interest at the time of repayment stems from the same logic that interest is required for calculation of taxes and dividends. It is not being counted as a project cost (which would argue for counting a cost at the time it is incurred, not when the expense is repaid); it is being treated as an accounting necessity to properly calculate receipts to the GOL.

19. In the GOL perspective, the cost of purchasing the GOL's equity share is substituted for construction costs. This equity cost more closely represents the cash flow the GOL will incur than do the construction costs. This approach is consistent with the fact the GOL perspective is more closely tied to a financial or actual cash flow analysis than a purely economic perspective.

20. Externalities are costs or benefits that are not borne by the entity which produces the cost or benefit. Pollution is a frequently cited example where the costs are borne by the larger society, not the specific source of the pollution. For this analysis, environmental and social costs and the opportunity cost of land have been estimated. These costs, external to NTEC, are included in the project perspective because it represents a view of all relevant costs and benefits. These costs are also included in the GOL view, because the GOL is expected to be accountable for unmitigated environmental and social costs and because the GOL serves as a proxy for Lao society with respect to the opportunity cost of land.

## 1.2 Differences between market prices and economic costs

21. Shadow prices are used to convert market prices to the economic opportunity cost of a resource when there are distortions in market prices. The opportunity cost represents the value of consumption that must be foregone to consume the good in question. An example of a market distortion is when an import tariff is placed on a good. This will raise the market price within the country above the true opportunity cost. The tariff merely transfers income from one source to another, but does not represent a net sacrifice of an alternative economic opportunity. Additional examples of market distortions include taxes, subsidies, monopoly rents, and exchange rates that do not measure the real difference in purchasing power. If significant unemployment exists and wages do not reflect the low opportunity cost of labor, perhaps due to minimum wages or subsidies, then labor is often assigned a shadow price.

22. In practice shadow prices are often estimated by multiplying the market price by a shadow price ratio. Often these ratios are reduced to a Standard Conversion Factor (SCF) for capital goods and a Labor Conversion Factor (LCF) for wages. To estimate shadow prices for this analysis, possible market distortions in the Lao economy are reviewed. The general order of magnitude of distortion is assessed. For information, shadow price ratios for several other countries are also shown. Shadow price ratios are then drawn from this knowledge of possible market distortions and the range of estimates demonstrated in practice.

23. Lao economic policy has been significantly reformed over the last several years and many sources of market distortion have been removed. To this effect, correspondence from the World Bank stated:

Shadow Prices (Project Evaluation: Task 3). Minimal Distortions: The shadow pricing exercise can be kept simple as market prices will do quite well for many things. Distortions are relatively minimal as prices and the exchange rate have been liberalized, tariffs substantially reduced, and quantitative restrictions lifted on almost all imports. Most inputs (goods and labor) for NT2 will come from abroad and hence will already be expressed in foreign terms. Therefore, the main corrections would appear to be limited to making sure that taxes and tariffs are removed from prices and (perhaps) some adjustment for the price of Lao labor.<sup>4</sup>

24. Because of the large amount of foreign capital used in NT2, it could well be that import taxes or tariffs would impose a significant distortion on opportunity costs for capital goods. According to a recent IMF study import duties range from 5% to 40%.<sup>5</sup> However, the same study notes that "Goods imported as grants, *inputs of foreign-financed investment projects* [italics added], sample goods, and several other goods expressly mentioned in the implementation decree of the Customs Law (No. 1/PM) of January 2, 1995 are entirely exempted."<sup>6</sup> Questions from Louis Berger Staff to the NT2 developers indicated that goods imported for NT2 are in fact exempted from import taxes.

25. If exchange rates do not represent the real terms of trade, perhaps because of a government policy to maintain a fixed exchange rate, this may also cause a distortion where financial prices do not represent true economic opportunity costs. In the past the GOL did maintain an exchange rate policy that may have caused exchange rates not to reflect the economic terms of trade. In fact, at one point the GOL maintained seven different exchanges. However, the GOL has liberalized and reformed exchange rate policies substantially. The IMF has recently found no real distortion in exchange rates by comparing the official exchange rate to an unofficial estimate of what an open market views as the real terms of trade. An IMF publication states,

The almost 2,000 km of common riverine border with Thailand, coupled with the existence of curb markets in most urban areas (especially in Vientiane), has led to a flourishing parallel market in foreign exchange. For many years the government has tolerated this parallel market, which has enabled the monetary authorities to measure market forces and to monitor the spread between official and market rates. The official and parallel exchange rates have moved together; the monetary authorities are seeing to it that the rate differential does not become too great. A rough rule of thumb has been a permissible variance of up to 10 per cent, although in fact the variance has been negligible over the last three years.<sup>7</sup>

26. For comparison purposes, a 1995 study by the World Bank for an energy project in Vietnam reviewed the use of a shadow exchange rate multiplier and found a situation similar to

<sup>4</sup> Comments on the Nam Theun 2 Study Proposals, 'Economic Impact Study of Nam Theun 2 Dam Project, 1996.

<sup>5</sup> The Lao People's Democratic Republic Systemic Transformation and Adjustment, The International Monetary Fund, 1996

<sup>6</sup> *ibid.*

<sup>7</sup> From Centrally Planned to Market Economies: The Asian Approach, Volume 3, Lao PDR, Myanmar and Viet Nam, 1996.

Laos where, "because of the liberalized nature of the market for foreign exchange in Viet Nam it is estimated that the exchange rate does not suffer from distortions, and no adjustments are made."<sup>8</sup> In summary, there appears to be little distortion in nonlabor sectors.

27. If there is a substantial amount of unemployment or underemployment, the opportunity cost for the labor force could be less than the market price of labor; it can be argued that the opportunity cost—the foregone value—of unemployed labor is zero. There does not appear to be significant unemployment in Laos and given the ambitious development projects planned, the outlook is not for increased unemployment, especially in the labor force relevant to NT2. As a report by the Lao Ministry of Labor and Social Welfare states,

A survey of labor units and economic sectors indicated a relentless growth trend in several economic sectors in line with the socioeconomic development plans, and it is expected that in the immediate future, the requirements in skilled and professional labor will increase by approximately 20,000 persons per year.<sup>9</sup>

Even if there were distortions in the labor market due to taxes or unemployment, the relatively minor portion of labor, and especially local labor (approximately 4.4% of facilities cost), in the overall project cost would lead to very small adjustments to project costs. Finally, the only area where data were available for the labor portion of costs was in construction.

28. For the above reasons, no adjustments were made to market prices to convert to shadow prices. However, if data improvements or other information should be made available that will necessitate the use of shadow prices, the computer model which is used in the cost/benefit analysis has a fully functional component to convert market prices to shadow prices.

### 1.3 The time value of money

29. A discount rate is used to adjust for the theory that the ownership or consumption of a good (or a service or a unit of money) in the more distant future is worth less than consumption of the good in the present or less distant future. The discounting technique essentially divides the value of future consumption by a compounded value of one plus the discount rate. There are several arguments advanced for this theory. The arguments may have more or less relevance depending on the perspective chosen.

30. The existence of investments yielding positive, real returns demonstrates a time value of money. The rate of return on the best alternative investment is an opportunity cost of capital. Private market interest rates with appropriate risk profiles can serve as a proxy measure of the opportunity cost of private capital.

31. However, this rate does not take into account several factors which may be present in government investments or investments undertaken for social purposes. Social objectives may lead to a desire to encourage investment for future consumption to build a nation's capital stock

<sup>8</sup> Staff Appraisal Report, Vietnam, Power Sector Rehabilitation and Expansion Project, 1995.

<sup>9</sup> Labor and Social Development Plans to the Year 2000, 1995

and future wealth. This argument is more typically advanced for developing countries where current relatively low income levels may discourage or prevent individuals from saving adequate amounts. Therefore, the private rate of saving may inhibit adequate investment funds for long-term development. It has also been argued that private individuals may place emphasis on consumption that will become available only within their particular lifetime. Therefore, individual saving will not match the socially desirable level that would give at least equal weight to consumption by future generations. Even if individuals do fully incorporate the welfare of future generations in investment decisions, it has been argued that any one individual's saving will not have a measurable effect on social development for future generations, and therefore individuals are again drawn to save and invest less than would be desired from the social perspective.

32. All of these arguments would suggest that social objectives call for additional saving and investment and a tendency toward projects with returns in the more distant future—in short, a lower discount rate for public projects than is reflected in the private market's opportunity cost of capital.

33. The measurement of private interest rates is complicated enough by the many types of investment vehicles, each with its own particular repayment and risk profile, but the estimate of the time preference of consumption for social projects is not observable in a direct market. However, a consensus exists within the economics profession that the discount rate for public purposes is lower than the one used for private investment. This was clearly stated by a World Bank publication: "...the IRI (investment rate of interest) for the public sector is commonly believed to be lower than the IRI for the private sector in most countries."<sup>10</sup>

34. While market interest rates may not be appropriate for final use as a discount rate for social objectives, they do provide a useful point of departure for further consideration. An Asian Development Bank study notes interest rates in Laos for a one year private sector time deposit of 18% per annum and an equivalent 3-month rate of 15% and a savings deposit rate of 12%.<sup>11</sup> This study was published in 1996; however, the rates are for December 1991. The previously cited IMF study listed private savings deposit rates as of September 1994 at 12%.<sup>12</sup> For comparative purposes, the October 1996 prime rate in Thailand ranged between 13.25% and 13.50%, while the minimum retail rate ranged from 13.00% to 13.75%.<sup>13</sup>

35. Previous World Bank studies have used discount rates ranging from 10.0% to 13.5% for public sector investment projects in Viet Nam<sup>14</sup> and 12% for a project in China<sup>15</sup>. The Asian Development Bank study also cites a rate for the Lao public sector of 1.2%. The very low rate may indicate a strong inclination on the part of the GOL for public investment.

<sup>10</sup> Cost-Benefit Analysis: Issues and Methodologies, Anandarup Ray, 1984

<sup>11</sup> From Centrally Planned to Market Economies: The Asian Approach, Volume 3, Lao PDR, Myanmar and Viet Nam, 1996.

<sup>12</sup> IMF, Systemic Transformation and Adjustment, *supra*

<sup>13</sup> Economic Review, Year-End, 1996. The Bangkok Post

<sup>14</sup> *ibid*

<sup>15</sup> Staff Appraisal Report, China, Tianhuangping Hydroelectric Project, 1993.

36. The interest rates listed for the private sector range from 12% to 18%. The lower end of this range may represent a proxy for a project with mix of public and private interests. The lower end can be used because this project does represent a significant public investment for Laos and as the arguments noted earlier detail, public investments frequently take a low end interest rate. The range of 12% to 18% represents a nominal rate. If the average of US and Thai inflation rates (4.5%) are subtracted from the nominal rate of 12%, the result is 7.5%. This discount rate is rounded down to 7% based on the significance of the public investment role the project may play, and 7% is used as the public discount rate.

## 2. Definition of the "Base Case"

37. This section describes scenarios and assumptions used in the "base case." As previously noted, sensitivity results were estimated for scenarios on several variables; the base case represents a specific grouping of scenarios to act as a touchstone for further analysis.

38. The base case includes the following scenarios and assumptions:

- Generation output level is 5,248 GWh per year as determined from the engineering study conducted by Lahmeyer + Worley.
- Tariffs are based on recent information from discussions with NTEC, the World Bank and GOL representatives. The base case tariff represents the most current understanding of ongoing negotiations between NTEC and EGAT, and a comparison to other recently agreed tariffs for Nam Ngum 2 and Nam Ngum 3. The base case tariff assumes a rate of 5.7 c/kWh to remain constant in nominal terms throughout the 25 year life of the Power Purchase Agreement
- No construction cost over-run.
- Thai inflation rate of 6% per year and US inflation of 3% per year.
- Real discount rates: 7% for the GOL.
- Unmitigated environmental and social costs are based on the "high" scenario as described in the environmental analysis.

39. To better put the base case in context, alternative scenarios and assumptions will be briefly described. A more detailed description follows in the section on sensitivity tests.

40. A total of five generation scenarios were developed based on simulated generation estimates from thirty years of historical weather patterns and an engineering model to convert the weather patterns to generation levels. The historical simulation data was used to produce a distribution of generation levels which then determined probable output level. In addition, to fully test project viability, the lowest scenario includes a five year drought beginning in the second year of operation. The fifty year average for the lowest scenario is about 3% lower than the base case, while the high scenario is about 1% greater than the base case.

41. A high and low tariff scenario are based on Thailand's expected avoided cost of power and recent tariff agreements on the Nam Ngum projects. Two additional tariff scenarios are used to analyze the effect of renegotiation of the Power Purchase Agreement fifteen years after commercial operation begins. These two scenarios represent both an upward and downward revision of the tariff with a greater risk on the downside from slow growth in real power costs.

For the life of the expected PPA, the lowest tariff is about 3% lower than the base case, and the highest tariff is about 4% higher than the base case.

42. For the other key assumptions: construction costs; inflation risks; unmitigated environmental and social costs, the sensitivity analysis include the following scenarios:

- Construction cost over-runs of 10% and 20%.
- US inflation rates vary from 2% to 4%, and Thai inflation rates vary from 5% to 7% per year.
- Unmitigated environmental and social costs vary from 10% to 50% of normal projected costs.

43. To set the bounds for the quantitative analysis, "rosy" and "nightmare" scenarios are also considered where every assumption is either optimistic or pessimistic. It is important to note that these scenarios represent the ultimate bounds of the analysis and each has a very low of probability of occurrence. It is quite unlikely that every assumption would turn out to be either optimistic or pessimistic. These scenarios have value only in gauging the bounds of analysis.

## 2.1 Costs and Benefits in the Base Case

44. Cost estimates in both nominal and real 1996 dollars are detailed in the Appendix. As noted earlier, environmental and social costs are already included in other budget items; they are shown on these tables for informational purposes only.

45. The sources of these data are as follows: pre-construction—Lahmeyer + Worley; construction—Lahmeyer + Worley; environmental and social—NTEC; externalities—Louis Berger International; operation and maintenance—SBC Warburg.

## 2.2 Base Case Results

46. Using the data and assumptions described previously, the results of the cost/benefit analysis are summarized in the following tables. Two time periods are shown for each perspective. The first time period runs through the concession period where assumptions, especially on tariffs, are likely to be more stable. The second time period runs through the year 2050, the estimated economic life of the project. After the concession period the tariff is assumed to be equal to the avoided cost of power supply to Thailand and costs are assumed to be constant in real dollars.

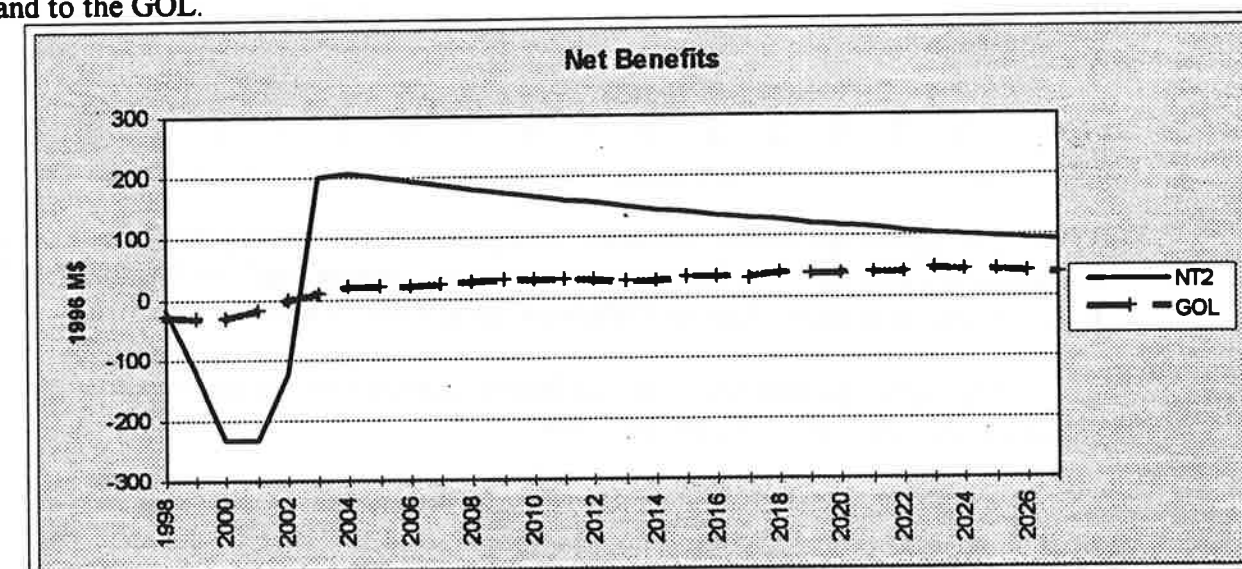


SCENARIOS and ASSUMPTIONS			
Generation	Average Unmitigated Env&Social	High	
Tariff	5.7 Const Noml Const. Cost Adjustment	0%	
GOL Finance	\$100: 1998 - 2002 Thai Inflation Rate	6%	
GOL Equity %	25% US Inflation Rate	3%	
GOL Real Disc%	7% NT2 Real Disc %	9%	

RESULTS (1996 M\$)		
	NT2	GOL
Years 1997 - 2027		
IRR	18.4%	15.1%
NPV	468	136
Years 1997 - 2050		
IRR	18.6%	16.4%
NPV	566	345

47. These results show that from both perspectives the project has a positive NPV. Because of the methodological differences described earlier, the results from the project perspective are different than for the GOL. The GOL perspective includes a portion for preconstruction costs. In addition, externalities are counted for both NT2 and the GOL but are a much higher proportion of costs for the GOL.

48. It is important to note the different time flow of benefits between NT2 and the GOL. Tax and royalty rates increase over time; therefore, the flow of benefits to the GOL is distributed more heavily to the later periods in project life. The following graph depicts the flow of net benefits to NT2 and to the GOL.



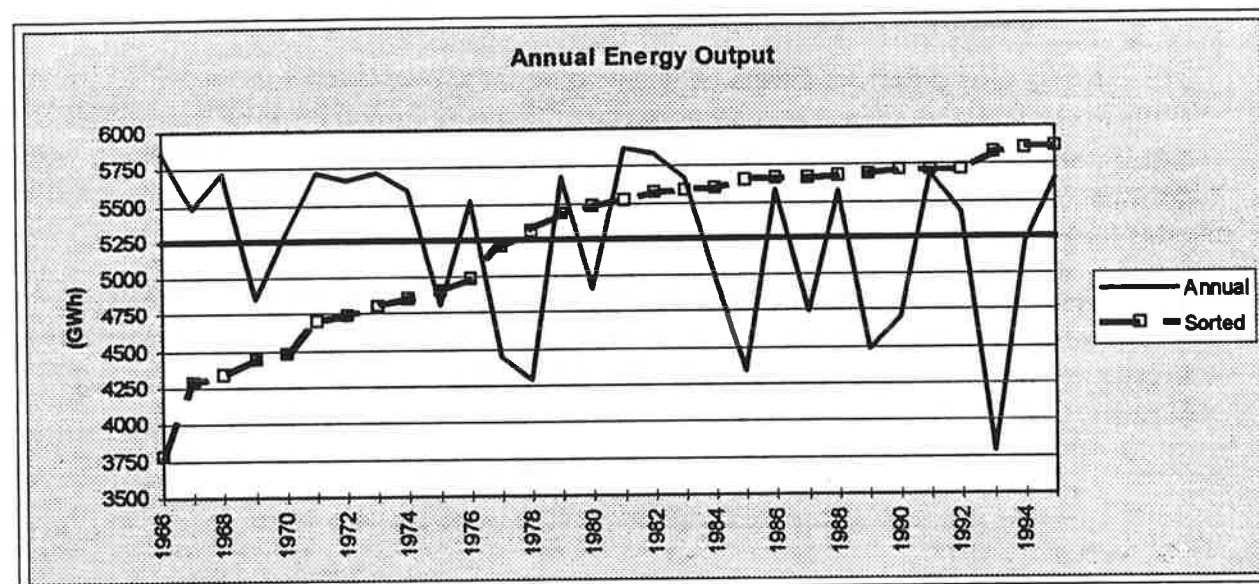
### 3. Sensitivity and Scenario Analysis

49. This section presents results of sensitivity tests on several assumptions and scenarios. For each sensitivity test, the results for the base case are followed by the results for variations in each variable tested. In addition, two other cases are developed to gauge the bounds for overall results: a rosy case where all variables are optimistic and a nightmare case where all are pessimistic. While these two cases may not be likely outcomes, they are illustrative of where the base case falls within the entire range.

#### *Generation Output Scenarios:*

##### Definition of Generation Output Scenarios

50. The generation scenarios were based on how historical weather patterns would simulate generation output levels. Generation output based on historical weather patterns were provided from a engineering model used by Lahmeyer + Worley. The results of the historical simulated generation levels are shown in the graph below. The graph shows the actual year to year levels with a solid line. The data was also sorted from low to high, which is shown on the dashed line.



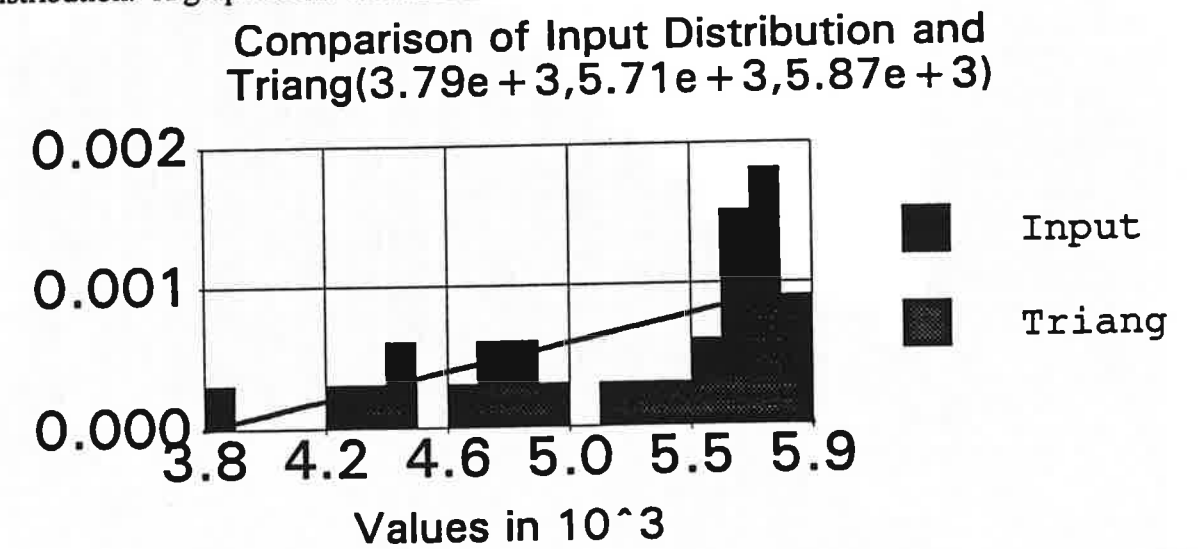
51. The dashed line demonstrates that a large part of the observations fall into a fairly narrow range near the average. This is especially true on the "upside" and may be explained by the relatively sizable amount of storage relative to generation capacity.

52. This data represent historical simulations, to transform this in generation output forecast scenarios, the following approach was used:

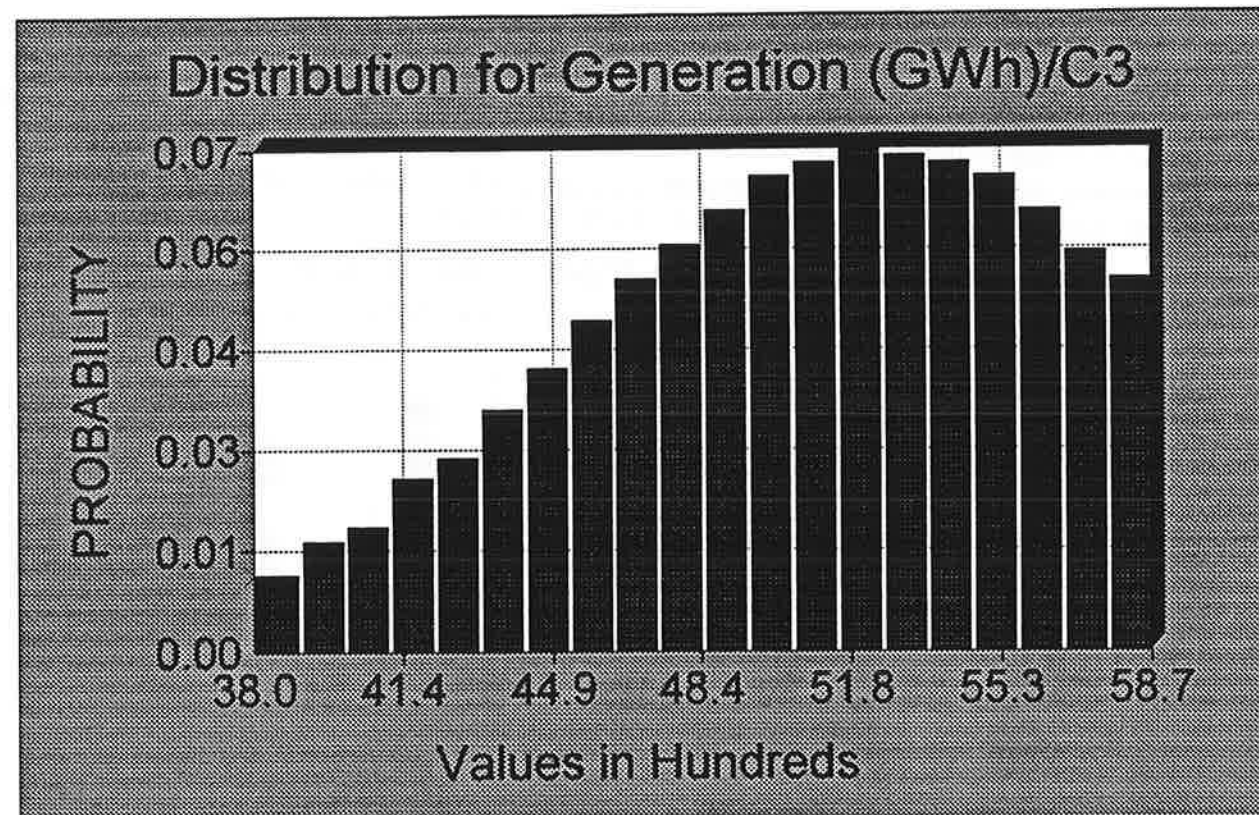
53. A probability distribution was fitted to the historical data. This distribution was selected from 26 possible probability distributions (Normal, student's t, poisson, exponential, logistic, beta, binomial, etc). For each distribution, maximum-likelihood estimators of the distribution parameters were selected. Each probability distribution is optimized with the best parameters.



These optimized distributions are then compared to the simulated data, and the probability distribution with the best "fit" or least residual difference between actual and simulated data is selected as the appropriate distribution. The primary criteria for selecting between distributions was a chi-square statistical test, although other criteria were also analyzed. The resulting probability distribution that best approximated the historical simulation data was a triangular distribution. A graph of the data and distribution is shown below.



54. This distribution was used to represent the potential output in any one year. To estimate the potential generation levels over the economic life of the project, a monte carlo approach was used. However, prior to using monte carlo draws. The simulation data was tested for autocorrelation. Autocorrelation was found to be statistically insignificant. The graph below shows the results of the probability draw for the first year.



55. The monte carlo approach selected a draw from the probability distribution for each year, this was repeated for 1,000 runs producing 1,000 generation output forecasts. These 1,000 forecasts were sorted based on the average output level. Based on these averages, forecasts representing the highest and lowest 10%; the highest and lowest 30%; and the 50% range were selected. A small difference of about 64 GWh/year existed between the average value from the 50% case and the estimated average level from the engineering model.

56. Percentage differences between the five forecasts were applied to the engineering estimate to scale the five forecasts back to the engineering estimate. The percentage differences of each of these forecasts from the 50% forecast was calculated. These percentage differences were applied to the average generation estimate from the engineering model (5,248 GWh/year) in order to properly scale the results. The five scaled forecasts represent the range of output levels. Finally, the average output level was substituted into the first year in each scenario to model the project's expected beginning operational level.

57. The low scenario was intended to fully test the viability of the project. Therefore an additional modification was made to examine the impact of a very poor outcome. A five year drought was entered into the first five years of the low scenario. This scenario then contains average output in the first year, a five year drought in years two through six, and the low 10% probability after year six. This results in a wider spread between the low scenario and other generation scenario. The results are shown in the following table:

## Results of Generation Output Scenarios

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>Low with drought</b>	15.5%	\$331	11.9%	\$90	15.8%	\$429	14.1%	\$299
<b>Low 30%</b>	18.3%	\$464	15.0%	\$134	18.5%	\$561	16.3%	\$342
<b>Average</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>High 70%</b>	18.5%	\$472	15.2%	\$138	18.6%	\$571	16.5%	\$349
<b>High 10%</b>	18.6%	\$479	15.4%	\$142	18.8%	\$579	16.6%	\$353

Tariff ScenariosDefinition of Tariff Scenarios

58. No current Power Purchase Agreement is active. The previous, expired agreement contained a tariff of 4.55 cents/kWh escalated at 3% during construction and 35% of the rate of inflation during operation. Since expiration of this agreement developments in power generation technology and responses to a Request for Proposals from Independent Power Producers have acted to lower Thailand's expectations of future generation costs below what they were at the time of the previous agreement. Therefore, the new tariff can be expected to be lower than the previous agreement.

59. The base case scenario (5.7 Const Nom'l) is drawn from recent estimations and conversations with NTEC World Bank staff and the GOL. This tariff scenario maintains a constant nominal rate of 5.7 c/kWh. Four additional tariff scenarios are developed. Two of these draw on information for competing power generation facilities. The other two begin with the base case tariff, but have a renegotiation provision fifteen years after operation.

60. The first of the two scenarios based on competing generation facilities is based on coal-fired generation (Coal). The fully allocated, levelized cost of a coal fired generation plant over the relevant period is 5.9 c/kWh (see section on avoided cost for details). Thailand is expected to increase its use of imported coal and it is likely that this type of plant may represent Thailand's avoided cost in the long run. The use of coal fired generation likely represents the most Thailand would be willing to pay to avoid generation and therefore is used as the optimistic scenario.

61. The second scenario based on competing facilities uses the recent agreements on Nam Ngum 2 and Nam Ngum 3 as basis [Nam Ngum (-)]. Information from GOL representatives indicated that these recent agreements were fair approximations for what the final Nam Theun 2 tariff may be and accounted for recent developments in the Thai power market. To estimate a lower tariff bound, the lower tariff from Nam Ngum 2 and Nam Ngum 3 was used. An additional subtraction was made to account for differences in power quality and deliveries.

62. Two scenarios were estimated with revisions after the fifteenth year of operation (5.7/+5% in yr 15, 5.7/-10% in yr 15) to analyze the effects of a possible tariff renegotiation. These scenarios revise the tariff up by 5% and down by 10% in year 15. A greater downward revision is

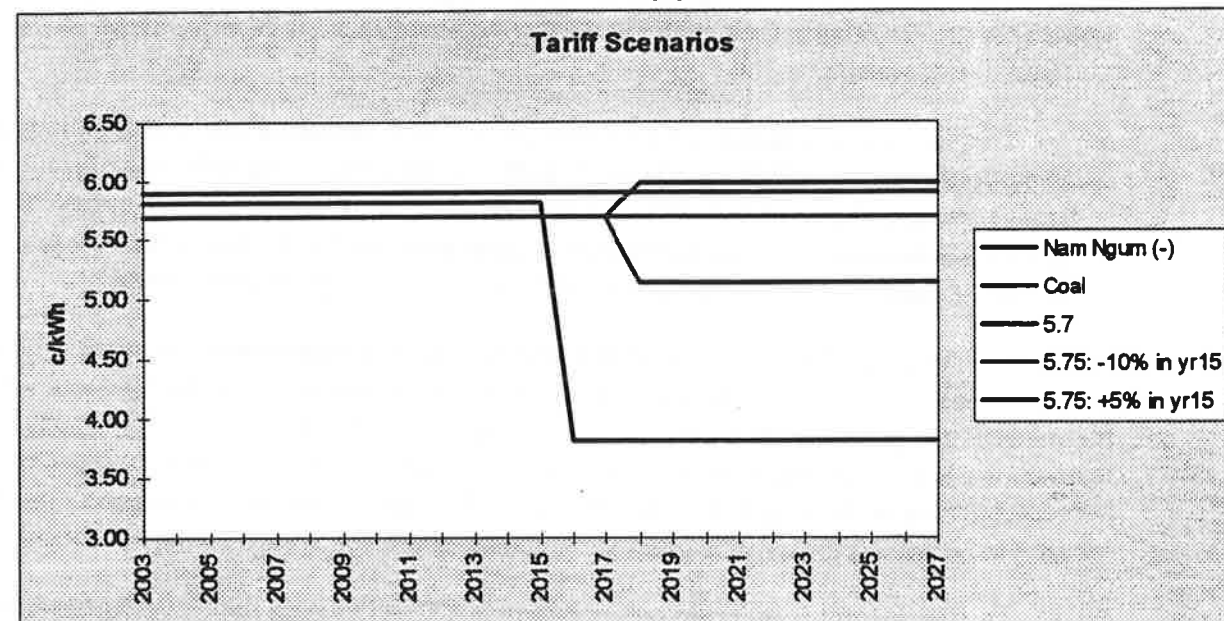
estimated because the forces exerting downward pressure on real power prices are assumed to be greater than those exerting upward pressure. The forces leading to downward price pressure are:

- Technological improvements in natural gas and coal finding, gathering and processing.
- Improvements in generation technologies which convert natural gas and coal to electric power.
- Privatization/deregulation of EGAT and PTT leading to increased cost cutting and technological and managerial improvements; competitive pressure leading to reduced margins on earnings.
- While demand growth from Thailand is expected to be quite strong, this strong demand growth is already incorporated in forecasts; recent economic slowing indicates there may be more downside potential in existing demand forecasts.

63. The forces leading to upward price pressure are:

- Increased worldwide demand and resource depletion leading to increased marginal costs for coal and natural gas.
- Increased energy use per unit of GDP during the rapid expansion of the Thai economy.
- Pent-up demand for energy in Thailand due to resource constraints.

64. The five tariff scenarios are shown on the following graph:



## Results of Tariff Scenarios

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>Nam Ngum (-)</b>	18.3%	\$418	14.1%	\$90	18.5%	\$517	15.9%	\$299
<b>Coal</b>	19.1%	\$509	16.0%	\$155	19.3%	\$608	17.1%	\$364
<b>5.7 Const. Nom'l</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>5.7/+5% in yr 15</b>	18.3%	\$453	14.8%	\$123	18.5%	\$550	16.2%	\$333
<b>5.7/-10% in yr 15</b>	18.4%	\$475	15.2%	\$143	18.6%	\$593	16.7%	\$395

**Construction Cost Over-run Scenarios**Definition of Construction Cost Over-run Scenarios

65. Previous studies of hydroelectric facilities have noted a potential for construction cost over-run. Should over-runs develop, the allocation of costs between NTEC and the GOL or other parties depends on the specific nature and cause of the over-run. Developing specific scenarios for each potential over-run and modeling the contractual responsibility in cost/benefit analysis is not feasible given the schedule and data constraints of the analysis. However, the study team feels it is important to gauge the overall effect of a construction cost over-run. To gain this context, a cost over-run scenario was estimated on the total project perspective, setting aside the issue of exactly which entity would be responsible for precisely what type of over-runs.

66. It may be argued that the fixed price nature of the turnkey construction contract incorporates many potentials for cost risk, and furthermore that the inclusion of contingency funds further dampens over-run risk. Therefore, the construction cost over-run amounts are comparatively small: 10% and 20%.

## Results of Construction Cost Over-Run Scenarios

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>No Cost Overrun</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>10% Overrun</b>	16.8%	\$418	10.8%	\$82	17.1%	\$516	13.0%	\$291
<b>20% Overrun</b>	15.5%	\$368	8.1%	\$28	15.8%	\$466	11.0%	\$237

**Inflation Rate Scenarios**Definition and Results of Inflation Scenarios

67. A one percentage point change in both US and Thai inflation was applied to the base case inflation assumption to derive the optimistic and pessimistic inflation scenarios. These changes may seem small when compared to year to year volatility, however it is important to remember that these inflation assumptions represent the entire period of economic analysis. Therefore the low inflation scenario uses a Thai inflation rate of 5% and US rate of 2%; the high inflation scenario uses a Thai inflation rate of 7% and a US rate of 4%.

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>Base Case</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>Low Inflation</b>	20.4%	\$621	17.2%	\$203	20.6%	\$774	18.3%	\$529
<b>High Inflation</b>	16.4%	\$337	12.9%	\$82	16.6%	\$399	14.4%	\$213

### ***Unmitigated Environmental and Social Costs***

#### **Definition and Results of Unmitigated Environmental and Social Cost Scenarios**

68. Unmitigated environmental and social costs are described in detail in the Environmental Impact section. In summary, these costs represent a percentage of the mean pre-mitigation damage estimates, excluding timber and carbon values. Three scenarios are included: a lower bound where costs are 10% of pre-mitigation estimates, an upper bound where costs are 50% of pre-mitigation estimates (the base case), and a scenario where there are no unmitigated environmental and social costs. In all scenarios, the full cost of unmitigated environmental and social costs is assigned in both the NT2 perspective and the GOL perspective.

#### **Unmitigated Environmental and Social Costs**

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>High Costs</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>Low Costs</b>	18.8%	\$489	16.9%	\$163	19.0%	\$589	17.8%	\$376
<b>No Env&amp;Soc Cost</b>	18.9%	\$495	17.3%	\$171	19.1%	\$595	18.2%	\$384

### ***Scenario Bounds***

#### **Definition and Results of Scenarios**

69. Two further scenarios were tested to set the overall bounds on project returns: a "rosy" scenario where all variables are set to the most optimistic assumption, and a "nightmare" scenario where all variables are pessimistic. These scenarios should be viewed as useful only in setting the bounds for analysis. It is very unlikely that all variables would ultimately fall either on the optimistic or pessimistic side. The assumptions and results of these sensitivity tests are shown on the following tables:

VARIABLE	ROSY	NIGHTMARE
Generation Output	Highest 10%	Low with drought
Tariff	Coal	Nam Ngum (-)
Construction Cost Over-Run	0%	20%
Inflation	Thai=5%/US=2%	Thai=7%/US=4%
Unmitigated Env & Social Cost	None	High

Sensitivity Test Results (1996 M\$)								
CASE	1997-2027				1997-2050			
	NT2		GOL		NT2		GOL	
	IRR	NPV	IRR	NPV	IRR	NPV	IRR	NPV
<b>Base Case</b>	18.4%	\$468	15.1%	\$136	18.6%	\$566	16.4%	\$345
<b>Rosy</b>	21.8%	\$709	20.3%	\$265	21.9%	\$866	21.0%	\$600
<b>Nightmare</b>	11.1%	\$112	4.1%	(\$69)	11.7%	\$173	8.2%	\$63

#### *Comparison of Results to Other Projects*

70. At the time of this report no comprehensive studies were available to compare the results of NT2 to similar projects using an equivalent cost/benefit analysis methodology. However, the Asian Development Bank has completed a study that compared the costs of several projects (including NT2) throughout Southeast Asia. These costs are represented in terms of cents/kWh and shown for both an upper and lower limit. The results show NT2 with a cost range of 1.5 to 2.7 cents/kWh. The average for other projects in Laos is 4.2 to 5.8 cents/kWh. For all of the area here described as Southeast Asia, the cost range is 5.2 to 6.1 cents/kWh.



Indicative Cost of Hydropower Projects (1993)		
Country/ Project	Hydropower Cost	
	Upper Limit	Lower
<b>CAMBODIA</b>		
Stung	5.3	4.0
Stung Mnam 2	3.9	2.5
Stung Atay	5.5	4.
Sambor	6.9	5.2
Average	5.4	4.0
<b>LAO PDR</b>		
Nam Tha	5.6	4.2
Nam Ngum 2	4.5	3.4
Nam Ngum 3	6.0	4.8
Nam Mang 3	6.0	4.8
Nam	6.9	5.6
Nam Ngiep	4.4	3.3
<del>Nam Thum</del>	<del>2.7</del>	<del>1.8</del>
Theun-Hinboun	2.4	1.
Houay	8.9	6.7
Houay Ho	4.6	3.0
Xe Nam Noy 2	8.0	6.0
Xe Nam Noy 4	7.3	5.5
Xe Knog 4	5.9	4.4
Xe Kaman	5.9	4.4
Nam Kong	5.5	4.
Average	5.6	4.2
<b>MYANMAR</b>		
Paunglaung	6.7	4.5
Bijin	5.3	3.5
Yeywa	5.0	3.8
Kun	7.0	5.3
Tamanthi	11.	8.8
Thaukegat	7.0	5.6
Thantwin high	5.5	4.
Thantwin low	4.7	3.5
Baluchaung III	3.8	2.8
Average	6.2	4.7
<b>THAILAND</b>		
Keang Krung	11.	8.6
Mae Lama	7.5	5.7
Mae Taeng	4.4	3.0
Average	7.8	5.8
<b>VIETNAM</b>		
Yaly	4.3	2.8
Son La	6.9	4.6
Huoi Quang	7.8	5.2
Ban Mai	6.3	4.7
Dai Thi	6.7	5.4
Buon Coup	5.9	4.7
Da Mi	8.2	6.2
Song Con 2	n/a	7.7
Dai Ninh	n/a	8.0
Ham	11.	8.8
An Khe	n/a	8.4
Plei Krong	n/a	8.0
Dong Nai 4	n/a	7.7
Cau Don	n/a	9.
Rao Quan 2	n/a	7.5
Cua Dat	n/a	10.
Song Hinh	n/a	6.8
Dong Nai 6	n/a	8.2
Average	7.1	6.9
<b>YUNNAN, P.R. CHINA</b>		
Dachashe	4.2	2.8
Jinghong	4.9	3.3
Xisowen	5.9	3.9
Nuozhadu	6.3	4.2
Jinanzhao	4.8	3.2
Average	5.2	3.5
<b>REGIONAL AVERAGE</b>	<b>6.1</b>	<b>5.2</b>



#### 4. Avoided Cost of Power for Thailand

71. Thailand's avoided cost will be determined by the cost of the marginal generating resource. A full avoided cost model would need to account for both daily and seasonal fluctuations in load and resource availability. A simplified assessment is conducted for this analysis by first examining the costs of various generating facilities that may be expected to be instrumental in setting the marginal cost of electricity. Next, to evaluate which type of these generating facilities will be foremost in determining the marginal cost, Thailand's prospective electric power demand and the supply potential of various generating resources are reviewed. This supply and demand interaction will determine which resources, in which time period, will be instrumental in determining Thailand's marginal cost of power.

##### 4.1 Cost Estimates of Competing Resources

72. The following tables shows generation cost estimates for natural gas and coal-fired resources. The specific type of generating unit shown here is that which would be suited to Thailand's power generation market. This market is characterized by rapid growth and therefore large unit sizes are appropriate

*Table of Cost of Alternative Resources:*

PROJECT DESCRIPTION		CAPITAL, O&M COSTS	
<i>Pulverized Coal</i>		Construction (\$/kW)	1,424
<i>Limestone Forced Oxidation</i>		Fixed O & M (\$/kW-yr)	42.90
<i>Source: EPRI TAG</i>		Variable O & M (\$/MWh)	4.40
PLANT CHARACTERISTICS		O&M Escalation Rate	4.5%
Operating Life (years)	30	First Year Fuel Price (\$/MMBtu)	2.00
Capacity (MW)	300	Fuel Escalation Rate	3.0%
Capacity Factor	86%	FINANCIAL ASSUMPTIONS	
Annual Generation (GWh)	2,252	% Equity	30.0%
Heat Rate (Btu/kWh)	10,016	Return on Equity	15.0%
ANNUAL CONST COST %		Debt Interest Rate	13.0%
2000	16.7%	Weighted Cost of Capital	13.6%
2001	33.3%	Financial Life (years)	16
2002	33.3%	Inflation Rate	4.5%
2003	16.7%	Nominal Discount Rate	12.0%
2004		Base Year for Price	1996
LEVELIZED COST		PROJECT DATES	
Nominal (c/kWh)		Construction Period (years)	4
Fixed Cost	2.46	Year Construction Begins	2000
Variable Cost	3.45	Year On Line	2004
Total Cost	5.90		

PROJECT DESCRIPTION		CAPITAL, O&M COSTS	
Natural Gas Combined Cycle 400 MW Unit Source: EPRI TAG		Construction (\$/kW)	372
		Fixed O & M (\$/kW-yr)	12.10
		Variable O & M (\$/MWh)	2.70
PLANT CHARACTERISTICS		O&M Escalation Rate	4.5%
Operating Life (years)	30	First Year Fuel Price (\$/MMBtu)	3.00
Capacity (MW)	400	Fuel Escalation Rate	4.5%
Capacity Factor	89%	FINANCIAL ASSUMPTIONS	
Annual Generation (GWh)	3,115	% Equity	30.0%
Heat Rate (Btu/kWh)	6,691	Return on Equity	15.0%
ANNUAL CONST COST %		Debt Interest Rate	13.0%
2002	50.0%	Weighted Cost of Capital	13.6%
2003	50.0%	Financial Life (years)	10
2004		Inflation Rate	4.5%
2005		Nominal Discount Rate	12.0%
2006		Base Year for Price	1996
LEVELIZED COST		PROJECT DATES	
Nominal (c/kWh)		Construction Period (years)	2
Fixed Cost	0.73	Year Construction Begins	2002
Variable Cost	3.46	Year On Line	2004
Total Cost	4.20		

73. The nominal levelized cost of NT2 is less than 3 cents/kWh Based on this review, a combined cycle natural gas-fired generation facility is more expensive than NT2. However, if future developments were to lower the ultimate power production cost of gas-fired generation, the competitive advantage could erode. Possible developments that could lead to this outcome are technological advances in either natural gas production or gas-fired generation. To evaluate these issues the potential for future developments lowering the cost of natural gas will be reviewed.

#### 4.2 Developments Affecting the Price of Gas-Fired Generation

74. It is very possible that both the capital costs of combustion turbines and the production cost of natural gas will stay flat or decline in real terms in the near future.

75. A thorough study of the market for combustion turbines notes that "In the last five years the power generation industry has witnessed dramatic price reductions for combustion turbines and combined cycle power plants. Reductions approaching 30% have been realized."<sup>16</sup> This study goes on to conclude, "Future demand is expected to remain well below worldwide manufacturing capability... As a result, prices over the next ten years are anticipated to remain depressed, with the expected prices staying within a few percentage points of 1996 values."<sup>17</sup>

76. In addition, technological improvements are expected to continue which will improve the heat rate—the rate at which natural gas can be converted to electricity—which is stated in terms

<sup>16</sup> Technical Assessment Guide, Electric Power Research Institute, 1996

<sup>17</sup> Ibid.

of Btu/KWh. This will mean the newer, more efficient machines will need to purchase less gas in order to produce the same amount of output, thereby reducing overall fuel costs for a given level of electricity. Current estimates have heat rates dropping from around 7,300 for current efficient turbines to around 6,300 for turbines in the year 2000, a 14% decline.

77. Finally, important advances are being made in gas finding and production technology. A technology known as 3-D seismic will continue to lower finding costs and improve finding success rates for natural gas. Horizontal drilling will increase the productivity of gas wells. Significant advances are being made in deepwater technology to produce gas.

78. If any of these future developments were to actually decrease the price of gas-fired generation in real terms, the issue would then become the quantity of natural gas available and the growth in power demands for Thailand; only if there is enough natural gas to keep pace with demand growth will natural gas drive the marginal cost of Thai power.

79. Current estimates from EGAT show the quantity of gas unable to keep pace with growing demand.<sup>18</sup> Under this scenario, gas may drive marginal costs in the short run, until sometime between 2000 and 2005, when imported coal is expected to meet the bulk of load growth. NT2 shows distinct competitive advantages over coal. Therefore, the issue becomes how long natural gas-fired generation can keep up with Thailand's power requirements. This question hinges on two variables: the demand growth in Thailand and the amount of natural gas available. To assess these two issues, Thailand's demand forecasts are reviewed, followed by an analysis of natural gas supply.

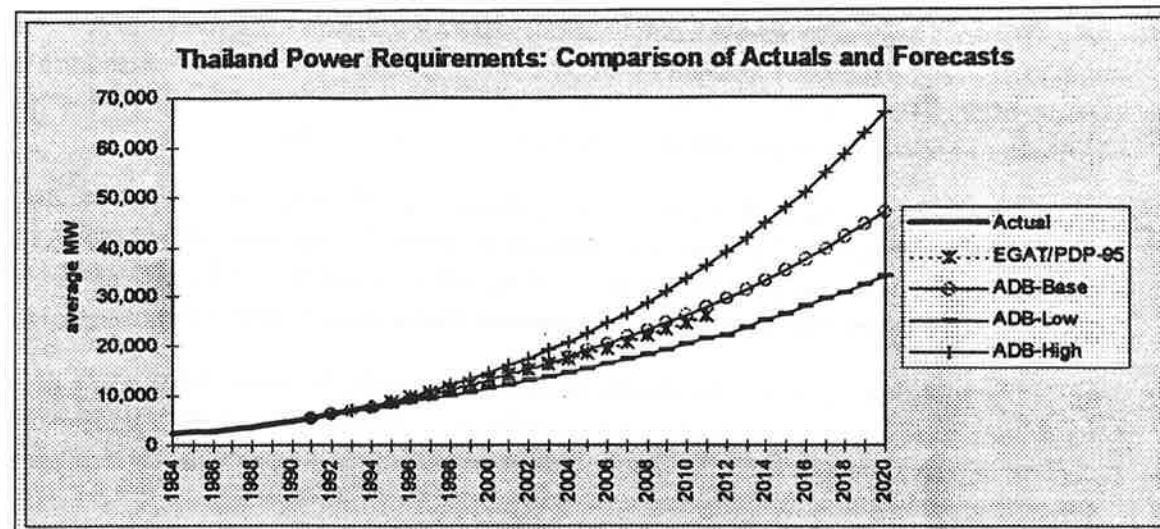
#### 4.3 Thai Power Demand Forecasts

80. Thailand's energy demand will be a function primarily of economic growth, energy prices and the success of energy demand side management measures. To assess demand, long-term forecasts from EGAT<sup>19</sup> and the Asian Development Bank<sup>20</sup> (ADB) are compared on the following graph. The graph shows actual electric energy requirements from 1984 to 1994 and compares the base case EGAT to three scenarios of power requirements from the ADB.

<sup>18</sup> Power Development Plan, 1995

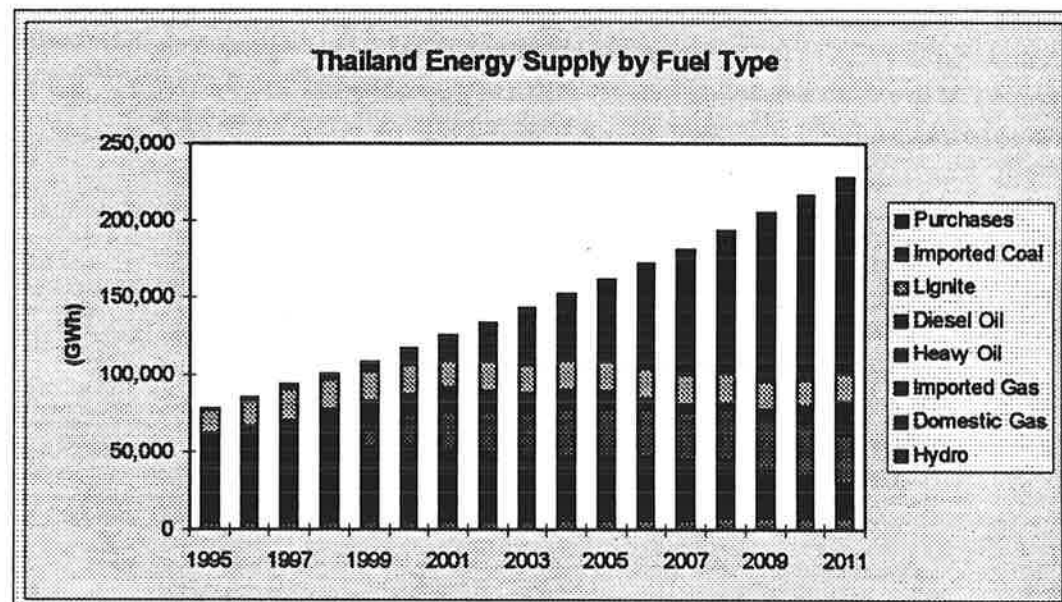
<sup>19</sup> General Information: EGAT Power Development Plan, 1995.

<sup>20</sup> Subregional Energy Sector Study for the Greater Mekong Subregion, 1995



81. The graph demonstrates a fundamental agreement between the EGAT forecast and the ADB base forecast. Both forecasts show a rapid growth rate. From 1998 to 2020 the ADB base forecast shows power requirements increasing at an average annual growth rate of 6.9%. Incremental power demand is forecast to grow by 953 average MW in 1998 and increase to an annual growth by 2020 of 2,553 average MW.

82. As noted, EGAT estimates that natural gas-fired generation will grow rapidly only through the early part of the next decade, after which imported coal will take on a larger role in meeting Thailand's demand growth. The following graph describes EGAT's expectation of fuel use for future resources:



83. The EGAT Power Development Plan makes clear that only if significant amounts of natural gas become available to Thailand will natural gas-fired generation be able to grow in

magnitudes sufficient to set marginal cost. To assess this potential, a brief review of natural gas resources available to Thailand follows.

#### 4.4 Supply of Natural Gas

84. The bulk of Thailand's natural gas supply is expected to come from offshore in the Gulf of Thailand with an additional important amount from offshore Myanmar. EGAT's Power Development Plan groups these supply areas by the various Unocal fields in the Gulf of Thailand—the Bongkot field and the Malaysia-Thai Joint Development Area (JDA), both also in the Gulf of Thailand and the Yadana field from Myanmar. Combined with other smaller fields, the total amount of gas to be imported grows from 525 MMscf/day in 2000 to 775 MMscf/day in 2011.

85. Recent developments indicate more gas may become available than was anticipated by the 1995 Power Development Plan. A large part of this increased capacity is from the JDA. The potential increase is still speculative but could be as large as 400 MMcf/day. However, Thailand and Malaysia have not yet fully resolved territorial issues and the allocation of gas from this field. In addition, two small new fields have been discovered offshore from Myanmar that could increase this supply by 100 to 150 MMcf/day. Unocal is also expected to increase production, and the Bongkot field is expected to increase capacity. All of these increases could push back the time when natural gas yields to imported coal as the marginal resource.

86. In summary, NT2 is currently estimated to be less costly than a natural gas fired combustion turbine, although the amount of this cost advantage could erode over time. While it is not expected that a combined cycle combustion turbine will become less expensive than NT2, the decline in gas generated electricity may continue to put downward pressure on the tariff for NT2. There is also a real potential for expanding gas supplies that could expand the horizon over which gas generation will put price pressure on NT2.

87. An estimate of the advantages to Thailand of preceding with NT2 can be estimated by comparing the levelized cost of a coal plant (5.9 c/kWh) with the base case tariff (5.7 c/kWh), an advantage of 0.2 c/kWh. If NT2 generates 5,248 GWh/year as given in the base case, this would indicate a cost saving of about \$10.5 million per year:

$$0.2 \text{ c/kWh} = 0.002 \text{ \$/kWh}$$

$$5,248 \text{ GWh/year} = 5,248,000,000 \text{ kWh/year}$$

$$0.002 * 5,248,000,000 = 10,496,000 \text{ \$/year}$$

## Appendix 1: Cost/Benefit Results

### Cost/Benefit Analysis Results - Real 1996 M\$

[illegible]



Results: 1996 M\$	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>PROJECT ANALYSIS</b>											
Benefits											
Generation (GWh)	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Tariff (¢/KWh)	4.50	4.37	4.24	4.12	4.00	3.88	3.77	3.66	3.55	3.45	3.35
Revenue	236.14	229.26	222.59	216.10	209.81	203.70	197.76	192.00	186.41	180.98	175.71
Costs											
Total Preconstruction											
Construction (budgeted)											
O & M	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46
Land Oppty Cost	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Unmitigated E&S	3.50	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Theun-Hinboun	8.86	8.70	8.53	8.37	8.21	8.06	7.90	7.75	7.61	7.46	7.32
Subtotal	36.82	36.55	36.39	36.23	36.07	35.91	35.76	35.61	35.46	35.32	35.18
Net Benefits											
Subtotal	199.32	192.71	186.20	179.88	173.74	167.78	162.00	156.39	150.95	145.66	140.53

<b>GOL ANALYSIS</b>											
Benefits											
Royalty	11.46	11.13	10.81	10.49	10.18	9.89	9.60	9.32	9.05	8.79	8.53
Tax				5.18	5.39	5.59	5.68	5.60	5.51	5.40	5.29
Equity Share of Inc	22.01	23.11	24.60	24.62	25.62	26.54	26.97	26.61	26.18	25.67	25.14
Subtotal	33.47	34.24	35.41	40.30	41.20	42.02	42.25	41.53	40.74	39.85	38.96
Costs											
Total Preconstruction											
GOL Equity											
Land Oppty Cost	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Unmitigated E&S	3.50	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Theun-Hinboun	5.32	5.22	5.12	5.02	4.93	4.83	4.74	4.65	4.56	4.48	4.39
Subtotal	11.82	11.62	11.52	11.42	11.33	11.23	11.14	11.05	10.96	10.88	10.79
Net Benefits											
Subtotal	21.65	22.62	23.89	28.87	29.87	30.78	31.11	30.48	29.78	28.98	28.17

Results: 1996 M\$	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PROJECT ANALYSIS</b>												
<b>Benefits</b>												
Generation (GWh)	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Tariff (¢/KWh)	3.25	3.16	3.06	2.97	2.89	2.80	2.72	2.64	2.57	2.49	2.42	2.35
Revenue	170.59	165.62	160.80	156.12	151.57	147.16	142.87	138.71	134.67	130.75	126.94	123.24
<b>Costs</b>												
Total Preconstruction												
Construction (budgeted)												
O & M	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46
Land Oppty Cost	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Unmitigated E&S	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Theun-Hinboun	7.18	7.05	6.91	6.78	6.65	6.53	6.40	6.28	6.16	6.05	5.93	5.82
Subtotal	35.04	34.90	34.77	34.64	34.51	34.39	34.26	34.14	34.02	33.90	33.79	33.68
Net Benefits												
Subtotal	135.55	130.72	126.03	121.48	117.06	112.77	108.61	104.57	100.65	96.84	93.15	89.56
<b>GOL ANALYSIS</b>												
<b>Benefits</b>												
Royalty	8.28	8.04	7.80	7.56	7.32	7.08	6.84	6.60	6.36	6.12	5.88	5.64
Tax	15.10	14.45	13.80	13.15	12.50	11.85	11.20	10.55	9.90	9.25	8.60	7.95
Equity Share of Inc	21.39	20.47	19.55	18.63	17.71	16.79	15.87	14.95	14.03	13.11	12.19	11.27
Subtotal	44.77	42.97	41.15	39.34	37.53	35.72	33.91	32.10	30.29	28.48	26.67	24.86
<b>Costs</b>												
Total Preconstruction												
GOL Equity												
Land Oppty Cost	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Unmitigated E&S	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Theun-Hinboun	4.31	4.23	4.15	4.07	3.99	3.92	3.84	3.77	3.70	3.63	3.56	3.49
Subtotal	10.71	10.63	10.55	10.47	10.39	10.32	10.24	10.17	10.10	10.03	9.96	9.89
Net Benefits												
Subtotal	34.06	32.34	30.60	28.87	27.14	25.40	23.67	21.94	20.19	18.45	16.71	14.97



### Cost/Benefit Analysis Results - Nominal \$

[illegible]

Results: Nominal M\$	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>PROJECT ANALYSIS</b>											
<b>Benefits</b>											
Generation (GWh)	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Tariff (c/KWh)	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
Revenue	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14
<b>Costs</b>											
Total Preconstruction											
Construction (budgeted)											
O & M	32.12	33.63	35.22	36.88	38.64	40.48	42.43	44.47	46.62	48.89	51.27
Land Oppty Cost	3.91	4.03	4.15	4.28	4.41	4.54	4.67	4.81	4.96	5.11	5.26
Unmitigated E&S	4.57	4.57	4.71	4.85	4.99	5.14	5.30	5.46	5.62	5.79	5.96
Theun-Hinboun	11.57	11.69	11.81	11.93	12.06	12.19	12.31	12.44	12.57	12.71	12.84
Subtotal	52.17	53.92	55.88	57.94	60.09	62.35	64.71	67.18	69.77	72.49	75.33
Net Benefits											
Subtotal	246.97	245.22	243.25	241.19	239.04	236.79	234.43	231.95	229.36	226.65	223.80

<b>GOL ANALYSIS</b>											
<b>Benefits</b>											
Royalty	14.96	14.96	14.96	14.96	14.96	14.96	14.96	14.96	14.96	14.96	14.96
Tax				7.39	7.92	8.45	8.85	8.99	9.11	9.20	27.62
Equity Share of Inc	28.71	31.05	34.06	35.11	37.63	40.15	42.02	42.70	43.27	43.69	39.13
Subtotal	43.67	46.01	49.01	57.45	60.50	63.56	65.82	66.65	67.34	67.85	81.70
<b>Costs</b>											
Total Preconstruction											
GOL Equity											
Land Oppty Cost	3.91	4.03	4.15	4.28	4.41	4.54	4.67	4.81	4.96	5.11	5.26
Unmitigated E&S	4.57	4.57	4.71	4.85	4.99	5.14	5.30	5.46	5.62	5.79	5.96
Theun-Hinboun	6.94	7.01	7.09	7.16	7.24	7.31	7.39	7.47	7.54	7.62	7.70
Subtotal	15.42	15.61	15.94	16.29	16.63	16.99	17.36	17.74	18.12	18.52	18.93
Net Benefits											
Subtotal	28.25	30.40	33.07	41.17	43.87	46.56	48.46	48.91	49.22	49.33	62.78

Results: Nominal M\$	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PROJECT ANALYSIS</b>												
<b>Benefits</b>												
Generation (GWh)	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Tariff (¢/KWh)	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
Revenue	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14	299.14
<b>Costs</b>												
Total Preconstruction												
Construction (budgeted)												
O & M	53.78	56.43	59.22	62.15	65.25	68.51	71.94	75.57	79.38	83.41	87.66	92.14
Land Oppty Cost	5.42	5.58	5.75	5.92	6.10	6.28	6.47	6.66	6.86	7.07	7.28	7.50
Unmitigated E&S	6.14	6.33	6.51	6.71	6.91	7.12	7.33	7.55	7.78	8.01	8.25	8.50
Theun-Hinboun	12.97	13.11	13.25	13.39	13.53	13.67	13.81	13.96	14.10	14.25	14.40	14.55
Subtotal	78.32	81.44	84.73	88.17	91.78	95.58	99.58	103.74	108.13	112.75	117.59	122.69
<b>Net Benefits</b>												
Subtotal	220.82	217.69	214.41	210.97	207.35	203.56	199.58	195.40	191.00	186.39	181.54	176.45
<b>GOL ANALYSIS</b>												
<b>Benefits</b>												
Royalty	14.96	14.96	14.87	14.87	14.87	14.87	14.87	14.74	14.74	14.74	14.74	14.74
Tax	27.27	26.89	21.88	21.42	20.97	20.99	20.98	20.25	20.08	22.90	21.65	20.33
Equity Share of Inc	38.63	38.09	30.99	30.35	29.71	23.91	23.32	14.73	14.05	13.36	12.63	11.86
Subtotal	80.86	79.93	67.74	66.64	65.55	60.77	60.18	50.72	50.87	50.00	49.02	47.94
<b>Costs</b>												
Total Preconstruction												
GOL Equity												
Land Oppty Cost	5.42	5.58	5.75	5.92	6.10	6.28	6.47	6.66	6.86	7.07	7.28	7.50
Unmitigated E&S	6.14	6.33	6.51	6.71	6.91	7.12	7.33	7.55	7.78	8.01	8.25	8.50
Theun-Hinboun	7.78	7.87	7.95	8.03	8.12	8.20	8.29	8.37	8.46	8.55	8.64	8.73
Subtotal	19.34	19.77	20.21	20.66	21.13	21.60	22.09	22.59	23.11	23.63	24.18	24.73
<b>Net Benefits</b>												
Subtotal	61.51	60.16	47.52	45.98	44.42	39.17	38.09	28.13	27.76	26.36	24.85	23.20

**Appendix 2: Cost Detail**

The following tables show cost used in the analysis. Environmental and Social costs are broken out and explicitly listed in the following tables. These environmental and social costs are included in other costs items of the analysis. They are shown separately here for exposition purposes only.

Cost Detail: 1996 M\$		Total	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>PRE-CONSTRUCTION</b>																
Development costs		34.63	2.15	4.21	6.12	8.00	9.57	4.58								
Developer's premium		34.63	2.15	4.21	6.12	8.00	9.57	4.58								
Sponsors fee		30.10	5.38	5.26	5.10	5.00	4.78	4.58								
<b>Total</b>		<b>99.37</b>	<b>9.68</b>	<b>13.68</b>	<b>17.35</b>	<b>21.00</b>	<b>23.92</b>	<b>13.73</b>								
<b>CONSTRUCTION</b>																
Planned																
Facilities		551.39							91.39	187.76	184.93	87.29				
Pre operation		19.08							0.96	0.94	0.93	3.66	12.60			
Administrative (own cost)		20.58							5.28	5.18	5.11	5.03				
Consultants		3.74							0.96	0.94	0.93	0.91				
Risk contingency		55.14							9.14	18.76	18.49	8.73				
Exchange rate risk		18.71							4.78	4.71	4.64	4.57				
Insurance		14.57						14.57								
Facilities stand by		2.33						2.33								
Environment (below)																
<b>Subtotal</b>		<b>685.55</b>						<b>16.90</b>	<b>112.48</b>	<b>218.34</b>	<b>215.03</b>	<b>110.19</b>	<b>12.60</b>			
Unplanned adjustment																
<b>Total</b>								<b>16.90</b>	<b>112.48</b>	<b>218.34</b>	<b>215.03</b>	<b>110.19</b>	<b>12.60</b>			
<b>ENVIRONMENT &amp; SOCIAL</b>																
Budgeted																
Development																
NTEC Construction Budget		23.08							6.87	5.58	5.34	2.70	2.58			
Construction mitigation		7.69							2.29	1.86	1.78	0.90	0.86			
Contingency																
Turnkey Allowance																
General		20.49							3.55	7.08	6.77	3.10				
Downstream Channel		16.39							2.84	5.66	5.41	2.48				
Operation																
Operator's Allowance		2.76														
<b>Subtotal</b>		<b>70.41</b>						<b>9.16</b>	<b>13.83</b>	<b>19.86</b>	<b>15.78</b>	<b>9.03</b>	<b>0.18</b>	<b>0.17</b>	<b>0.17</b>	<b>0.16</b>
Off Budget																
Land Apply Cost		55.23												2.70	2.66	2.61
Unmitigated Env&Social		72.58							0.28	1.82	2.17	2.23	3.02	3.24	3.19	3.05
<b>Subtotal</b>		<b>127.80</b>						<b>0.28</b>	<b>1.82</b>	<b>2.17</b>	<b>2.23</b>	<b>3.02</b>	<b>5.94</b>	<b>5.85</b>	<b>5.66</b>	<b>5.49</b>
<b>Total</b>		<b>198.21</b>						<b>9.45</b>	<b>15.65</b>	<b>22.03</b>	<b>18.01</b>	<b>12.04</b>	<b>6.12</b>	<b>6.02</b>	<b>5.83</b>	<b>5.65</b>
<b>O &amp; M, ADMIN</b>																
O & M		375.00												15.00	15.00	15.00
O & M Insurance		37.50												1.50	1.50	1.50
Overhaul reserve		48.91												1.96	1.96	1.96
NTEC Admin		75.00												3.00	3.00	3.00
<b>Total</b>		<b>536.41</b>												<b>21.46</b>	<b>21.46</b>	<b>21.46</b>

Cost Detail: 1996 M\$	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2028
<b>PRE-CONSTRUCTION</b>																					
Development costs																					
Developer's premium																					
Sponsors fee																					
<b>Total</b>																					
<b>CONSTRUCTION</b>																					
Planned																					
Facilities																					
Pie operation																					
Administrative (own cost)																					
Consultants																					
Risk contingency																					
Exchange rate risk																					
Insurance																					
Facilities stand by																					
Environment (below)																					
<b>Subtotal</b>																					
Unplanned adjustment																					
<b>Total</b>																					
<b>ENVIRONMENT &amp; SOCIAL</b>																					
Budgeted																					
Development																					
NTEC Construction Budget																					
Construction mitigation																					
Contingency																					
Turnkey Allowance																					
General																					
Downstream Channel																					
Operation																					
Operator's Allowance																					
<b>Subtotal</b>	0.15	0.15	0.14	0.13	0.13	0.12	0.12	0.12	0.11	0.10	0.10	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.06
Off Budget																					
Land Oppty Cost	2.53	2.49	2.45	2.41	2.36	2.32	2.28	2.24	2.20	2.16	2.12	2.08	2.04	2.01	1.97	1.93	1.89	1.86	1.82	1.78	1.75
Unmitigated Env&Social	2.87	2.82	2.77	2.73	2.68	2.63	2.59	2.54	2.49	2.45	2.41	2.36	2.32	2.27	2.23	2.19	2.14	2.10	2.06	2.02	1.98
<b>Subtotal</b>	5.40	5.31	5.22	5.13	5.04	4.96	4.87	4.78	4.70	4.61	4.53	4.44	4.36	4.28	4.20	4.12	4.04	3.96	3.88	3.80	3.73
<b>Total</b>	5.55	5.45	5.36	5.26	5.17	5.08	4.98	4.89	4.80	4.71	4.62	4.53	4.45	4.36	4.26	4.19	4.11	4.03	3.94	3.86	3.78
<b>O &amp; M ADMIN</b>																					
O & M	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
O & M Insurance	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Overhaul reserve	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
NTEC Admin	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>Total</b>	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46	21.46

Cost Detail: Nominal M\$		Total	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>PRE-CONSTRUCTION</b>																
Development costs		35.00	2.00	4.00	6.00	8.00	10.00	5.00								
Developer's premium		35.00	2.00	4.00	6.00	8.00	10.00	5.00								
Sponsors fee		30.00	5.00	5.00	5.00	5.00	5.00	5.00								
<b>Total</b>		<b>100.00</b>	<b>9.00</b>	<b>13.00</b>	<b>17.00</b>	<b>21.00</b>	<b>25.00</b>	<b>15.00</b>								
<b>CONSTRUCTION</b>																
Planned																
Facilities		673.53							104.35	224.21	230.94	114.03				
Pre operation		25.37							1.09	1.13	1.16	4.76	17.22			
Administrative (own cost)		25.14							6.01	6.19	6.38	6.57				
Consultants		4.57							1.09	1.13	1.16	1.19				
Risk contingency		67.35							10.44	22.42	23.09	11.40				
Exchange rate risk		22.86							5.46	5.83	5.80	5.97				
Insurance		15.91						15.91								
Facilities stand by		2.55						2.55								
Environment (below)																
<b>Subtotal</b>		<b>837.28</b>						<b>18.46</b>	<b>128.45</b>	<b>260.70</b>	<b>268.52</b>	<b>143.94</b>	<b>17.22</b>			
Unplanned adjustment																
<b>Total</b>								<b>18.46</b>	<b>128.45</b>	<b>260.70</b>	<b>268.52</b>	<b>143.94</b>	<b>17.22</b>			
<b>ENVIRONMENT &amp; SOCIAL</b>																
Budgeted																
Development																
NTEC Construction Budget		27.00						7.50	6.36	6.38	3.38	3.38				
Construction mitigation		9.00						2.50	2.13	2.13	1.13	1.13				
Contingency																
Turnkey Allowance																
General		25.00							4.05	8.45	8.45	4.05				
Downstream Channel		20.00							3.24	6.76	6.76	3.24				
Operation																
Operator's Allowance		6.25											0.25	0.25	0.25	0.25
<b>Subtotal</b>		<b>87.25</b>						<b>10.00</b>	<b>15.79</b>	<b>23.71</b>	<b>19.71</b>	<b>11.79</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>
Off Budget																
Land Oppty Cost		134.52														
Unmitigated Env&Social		164.79						0.32	2.08	2.59	2.78	3.94	4.43	4.56	4.57	4.57
<b>Subtotal</b>																
<b>Total</b>																
<b>O &amp; M, ADMIN</b>																
O & M		955.02											20.50	21.45	22.46	23.51
O & M Insurance		95.50											2.05	2.15	2.25	2.35
Overhaul reserve		124.57											2.67	2.80	2.93	3.07
NTEC Admin		191.00											4.10	4.29	4.49	4.70
<b>Total</b>		<b>1,366.10</b>											<b>29.33</b>	<b>30.69</b>	<b>32.12</b>	<b>33.63</b>

Cost Detail: Nominal M\$		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PRE-CONSTRUCTION</b>																						
Developer's costs																						
Developer's premium																						
Sponsors fee																						
Total																						
<b>CONSTRUCTION</b>																						
Planned																						
Facilities																						
Pre operation																						
Administrative (own cost)																						
Consultants																						
Risk contingency																						
Exchange rate risk																						
Insurance																						
Facilities stand by																						
Environment (below)																						
Subtotal																						
Unplanned adjustment																						
Total																						
<b>ENVIRONMENT &amp; SOCIAL</b>																						
Budgeted																						
Development																						
NTEC Construction Budget																						
Construction mitigation																						
Contingency																						
Turnkey Allowance																						
General																						
Downstream Channel																						
Operation																						
Operator's Allowance																						
Subtotal		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Off Budget		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Land Oppty Cost		4.15	4.28	4.41	4.54	4.67	4.81	4.96	5.11	5.26	5.42	5.58	5.75	5.92	6.10	6.28	6.47	6.66	6.86	7.07	7.28	7.50
Unmitigated Env&Social		4.71	4.85	4.99	5.14	5.30	5.46	5.62	5.79	5.96	6.14	6.33	6.51	6.71	6.91	7.12	7.33	7.55	7.78	8.01	8.25	8.50
Subtotal																						
Total																						
<b>O &amp; M, ADMIN</b>																						
O & M		24.62	25.78	27.01	28.30	29.66	31.09	32.59	34.18	35.84	37.60	39.45	41.40	43.45	45.61	47.89	50.29	52.83	55.50	58.31	61.28	64.41
O & M Insurance		2.46	2.58	2.70	2.83	2.97	3.11	3.26	3.42	3.58	3.76	3.94	4.14	4.35	4.56	4.79	5.03	5.28	5.55	5.83	6.13	6.44
Overhaul reserve		3.21	3.36	3.52	3.69	3.87	4.05	4.25	4.46	4.68	4.90	5.15	5.40	5.67	5.95	6.25	6.56	6.89	7.24	7.61	7.99	8.40
NTEC Admin		4.92	5.16	5.40	5.66	5.93	6.22	6.52	6.84	7.17	7.52	7.89	8.28	8.69	9.12	9.58	10.06	10.57	11.10	11.66	12.26	12.86
Total		35.22	36.88	38.64	40.48	42.43	44.47	46.62	48.89	51.27	53.78	56.43	59.22	62.15	65.25	68.51	71.94	75.57	79.38	83.41	87.66	92.14



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## **Annex 2**

### **Valuing the Social and Environmental Impacts of the Nam Theun 2 Hydroelectricity Project:**

#### **A Preliminary Assessment**

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**Annex 2**  
**Valuing the Social and Environmental Impacts of the**  
**Nam Theun 2 Hydroelectricity Project: A Preliminary Assessment**

**Introduction**

1. The proposed Nam Theun 2 hydroelectricity power project (NT2) would produce electricity for export to Thailand. For the country of Laos, the potential benefit of this project is primarily the financial flows that would accrue to the country through the sale of electricity. The project would, however, entail considerable trade-offs, particularly in the environmental and social aspects of the project. The proposed reservoir would flood approximately 450 km<sup>2</sup> and require the involuntary resettlement of 4-5,000 people. The government of Laos must consider the benefits and costs of this project before committing its land and people to its implementation. This study focuses on presenting the social and environmental impacts in a manner that is most conducive to an effective evaluation of the trade-offs of the project.
2. The primary objectives of this study are to:
  - Categorize the environmental and social impacts associated with the construction and implementation of the Nam Theun 2 hydroelectricity project.
  - Carry out the valuation and monetization of as many of these impacts as possible.
  - Identify the costs and assess the effectiveness of measures to mitigate these costs and provide estimates for residual (unmitigated) costs.
  - Assess the institutional capacity to carry out mitigation efforts.
3. We will follow this sequence in the analysis, first contemplating the costs of these impacts without mitigation, then assessing the costs and benefits of different mitigation strategies, and finally valuing any residual damages. The valuation of the environmental and social impacts of the project is carried out in order that these may be incorporated into a benefit-cost framework. By definition, this does not address distributional, equity, or ethical issues; the approach considers only economic efficiency. Certainly, this does not preclude consideration of these aspects; rather, these must be weighed separately.
4. For some of the potential impacts of the project, economic valuation is not possible given the current lack of specificity and quantitative analysis in the various studies. In these cases, we are only able to present the direction and general magnitude of the impacts at this time. We will, however, present a framework for possible future valuation efforts and propose some suggestions for the modification of ongoing studies such that the results may more readily present themselves for economic valuation.
5. For some of the impacts, economic valuation may neither be appropriate nor add significantly to the assessment of the merits and costs of the project. For these types of impacts, we present the results in qualitative terms.

## 1. Categorization of Impacts

6. The impacts of the project are best considered as a comparison between what occurs with implementation of the project versus what would have occurred without the project. (This is not the same as before and after the project.) Hence, projections into the future must be made for both the baseline and the project scenarios. These scenarios are "most likely" estimates of what will occur, based on economic, demographic, political, and social forces, to name just a few. In a later section, we will expand the analysis to include the effects of mitigation efforts. This section considers the effects of the project without taking any measures to offset, mitigate, or compensate for adverse impacts.

7. Social and environmental impacts will occur both inside and outside the project area. For this analysis, we divide the impacts into seven areas, based primarily on geographic location:

- The inundation area;
- The Nakai Biological Conservation Area;
- Downstream in the Nam Theun;
- Downstream in the Nam Phit/Xe Bang Fai;
- The construction area;
- The resettlement areas;
- Regional health impacts.

### 1.1 The Inundation Area

8. The currently proposed configuration of the project entails the inundation of approximately 45,000 hectares of land on the Nakai Plateau. This area contains the land and homes of over 4,500 people and natural habitats in various stages of degradation. The inundation area comprises about 40% of the total land on the plateau itself. Logging on the plateau started over ten years ago, but has increased steeply over the past two years based on the projected implementation of the NT2. The degradation of the land can be attributed not only to this logging, but also to the hunting and swidden agriculture that occurs on the plateau. 70% of the inundation area is already either partially or totally deforested (of which 8% is under agriculture) and 30% of the area remains forested (Environmental and Social Action Plan Proposal, IUCN/WCS, 1996). The land to be inundated has provided habitat to elephants and bears, among numerous other species.

9. Agricultural productivity has been dropping on the plateau. Incomes, which depend not only on agriculture, but on fishing, hunting, and the collection of products from the forest, have also been dropping.

10. Any assessment of future land-use is at best probabilistic. Based on the available information, we define the baseline scenario as a continuation of logging on the plateau, with subsistence activities remaining on the plateau, though with the economic base of the inhabitants continuing to decline. We support this contention with the following arguments. With a narrow definition of project boundaries, one would consider only what happens in the inundation area. Under this excessively strict interpretation it seems reasonable that logging would eventually occur, based upon the value of the standing timber and the history of cutting timber. The only

difference would then be the timing of the timber cutting. Another perspective would be to consider the overall amount of timber cutting that occurs within the economy. The assumption here is that the timber cutting that is occurring now within the Nakai plateau is displacing cutting that would otherwise be occurring elsewhere. Either way, the conclusions are essentially the same.<sup>1</sup>

11. Within this general baseline projection, the only relevant differences would be the pace of timber cutting and regrowth (and hence the timing of future timber revenues) and the productivity of the areas remaining for the subsistence activities of the inhabitants. We explain in the next section how these differences affect the valuation. Any other baseline scenario would require a dramatic change in the economics of the area—for example, the rapid development of a tourism industry, the initiation of a joint implementation project, or a marked increase in foreign development or conservation funding.

12. Compared to the terrestrial portion of the inundation area, the riverine ecosystem is not significantly degraded. It provides habitat for endangered avian species such as the white-winged duck. In all probability, several fish species are endemic to the area. While the degradation of surrounding land areas can severely impact aquatic ecosystems, we do not predict these effects to be highly significant.

13. The with-project scenario is based on the following major impacts in the proposed inundation area:

- Loss of villages and involuntary resettlement.
- Loss of incomes based on forest product gathering and agriculture.
- Loss of future timber harvests.
- Loss of any residual forest ecosystem values.
- Loss of the riverine ecosystem.
- Creation of a lacustrine ecosystem.

## 1.2 The Nakai-Nam Theun National Biological Conservation Area

14. The National Biological Conservation Area (NBCA) consists of 3,700 km<sup>2</sup> of forested ecosystems rich in biodiversity. Of special note is the habitat of two recently described mammal species: the saola and a species of muntjac. The NBCA is also home to several thousand (~5,000) people, in addition to encompassing a large majority of the catchment area for the proposed reservoir. The fate of the NBCA is linked to the NT2 in a number of ways. Contiguous to the inundation area, the NBCA could be affected by any future movements of people from or through the inundation area. This could be the result of the declining resources base in the inundation area or unintended results of resettlement plans. The NBCA could potentially attract either more hunters or slash-and-burn agriculturists. The construction of roads and improvement in transportation has often led to a marked increase in natural resource exploitation and conversion

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<sup>1</sup> There is a third argument that yields the same conclusion: the cutting of timber is merely the liquidation of a natural asset and should hence not be counted as "income." Assuming the timber is sold at its true value, the sale of timber will approximately equal the natural capital depreciation rendering no meaningful contribution to GNP.

of forested land to agricultural use. The actual construction of the dam and the creation of the reservoir could also produce more pressure on the NBCA from migrants attracted to the area. In the baseline scenario, hunting and exploitation of non-timber products will continue (this is thought to be progressing at an unsustainable pace). In the project scenario, without mitigation, non-timber human pressure on the NBCA is likely to increase.

15. The second important way the two areas are connected is indirectly through the national demand for timber and natural resource income. Apparently, the national government is pursuing a resource strategy to convert natural capital into investments in infrastructure, public services, and an industrial base. According to this logic, the expansion of hydroelectric capacity will ease the pressure on natural forests. This link is complicated by the different actors within the Lao PDR. The BPKP (a mountainous development company operating in Central Laos) has traditionally financed its development agenda with timber revenues while all the revenues from the dam will presumably go directly to the central government. The end of timber cutting in both the Nakai Plateau and NBCA will almost certainly lead to a situation where demand for timber far exceeds available supply (see Margules Groome Poyry, 1996). To mitigate this, the BPKP is in the process of diversifying its portfolio of investments as well as investing in plantations. This area deserves the utmost attention.

16. The third link between the two areas is through the effect of sedimentation on the future productive capacity of the reservoir. Deforestation imposes a cost on the project through sedimentation of the dam. Hence, the standing timber in NBCA (which is virtually coterminous with the reservoir's catchment area) has a greater value with the project than without.

17. Lastly, the future of the NBCA could be improved by drawing funding for the management of the NBCA from project revenues. We will consider the influence of this on the protection of the NBCA in the following section on mitigation.

18. As in the inundation area, the baseline and project scenarios of the NBCA are based on the differential likelihoods of alternative outcomes. Specifically, there is a real chance that protection of the NBCA will occur without the project. There is also a possibility that the area will be lost with the project. The net probability of protecting the NBCA is a function of the four linkages mentioned above. We assess that the chance of protecting the NBCA is moderately better in the presence of a financially profitable project.

	Human Pressure	Revenue Effect
With Project	-	+
Without Project	+/-	-

	Potential Areas of Protection	Estimated Probability of Effective Protection and Management <sup>222</sup>
Without Project	Entire plateau & NBCA	Low (~10%)
With Project	60% of plateau & NBCA	Moderate (20-40%)

Note: The assessments in this section do not consider the impact of preventive expenditures and mitigation measures – which in this case would be the financial support for the Nakai-Nam Theun NBCA derived from the project. The impact of financial and management support on the probability of protection is considered in Section 4.2.

### 1.3 Downstream/Nam Theun

19. The proposed project not only blocks the flow of the river but diverts the bulk of the water flow from the natural course of the Nam Theun to a different drainage basin. From the site of the dam until the confluence with the Nam Phou, the flow of Nam Theun is projected to be only [6] 2 cumecs (the quantity of water released into the Nam Theun is an operational decision), except when the reservoir is full and spilling excess water. There are thought to be no human habitations on this stretch of the river. Below the confluence with the Nam Phou, the average flow of the river will be a fraction of the historic levels.

20. The creation of the dam will have profound impact on the fish and aquatic ecosystems of the river below the dam. This may entail the loss of some endemic species. Evaluating this impact is complicated by the construction of the Theun-Hinboun dam downstream. While this dam will include a fish ladder, it is reasonable to assume that a certain amount of damage to the fish and aquatic ecosystems below the NT2 dam will occur as a result of the construction of the Theun-Hinboun project.

21. Human impacts could be felt in the quantity of fish caught, increased difficulty for river transportation, and domestic water uses.

### 1.4 Downstream/Xe Bang Fai Basin<sup>3</sup>

22. The diversion of the Nam Theun flow increases the amount of water into the Xe Bang Fai basin by 200-280 cumecs, depending on the configuration of the project. The marked increase of water into the Nam Phit and Xe Bang Fai substantially alters the riverine ecosystem, particularly in the dry season. Some inhabitants of the area may need to be relocated. Additionally, increased flooding in the Mahaxai area would have adverse impacts upon agricultural output and possibly cause property damage and loss of livestock.

<sup>2</sup> Based on interviews and experience elsewhere.

<sup>3</sup> We will consider the construction of the channel bringing the outflow from the powerhouse to the Nam Phit as an integral part of the project and therefore the basis for our no-mitigation analysis. While the argument might be made that releasing the water directly into the Nam Katang is the true no-mitigation case, this scenario can and should be fully avoided, without significant uncertainty in implementation and without sizable residual impacts. Considering this possibility would not add to understanding of the project.

### **1.5 Downstream/Water Quality**

23. Fundamentally changing the dynamics of the water regime will have significant effects on water quality. Dissolved oxygen content, acidity, salinity, and temperature are only a sample of the possible concerns. These changes could have impacts on downstream ecosystems and fish populations well beyond the regional level. Of particular concern is the possible release of anoxic water from the reservoir. Preventing this from occurring is a straight-forward process. However, without proper prevention and management the release of large quantities of anoxic water can have immediate and catastrophic effects, resulting in the death of all fish life in the affected area. This is not anticipated to be of major concern in this case.

### **1.6 Construction Area**

24. Numerous social and environmental impacts are the direct result of the construction of large structures. The greatest impact is the large influx of people associated with the construction of the project. NTEC will hire as many as 4,000 people to work on the project. In addition, the Theun-Hinboun Project had two more people move in for each worker. Macdonald estimates the number of new entrants at 15,000 (World Bank Background Paper on Public Health, November, 96). Included amongst the many potential impacts from migrant labor are increased pressure on natural resources, increased incidence of disease, increased water pollution and solid waste, etc. The transportation of materials and improvement of roads can have both positive and negative impacts. The Draft EAMP documents other potential impacts of construction including air pollution, noise pollution, and work safety issues. Health issues are treated separately below.

### **1.7 Resettlement Areas**

25. Apart from the crucial human issues of resettlement, the relocation of a few thousand people will have impacts on newly settled areas, and increased impacts on previously settled areas. While these impacts are worthy of consideration, they are not likely to be large, except in the event that immigrants forced from the inundation area settle in the NBCA, increasing the critical pressure on this land. This could result in the accelerated loss of biodiversity in the NBCA and the denuding of the watershed (negating some of the economic rationale for moving these people in the first place). It should be noted that all the concerned parties have agreed that new immigrants should not be allowed to move into the NBCA. At the same time, it should be recognized that the dispersion of people is notoriously difficult to predict and control.

### **1.8 Regional Health Impacts**

26. The inundation of the 45,000 hectares increases the risk of disease, primarily malaria and schistosomiasis. While schistosomiasis is not currently in the Nakai-Nam Theun region, the creation of a reservoir and the recruitment of a large workforce increases the probability of the introduction of this disease to the region. Malaria, which already exists in the area, could be spread by the reservoir. In addition to malaria, the most significant threat to public health is the spread of HIV through the labor force. The weak public health and health education networks in the area, combined with the inability to treat HIV, make it potentially one of the most serious impacts of the project, perhaps at the same level of magnitude as the resettlement of villages from the inundation area. At present, the true magnitude of these risks is poorly understood.



## 2. Valuing Social and Environmental Impacts

27. The tools and techniques for valuing social and environmental impacts are based upon the tenets and theory of welfare economics. These applications are all logical extensions of the basic theory that individuals with limited resources make choices about how to allocate their scarce resources on the basis of personal preferences. While the discipline has been developing over many decades in the developed world, the application of these techniques in the developing world has occurred almost exclusively in the past decade. Nonetheless, there is a broad array of useful techniques which may be applied to valuing the trade-offs associated with developing country projects such as NT2.

28. In many cases, the valuation of impacts can be constructed using the direct effect on goods and services for which there are markets. Direct market impacts and prices are the first choice for assessing economic impacts. These techniques are both reliable and easy to explain, making them effective tools for incorporation into policy decisions. Examples of these productivity-based methods include the economic value of changes in agricultural or timber output or damage to property. Calculation of such values can be a very straight-forward process where the impact of environmental and social impacts has been properly quantified. For example, the impact of a decrease in water quantity can be expressed in tons of rice per year. Similarly, a lower bound for the cost of illness can be estimated by looking at lost productivity and work time, the costs of treatment, and the costs of efforts to avoid illnesses.

29. Another approach based on revealed preference entails the estimation of welfare impacts through the observation of expenditures and willingness to pay in surrogate markets. For example, the value of non-marketed goods and services such as social and environmental amenities can be observed through property values, wage rates, or the expenditures taken to visit a natural area or public park. The "travel cost method" has been used to great effect in measuring the value of recreational and natural areas in both developed and developing countries.

30. The techniques mentioned above can be used to measure both direct and indirect impacts of social and environmental changes. There are additional values that exist independently of use or consumptive values. These values, often termed "existence" values, can only be estimated by direct elicitation—essentially, asking people what it is worth to them. For example, assessing the value of biodiversity can be estimated by measuring the amount individuals would be willing to pay to view certain animal species. However, this does not cover the full value of the resource. There is a large willingness to pay that is not dependent upon the use of the resource, one that hinges solely on the knowledge that it exists. The transfer of international funds for the conservation of nature is an expression of this value.

31. The contingent valuation method (CVM) has been developed to capture these values and other hard to measure amenities or services. CVM methodology is based on analyzing the results of carefully crafted surveys of representative samples of the relevant population. To measure the cost of potential biodiversity losses associated with NT2, this is the only technique that can adequately address the true value. This cost could be reflected both in Laos and globally, requiring surveys both domestically and internationally. Another example where this technique would have been appropriate is to measure the losses that accrue to communities that are

involuntarily resettled. While the value of physical assets can be measured with more standard economic techniques, there may be substantial psychic costs associated with relocation beyond the loss of productive assets. These full costs of uprooting a community can be estimated by surveying the willingness to accept compensation for such a move. This can be carried out in non-cash economies by measuring compensation in easily recognizable units such as kilograms of rice or bundles of subsistence goods. The informational needs of such a study, however, are significant. If the survey is to adequately measure the economic value of the proposed change, the respondents must fully understand the implications of their choice on their future welfare. For example, the process of relocation may bear unanticipated psychic costs or bring about an unforeseen deterioration of social structures. In order for these to be properly valued, these impacts must be anticipated, described, and understood. In practice, these types of impacts are often best addressed separately and not from an economic perspective.

### **3. Preliminary Estimates of Pre-Mitigation Social and Environmental Costs of NT2**

32. The following estimates are for the net costs with the implementation of the project, but without mitigation efforts. These estimates are preliminary and based upon incomplete information. These should be interpreted only as indicative of the magnitude of the impacts and not authoritative. (See attached spreadsheets for a year by year breakdown of each of the cost estimates in this section.)

#### **3.1 The Inundation Area**

33. We value the land that will be lost through inundation by dividing the losses into five categories: (1) lost livelihood of local inhabitants; (2) welfare losses associated with involuntary resettlement not included in the accounting of lost productive assets; (3) lost future harvests of timber; (4) loss of habitat and biodiversity; 5) lost carbon values.

34. **Income Loss: Agricultural Land and Access to Non-timber Forest Products.** Valuing agricultural and pasture land can be accomplished by either looking at the price of land (not applicable in this case) or looking at the future income stream derived from the land. The productivity of non-timber forest products is also best measured by looking at annual income flows derived from their exploitation. The total annual income gained from agriculture and other income generating activities in the inundation area is somewhat less than \$100 per capita (Based upon Chamberlain et al., 1996 and NTEC, 1996). To account for uncertainty and limitations in the process of measurement we feel it is appropriate to use a range of \$100-150 per capita.<sup>4</sup> Assuming 4,500 people in the area of the plateau to be inundated, this is equal to \$450,000-675,000 per year in lost productive capacity. (These estimates include factors of production, such as the contribution of labor, which are not lost by inundation of the land, biasing the results upward. Nonetheless, we think it is important to remain firmly on the conservative side in making estimates based upon somewhat sketchy information.)

35. These figures are clearly low compared to other areas. For example, rice yields are only about one ton per hectare compared to two to four tons per hectare in other parts of Laos. The

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<sup>4</sup> There appear to be incentives for villagers to under-report sources and levels of income.

yields from non-timber forest products are quite low by world standards; Godoy *et al.* (1993) report a world median value of \$50 per hectare in a review of the available studies, whereas here, the yields are less than \$2 per hectare, reflecting the logging and degradation that have occurred on most of the projected inundation area.

36. **Dislocation Costs.** As mentioned earlier, the only plausible way to accurately measure the value of the total losses from resettlement would be to carry out a survey aimed at eliciting the willingness to accept compensation (WTAC) by the inhabitants. The argument might be made that these costs are inestimable given the profound and dramatic nature of the change. Nevertheless, bearing in mind the transitory tendencies of many of the inhabitants of the plateau, we feel it is reasonable to assume that they can fully understand the burden of moving and the nature of the trade-offs. (This may not be applicable when the inhabitants are asked to fundamentally change their way of life. This would have been the case if the resettlement strategy depended largely on newer livelihood models such as agro-forestry. The agro-forestry component has been de-emphasized in the latest Resettlement Action Plan.) We estimate that the WTAC (which includes compensation for both income and psychic costs) could approach double the lost income, but would not be much higher. Using this as a guide, we add another \$450,000 to 675,000 in annual costs for the non-income (psychic) costs of dislocation and changed way of life.

37. **Timber.** As discussed in the previous section, the baseline scenario includes the continued logging of the Nakai plateau. Given the fact that, as far as possible, the reservoir area will be logged before inundation, the potential changes in timber revenues due to implementation of the project can be put in three categories: (1) The loss of any subsequent harvests that would have taken place in the future, i.e. due to regrowth; (2) Losses associated with the hurried cutting of the timber in the form of an increase in damaged and wasted timber or the failure to secure the best prices;<sup>5</sup> (3) Interest accrued from the profits on timber cut earlier due to the project.<sup>6</sup>

38. Calculating the loss of future harvests is conceptually straightforward, since one can assume that the most valuable timber would be cut in either scenario. Furthermore, arguments in favor of sustainable harvesting or selective harvesting of timber are generally based on maintenance of non-timber forest values, not on maximizing the profitability of timber sales. Maximizing timber sales generally leads to the periodic cutting of all the standing timber, followed by another cycle of regrowth and harvest.

39. The growth of commercial timber in the area is conservatively estimated to be from 2.0-2.7 m<sup>3</sup> per hectare per year for softwood, and 0.8-0.9 m<sup>3</sup> per hectare per year for hardwood (RAP, 1997). While we cannot expect this growth to translate into harvestable timber immediately, the available documentation suggests that there is a substantial amount of harvestable

<sup>5</sup> There is not sufficient information available to accurately analyze the prices Laos is getting for its timber. Normally, one might look at international prices, extraction costs, and transportation costs to estimate the value of timber. The complex relationship Lao PDR has with its marketing partners makes assessing Laotian rents from timber very difficult. This issue is largely independent of the project.

<sup>6</sup> If timber is cut in a way that is more profitable because of the project, this could be counted as a benefit of the project. Assuming that prices stay the same, when the growth of timber is slower than the discount rate, it is more profitable to cut the timber early. In such a case, the interest earned on the revenues will exceed the increase in value due to growth.

timber on the plateau, keeping in mind that many areas were cut as much as ten years ago or more, and that many areas that have been harvested were done so selectively (Margules Groome Poyry, 1996) (It is reported that half of the inundation area had been cut prior to 1996. Margules Groome Poyry report residual commercial timber of 65 m<sup>3</sup> per hectare in parts that have been previously cut, with an average of 13 m<sup>3</sup> per hectare across all the unstocked areas. Using these figures, we estimate that a sustainable cut of between 48,000 to 60,000 m<sup>3</sup> per year, starting in 2003, would have been possible, based on a mean annual increment of 1.6 to 2.0 m<sup>3</sup> per hectare over a relevant area of 30,000 hectares. (This is consistent with a total commercial timber stock of between 2.4 to 3.0 million m<sup>3</sup> for the entire inundation area, with a cutting cycle of 50 years. Again, see MGP, 1996.) Obviously, a more careful assessment of the growth potential and the quality and size of timber remaining after harvests would improve the accuracy of these estimates.

40. Prices for standing timber (stumpage values) are conservatively estimated at between \$40 and \$60 per m<sup>3</sup>. (The price of standing timber, or stumpage values, are net of the costs of extraction, and therefore reflect the profits that can be derived from harvesting the timber.) This would have produced an annual profit of between \$1.9 to \$3.6 million dollars per year, starting in year 2003. Capitalized at a discount rate of 7%, this is equivalent to a present value of \$20 to \$38 million dollars in 1998 dollars.<sup>7</sup>

41. The available information is not sufficient to estimate the other two potential impacts on timber values of accelerated cutting mentioned above: the losses due to increased ancillary damage and waste and the benefits of interest earned on revenues. We expect, however, that the net effect of the two will be small.

42. Future valuation efforts would benefit from better yield estimates, including the effect of different management strategies on growth rates. The figures can also be improved by more accurate estimates of stumpage values in Laotian pine forests.

43. **Terrestrial Habitats and Recreational Benefits.** Despite the ongoing timber cutting of the plateau, at any one time, large areas of land are sufficiently undisturbed to provide habitat for animal species and plant life. Even in the case in which the entire area is completely logged over, there are additional natural values that would be lost with inundation beyond the lost regrowth of the timber and loss of the direct use of the forests by the local inhabitants. Despite the logging, there is still the opportunity to allow for the recovery of the ecosystem. Although this ecosystem would undoubtedly be altered, it would still be capable of sustaining many of the original species found in this area. There are highly valued "natural areas" in many countries that have at some point been highly degraded.

44. Considerable work has been done in other countries to value the assets of forests beyond the consumptive use of timber and non-timber products. Generally, these values are expressed either through the benefits of tourism or through non-use benefits (the economic value associated

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<sup>7</sup> Another estimate of the foregone timber earnings of the inundation area is \$26 million dollars (EAMP, 1997). Both of these estimates are comparable with the returns to moderately productive forestry plantations, which are an option. The opportunity cost of land estimates would be higher if one were to consider fast growing, high yield plantations to be an option.

with the knowledge of the asset's continued existence, which has value both nationally or internationally). For Laos, these values have not been fully realized as a result of the relative lack of eco-tourism development and, until recently, the lack of awareness internationally regarding Lao PDR's natural assets. There are no estimates for the value Laotians place on their natural heritage. Furthermore, looking only at the current "realized" value of these habitats is not a fair reflection of the future value of such resources in Lao PDR.

45. A range of estimates of the potential future value of this area can be ascertained by looking at similar habitats in other countries. We divide these values into three categories: (1) Land values based upon tourism benefits; (2) Land values based upon international transfers to promote conservation; (3) Potential value of biodiversity based upon the future development of pharmaceuticals.

46. The best proxy for the value of tourism quality natural areas in Southeast Asia is found in neighboring Thailand. TDRI (1994) found that the value of the Khao Yai National Park was \$600 per hectare per year and rising. This figure includes international and domestic tourism, as well as national non-use values. These estimates will be somewhat higher than the values for the Nakai plateau because of higher living standards and a more developed tourism market in Thailand. The current degraded status of the land will further reduce these values.

47. A measure of the potential for international financial transfers for conservation can be estimated by looking at the experiences of other countries. A review of international transfers in the form of debt-for-nature swaps by Pearce and Moran (1994) found a range of values from less than \$1 per hectare to as high as \$25 per hectare. We will use a figure of \$10 per hectare. A thorough review of the international willingness-to-pay for conserving nature in Southeast Asia could improve these estimates. Such a study could concentrate on documenting all the transfers that have occurred in Laos and the region and correlate these transfers with the dominant characteristics of the natural areas in order to better predict the potential for capturing these values.

48. Lastly, plant and animal biodiversity has potential value as the basis for the manufacture of pharmaceuticals. The value of plant-based drugs derived from rainforests was reported by Pearce (1993) to be \$1-21 per hectare per year. Capitalized with a 7% discount rate, this is equivalent to a net present value of \$14-300 per hectare. These estimates could be improved by recording the relative diversity of plant species found in the inundation area and the number of unique species found there.

49. Using these figures as benchmarks, we estimate that the premium on the land, in addition to the timber, for terrestrial habitat, biodiversity, and existence values of this land is \$75-\$125 per hectare per year.<sup>8</sup> This figure, in a sense, captures the "option value" of the land—the value of

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<sup>8</sup> This premium can be calculated by assuming a tourism value of the land of \$600 per hectare per year, starting 20 years from now. Using a discount rate of 10%, this value is \$89. Adding the pharmaceutical and international transfer values brings the figure up to \$100 per hectare per year. We use a range of \$75-125 to reflect estimation errors. Conceptually, a figure in the same range might be estimated by assuming a conversion factor to adjust the value of Khao Yai in Thailand to the situation in Laos. Using a GDP weighted conversion would render an estimate of \$75 per hectare per year (Thailand's GDP is approximately 8 times that of Laos.). This is clearly a lower bound since a portion of the value is a result of international tourism.

retaining future use options for the land (tourism and biodiversity protection). Due to the logging that occurs on the plateau, it would be inappropriate to impute these values to all of the inundation area. To apply these values, we use an area of land equal to 30% of the inundation area, or 13,500 hectares, as the amount of land that might reasonably capture these values at any one point in the future. This is based upon the area of land currently under forest.

50. **Potential Benefits of the Reservoir.** The creation of the reservoir is not without its benefits. As in the case of the Nam Ngum reservoir, the creation of a large fresh water lake could produce tourism benefits. While the domestic tourism market will certainly benefit, these receipts are quite low in comparison to the revenues possible from international travelers. While the precedent for biodiversity-based international tourism is well established, the potential for international tourism based on a man-made lake is unclear, although this may be attractive in combination with the NBCA. Further study of domestic, regional, and international tourism markets is required to better understand this potential.

51. The reservoir may increase the annual catch for the area's fisheries. Estimates for the annual net increase in the catch is in the range of 400 to 650 tons<sup>9</sup> per year with an average price of \$1.50 per kilogram (Draft Resettlement Action Plan, May 1997). Assuming the cost of catching the fish at half the price, this yields an annual benefit of \$0.3-0.5 million per year. This is equivalent to a net present value in 1998 of \$3 to \$5 million dollars.

52. **Hydrological Functions.** The primary hydrological functions of forests include the recharge of aquifers and the regulation of inter-seasonal water flow. Although the basic water regime will be altered, these services will not be lost with the inundation. In fact, considering the degradation of the plateau, in this aspect, the net effect of the project could be positive. Either way, this impact is likely to be small.

53. Another hydrological forest service, water quality protection, is likely to decline and will be considered separately.

54. **Carbon Sequestration.** Carbon storage losses will occur as a result of the timber cutting and the effort to remove biomass from the reservoir before inundation. This will result in the release of greenhouse gases equivalent to 25-40 million tons of carbon dioxide.<sup>10</sup>

55. The net carbon balance for Laos and Thailand together will be positive if one considers the alternative source of energy to be natural gas or coal, because the carbon savings in Thailand will offset the carbon losses in Laos. However, if one considers demand-side management as an alternative source of energy for Thailand, the two-country balance will be negative.

56. From the Laotian point of view, the loss of carbon is not compensated, unless the value of the lost carbon is built into the price of the electricity, which is unlikely. Therefore, while the two-country carbon balance may under certain assumptions appear positive, from the Laotian perspective, it is clearly negative. We value this loss at the price that is emerging in the

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<sup>9</sup> The RAP cites a projected range for the reservoir fishery of 500 to 750 tons per year and a current estimated catch of 100 tons per year.

<sup>10</sup> Delmas and Galy-Lacaux (undated). This is equal to 6.8 to 10.9 million tons of carbon.



developing carbon offsets market: ten dollars per ton of carbon<sup>11</sup> (We are valuing the lost potential sale of carbon credits that might have occurred without the project). Because it seems implausible to suggest that Laos might be compensated in some way for all the carbon released, we will value only the lost potential for sequestering carbon with the regrowth of trees in the inundation area.<sup>12</sup> We assume regrowth to average 2-3 m<sup>3</sup> per year and a carbon content estimate of .225 tons of carbon per m<sup>3</sup> of wood. This yields a carbon value of \$200,000 to \$300,000 per year.

57. These estimates can be improved with a more detailed accounting of the carbon dioxide and methane flows based on the specific circumstances of NT2.

### 3.2 Aquatic Ecosystems

58. The project will entail the loss of much of the aquatic ecosystem on the Nakai plateau. The ecosystem includes the habitats of endangered species, putting these species at an increased risk of extinction. This includes important avian species such the white-winged duck and other bird species and a number of species of fish that may be endemic to the area. Kottelat (1996) recorded 11 species of fish in the Nam Theun and 2 species of fish in the Xe Bang Fai that have not been found elsewhere. Of the 11 species of fish in the Nam Theun-Nam Gnouang basin, 3 are not known to exist in any areas unaffected by the dam.

59. Because these ecosystems are conceptually (and physically) linked to the downstream ecosystems of the Nam Theun, Nam Phit, and Xe Bang Fai, we will consider them all together. The measurement issues are nearly identical to those discussed above for the values of terrestrial ecosystems; apart from the use values or consumption benefits from rivers, the losses might be expressed as lost tourism potential, or the willingness-to-pay to avoid this alteration, which may be reflected by international transfers. In the absence of animal viewing or other major tourism attractions, the empirical work valuing natural areas in developing countries is extremely limited. Studies in developed countries have taken two related approaches: valuing either specific species or habitats. For example, the willingness-to-pay (WTP) to protect the striped shiner and the salmon were found to be \$5 per person per year and \$8 per person per year, respectively. For bird life, the WTP to protect the bald eagle is \$19 per person per year; it is \$21 per person per year for the Northern Spotted Owl. Certainly, the value of species and habitats is inextricably linked. At the ecosystem scale, the willingness-to-pay to protect the rivers of Norway was found to be \$60-110 per person per year. While these estimates give a fair indication of the magnitude of the WTP to conserve nature domestically, it would be inappropriate to apply this type of figure to the ecosystems of distant countries.

60. Given the limited information, the most plausible approach for assessing the magnitude of the impact on these aquatic ecosystems is to estimate values for the entire ecosystems, rather than the specific species, imputing a value for these aquatic ecosystems in relation to terrestrial habitats. To make this calculation, we assume that one kilometer of river is equal, in conservation

<sup>11</sup> This is based upon the 1996 purchase of 200,000 tons of carbon credits by Norway from Costa Rica at \$10 per ton.

<sup>12</sup> An argument could be made for imputing a shadow value for all of the carbon released due to the project. We have chosen to err on the conservative side.

terms, to 50 hectares of terrestrial habitat.<sup>13</sup> The length of rivers affected by the project total approximately 400 kilometers: 150 kilometers for the Nam Theun and its tributaries on the plateau, 70 kilometers for the Nam Theun between the NT2 dam and the Theun-Hinboun dam, and 175 kilometers in the Xe Bang Fai basin above the Mekong. Using the same logic as was used in calculating the biodiversity and potential tourism values for the terrestrial habitats, we use the range of \$75-125 per terrestrial hectare per year. Clearly, the river systems mentioned are subject to different levels of alteration. The Nam Theun river within the inundation area suffers the greatest impact (and is also less degraded than the terrestrial systems used as a benchmark). For the Nam Theun and its tributaries above the inundation area, the Nam Theun below the dam, and the Xe Bang Fai, the incremental damage will be lower, yet are still significantly altered. In aggregate, we estimate that the average figure is indicative of the average magnitude of the damages. More than valuing the loss of individual species of fish or assessing water quality and quantity changes, we attempt to quantify the cost of the large-scale alterations of natural ecosystems. These assumptions yield a damage estimate of \$1.5-2.5 million per year for the alteration of natural ecosystems, lost biodiversity and diminished ecotourism potential of these aquatic ecosystems.

61. These rough estimates can be improved, first, with the further quantification of the physical impacts on these aquatic ecosystems. Secondly, more accurate estimates could be produced with a review of relevant international transfers for the conservation of rivers and aquatic species and the tourism development potential for Southeast Asian rivers. Thirdly, future valuation work may elucidate the magnitude and capture of international non-use values.

### 3.3 Nakai-Nam Theun National Biological Conservation Area

62. A proper valuation of the NBCA would require a study devoted to this single aspect. In conceptual terms, the value of the natural area is the sum of all the prospective benefits of protection (hydrology, watershed protection, biodiversity protection, possible non-timber product use, recreation, tourism, carbon sequestration, national heritage, etc.) minus the earning foregone by not cutting the timber, growing crops, or grazing animals. Assessing the cost of losing land from this area would have to consider all those benefits as well as any income derived from the sale of timber. Such a study would add considerable input to the policy decisions being made currently. Without such information, the situation must be evaluated in broad terms. We must take the perspective that protection of the area is a policy choice, and any actions that contribute to its protection are benefits. In fact, the stated policy to protect the area—if it does mean foregoing the large revenues available through logging—says much about the great value of protecting this area. We are not able to say how far Laos should go (how much it can afford to spend in this regard) to protect the NBCA.

63. As stated earlier, the effect of the project on the NBCA, without mitigation efforts, has two categories of impacts, influencing the NBCA in opposite directions: 1) The demand for land

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<sup>13</sup> This is the same as equating one hundred meters of river to five hectares of terrestrial habitat. This assumption is based upon the concentration of species along rivers and the spatial extent of riverine habitats, including seasonal wetlands and flood plains.



and forest products will increase pressure on the NBCA; 2) the larger economic pressures based on the demand for natural resource revenues will diminish. Depending on which impact is more significant, the impact of the project, without mitigation, could go either way. Based on the available information, it is our opinion that the revenue effect is a larger constraint, and hence, the prospects for protection are greater in the presence of the project. Modeling these pressures would be difficult, requiring the assessment of not only economic and demographic pressures, but political and international aspects of the region. We will discuss this issue further in the mitigation section.

### 3.4 Downstream Impacts on Local Inhabitants

64. **Nam Theun.** Documentation of the impacts on this region is scant, though human impacts are likely to be low in economic terms. In order to better document these impacts, the following information would be necessary:

- the number of families which engage in fishing and estimates of quantity and market prices for the fish catches;
- estimates of the decline in artisanal fishery yields;
- domestic, agricultural, and other uses of water from the Nam Theun;
- effect of lower water levels on the ability to obtain this water;
- impact on river transportation;
- impact on vegetable gardening on the banks of the river.

65. **Nam Phit/Xe Bang Fai.** The most serious concerns in this area are the losses of houses and fields from the increased water flows and the possible increase in flooding. Clearly, the probability of flooding will increase in the Mahaxai district. However, the argument has been made that the flooding in the confluence area of the Xe Bang Fai and Mekong rivers will decrease because of decreased water levels in the Mekong as a result of water impounded in the NT2 reservoir. This is a valid argument when the reservoir is not full at the time that damages from flooding occur. This is not necessarily the case since flooding can occur with heavy rains at the end of the rainy season, when the reservoir may already be full. In this instance, the quantity of water in the confluence area is unchanged, compared to the without project scenario.

66. No estimates have been made for the impact on downstream inhabitants of the Nam Phit and Xe Bang Fai. Damage estimates would be possible if the following data were available: 1) The change in the probability of floods of various heights and durations; 2) the extent of the affected areas; and 3) agricultural yields on land affected. It is our understanding that the study of this issue is ongoing. Adequate estimates of those aspects that are required for quantification were not available at the time of writing.

67. Just as for the downstream inhabitants of the Nam Theun, the impact on local fisheries' production could be substantial. The same data outlined in the previous section should also be documented for this basin.

### 3.5 Downstream/Water Quality

68. Changes in water quality will affect both the composition of rivers and surrounding ecosystems and the productivity of these resources. The risks involved in changing water quality

are not well understood, though the risks of substantial and wide-reaching damage are considered quite high without mitigation. The valuation estimate for aquatic ecosystems effectively captures much of this category, though the potential extent of damages could be wider than the 400 kilometers of rivers mentioned earlier, raising the magnitude of the estimates.

### 3.6 Construction and Resettlement

69. The environmental and social costs associated with the mass movement of people are based on the conversion of land, over-exploitation of resources, and pollution of water and land. Increased stress on natural resources can contribute to a decline in incomes for the original inhabitants of an area. Similarly, degraded environments contribute to poor health and nutritional deficiencies. While these impacts can have important consequences locally, their impact is unlikely to be large in terms of the project. The Draft EAMP lists provisions for managing the impacts of construction. If followed, these should keep the impact of the construction process to a minimum. Mitigation measures for the impacts of spontaneous resettlements that are expected to arise with the construction activities include water supply, waste disposal, and the provision of firewood. Again, following these recommendations should keep negative impacts to a minimum.

70. Consequently, no estimates have been made for this category of impacts. Estimates might have been made based on a review of similar large construction sites, or on an assessment of the quality and amount of water and land degraded. Although these impacts will be small in relative terms and would thus have no real impact on the overall economics of the project, prevention and mitigation are clearly necessary and appropriate.

### 3.7 Regional Health Impacts

71. Without mitigation, the inhabitants of the region will suffer an increased probability of contracting diseases exacerbated by the reservoir, including malaria and schistosomiasis. The increased population in the area, in combination with poor sanitation, could result in the elevated incidence of numerous diseases such as gastro-intestinal diseases, dengue, and opisthorchiasis. Proper valuation of these impacts would require, at a minimum, estimates of baseline rates, estimates of the increase in incidence of these diseases in the region and estimates of the severity of illness. This could be measured in lost lives, lost working days, time and money required for treating the diseases, and any costs due to avoidance activities. Based on such estimates, the losses could be enumerated. The most thorough approach would be based upon surveys to assess the willingness to pay to reduce the risk of illness and mortality.

72. Given the lack of primary data and disease projections, we are left to make broad, indicative estimates of the costs of potential increases in illness. In reality, some costs cannot be fully measured monetarily, such as loss of human life—which by intrinsic nature cannot be valued. Nonetheless, it is possible to estimate the compensation for wrongful loss of human life that society might offer to the families of the deceased. For example, suppose that the increase in the incidence of HIV in the Kammouane Province due to migration induced by the project is one additional infection per 1,000 people per year. This would eventually result in an additional 275 deaths per year in the province. In the United States, based on policy decisions and the willingness to pay to reduce risks to life, it is estimated that societal compensation for wrongful loss of human life averages between 2 and 5 times the net present value of expected lifetime

earnings. If a similar measure is applied in Laos, the annual economic loss would be approximately \$2-4 million dollars per year. Potential increases in malarial infection attributable to the project could be treated similarly. As these risks are poorly understood, not only in Laos but worldwide, further study is recommended. In fact, such a study carried out in Laos could contribute greatly to the body of knowledge in this area and would be deserving of international financial support.

73. The cost of illness can be valued by lost productivity, using wages as a proxy for productivity, and the cost of treatment. If the workforce in the province is 100,000 and the unmitigated increase in illnesses from the project accounts for an additional lost workday per worker per year, at a wage rate of \$1 per day, the economic cost of illness is equal to another \$0.1 million per year. In practice, the cost of treatment will be quite low.

#### **4. Preliminary Estimates for the Cost and Effectiveness of Mitigation Measures**

74. The estimated costs of mitigating the impacts mentioned in the previous section range from straightforward engineering cost figures to the cost of implementing more complex social intervention programs that may span over a decade or more. Budgets for required mitigation measures are still under negotiation, and the predicted effectiveness of the various measures continues to be studied. Hence, the figures and assertions in this section are quite rough and will require updating.

75. The overall goal should be the full "internalization" of project impacts. However, mitigation measures may not be completely successful in preventing or offsetting project impacts, leaving residual damages. We will therefore also include estimates for residual damages. (These figures are intended to be indicative of the range of possible outcomes from the proposed mitigation measures. In no way do we purport to accurately predict these outcomes at this stage.) In the event that mitigation measures do not fully address project impacts, residual damages should be compensated.<sup>14</sup>

##### **4.1 Resettlement**

76. To the extent that productive assets can be transferred or replaced, the inhabitants of the plateau can and should be adequately compensated. (World Bank directives require resettled people to be at least as well off as before the involuntary move.) In light of the declining income base and tradition of movement, this resettlement proposal is potentially less problematic than those experienced in other parts of the world. Nonetheless, the difficulty in successfully relocating thousands of people should never be underestimated.

77. The draft RAP proposes a package of compensation for the material losses that includes the provision of land, houses, schools, health posts, roads, irrigation, and electricity, as well as education and training. The proposed budget for resettlement is in the area of \$15 million in total<sup>15</sup> (See RAP, 1997).

<sup>14</sup> This should not be understood as necessarily monetary compensation. In almost all cases, it will only be appropriate to compensate for lost productive assets by replacing these assets.

<sup>15</sup> This figure is quoted in nominal terms. The total amount and timing of investments are not final.

78. One possible difficulty in resettlement can result from poor adaptation to a new means, or combination of means, of subsistence. In the current resettlement plan, the people being resettled would have a fair amount of flexibility in choosing their livelihood and income base. One of the possible components, agro-forestry, is untested and, as such, is subject a fair degree of uncertainty. It does, however, seem to hold the potential for being a good source of income, as well as being an appropriate use of the land. At a minimum, successful implementation of this component would require a lasting system for assistance and training using extension agencies and possibly social work. Despite the commendable level of effort and planning that is going into the RAP, the prospect of failure is still real. Problems may surface in those making the transition from a non-cash economy to the marketplace.

79. If resettlement fails to successfully provide a sustainable livelihood to 10% of the families, the residual damages would be approximately \$0.09-0.13 million per year. If the resettlement effort increases mortality rates, the cost will, of course, be much higher.

#### 4.2 Biodiversity

80. The mitigation measure for offsetting biodiversity losses is the increased protection of the NBCA. The with-project with-mitigation scenario unambiguously produces the best possibility of preserving the NBCA (we estimate this probability as between 50% and 75% which can be compared to the estimates given in the table of page 5). Population pressures and economic pressures are both reduced in this scenario. The major studies carried out in the area report a relative richness of the NBCA compared to the inundation area of the Nakai plateau. (The offset should be compared to the sum of biodiversity impacts of the project including impacts on fish species in all of the affected areas.)

81. However, protection of this offset is still a probabilistic outcome; it is not guaranteed. Tremendous uncertainty still remains regarding the fate of people within the NBCA and hence the wildlife of the area. While no involuntary resettlement is recommended, it has been previously suggested to consolidate the people of the area and promote rice production. Constructing a road would almost certainly lead to increased exploitation of the NBCA resources. The IUCN/WCS study team strongly recommend against either logging or the building of roads in the NBCA. Creating incentives to resettle outside is another approach. Trade-offs exist between immediate assistance and the provision of incentives to relocate.

82. Included in this category is the extension and linking of protected areas using corridors. This is intended, in part, to mitigate the lost elephant habitat on the plateau. Other possible mitigation measures include increasing the amount of water released into the Nam Theun, building fish ladders, preventing the introduction of exotic species into the reservoir, and possibly funding the creation of plantations to offset the loss of forests.

83. One figure for the project's contribution to the cost of protection is \$30 million over 30 years<sup>16</sup> (Personal communication, David Iverach, 1/97).

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<sup>16</sup> These figures are quoted in nominal terms as the timing of the payments is uncertain and the total amount is still subject to negotiation.

84. The prospects for conserving biodiversity in the area appear to be clearly higher in the presence of the project and the recommended mitigation actions.<sup>17</sup> This is for the following reasons: (1) the project decreases the pressure on the government to cut timber in the NBCA in order to finance development objectives; (2) the proposed funding to be derived from the project for conserving the NBCA is much larger and subject to less uncertainty than alternative sources, which can be translated into an pro-active management presence in the area; (3) the management of the conservation area would benefit from international experience and technical capacity, in addition to the increased scrutiny, that would be brought about by its linkage with the project; (4) the existence of the reservoir gives added incentive for Laotian society to protect the watershed. On the negative side, improved access, both by water and better roads, could increase pressure on the NBCA. If this assessment is correct, and if one were to consider only biodiversity, one should support the implementation of the project. Still, there is a real chance that the biodiversity offset will fail. Hence, we include an estimate of residual biodiversity damages based on the uncertainty of the proposed mitigation, the questionable validity of substituting certain kinds of biodiversity for others, and the irreversible nature of creating large reservoirs.

#### 4.3 Downstream Impacts

85. Construction of a channel to receive the out-take water and prevent the damage to the Nam Katang has an incremental cost. As mentioned earlier, we consider this to be an accepted part of the normal construction process, entailing minimal residual effects on the Nam Katang. This measure itself creates costs, entailing the loss of some paddy land and the loss of a small irrigation system in Gnoumalat. This will require compensation. A detailed accounting of the cost of any land lost and the scope for replacing these assets must be addressed.

86. Further study will be required to settle the flooding issue. Clearly, compensation of some type will be required for those who lose land or suffer more frequent flooding as a result of the project. Assistance in providing irrigation has been proposed as one mitigation measure. The RAP includes budget items for irrigation and electricity supply totaling \$3 million<sup>18</sup>. This would not include the costs of more extensive irrigation infrastructure for the Savanakhet plains. The land suitable for irrigation is estimated at 50,000-100,000 hectares.

87. We consider that this impact can be fully mitigated with no residual damages expected. This is based on the assumption that, regardless of the total net effects downstream, each downstream inhabitant that bears costs from the project is identified and compensated adequately.

#### 4.4 Regional Health

88. Mitigation can consist of both avoiding the spread of disease and the treatment of those infected. The former is preferable. Another possibility is that the incidence of a few diseases may

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<sup>17</sup> Conceptually, one could attempt to quantify the expected value of the increased likelihood of protecting the NBCA. To accomplish this, the informational needs would, of course, be great. We agree with the need and value of building in such an offset into the project, in terms of both pragmatism and sound public policy. The policy choice is clear, even without a more explicit valuation of this aspect.

<sup>18</sup> As for all proposed mitigation expenditures, this figures are in nominal terms.

increase while overall health still improves due to better nutrition, health care, and education. In aggregate terms, the overall health of the inhabitants of the area can be improved with an aggressive preventative medicine program and an investment in the treatment of diseases, including those diseases that may occur as a result of the dam. However, the large behavioral element in the prevention of HIV makes its mitigation subject to a high degree of uncertainty.

89. The provisional budget for health impacts is \$15 million<sup>19</sup> but includes other construction-related mitigation costs.

#### **4.5 Water Quality**

90. Addressing the quality of water coming from the reservoir has both engineering and operational components. The full removal of biomass from the inundation area will prevent some of the damage that might be caused by eutrophication. Drawing water from the surface through multiple-level penstocks can mitigate some of the temperature and oxygen content issues. Another proposed mitigation measure is the construction of the channel such that it aerates the water on its way out. Other potential problems such as salinization or the leaching of naturally occurring toxic materials are not easily remediable. Residual damages are not estimated.

#### **4.6 Costs Associated with Construction**

91. Funding will be drawn from the construction budget to address many of the negative impacts that could arise during construction. These issues include sanitation and drinking water, discouraging hunting and natural resource exploitation, repatriation of foreign workers, etc. These issues are quite specific and must be analyzed in great detail during the negotiation process before summarizing the costs and effectiveness of mitigation.

#### **4.7 Project Benefits as Mitigation Measures**

92. The project could have considerable benefits in addition to the costs. The provision of useful irrigation water and the potential for tourism are two examples, in addition to the fisheries production in the reservoir. These are subject to substantial uncertainty. One possible approach would be to have the project make contributions to an environmental and social mitigation fund; and these contributions could either be reduced or refunded when project benefits come to fruition. The advantage of constructing such a scheme is that the project developers are given the incentive and flexibility to promote and pursue "external" project benefits for the region, beyond the mere dedication and expenditure of funds, which alone may be a poor determinant of the success of the various mitigation measures. Another advantage is that this would reduce the exposure of the Laotian government to residual project costs. Implementing such a proposal would require the negotiation of meaningful and robust performance benchmarks, e.g. annual fish yields, hectares of active farmland irrigated with a minimum quantity of water, etc. Analogously, performance bonds may be useful in ensuring that the TKC complies with the social and environmental performance standards and that the providers of resettlement services meet contractual obligations.

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<sup>19</sup> Figures are in nominal terms.



## 5. Mitigation, Compensation, and Residual Damages

93. The logic of social and environmental valuation allows for a more complete assessment of the scale of damages and the available strategies for mitigation<sup>20</sup>. A one for one replacement of all values lost by the project will tend to be a more expensive approach to compensating those adversely impacted by the project. A mixture of cost-effective preventive expenditures, offsets, and direct compensation can not only limit the costs borne by project developers but can allow those experiencing losses to be more generously compensated. Given the size of the project, the capital costs, and the social and environmental costs that must be addressed, the savings from cost-effective mitigation schemes could be considerable. However, if one were to err in either direction, it would be better in this case to err in the direction of more mitigation and prevention and less compensation and fewer offsets.

94. It is judicious to anticipate both cost over-runs in the mitigation plans which are being made and unanticipated costs. Special care must be taken to clearly define the terms and responsibility for any additional costs and in the event of non-performance of mitigation efforts. Merely ensuring that financial resources are expended is not adequate. Additional costs, whether they be increased mitigation spending or residual damages, could be borne by NTEC, the GOL, or both.

95. Our current assumption is that poor mitigation performance would lead to both higher mitigation expenditures and higher residual damages. This can be better defined and updated with more explicit contractual details. The GOL should strive to limit as far as possible its exposure to residual costs through stringent and comprehensive contractual arrangements. However, given the large degree of responsibility the GOL will have in the success of mitigation measures, contractual guarantees can only go so far. In effect, Laos is wagering a large portion of societal welfare on its own ability to manage the negative social and environmental impacts of the project.

96. Estimating the potential and magnitude for residual damage costs is undoubtedly a tenuous exercise. However, a review of international experiences with large dams applied to the context of Laos and Nam Theun II allow us to estimate a plausible range of values. At this point, our best estimates are that the GOL should anticipate a likely range of residual damages is 10%-50% of the pre-mitigation damage estimates. This applies to all costs except for the lost timber harvests and carbon values<sup>21</sup>. This is based upon the following comparison of the pre-mitigation costs and the probability of success in preventing or mitigating these impacts. The actual value of residual damages will be the result of the level of mitigation efforts and expenditures, the institutional and technical capacity of the parties charged with mitigation actions and a wide range of cultural, social, behavioral, and external factors. While we hope and expect, should the project go forward, that the residual damages will fall closer to the lower estimate, it is prudent to take into

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<sup>20</sup> Post-mitigation costs can be placed into four categories: 1) directly mitigated—actual impact is lessened; 2) offset—action is taken elsewhere offsetting the impact to balance negative effects; 3) compensated—payment (money or other assets) to those adversely impacted; and 4) residual costs—impacts not addressed by 1, 2, or 3.

<sup>21</sup> Currently, there are no proposed mitigation measures for the loss of potential timber and carbon values. These should therefore be considered as a part of the Laotian contribution to the project.

account the often repeated experiences of countries world-wide that have suffered residual project costs closer to the higher estimate.

- **Resettlement** - The pre-mitigation costs of forced resettlement were estimated to be approximately \$1 million per year. International experience with resettlement efforts have varied greatly, although with numerous notorious failures.<sup>22</sup> A recent review of 50 World Bank financed dam projects indicates that resettlement was carried out with reasonable success in half the cases (Liebenthal et al, 1996). As mentioned earlier, in this project the efforts to date in fostering successful resettlement are commendable, but the livelihood models are still subject to significant uncertainty, particularly in area of agro-forestry. While we do not anticipate the chances of total or even 50% failure to be realistic, a 10 or 20% failure rate is clearly still possible. A 100% success rate would be unrealistic.
- **Lost Terrestrial and Aquatic Ecosystems** - These losses before mitigation were estimated at \$2-4 million per year. We consider these costs to be adequately mitigated with the successful protection of the NBCA, though this is by no means a certainty. We estimate the chances of failure in this regard to be in the area of 10-50% (see paragraphs 14-18 and 80-84). Of course, a total loss of this area, which is well within the realm of possibility, would constitute a complete failure at mitigation.
- **Health and Construction Impacts** - The possible health costs without mitigation measures could be extremely large. International experience again presents mixed results in this regard, though success rates are somewhat higher in this category than for resettlement efforts. (See Liebenthal or McCully for examples.) Virtually all the impacts of malaria and schistosomiasis can be addressed with an aggressive prevention, mitigation, and treatment program. This is not necessarily true for HIV, where post facto treatment is not effective. Successful implementation of programs is not guaranteed in either case. The recent experiences with Nam Theun-Hinboun and elsewhere should help in preventing the other social impacts associated with construction, but it also points to the difficulty in preventing such impacts. Commendably, the RAP proposes a marked increase in health expenditures for the region. This in itself is not enough to ensure that the spread of communicable diseases can be held in check (and does not necessarily bear any relation to the magnitude of the risk). The risks can be reduced with the following measures: (1) Education about the risks of HIV/STDs and the use of condoms; (2) regulation of brothels; (3) treatment of STDs (a policy to dismiss those with STDs is counterproductive); (4) provide housing for families.
- **Flooding, Water Quality and Unanticipated Impacts** - The possible impacts of flooding still requires further study and questions remain regarding water quality. This could certainly add substantially to residual costs. Given the size and extent of this project, unanticipated costs will almost certainly materialize.

97. Taken in toto, we consider the possibility of no residual damages to be unrealistic. Ten percent is a realistic lower bound. International experience with large dams points out the real possibility of a near total failure to mitigate social and environmental costs. Yet the intensive

<sup>22</sup> See McCully (1996) for many examples.



planning and financial resources allocated to these concerns greatly improve the chances for successful implementation of mitigation efforts. Still, the magnitude and difficulty of the mitigation efforts also justify considering the possibility of substantial residual costs which we estimate could reach 50% of the total costs without mitigation.

98. The potential revenues of the project (approximately \$200 million per year) are several times the quantifiable environmental and social costs. Equity and prudence suggest that all social impacts should be fully mitigated or compensated (everyone affected by the project should be at least as well off and preferably better off), and the net environmental impacts should be clearly positive. In some instances, the efficiency of mitigation programs may need to be compromised to ensure that solutions are equitable. Financially, this should not be problematic. The key elements will be proper program design, implementation, monitoring, follow-up, and long-term commitment from all parties.

#### **6. Institutional Analysis: Key Aspects**

99. Enhancing and strengthening the institutions charged with carrying out the social and environmental mitigation plans is perhaps the biggest challenge for achieving success in these areas. The magnitude of the endeavor is clearly evident in a cursory observation of the extent and diversity of the proposed mitigation measures; the complexity of these measures, particularly those with extensive social elements; and the size of the mitigation budget in comparison to the Lao PDR social programs spending. The breadth and intricacy of the mitigation agenda, which is being based upon international standards, is greater than that previously undertaken by the various agencies, both public and private, that comprise the current capacity within Lao PDR. While it is clear that the present institutional structure needs augmentation to effectively implement these plans, analysis of the track record of the current institutional structure is not a fair measure of the potential to carry out the many tasks. While predicting the outcome of the social and environmental mitigation is a crucial component in setting the path that the project development takes, it is not possible to predict the potential success of the mitigation measures with any certainty. The lack of precedent does, however, provide a degree of flexibility in the design and allocation of institutional responsibilities.

100. There are numerous different institutional configurations that could be chosen to carry out these plans. The selection of alternatives will likely be a participatory and negotiated process. The strengths and weaknesses of each alternative should be carefully considered and periodically revisited throughout the process. While we have said that it is difficult to predict the success of these measures with a high degree of confidence, it is possible to delineate those particular aspects of institutional arrangements that are most conducive to success.

101. For this preliminary analysis of the institutional aspects we separate the social and environmental mitigation plans into the following seven elements:

- Design and planning;
- financing mechanism;
- legal framework;
- social aspects and participation;
- technical expertise;

- implementation;
- monitoring and review.

102. We will address each of these aspects, considering the specific tasks and possible agencies or organizations that could be involved in each.

### **6.1 Design and Planning**

103. Two principles will arise repeatedly in the design of programs and strengthening of institutions:

- Ethical and equity considerations demand that every individual and area affected by the project must be well compensated for any losses. International involvement in the project will demand that mitigation and compensation take place according to international standards.
- Social and environmental measures must be commensurate with and appropriate to the Laotian development agenda. Institutional strengthening and capacity development should complement the larger efforts being carried out across the nation and contribute to institutional strengthening beyond the boundaries of this project.

104. These two principles will often be mutually reinforcing. However, they may also contradict each other. This is perhaps most evident in the plans for resettlement. It is unlikely that the project will proceed with World Bank funding without a comprehensive and expensive resettlement program in place. This contrasts sharply with previous (and possible future) Laotian resettlement programs which are unstructured, gradual, and flexible with major "improving" elements. Resolution of this issue, and other design and planning issues, will best take place via an ongoing dialogue within specially constituted committees, with representation of the different perspectives.

105. In some cases, it may be advisable to expand the links between the institutions currently functioning in Lao PDR to increase the prospects for the effective accomplishment of the program objectives. We do not recommend that new implementation institutions be created, but rather recommend that the effectiveness and coordination of existing bodies be improved.

106. The Resettlement Management Unit is a good example of a body created to promote the horizontal integration and cooperation of different institutions to plan and design one of the mitigation strategies. The successes of this body will provide valuable experience for the inception of other comparable committees.

107. A similar body has been proposed for managing the NBCA consisting of representatives from the Department of Forestry, the Provincial Governor's office, the BPKP, the IUCN, and NTEC.

### **6.2 Financing Mechanism**

108. Financing comprises two aspects: 1) allocating the responsibility for paying for the different mitigation items and 2) allocating the responsibility for managing and disbursing the finances. The former is a currently being negotiated between the GOL, NTEC, and the World Bank. In addition to the initial financing of various measures, the responsibility for cost over-runs and contingencies

must be clearly defined. (Many of the mitigation measures, if they are to be truly successful, will require a good deal of flexibility in implementation and follow-up measures. These characteristics are not conducive to well-defined budgets.) The actual availability of financing is not likely to be the most serious limitation for addressing social and environmental concerns.

109. The issue of managing the disbursement of funds is more complicated. Of particular concern in projects of this magnitude is the potential for leakages. While the prevention of leakages should not be pursued at the expense of all else, they are perhaps the biggest impediment to successful project implementation and must be assiduously prevented.

110. In the management of the NBCA, proposals for some type of environmental trust fund have been forwarded. This would put the power for disbursement of financing with an independent board composed of representatives of many sectors. One of the particular strengths of this option is the increased likelihood of funds being disbursed based upon merit and performance. (Competitive bidding could be the mechanism for the selection of an implementing body.) This mechanism has been used successfully in many countries. It is hoped that a similar arrangement will surmount political sensitivities and be adopted in Lao PDR.

111. The creation of another fund for social programs has also been proposed. This could be a good way of ensuring that financing is available for unforeseen social impacts and expenses resulting from the project.

### **6.3 Legal Structures**

112. The legal structure sets the crucial ground rules by which all these other functions must occur. A good legal structure will promote and facilitate the prudent use of scarce resources, while a poor legal structure will hinder progress. Among the most important legal issues that require priority in the project area are the property rights over the land (and its timber) given to those resettled and the property rights over the fish in the reservoir. Firmly established property rights, whether based on communal access or private property, will greatly improve the value of these resources and are crucial for their sustainable management. These issues must be settled well before the people are moved or the reservoir is inundated for resettlement to be successful.

### **6.4 Social Aspects and Participation**

113. The success of the mitigation efforts will hinge upon the success of incorporating social constraints, sensitivities, and preferences into the plans and actions. This demands the involvement of people adroit at the interactions between cultures at every step, as well as the active participation of those people affected. This is, of course, paramount for carrying out the resettlement plans and the initiation of any outreach or development programs in the NBCA. Irrigation, forestry and fishing management, public health, agricultural extension, and irrigation planning cannot effectively proceed without adequate social input.

### **6.5 Technical Expertise**

114. Lao PDR currently relies heavily on outside technical expertise. While this will continue in coming years, the country might better capitalize on the immense amount of technical knowledge that flows through its borders in the form of foreign consultants and advisors. These

visits should be designed to transfer skills, information, and training to national counterparts. Any international input into the social and environmental mitigation measures should contribute to strengthening Laotian institutions.

## **6.6 Implementation**

115. Selection of the institution to implement environmental and social mitigation efforts should be based upon performance, with a preference given to domestic entities. In some cases, prior commitments or political exigencies may mean that these decisions have already been made. If this is the case, future commitments might be minimized to allow the gradual incorporation of performance based contracting. The implementing agency might also provide the technical capacity and contribute to the design and planning stage.

## **6.7 Monitoring and Review**

116. This is possibly the most demanding of the functions mentioned. It is important that this occur independently of the implementation process. While many implementation agencies will effectively carry out the agreed-upon tasks without the threat of lost funding or legal action, this is not universally true: performance review and accountability are essential for reliable and predictable project execution. Transparency greatly enhances the effectiveness of these actions. Confirming that the "money has been spent" is not an adequate measure of the achievement of mitigation plans. Alternative performance indicators should be developed for each action.

117. This monitoring and review role might be best played by either the entity responsible for the design and planning or the agency that disburses the funding.

# **7. Institutions and Mitigation Actions**

## **7.1 Resettlement**

118. A model seems to be developing for the allocation of responsibility for resettling the inhabitants of the inundation area. The RMU mentioned earlier is responsible for planning the process. The financing for resettlement comes from NTEC. The social aspects are being carried out by the Lao Women's Union, the Provincial government, BPKP, and NTEC, and by giving the villagers themselves a voice by affording them with different options. Technical inputs will come through NTEC. The provision of social services will be carried out by the Provincial government. Infrastructure (roads, houses, etc.) will be constructed by the BPKP. The Provincial government will coordinate the actual moving of people to new sites.

119. This model has much to commend it. The oversight and monitoring role, however, does not seem to have been settled yet. The GOL, as a member of the project group, may not be in the best position to play the role of an independent monitor. Also in need of further clarification is the role of the Provincial government in providing agricultural and forestry extension that is so crucial to the success of the resettlement effort.

120. The provision of promised services is a straightforward process, though funding must be allocated for operations and maintenance in addition to adequate staffing. Providing a viable alternative livelihood, however, is a much more problematic proposition that historically has a high failure rate, often resulting in a breakdown of families and cultures in addition to the

economic failure. An exceedingly high mortality rate is not uncommon. Further study must go into the institutional structures and responses required to prevent such outcomes, and whether this type of result can be reliably avoided.

## **7.2 Downstream Channel**

121. The construction of the downstream channel to mitigate the adverse effects of the diversion of the Nam Theun water into the Xe Bang Fai is primarily an engineering and construction feat. This simplifies the performance standards and accountability greatly. Including this in the turnkey construction contract appears to be a good choice. There are no readily apparent reasons to doubt that this will be carried out as planned. Building liability and non-performance clauses into the contract can safely assure compliance with agreed-upon standards.

122. There is the possibility that further resettlements will be required because of the course of the water in the Nam Phit. This possibility must be well anticipated with contingency funding and resettlement plans at the ready.

## **7.3 Mitigation of Construction Impacts and Regional Health**

123. To the extent possible, the mitigation of these impacts should also be built into the turnkey contract. However, the GOL may want to play a central role in some tasks, such as regional health. Implementation of disease prevention and treatment programs will require serious consideration. This might be best carried out by the Provincial government with the assistance of outside experts with clearly delineated responsibilities for the construction teams.

## **7.4 Increased Protection of the NBCA**

124. This mitigation action is fraught with great uncertainty. By some accounts, it will take a Herculean effort to maintain the integrity of both the residents and the biodiversity of the area. This may be the biggest obstacle to protection. This is best addressed by committing to an extended process of benevolent intervention, experimentation, and flexibility. Dogmatic and rigid approaches will not engender success on this slippery ground. One approach suggested is to attempt to coax the inhabitants out of the area with incentives for relocation. Another approach would be to offer employment based upon protection of the area, rather than its exploitation, such as for park rangers and guides.

125. The other large impediment to protection—the opportunity cost of not cutting the timber—is partially mitigated by the terms of the NTEC contract: the largest portion of Laos's revenues will come well into the future, lending a strong incentive to avoid timber cutting in the area to protect the catchment area of the dam and ensure its value 25 years hence when it reverts to Laotian ownership. A study devoted to the economic ramifications of cutting versus protection could shed more light on this trade-off.

126. Extended representation for the planning and monitoring of this area will be critical. Added foreign participation will also help. One possible avenue is through the declaration of the NBCA as a World Heritage Site. Another possible mechanism, given the international importance and value of this area, would be for the government of Laos to sell the timber cutting rights to the international community (transferable development rights). The establishment of an environmental trust fund would greatly increase the chances of such an exchange occurring.

127. As discussed earlier in the study, the mitigation offered for irreversibly changing the ecosystems of the plateau and rivers is the protection of this area. Given that this is not assured, it should be considered whether the institutional arrangements should include any recourse in the event of failure. (Should another offset be considered as a contingency offset in the event of the failure to protect the NBCA? Where should earmarked funding be allocated in this event?) Given the uncertainty and problematic nature of monitoring success in this endeavor (protection of biodiversity cannot be the only objective as long as people live in the area), one must attempt to build as many incentives and guarantees as possible into the agreement.

128. One such guarantee is earmarked financing paid into a fund devoted solely to activities in the NBCA. This does not, however, guarantee that the money will be well spent. The creation of an independent body to disburse these funds can improve these prospects. Lastly, neither of these mechanisms will guarantee that local, regional, and national policies will not contradict and undermine protection efforts. Certainly, this area is Lao sovereign territory and, ultimately, the Lao authorities will dispose of it as they see fit.

## 8. Sedimentation

129. The topography of the watershed and the lay-out of the reservoir suggest that Nam Theun II will be susceptible to problems as a result of sedimentation, as well as impacts on water quality (the intake is at the head of the reservoir where sediments deposit) (Also see Center for Water Research 1997). Given that the watershed is almost completely forested at present, current rates of sedimentation will certainly be quite low, but this will not necessarily always be the case. Sedimentation reduces the storage capacity of reservoirs which can lessen the useful life of a reservoir and decrease electricity production. A rate of capacity loss of 1% per year has been encountered, though the figure can be much higher (Mahmood, 1987). This is somewhat difficult to predict; not only is the deposition of sediments in a reservoir hard to model, but the rate of erosion on a plot of land can vary from 50 times to as much as 1000 times, depending on land-use practices. The protection of the watershed surrounding a reservoir is the one determining factor that can be controlled.

130. Sedimentation has had a substantial effect on the profitability of numerous dams around the world. Although these economic impacts can be felt almost immediately, most of the impact occurs over the course of many years. The implication in this case is that the return to GOL from this dam may be sensitive to the rate of sediment loading, although this is probably not the case for the project developers. This is not necessarily undesirable, as it is GOL which must ensure that degradation of the watershed is kept to a minimum.

131. Unquestionably, with effective management of the watershed, which would entail a small if any rise in the rate of erosion, sedimentation would have an insignificant impact on the profitability of the project, in present terms. A recent analysis suggests that the impact of sedimentation on energy production of the project is no more than about 2% of the present value over fifty years, in a "worst-case" scenario with erosion rates of 48 tons per hectare (See NTEC Reservoir Sedimentation Risk Analysis). Given the available information, this assessment appears reasonable.

132. However small these estimates may be in relative terms, such a loss in output would be large in absolute terms. It should also be recognized that the impact of such a loss in production would occur disproportionately in future years. This analysis is valuable for putting such risks in perspective and emphasizes the importance of watershed management, as well as hopefully strengthening the resolve for watershed protection. Should the project proceed, one hopes that erosion rates will never reach such a level. However, it would be prudent to carry out further investigations in order to assess more accurately the potential erosion rates in the Nam Theun watershed under poor management scenarios.

## 9. Conclusions

133. The potential social and environmental costs, without mitigation, for which we have estimates are in the range of \$80-160 million in present terms, with a round mean value of \$120 million.<sup>23</sup> Of this, \$20-40 million is attributable to the opportunity costs of land. As there is no planned mitigation for these costs, they should be considered a part of Laos's contribution to the project.

134. Most of the other \$60-120 million in costs can, in practice, be mitigated. There is, however, a substantial degree of uncertainty involved in the actual implementation and follow-up for these measures. Part of this may arise out of philosophical differences over acceptable mitigation standards. Political and regional issues may also contribute to uncertainty. Finally, the institutional capacity to carry out the mitigation measures may not develop rapidly enough to address every aspect of the mitigation program. Given the current arrangements, the combination of these factors translates into a significant possibility of the project resulting in substantial residual social and environmental costs. Depending on the size and terms of contingency budgets, these costs can be lessened by increased spending by NTEC or decreasing the profitability of the project, or they may be shouldered by the Laotian government<sup>24</sup>. The most likely scenario is a combination of both. This uncertainty adds to the risk profile of the overall project, for both NTEC and the GOL.

135. A mitigation budget of \$60-75 million for resettlement, biodiversity, construction, health, and downstream impacts (not counting the channel construction) should be nearly adequate, in financial terms, to address the cost of the impacts, either through mitigation, offsets, or compensation. In an optimistic scenario, unforeseen costs would not be more than an additional \$10-20 million, which would be drawn from a social/environmental contingency fund. In a pessimistic scenario, additional expenditures of \$35-50 million would be required for mitigation efforts, reducing the profitability of the project. Depending upon the actual structure of the contract, the GOL could be left with considerable residual damages not addressed through the NTEC budget. This could range from \$1-3 million per year.

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<sup>23</sup> These figures are somewhat different from previous drafts. The estimates for future timber harvests have been reduced, and the present value summary statistics in this draft are calculated using a real discount rate of 7% to be consistent with the benefit-cost analysis.

<sup>24</sup> This could be addressed by increased demands on the Laotian government budget or unaddressed social and environmental costs. Either way, this represents an economic loss to the country.



136. While international models can provide valuable experience in improving institutional arrangements, the contractual relationships and political aspects unique to Laos will require a Laotian solution to reducing this risk, if this is at all possible. Extending participation in the proposed mitigation measures to each of the major players seems to be essential for success. The issue of oversight and recourse in the event of non-performance needs to be clarified.

137. Many of the local human impacts are small in comparison to the overall project costs. Safeguards must be built in to ensure that these inexpensive, distributional issues are fully addressed.

**Summary Table of Environmental and Social Costs and Benefits**

<i>Impact</i>	<i>Pre-mitigation</i>		<i>Post-mitigation</i>	
	<i>Annual Cost/(Benefit)</i>	<i>Present Value of Total Costs/ (Benefits) (1998)</i>	<i>Estimated Rate of Mitigation</i>	<i>Present Value of Residual Costs<sup>a</sup> (Benefits) (1998)</i>
Villages and lost incomes	0.9-1.35	11-16	80-90%	1.4-2.8
Terrestrial ecosystems	1.0-1.7	13-23	50-90%	1.8-9.0
Aquatic ecosystems	1.5-2.5	16-27	50-90%	2.2-10.8
Health and construction	1.8-4.4	25-61	50-90%	4.3-21.5
Flooding	not estimated			
Fisheries productivity	(0.5)-(0.3)	(5)-(3)	NA	(5)-(3)
Future timber harvests	1.9-3.6	20-38	NA	20-38
Carbon	0.2-0.3	2-3	NA	2-3
<b>Total</b>	<b>6.4-13.3</b>	<b>78-163</b>	<b>65</b>	<b>27-82<sup>b</sup></b>

Note: All figures are in millions of US dollars.

a) Residual costs are calculated as a percentage of the mean pre-mitigation cost estimates.

b) The range in residual costs reflects the variation in two fundamentally different categories: i) those costs for which mitigation measures are planned; and ii) those costs for which no mitigation measures are planned (timber & carbon). The variation in the former is a function of the success of mitigation measures. The variation in the latter reflects only measurement error. If the timber and carbon values are expressed as a mean value of \$31 million, the range of residual damages becomes \$37-76 million (See attached tables).



**Table 1**  
**Pre-Mitigation Damage Estimates**

Lower Estimate	Total	NPV (1998)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Future Timber Harvests	47.5	19.9	0	0	0	0	0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Carbon	5.1	2.1	0	0	0	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sub-total	52.6	22.0	0	0	0	0	0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Villages & Lost Incomes	24.0	10.6	0	0	0.3	0.5	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Terrestrial Ecosystems	28.5	13.5	0.5	0.5	0.8	0.8	1	1	1	1	1	1	1	1	1
Aquatic Ecosystems	38.5	16.5	0	0	0	0	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Health and Construction	52.2	25.0	0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Fisheries Catch	(11.9)	(4.8)	0	0	0	0	0	(0.2)	(0.3)	(0.4)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Sub-total	155.1	60.7	0.5	2.3	2.9	3.1	4.5	5.0	4.9	4.8	4.7	4.7	4.7	4.7	4.7
Total	207.7	82.7													

Upper Estimate	Total	NPV (1998)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Future Timber Harvests	90	37.7	0	0	0	0	0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Carbon	7.6	3.2	0	0	0	0	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Sub-total	97.6	40.9	0	0	0	0	0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Villages & Lost Incomes	36.45	16.3	0	0	0.7	0.9	1.1	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Terrestrial Ecosystems	48.4	22.8	0.8	0.8	1.3	1.3	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Aquatic Ecosystems	64.0	27.3	0	0	0	0	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Health and Construction	127.6	61.0	0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Fisheries Catch	(7.1)	(2.9)	0	0	0	0	0	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Sub-total	283.6	124.6	0.8	5.2	6.4	6.6	8.7	9.9	9.8	9.7	9.7	9.7	9.7	9.7	9.7
Total	381.2	165.5													

Inundation occurs in year 2003.  
 Resettlement of villages phased in starting in year 2000.  
 Terrestrial ecosystem losses phased in starting in 1998.  
 Aquatic ecosystem losses phased in starting in 2002.  
 Health and construction impacts start in 1999.  
 Loss of future timber harvests start in 2003.  
 All figures are in constant 1998 dollars.  
 The discount rate is 7%.

Table 2

Residual Damages

Unmitigated Damages

Total	NPV (1998)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Low	11.5	5.8	0.1	0.4	0.5	0.5	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.4
High	95.4	44.4	0.3	1.9	2.3	2.4	3.3	3.6	3.6	3.4	3.4	3.4	3.4	3.4

Opportunity Costs of Land

Total	75.1	31.5	-	-	-	-	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Low	86.6	37.3	0.1	0.4	0.5	0.5	0.7	3.6	3.5	3.4	3.4	3.4	3.4	3.4
High	170.5	75.9	0.3	1.9	2.3	2.4	3.3	6.6	6.6	6.4	6.4	6.4	6.4	6.4

Unmitigated damages are calculated as a percentage of the mean pre-mitigation damage estimates excluding timber and carbon.

The range of unmitigated damages is 10% for the low estimate and 50% for the high estimate.

The projected fisheries benefits are netted out of the unmitigated damage estimates.

Opportunity costs of land are equal to the sum of the mean timber and carbon values.

NPVs are calculated only for comparison of figures. Discount rate used is 7%.

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### **Annex 3**

## **Microeconomic and Institutional Capacity Analysis of Nam Theun 2**

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**Annex 3:**  
**Microeconomic and Institutional Capacity Analysis**  
**of Nam Theun 2**

**Introduction**

1. The microeconomic and institutional analysis component examines the likely impacts of the Nam Theun 2 hydroelectric project on the real sector of the Lao economy, especially on prices and employment in the project area.<sup>1</sup> This component also examines the institutional capacity of BPKP, the provincial governments, and the central government, to manage the impacts of the project. Preliminary findings and recommendations concerning market impacts, implementation capacity and monitoring are presented in the final section of this report.

**1. Preconstruction Activities**

2. A question implicit to the analysis of the projected impacts of the Nam Theun 2 project has to do with its relationship to current logging on the Nakai Plateau. There seems to be no question that BPKP embarked on an accelerated logging program in 1993 in anticipation of the approval of the Nam Theun 2 dam project. This was offset by a halt to logging activities in the much larger catchment area behind the planned inundation area, in anticipation of its being retained as a national biodiversity conservation area (NBCA). This fits within the larger context of the Lao PDR's national economic strategy progressively to replace exports and government revenues from logging with higher receipts from hydroelectric power; and gradually to reduce logging quotas to levels compatible with sustainable forestry harvesting.

3. From an economic standpoint, the accelerated logging program on the Nakai Plateau should not be considered a part of the Nam Theun 2 dam project, because if the project were not to go forward, forestry on the Plateau would recover, especially if assisted by reforestation. In this case, the Plateau's second growth forest could continue to yield a sustainable harvest in future years (and indeed, this represents an economic opportunity cost that has been factored into the Economic Study's cost-benefit analysis of the Nam Theun 2 project).<sup>2</sup> Nonetheless, BPKP's accelerated logging program provides a useful case study of the impacts on local markets of a fairly large-scale productive activity in the Nakai Plateau area.

**1.1 Direct impacts**

4. In some respects BPKP's logging activity is an enclave project similar to that envisioned by Nam Theun 2 project developers. Almost all of the logging itself is contracted out to Vietnamese or other foreign concessions. Thus, the direct employment impacts on the local area are minimal, and the impact on local wages also has been negligible. Price impacts on consumer goods and services in the Nakai Plateau appear to have been minimal, in part because there is a

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<sup>1</sup> An assessment of the potential impact of revenues from Nam Theun 2 in terms of relative prices at the national level is presented in component 4, 'Macroeconomic Analysis.'

<sup>2</sup> From a biodiversity standpoint, the Economic Study team believes that the probability of the NBCA being preserved is increased by the Nam Theun 2 project going forward as currently designed. (See Annex 2.)

relatively good highway network; and because commercial trade is essentially open. In both Nakai and Lak Sau (BPKP's regional headquarters), consumer goods imported from other parts of Laos, and from Thailand, are plentiful, and appear to be no more costly than in Vientiane. Local producers also are very active in supplying goods and services in the local markets visited in both towns.

### **1.2 Indirect impacts**

5. The indirect impacts of BPKP's logging program on local and regional markets include the company's investments in wood processing plants, hotels, restaurants, and other businesses; and a significant in-migration to take advantage of new market opportunities, centered in particular on Nakai and Lak Sau towns. This growth has all the hallmarks of a boom town syndrome, including microentrepreneurs selling their goods in the open-air markets; as well as some of the social ills, such as prostitution. But BPKP, in its role of local authority, apparently engages in a conscious effort to minimize the threat to traditional village organizational stability and authority in the surrounding region.

6. One area of immediate concern, however, has to do with protection of wildlife in the area, and indeed one can easily find rare species for sale in the local open-air markets and restaurants. The in-migration of Lao population, and probably of foreign logging crews as well, can only have meant increased demand for these products (and also supply, for many new residents and workers hunt). Without implementation of an organizational and enforcement structure to prevent encroachment on the wildlife population, these new demographic pressures could multiply the threat to wildlife in the Nakai Plateau and in the NBCA as well.

### **1.3 Rural development activities**

7. BPKP has engaged in a number of rural development activities to the benefit of the Nakai Plateau region. Although a report on these activities has not yet been made available by BPKP, the Economic Study team were told that they focus on infrastructure development, especially rural roads, electrification, rice-paddy irrigation systems, and construction of schools and health clinics. As reviewed in section 3.6, below, BPKP has the unique capacity to circumvent central government institutional weaknesses and financial constraints in the supply of these public goods because it has its own sources of revenue.

## **2. Construction Project Impacts on Local and Regional Markets**

8. Although the Nam Theun 2 construction project is designed essentially as an enclave development, this will reduce, but not eliminate, the impacts of the project on local goods, services and labor markets. This section examines the likely effects on local and regional prices and employment of the increases in demand for goods and services and population attributable to the Nam Theun 2 construction project. The probable impacts of demographic pressures on social cohesion and biodiversity are also considered.

## 2.1 Potential institutional/infrastructural bottlenecks

9. There appear to be few if any bottlenecks to the supply of consumer goods and services with the potential to cause shortages and/or significant price rises related to the construction phase of the Nam Theun 2 project. The transport network already is relatively good to both Nakai and Lak Sau towns. Internal commercial trade and prices in Laos are virtually unrestricted, and have been since the late 1980s. This will allow Lao producers to expand sales to meet increases in demand in the project area. Foreign trade and the exchange regime also have been substantially liberalized, so that imports can help to stem local or regional shortages and price increases that otherwise might arise.

10. Bottlenecks to the supply of nontradeables, which for purposes of this analysis are taken to mean consumer services, could be a more serious source of concern. But as long as the authorities do not seriously restrict labor mobility, in-migration seems like a strong possibility in response to the increased demand for services in the Nakai Plateau, and this will tend to minimize price increases in nontradeables.<sup>3</sup>

## 2.2 Price impacts—consumer goods & services

11. Experience in other hydro projects indicates that the impact of the construction project on local prices is likely to be minimal. Economic Study team members were told at the Theun-Hinboun project site, for example, that food supplies were purchased from Vientiane and Thakek, as well as from smaller towns in the Central Region; imports from Thailand were brought in as needed. As a result, the prices observed in local food markets were similar to those seen in Vientiane.<sup>4</sup>

12. As for services, at the Theun-Hinboun site about 30% of the small retail outlets servicing customers both within and outside the project compound were run by members of families of workers inside the camp. The other 70% were people who had migrated from elsewhere in Laos to establish such enterprises. The experience at Theun-Hinboun, as well as in the towns of Nakai and Lak Sau (as discussed in the previous section) is that in-migration of Lao microentrepreneurs has dampened price increases even in nontradeables.

13. Price increases in consumer goods and services attributable to the Nam Theun 2 construction project would be negligible at the regional or national levels, again, because with price, trade and exchange regime liberalization, Laos is a small, open economy; and because, so far, authorities have not intervened to restrict labor mobility. Nonetheless, it is fully to be expected that Thakek and downstream villages in Khammouane Province would benefit from spillover demand for both goods and services, and would react to that demand by increasing

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<sup>3</sup> Where bottlenecks appear most likely to arise is in the supply of public goods and services that would not be financed or provided by the project itself, and hence would fall under the responsibility of the GOL. The sources and nature of these potential bottlenecks are discussed in section 3, below.

<sup>4</sup> This contrasted with the reported experience at the Xeset hydro site in the late 1980s, which apparently experienced significant real increases in consumer-goods prices because the project relied mainly on local procurement.

supply. The Deputy Governor of Khammouane Province, in particular, thought that local and regional food producers could compete very effectively to meet increased demand for food products on the Nakai Plateau.

### 2.3 Direct employment impacts

14. Experience in other hydro projects suggests that the direct impacts of the Nam Theun 2 construction project would be minimal in terms of creating either shortages in selected labor categories, or increases in wage rates in those categories. One reason is that the project, as conceived, is almost entirely an enclave activity: Most of the labor that would be brought in would be immigrants from other countries. (NTEC representatives were not yet prepared to give an estimate of the proportion of the construction project workforce that would be Lao, but past experience suggests that the proportion of Lao laborers would be considerably less than 25% of the total.)

15. Second, although Lao workers with equivalent skills would be given preferences in hiring, experience in other hydro projects (Theun-Hinboun, Xeset) indicates that very few Lao laborers would be qualified for, and therefore hired into, the skilled labor categories. Third, even for unskilled jobs, hiring from the local population would be rare. Instead, the tendency has been for Lao workers from previous hydro projects to migrate to the regions where new projects are going in; and of course, these laborers will be more experienced and attractive from the standpoint of the employer. Finally, in Nakai Plateau, even when there are hiring preferences for local laborers, they very rarely apply for jobs outside their villages, as demonstrated by the new BPKP pressboard factory, which received only one local job application.

### 2.4 Indirect impacts

16. Despite the enclave nature of the project, there would still be substantial indirect impacts of the increased labor force and population on the Nakai Plateau during the construction period, in the form of increased demand for goods and services, leading to increased employment opportunities, particularly in the provision of consumer services. Although in-migration of Lao microentrepreneurs from other regions would dampen the impact of this on prices (and wages), it is still to be expected that, in comparison to local wages or in-kind income, the income that local residents could derive from hawking goods and services to the construction project workers would be very attractive. The fact that rice production in many of the local villages is in deficit, and has been falling in recent years, would add to pressures to seek employment outside the village. The economic benefits would be increased income for those families and villages. Nonetheless, based on observation of the indirect, or "multiplier" economic impacts of other hydropower projects during the construction phase, like Theun-Hinboun, these would not be large enough to register much impact on the growth of the national economy.

17. Another indirect impact would be increased demand for public infrastructure and services outside the project compound. It is not clear who would meet this responsibility. At Theun-Hinboun, for example, a first aid station was provided by the contractors which offered free services to all people in the area, including medication. But Lao laborers received no housing for the dependents they brought with them, who instead had to fend for themselves in a makeshift



village on Highway 8 just outside the project camp. Electricity and water treatment were provided to the project compound, but the "unofficial" camp outside the compound had neither electricity nor waste water services. NTEC representatives have said that the Nam Theun 2 project would place significant emphasis on planning for infrastructure services for the community that will almost certainly develop outside the project compound. (Details of how these responsibilities would be shared with BPKP, provincial authorities and the central government still remain to be worked out; see section 3 of this annex.)

## 2.5 Social impacts

18. The likelihood that the immigrant laborers would settle in the Nakai Plateau once the construction project was completed is low, given the fairly strict control maintained by Lao authorities on residency visas for foreigners. But during the construction period both they and Lao immigrants to the area could pose serious demographic pressures. As evidenced by the experience in sites near other hydro projects, not to mention the boom-town syndrome evident in Nakai and Lak Sau towns, rapid local economic growth may represent a threat to local village organizational stability and family cohesion with potentially negative social consequences. The Lao Women's Union expressed a concern about such negative social consequences in its contribution to the First National Consultation Workshop on the project in January 1997. As amplified by international institutions like UNAIDS, one serious concern has to do with the rise of prostitution and the potential for accompanying social diseases, such as AIDS.

19. Another factor related to demographic pressures is that, by and large, the families and villages that would be resettled by the project are composed of non-Lao "ethnic minorities," whereas the majority of new residents on the Plateau would be migrants of Lao origin from elsewhere in the country. An indication of the difficulties that ethnic minorities may have in integrating into Lao villages and modern agricultural techniques is suggested by the fact that, so far, only ten families have indicated a desire to move off the Plateau to resettlement locations downstream.

## 2.6 Biodiversity impacts

20. The principal means by which the ecology of the Nakai Plateau and the NBCA has been protected until recent years has been inaccessibility. Construction of access roads, accelerated logging of the Nakai Plateau and demographic pressures derived from increased economic activity in the area already represent serious threats to wildlife, both in the Nakai Plateau and in the NBCA; as well as to forestry in the NBCA. These demographic pressures would be likely to increase significantly during the construction phase of the Nam Theun 2 project, because the logging program would accelerate even as site preparation and construction began. Even if the project developers were able to enforce restrictions on the hunting and fishing of immigrant workers living within the NTEC compound, there would be increased risk to biodiversity from the influx of Lao population and immigrant logging crews likely to occur during the construction phase.

21. The official GOL response to this concern is that internal residency restrictions will be utilized to minimize demographic pressures in both the Nakai Plateau and the NBCA. There are at least two reasons to believe that this position is less than credible. First, this has not been done in the past—the policy has not been enforced so far. As discussed in section 1.1, above, BPKP's accelerated logging of the Nakai Plateau has been accompanied by rapid growth of both Nakai and Lak Sau towns; and there is little evidence that BPKP has discouraged settlers from moving into the region to take advantage of the opportunities deriving from economic growth. Neither have there been serious attempts to restrict labor mobility to other hydro sites, such as Theun-Hinboun. Second, as discussed earlier in this section, restrictions on labor mobility could have detrimental effects in terms of creating shortages and higher prices for goods and services in the local area, and so should not be promoted as a matter of policy.<sup>5</sup>

22. Thus, it is to be expected that increased demographic pressures would be the most likely outcome during the construction phase of the Nam Theun project, and that, without promulgation of effective environmental protection policies and enforcement, these would have very detrimental impacts on biodiversity. As discussed in sections 3 and 4, below, BPKP, provincial authorities and the central government ministries of the GOL do not appear to have the institutional capacity to carry out this function at present. This, more than any other factor, has been what has driven proposals to put into place an 'autonomous institution,' under the proposed NTSEP loan from the World Bank, to carry out this mandate.

### 3. Institutional Capacity

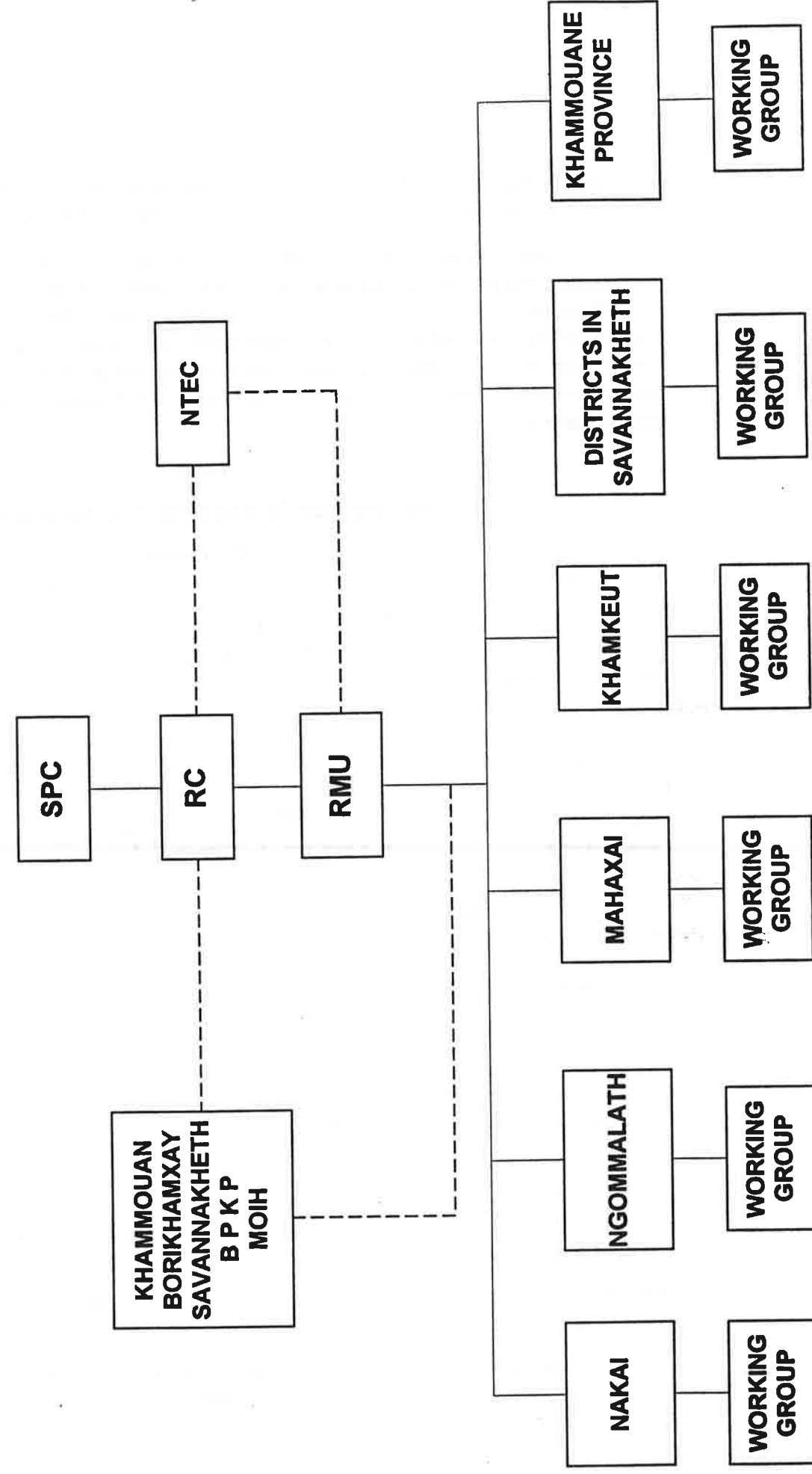
#### 3.1 Resettlement Committee

23. Should the Nam Theun 2 project proceed as planned, one area in which the GOL will retain primary responsibility and authority is that of resettling the 900 or so families in the area to be inundated. The GOL has decided that this responsibility will fall to an ad hoc Resettlement Committee (RC), under the direction of the State Planning Committee (SPC). The intention of the GOL is to provide an improved quality of life—not just an equivalent quality of life—to the families that would be resettled. NTEC's Resettlement Action Plan still is subject to GOL review in the context of contract negotiation, and so by any measure the institutional structure of the RC is still evolving; nonetheless, its tentative outline is presented and assessed below.

24. **Institutional structure and mandate.** The Economic Study team paid a visit to the RC in Thakek, where it is headquartered in offices provided by NTEC. The Chairman, Mr. Bouathong Phousalith of SPC, provided the team with an organigram of the planned institutional structure of the RC (Figure 1). The RC itself is to be comprised of Mr. Phousalith; Mr. Voradeth Phonekeo, representing the Ministry of Industry and Handicrafts; the Vice Governors of Borikhamxay Khammouan Provinces (the two provinces that would be most affected by the

<sup>5</sup> Although not intrinsically an economic concern, it is also the case that internal residency and migration restrictions may raise human rights issues. This is the reason, for example, that RC authorities would be predisposed to waive such restrictions in the case of families of Lao workers on the project (see section 3.1, below).

**Figure 1**  
**NAM THEUN 2 PROJECT**  
**RESETTLEMENT ORGANIZATIONS**



planned resettlement); the head of the Industry and Handicrafts Department of Savannakheth Province, and Dr. Maydom, the Vice President of BPKP. NTEC also participates in the RC.

25. The mandate of the RC was still evolving during the period in which the Economic Study team carried out its institutional analysis, in parallel with conceptualization of the proposed NTSEP project. The Study team were informed by the GOL during the Study review process that, under the proposed structure of responsibilities currently being considered, the RC would not be responsible for awarding works contracts financed by NTEC. Those contracts would instead be implemented by the Turnkey Contractor, which would in turn engage directly in subcontracting.

**Table 1**  
**Detailed Cost Estimate For NT2 Resettlement**  
**Unit:USD**

No.	Cost Item	Total Cost	Financing Plan			
			NTECo	NTSEP		
				GOL	IDA	Total
1 Reservoir Component						
A Resettlement Site Development & Relocation						
	Subtotal of A	6,809,436	5,072,716	236,720	1,500,000	1,736,720
B Livelihood Development						
	Subtotal of B	3,273,968	2,923,968	350,000	0	350,000
2 Downstream Component						
	Subtotal of Downstream	12,572,300	3,605,800	141,500	8,800,000	8,941,500
3 Resettlement Planning and Design						
	Subtotal	3,000,000	3,000,000	0	0	0
4 Administration & Management						
	Subtotal	2,839,200	0	1,262,400	1,576,800	2,839,200
	Physical Contingency 10%	2,983,040	1,583,798	199,062	1,187,680	1,386,742
	GRAND TOTAL	32,813,444	17,421,782	2,189,682	13,064,480	15,254,162

Source: Resettlement Committee, July 1997 (based on a proposal from NTEC)

26. It was also envisioned that IDA funds would be forthcoming from the NTSEP project for parallel financing of resettlement activities. Table 1, based on information provided to the team in

July of 1997, represents a proposal from NTEC concerning the sources and destination of expenditures under the resettlement activity, including the scope and nature of the proposed IDA financing of NTSEP. The Study team were informed that expenditures of NTSEP project funds would be the responsibility of the RC's Resettlement Management Unit (RMU), and would be subject to standard World Bank accounting procedures and audits. The main contribution of the GOL in terms of counterpart financing would be for the salaries of GOL representatives. As proposed, NTEC would be responsible for financing slightly more than 53% of the proposed resettlement activity, which itself would total \$33 million.

27. **Potential conflicts-of-interest.** Although the scope and nature of the RC's institutional mandate and responsibilities remain to be fully resolved, RC representatives told the Study team that the committee would be largely advisory in nature, and in particular that it would not be responsible for awarding contracts. Nonetheless, a Resettlement management Unit (RMU) would be set up under the RC's direction that would be responsible for awarding contracts derived from NTSEP financing. To the extent that the RC is expected to supervise the activities of the RMU, or the committee discusses RMU plans or procedures concerning bidding for contracts to be extended with IDA financing in an advisory capacity, it could be inappropriate for BPKP, as a member of the RC, to bid on contracts that might be awarded by the RMU. A similar potential for conflict-of-interest could arise in respect to BPKP's plans to bid on works contracts to be awarded by NTEC or its Turnkey contractor, given NTEC's participation in the RC. These issues should be resolved in the context of coming to grips with the scope and nature of BPKP's future role, should the Nam Theun 2 project go forward. (See discussion in section 3.6, below.)

28. **Local participation in the planning process.** The RC plans to constitute a Resettlement Management Unit (RMU) responsible for implementation, four Working Groups composed of officials from the four districts principally affected, and a final Working Group for Khammouan Province. Most of these officials have already been identified. The intention is to incorporate village participation in resettlement planning by including the village chiefs. Also represented will be the Lao Women's Union, the Lao Revolutionary Youth Union, and the Lao Development Front, which includes chiefs of ethnic groupings and village militia.

29. The Economic Study team witnessed only one public forum held at the local level, a meeting in Muang Mahaxai, a town in the downstream area, concerning the expected impacts of the Nam Theun 2 dam. This was attended by Lao journalists, World Bank staff and senior NTEC representatives, as well as RC, Provincial and District representatives. Although the meeting probably was not a fair representation of the degree to which local concerns are taken into account, several fluent Lao speakers complained that the RC representative failed to translate negative comments or concerns made by local citizens about the dam project. Likewise, a very senior NTEC representative attending the meeting complained that local citizens were receiving misinformation about the dam's probable impacts. One problem that has arisen is that the RC depends on NTEC almost entirely for financing of the consultations process, placing it in a peculiar position in respect to sampling and conveying the views of local stakeholders.

30. **Ancillary GOL responsibilities.** Based on past experience with hydroelectric projects elsewhere in Laos, there could be in-migration pressures to the region that represent costs not

covered by the project itself. Examples might include mushroom towns of the type that arise near construction sites, with merchants competing to provide consumer goods and services to the construction workers. This raises the question of who within the GOL might have responsibility to provide the public services and infrastructure for the migrants to the site who don't work directly for NTEC, and what plans are in effect to account for this.

31. The answer from the RC Chairman was twofold. First, these mushroom towns were expected mainly to be self-financing, so no additional GOL funding for public infrastructure or services was thought to be necessary. Second, the GOL's internal residency restrictions would be utilized to stem in-migration. In particular, any citizen wishing to move into the area would require prior authorization of district or provincial-level officials; although special consideration would be given to the wives and children of Lao workers at the construction site. This method would be utilized effectively to reduce demographic pressures likely to arise from the construction project. (A similar method of restricting internal population migration was envisioned to ensure that demographic pressures did not increase in the NBCA.)

32. **Monitoring.** The RC Chairman held to the position that the six Lao institutions comprising the RC, supplemented by other GOL officials, would carry out monitoring of the resettlement activity on their own. The RC is amenable, however, to the suggestion that outside training and technical assistance could be provided.

### 3.2 Provincial authorities

33. The Deputy Governor of Khammouane province participates in the RC, and the province itself would be affected more than any other by the Nam Theun 2 project. The Economic Study team held a meeting with the Deputy Governor in a preliminary attempt to gauge the absorptive capacities of provincial authorities relating to GOL responsibilities stemming from the Nam Theun 2 project.

34. **Role of provincial authorities.** The Deputy Governor said that the role envisioned for provincial authorities in resettlement was to support the RC, which would hire contractors to move houses dismantled by residents to new sites, also prepared by contractors. Provincial authorities also would disseminate information about resettlement to families to be moved, and monitor implementation through the RC and its working groups. Funding as yet to be determined would be provided by NTEC for costs directly related to the Nam Theun 2 project, including resettlement.

35. **Ancillary public expenditures.** This raised the question of public sector responsibility for potential ancillary costs arising from the project, such as mushroom towns likely to arise during the construction period. The answer was that, in practice, provincial authorities determined total needs, and then had to ascertain what BPKP planned to cover from its own resources. (In the future, it would be necessary to factor into account what NTEC and the NTSEP project would be willing to cover, as well.) Once these sources of external financing were known, application was made to the central government for the transfers that would be

necessary.<sup>6</sup> In 1997, for example, Khammouane Province had requested about Kip 4 billion (\$4 million) for its entire budget, of which half was slated for construction of infrastructure. But because of limited availability of financing from the central government, provincial authorities were more than happy to rely on BPKP, which generally took care of town planning on the Nakai Plateau, and had undertaken a number of projects to build schools, health clinics and other public infrastructure in that area. Provincial authorities retained responsibility for the financing of public-infrastructure operations and maintenance.

36. **Absorptive capacity.** No estimate of the additional provincial expenditures likely to arise from the Nam Theun 2 project had yet been made by provincial authorities. Nonetheless, it was clear that the magnitudes of expenditures projected for social mitigation related to the Nam Theun 2 project—on the order of \$33 million in total—far outweighed the absorptive capacity of provincial authorities accustomed to dealing with annual budgetary outlays on the order of \$4 million<sup>7</sup>. This underlined the importance of the RC in the conduct of the entire resettlement activity; and of BPKP in meeting public infrastructure needs not covered by NTEC.

### 3.3 MOAF

37. The Ministry of Agriculture and Forestry is broadly responsible for protection of forests and wildlife in Laos's 18 national parks, representing more than 10% of the nation's total land area.<sup>8</sup> It is also responsible for policing timber cutting on the remaining 15% of Lao land area that is forested. The policy is that, with the exception of logging in areas designated to become reservoirs, or in corridors opened for electricity transmission lines, roads, irrigation systems, or other development projects, the nation's timber harvest should not surpass 300,000 cubic meters per year.

38. The problem is that the MOAF has never had sufficient staff to carry out this mandate. It has only 3 field offices, with not more than 10 persons employed per office. The budget allocated for protection of national parks amounts to only Kip 100 million (about \$100,000) per year. In fact, the change in policy in 1994 to give three state monopolies sole rights to cut timber in their respective regions (see section 3.6, below) was intended in part to confront the incapacity of central government authorities to police commercial logging—and to ensure that timber royalties were paid.

39. This background illustrates the difficulty of determining where to allocate financing from the Nam Theun 2 project to protect the NBCA. The MOAF has not developed its own independent estimate of the financing that it would need to provide an adequate level of

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<sup>6</sup> In Laos, provincial and district authorities have no sources of revenue other than transfers from the central government, which are allocated on an annual basis.

<sup>7</sup> NTEC representatives have informed the Study team that Khammonane provincial officials would be responsible for expenditures of \$6.5 million over a 5-year period, and believe that this amount could be absorbed effectively by provincial institutions. This amount does not, however, include potential ancillary public expenditures.

<sup>8</sup> Much of the information in this section is derived from an interview with a senior official in the MOAF.



protection of the national park system it is responsible for. NTEC itself has offered to provide up to \$1 million per year allocated to protection of the NBCA, should the Nam Theun 2 project go forward. But this amount, if it were allocated to the MOAF, would expand the Ministry's budget for forestry preservation by fully tenfold. This magnitude of increase clearly raises issues about MOAF's absorptive capacity, one of the primary considerations leading to the suggestion from the World Bank to set up an 'autonomous institution' to protect the NBCA.

### 3.4 Ministry of Health

40. Members of the Economic Study team met with representatives of the Curative Medicine Department of the Ministry of Health, to try to ascertain the Ministry's needs and absorptive capacity in respect to the negative health impacts attributable to the Nam Theun 2 project. The long-term strategy and financing needs of the Ministry also were discussed.

41. **Impacts of Nam Theun 2.** The ministry had completed no studies of the added health problems, and no projections of its own increased budgetary requirements, relating to the Nam Theun 2 project. No reference studies had been undertaken concerning the health impacts of the Nam Ngum or Xeset hydroelectric projects, because of lack of funds; but with foreign financing research was underway to examine health impacts attributable to the Theun-Hinboun project. There had been no contacts with NTEC for some time concerning potential health impacts of the Nam Theun 2 project.

42. The team was told that it was to be expected that malaria would increase as a result of the Nam Theun 2 project. No schistosomiasis had ever been detected on the Nakai Plateau, but if it appeared then it would be dealt with. The possibility of AIDS occurring on the Plateau was ruled out; neither had the Ministry representatives heard of the work being done by NGOs and international institutions (including UNAIDS) concerned about the potential for a rise in AIDS near hydroelectric project sites in Laos.

43. **Long-term strategy.** The Ministry's long-term strategy in respect to health care was to invest in prevention rather than treatment, as the most cost-effective means of improving the nation's health. This would involve (1) improving the quality of sub-district hospitals; (2) improving the capacity of district levels to provide emergency care; and (3) at the sub-district levels, (a) increased immunization; (b) reduced maternal mortality; and (c) improved mother-and-child health. It was hoped that the population growth rate could be reduced from 2.4% to 2%. Health expenditures accounted for about 5% of the GOL's budget. The Ministry was looking for a 15% - 20% increase per year during the next five-year plan to accomplish its goals. The average expenditure of the ministry per Lao citizen was \$3.50 (\$5.00 with the help of international organizations); the target was to increase that amount to \$12 per person. Increased revenues from hydro-power would be one of the main sources of revenue to allow this.

### 3.5 Ministry of Education

44. The Study team met with representatives of the Ministry of Education with much the same agenda as with the Ministry of Health. These were, first, to ascertain the Ministry's needs and absorptive capacity in respect to the increased demand for school buildings and teachers



attributable to the Nam Theun 2 project. The long-term strategy and financing needs of the Ministry also were discussed.

45. **Impacts of Nam Theun 2.** No assessment of the increased education budget that might be necessary should Nam Theun 2 go forward had been carried out. Ministry officials said that one of their difficulties in general was that they did not know in advance the needs and sources of other funding at provincial and district levels, and so could not plan accordingly. But the real problem stemmed from central budget financing constraints. Planned financing would allow the construction of only 390 schools by 2000, amounting to just three per district; whereas the needs were much greater. The fact was that funds were so short, the Ministry was more than happy to rely on BPKP, and sometimes NGOs, to build needed schools.

46. Secondary and primary-school operations and maintenance were formally financed at provincial and district levels, with transfers from the central government. But in practice, Ministry funding for these items also was tight; as a result, many local communities financed upkeep of their own schools. The Ministry did provide financing for teachers' salaries, but there was usually a considerable waiting period before they could come up with the needed funds.

47. **Long-term strategy.** The Ministry had determined that the quality of education was low at all levels. Thirty percent of teachers were wholly untrained. There was a lack of textbooks, and at least 40% of physical facilities were below standard. There was a need to trim higher education scholarships and focus on basic education. The Ministry itself contributed only about one-fifth of the nation's total education budget, with the remainder coming from international institutions and NGOs. The GOL's strategy was to increase domestic financing of Lao education, utilizing in part the anticipated revenues from hydropower. Over the long term, five programs were to be put into place to: (1) improve teacher training; (2) develop general education; (3) develop "nonformal" education (i.e., literacy, post-literacy and skills training); (4) improve vocational and technical administration; and (5) improve administration and budgeting.

### 3.6 BPKP

48. Much of the economic and institutional analysis of the Nam Theun 2 project skirts the intrinsic importance of the Mountainous Region Development Corporation (or *Bolisat Phathana Khet Phoudoi*, usually referred to by its Lao acronym, BPKP). Yet BPKP is one of the Lao PDR's most significant institutions in terms of national exports and central government revenue, and it is the predominant Lao institution in respect to logging and rural development in the Central Region, which includes the Nakai Plateau and the NBCA. And so the question of how this institution is to evolve, as its principal source of revenue—logging and wood products—declines, is a serious consideration for the sustainability of the project's proposed institutional structure.<sup>9</sup>

<sup>9</sup> Most of the information in this section derives from interviews with Dr. Maydom, BPKP's First Vice President. This is supplemented by a Financial Statement supplied by BPKP in March 1997 and figures from the Ministry of Finance, the World Bank and the IMF.

49. **Institutional mandate.** BPKP is a state-owned company chartered in 1985 by a decree of the Lao PDR's Party Central Committee, with the mandate to develop the Central Region of the country. It is essentially owned and operated by the armed forces headquartered in the region. It is a net contributor to the national budget<sup>10</sup>. Since 1993 it has been given sole harvesting rights to the region's timber resources, from which (including its wood processing activities) it derives 80% - 90% of its revenue. As shown in Table 2, BPKP contributes substantially to the central government's budget, because the company is required to make timber royalty payments on all trees felled.<sup>11</sup> In fact, BPKP's timber royalties have amounted to roughly 8% - 10% of total government revenues since full-scale logging operations began on the Nakai Plateau in 1994.

**Table 2**  
**General Government Revenues, fiscal years**

	(in billions of Kip)			
	1992-93	1993-94	1994-95	1995-96
<b>TOTAL</b>	113.3	135.8	164.6	220.3*
of which (as % of Total):				
Taxes and Custom Duties	55.1%	63.1%	63.0%	63.9%
Timber Royalties	20.8%	15.5%	15.0%	15.0%
Other Revenues	24.1%	21.4%	22.1%	21.2%
<b>Memo item:</b>				
		1994	1995	1996
Timber royalties paid by BPKP**		12.0	16.0	19.5

\*projected

\*\*converted from U.S. dollars to kip at period average exchange rates; calendar year basis

Sources: Ministry of Finance, World Bank, IMF; BPKP Financial Statement (3/97)

<sup>10</sup>BPKP representatives have informed the Study team that central government funds are sometimes allocated to BPKP.

<sup>11</sup> The Economic Study team confirmed in field trips to the region that a very careful system of marking felled trees to identify them for tax purposes was in place and being utilized.

50. **Logging in the Nakai Plateau.** Logging in the Nakai Plateau actually began before the Nam Theun 2 project came under consideration. A Soviet survey determined in the early 1980s that there were 19 million cubic meters of commercially saleable pine on the Nakai Plateau<sup>12</sup>. At first, only selective cutting of trees more than 200 years old was approved, under quotas allowing 30,000 cubic meters per year to be harvested. During this period, BPKP was required to engage in an extensive re-forestation program. Then, in 1993, a decision was made to go forward with the Nam Theun 2 project, at about the same time that a Memorandum of Understanding was signed with Thailand to supply 1,500 MW of electricity, and the timber harvesting quota was increased to 300,000 cubic meters.<sup>13</sup> It appears that a policy was enforced to harvest the largest trees first.

51. A review of BPKP's Financial Statement (Table 3) clearly indicates the change in the company's fortunes which resulted from this decision. BPKP's total income in U.S. dollars averaged about \$10 million annually during 1991 - 1993; during 1994 - 1996 it averaged more than \$37 million annually. Nonetheless, the principal beneficiary of this increase appears to have been the central government, royalties to which increased by more than twelve-fold, from \$1.5 million on average during 1991 - 1993 to \$19.1 million on average during 1994 - 1996. By way of contrast, the company's rural development activities in the Central Region rose less quickly than did its total income; and its reported net profits fell on average by more than half.

52. **Rural development activities.** Although no written statement of BPKP's rural development activities or plans had been made available by the time this draft report went to press, Dr. Maydom told the team that these have centered on rural infrastructure—mainly rural roads, but also housing, irrigation systems for paddy rice farmers, electrification, schoolbuildings and health clinic facilities. Dr. Maydom reported that 50 wooden houses had already been constructed, and another 100 had been started, to facilitate resettlement in accordance with the GOL's efforts to reduce slash-and-burn agriculture. The Economic Study team visited a village that had been resettled by BPKP for which an irrigation system had been installed. Not all rural development activities, however, were devoted to rural areas: A Cultural Center, for example, had been built in Vientiane.

53. **Business interests.** Given its mandate to develop the Central Region, and no initial budget, BPKP's business activities have centered on establishing joint-venture and concession arrangements with foreign partners. Key among these have been the concessions granted to Vietnamese concerns to fell and haul the trees, a method that has apparently been the predominant one for accomplishing the clearcutting of trees on the Nakai Plateau. The Economic Study team observed numerous Vietnamese logging trucks and crews in the region during field visits to the

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<sup>12</sup> This is thought to have greatly exaggerated the Plateau's logging potential, but no subsequent estimates of the size of the potential harvest were done until 1994. It appears that in 1994 some 3.5 m<sup>3</sup> million existed. By 1996 this was estimated to have fallen to between 1.1 and 2.6 m<sup>3</sup> million (Margulis, Groome & Poyry, 1996).

<sup>13</sup> Policy and quotas for timber harvesting are set annually by the Prime Minister's office. It should be reiterated that the decision to accelerate logging in the Nakai Plateau came in the context of an overall policy to restrict commercial logging in the NBCA.

Table 3

BPKP'S FINANCIAL STATMENT									
YEAR	INCOME (USD)	EXPENSES (USD)			NET PROFIT		ASSET		
		Business Expenses	Royalty	Taxes	Rural Development	Total Expenses	(USD)	(KIP)	
1985-1990	45,234,255	26,574,746	6,524,892	1,342,189	7,056,086	41,497,913	3,736,342	7,081,988,507	
1991	11,186,407	5,284,069	1,581,408	1,540,337	993,820	9,399,634	1,786,773	5,896,303,791	
1992	9,373,787	5,048,363	1,846,161	1,807,856	362,060	9,064,440	309,347	5,814,943,570	
1993	9,265,716	3,859,419	1,188,753	1,145,031	2,877,337	9,070,540	195,175	8,592,951,120	
1994	30,512,196	8,940,443	16,760,764	218,713	4,185,476	30,105,396	406,800	9,646,924,080	
1995	45,347,695	18,904,749	19,906,963	351,486	5,881,668	45,044,865	302,830	16,997,269,560	
1996	35,658,436	11,967,055	20,696,560	335,954	2,315,156	35,314,725	343,711	22,351,844,001	
<b>TOTAL</b>	<b>186,578,492</b>	<b>80,578,844</b>	<b>68,505,500</b>	<b>6,741,566</b>	<b>23,671,603</b>	<b>179,497,514</b>	<b>7,080,979</b>	<b>22,351,844,001</b>	

Source: Bolisat Phathana Khet Phoudoi(BPKP), 3/97.

area. Dr. Maydom confirmed that most of the logging was carried out by Vietnamese and other foreign laborers, and said that this type of association was necessary to secure permission to export the logs through Vietnam.

54. Other BPKP business activities have tended to center around wood processing plants, such as the joint venture with a Hong Kong company in a plywood factory, employing 800 workers, situated on the road between Thakek and Nakai. This activity follows the general practice BPKP has utilized with its joint venture partners, which is to take a 30% stake in the activity, in return for site preparation and contributions of some raw materials. Although annual reports of these joint ventures were not made available, a list of the companies with which BPKP has formed joint ventures suggests that BPKP has been trying to diversify its activities away from timber and wood products, with projects in marble and granite quarrying and shoe production. It has joint ventures with Japanese, Hong Kong, Chinese, Taiwanese, Russian and American partners.

55. **Tourism and other services.** BPKP also has developed a number of tourism-related services, such as discotheques, restaurants, guest houses, a hot springs station and Mekong River tours. The size and profitability of these activities is not reported separately by BPKP, but is clearly a small fraction of its revenue from other activities. There is no comparison to international tourism standards.

56. **Role in resettlement.** BPKP is a major stakeholder in the constellation of activities relating to Nam Theun 2, as reflected in its active participation in the National Consultation Workshops on Nam Theun 2. For one thing, BPKP already provides humanitarian assistance and finances rural development activities for residents of the Nakai Plateau. For another, it is becoming a significant employer in the region (although the realistic prospects that workers from resettled families would gain employment in BPKP factories seemed remote).<sup>14</sup> In addition, the company is positioning itself to bid on contracts for infrastructure development stemming from the Nam Theun 2 project. Dr. Maydom said that BPKP would actively seek contracts stemming from resettlement activities in such areas as road-building and construction of housing, irrigation systems, clinics and schools.

57. BPKP is also one of the principal entities represented on the GOL's Resettlement Committee which, under the direction of the State Planning Committee, has been given line responsibility for all Nam Theun 2 resettlement activities. Although the mandate and by-laws of this institution have yet to be fully defined, GOL officials anticipate that the Resettlement Management Unit (RMU) that reports to it will be responsible for letting contracts for infrastructure development and other activities relating to resettlement. (The other representatives

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<sup>14</sup> It is noteworthy that none of the 800 employees of the Hong Kong plywood factory visited by the team came from the villages that would be resettled on the Nakai Plateau; and similarly that a press-board factory actually situated on the Nakai Plateau employed only one person from those villages. This, despite hiring preferences offered to persons from those villages, suggests that replacement income from employment in BPKP factories may not be a realistic option for the resettlers.

on the Resettlement Committee are senior officials of the three provinces involved; and NTEC, which is also supposed to provide part of its financing. See section 3.1.)

58. **Role in environmental protection.** It is also the case that, after resettlement, BPKP will retain sole commercial harvesting rights to all trees on the Nakai Plateau, including those on land owned individually or communally by the resettlers. In addition, Dr. Maydom envisions that the company will have a significant role to play in respect to protection of the NBCA. BPKP further defines its role as helping to implement the GOL's policy to restrict swidden agriculture in the area. Although currently in abeyance pending appraisal of the NTSEP project, the GOL's policy is to consolidate the population of the NBCA area into several sites to which access roads would be built by BPKP, and then encourage them to shift from swidden production in part by constructing irrigated paddies, also to be built by BPKP. BPKP also sees itself as a bidder on some of the contracts that would be forthcoming from the NTSEP exercise, including for example, forestry protection.

59. **Role in poverty alleviation.** BPKP's principal responsibility for development of the Central Region is expected to continue during and after the construction of the Nam Theun 2 dam, and so it must be factored into account in all decisions having to do with rural development and poverty alleviation in the region. In accordance with that role, during the past three years BPKP has reported contributing on average more than \$4 million per year to rural development activities, making its budget for those activities equivalent to the entire budget of Khammoane provincial authorities. It supplements and in some cases supplants the central government's infrastructure investments in agricultural productivity, education and health. It has flown in emergency rice supplies to subsistence farmers unable to feed their families during the floods of the past two years. And it is a growing employer in the region.

60. **Institutional oversight and fiduciary accountability.** There are some potential discrepancies in respect to the financial figures reported by BPKP in comparison with those from other sources which give cause for concern about its fiduciary accountability. The IMF, for example, reports that timber exports of the Lao PDR rose from \$88 million in 1995 to an estimated \$127 million in 1996. Much of this could be attributable to the accelerated harvesting of trees from the Nakai Plateau. But BPKP figures indicate that its royalties stayed even at around \$20 million in 1995 and 1996; and that the company's income actually declined by \$10 million in 1996.

61. Under circumstances normal for autonomous state-owned companies in other countries, such potential discrepancies are referred for resolution to the governmental bodies responsible for institutional oversight of the company. But, as it was chartered by Party decree, rather than by Government decree, BPKP has no founding organ within the GOL. Thus, despite the promulgation of a recent Enterprise Law requiring such oversight for all state-owned companies, there currently is no GOL oversight of BPKP's financial accounts. The Economic Study team were told that, in accordance with the Enterprise Law, a Board of Directors should be established to oversee BPKP, and that further, a Ministry of Finance official should be placed within the

company as Chief Financial Officer. These legal requirements have not so far been met.<sup>15</sup> Instead, the singular control exerted by the central government on BPKP's activities are certificates that are issued by the MOF allowing it to move cut timber (which are the basis for collection of timber royalties).

62. **BPKP's future role.** It is not at all clear how BPKP's role should or will evolve as its principal source of revenue—logging and wood products—declines. And logging must decline once the Nakai Plateau is exhausted, and given the planned environmental protection of the NBCA area. A case can be made for sustainable timber harvesting on a smaller scale in pre-defined areas of the Central Region; and under current arrangements, BPKP would retain its monopoly rights to fell this timber commercially. But the decision to move from quota concessions to monopoly rights for BPKP in 1993 is not the only means to organize sustainable timber harvesting; and it may not be the most efficient means, either, as long as central government authorities develop a sufficient capacity to police logging concessions.

63. What is clear is that, just to continue its operations at current levels, BPKP will have to diversify its business activities away from a dependence on wood products. This, in fact, is the company's explicit strategy. Nonetheless, BPKP's commercial interests will continue to be to maintain higher logging quotas than are commensurate with a sustainable harvesting regime. This will be true particularly while it retains the monopoly rights to commercial logging in the Central Region.

64. **Conflicts between public role and commercial interests.** Another aspect of concern in the consideration of BPKP's future role has to do with sorting through several conflicts inherent to its role as a public institution with commercial interests. As a profit-making institution, the company should not be saddled with a mandate to invest its retained earnings in social expenditures that are not profitable for it, such as rural development, electrification, social infrastructure or humanitarian assistance. Instead, the best means to transfer to social needs the "windfall profits" from felling trees on state-owned land is to tax those profits—and this is the role of timber royalties, not of sui generis BPKP expenditures on regional and local good works. Again, to the extent that BPKP's profitability is threatened by the mandate to continue making such social transfers, even as its principal sources of revenue decline, pressures will remain to maintain timber harvesting operations at higher-than-sustainable levels.

65. It is also important to define BPKP's role in respect to public governance functions. In general, the rule should be that BPKP should have no say in government deliberative bodies, nor should it advise such bodies, if the company's commercial interests could be affected by the decisions of those bodies. If BPKP plans, for example, to become a profitable supplier of civil-works services, it should not also participate in government deliberative bodies that affect decisions about civil-works expenditures. Hence, the potential conflict-of-interest that would be represented by BPKP's participation both in the Resettlement Committee's decision-making, and in bidding for contracts that must be let by the Resettlement Management Unit or NTEC, is

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<sup>15</sup> This also applies to the state-owned companies with similar mandates in the Northern and Southern Regions of Laos.



evident. Similar considerations may limit the extent to which BPKP should be involved in bidding on contracts for the preservation of the NBCA; although it is likely that close cooperation with BPKP will be essential to assuring forestry and wildlife protection in the NBCA.

#### 4. Preliminary findings and recommendations

66. This microeconomic and institutional analysis looks at the probable impacts of the Nam Theun 2 project on the real sector of the economy, especially in the project area during the construction period. The component also examines other impacts, including those deriving from demographic pressures in response to increased economic opportunities in the area. The institutional capacity of the BPKP, the provincial governments and the GOL to manage the impacts of the project are assessed. This section highlights preliminary findings and recommendations concerning project impacts, implementation capacity and monitoring.<sup>16</sup>

##### 4.1 Project impacts on local and regional markets

67. **Impacts on relative prices.** The Nam Theun 2 project would not have a significant impact on relative prices of consumer goods in the local or regional area, because the project is designed as an enclave that would import most of its supplies. Regarding spillover demand, following price and trade liberalization there are relatively few bottlenecks to the importation of these products from other regions of Laos or from neighboring countries that would cause shortages or relative price shifts. And, as long as the authorities do not attempt to begin restricting labor mobility, in-migration seems like a strong possibility in response to the increased demand for consumer services in the Nakai Plateau, and this will tend to minimize price increases in the prices of those services.

68. These conclusions are supported by recent experience in other hydro projects, as well as observation of the impact on relative prices of BPKP's accelerated logging campaign in the Nakai Plateau since 1993. Should the project go forward, it would be relatively simple and inexpensive to monitor relative price changes through weekly or monthly samples of prices of one or two representative market baskets.

69. **Employment impacts.** Similarly, the direct employment impacts of the construction project on the local area and region would be minimal, in part because the project is designed as an enclave which would import equipment, materials and most of the labor that would be required. In other hydro projects, the employment of Lao labor has generally been confined to unskilled labor categories, and this pattern would be likely to persist in this case. In addition, most of the unskilled labor would likely be drawn from other regions of Laos, and not from the Nakai Plateau. This would tend to minimize the impact of the project on selected labor skills categories and wages in the Nakai Plateau. It would be a relatively straightforward matter to monitor these developments through cooperation with NTEC.

<sup>16</sup> The recommendations for monitoring are of necessity preliminary, since the EAMP and RP are still in draft and the budget and respective responsibilities for environmental and social protection are still being negotiated with NTEC.



70. **Indirect impacts.** Although the local impact of the project on relative prices would be minimal, as would direct employment in construction crews, there would be significant indirect impact, in the form of increased demand for consumer goods and services, leading to increased local employment opportunities and income. It is to be expected that local residents as well as businesses within the region more broadly would derive additional income from these opportunities. But based on observation of the indirect, or "multiplier" economic impacts of other hydropower projects during the construction phase, like Theun-Hinboun, these would be of minimal importance in comparison to national GDP. Periodic surveys of local and regional households and enterprises could be instituted to monitor these developments.

#### 4.2 Impacts of demographic pressures

71. **Social impacts.** The demographic pressures likely to derive from immigrant laborers would probably be minimal over the medium-term, because of fairly stringent visa restrictions. But during the construction period both they and Lao immigrants to the area could pose serious demographic pressures. As evidenced by experience in sites near other hydro projects, such pressures can have deleterious social impacts. One serious concern has to do with the rise of prostitution and the accompanying potential for social diseases, such as AIDS. This would have to be monitored very carefully by local authorities and the Ministry of Health, possibly with the help of local NGOs.

72. **Impacts on biodiversity.** Another impact of demographic pressures on the Nakai Plateau would be the strong potential for loss of wildlife due to hunting and deforestation. The principal means by which these areas have been protected until recent years has been inaccessibility. This would be reduced significantly should the project go forward as planned, in which case the NBCA, as well as reserved areas of the Nakai Plateau, would have to be protected by more active measures. The GOL plan to invoke internal residency restrictions does not look practical. Without promulgation of effective environmental protection policies and enforcement, loss of biodiversity would be a real risk. This, more than any other factor, has driven proposals to put into place an 'autonomous institution' under the proposed NTSEP loan from the World Bank, to carry out this mandate.

#### 4.3 Institutional Capacity

73. This report highlights key aspects of the structure and activities of a number of public-sector institutions key to the management of the impacts of Nam Theun 2, including the Resettlement Committee (which includes provincial and local authorities), provincial authorities, the Ministry of Agriculture and Forestry, the Ministry of Health, the Ministry of Education and BPKP. The objective is to derive a preliminary assessment of the extent to which these institutions are prepared to manage those impacts of Nam Theun 2 which fall either wholly or partly outside the purview of the private sponsors.

74. In reality, this demarcation is difficult to draw, because the exact nature of NTEC's contractual responsibility for such things as mitigation of environmental and social impacts, provision of physical infrastructure, and monitoring of project implementation is still under negotiation. Nonetheless, there are several areas in which responsibility for action on the part of

Lao authorities would appear to be necessary, including resettlement, mitigation of social and environmental impacts, environmental protection, and re-defining the role of BPKP. These are discussed in relation to the currently envisioned structure of responsibilities for mitigation and management of project impacts on the part of BPKP, provincial authorities and central government ministries.

75. **Resettlement.** As reviewed in section 3.1, the GOL would retain primary responsibility for resettlement of the 900 or more families in the area to be inundated. A number of issues are suggested by the manner in which this committee is structured, including the contractual relationship with NTEC, the participation of BPKP, local participation in the planning process and monitoring of resettlement implementation. A related issue has to do with responsibility for the ancillary infrastructure that would be needed outside the project compound.

76. Among the issues that must remain unresolved pending negotiations between NTEC and the GOL are the amounts NTEC will contribute for resettlement, what it will spend them for, and what would be the scope and nature of parallel expenditures to come from IDA financing under the proposed NTSEP project. Nonetheless, one or two observations can be made at this point. On past experience, indirect impacts of the project will include significant demographic pressures, and the GOL will need to explore the extent to which NTEC should cover at least part of the cost of the ancillary infrastructure and services for the mushroom towns that are bound to spring up near the project site. The residual will fall to the GOL, and prior planning for these costs and responsibilities will be essential.

77. The mandate of the RC was evolving during the period in which the Economic Study team carried out its analysis, in parallel with conceptualization of the proposed NTSEP project. RC representatives told the Study team that, as currently envisioned, the committee would be largely advisory in nature, and in particular that it would not be responsible for awarding contracts. Nonetheless, current NTEC proposals envision expenditures on all resettlement activities amounting to \$33 million dollars, shared roughly equally between the project and parallel financing to come from the NTSEP project. A Resettlement Management Unit (RMU) would be set up under the RC that would be responsible for expenditures of NTSEP funds. To the extent that the RC is expected to supervise the activities of the Resettlement Management Unit (RMU), or that the committee discusses RMU plans and deliberations concerning any contracts to be extended with NTSEP financing, it could be inappropriate for BPKP, as a member of the RC, to bid on contracts that might be awarded by the RMU. A similar potential for conflict-of-interest could arise in respect to BPKP plans to bid on works contracts to be awarded by NTEC or its Turnkey contractor, given NTEC's participation in the RC. These issues should be resolved in the context of coming to grip with the scope and nature of BPKP's future role, should the Nam Theun 2 project go forward.

78. Local participation in the planning process relating to the Nam Theun 2 project has been stressed by the World Bank and other institutions, but judging by the consultation process that the Study team joined, better approaches could be found to information dissemination and gauging the real concerns of local residents. The planned structure of working groups is encouraging, but it is also true that both the RC and NTEC bear a special responsibility to assure that this

communication process is as value-neutral and accessible as possible, so that the concerns of local residents can be fairly represented. The RC, which currently is almost wholly dependent on NTEC, is placed in a peculiar position in respect to sampling and conveying the views of local stakeholders.

79. Based on the interviews carried out by the Study team, much remains to be done in terms of sorting out the respective responsibilities of NTEC and the GOL, and differences over approach, already observable, are likely to continue to arise during implementation. Under these circumstances, external monitoring of resettlement program implementation is strongly advised.

80. **Mitigation of social and environmental impacts.** In principle, NTEC should bear financial responsibility for mitigation of all social and environmental impacts attributable to the project. Based on international experience, however, the Study team estimates that under the best of circumstances, 10% of such costs are never mitigated; under the worst of circumstances, 50%. The Study team has utilized the higher figure as a first estimate of the cost that would be attributed to the GOL, first, because NTEC's budget to cover these costs is still being negotiated; and second, because the institutional division of implementation responsibilities also remains to be defined.

81. Based on the very preliminary review of institutional capacity carried out in this Study, however, other than the RC, public sector institutions appear not to have begun the process of planning to manage the project's impacts. The health impacts, in terms of potential increases in malaria and AIDS, could be significant, for example, but the Ministry of Health apparently has undertaken no contingency planning or budgeting, nor has it studied the health impacts of hydropower projects at other sites. Institutional responsibility for the construction of ancillary infrastructure, health clinics and schools is hazy and overlapping among BPKP, provincial authorities and GOL ministries like the Ministry of Education; and again, there appears as yet to have been no contingency planning or budgeting.

82. More fundamental, the amounts that are under discussion for inclusion in the mitigation budget are of a magnitude considerably larger than the budgets that provincial authorities and GOL ministries are used to spending, calling into question their institutional capacity to manage the responsibilities that might fall to them. This would argue for substantial reliance on contracting out to private and non-profit groups to meet those mitigation responsibilities falling under the GOL's domain. To date, however, the institutional structure and capacity to carry out these responsibilities may be characterized as rudimentary.

83. **Environmental protection.** As currently structured, it is clear that the MOAF has neither staff, budget nor experience to undertake environmental protection in the Nakai Plateau and in the NBCA. These responsibilities, however, would definitely increase, both during and after the construction of the Nam Theun 2 hydropower facility. It is for this reason that the World Bank and other stakeholders in Nam Theun 2 have begun to discuss the need for an 'autonomous institution' that would be responsible for environmental protection of the NBCA and possibly portions of the Nakai Plateau as well. These discussions were in too preliminary a stage to allow assessment within the context of this report. The GOL's initial position, however, that most of the protection that would be needed could be accomplished through reliance on internal residency

restrictions, appears neither practical nor desirable. Other means must be found to enforce forestry and wildlife protection, including the possibility of hiring rangers specifically for that purpose. Again, given the GOL's thin institutional capacity in this area, much of the work of the 'autonomous institution' would probably have to be contracted out to private or non-profit entities.

84. **Role of BPKP.** The role of BPKP will need to be re-defined if the company is to evolve from a state development institution into a for-profit company, and as it shifts the main basis of its revenues from timber to other activities. The monopoly that it currently enjoys on timber harvesting in the central region could be replaced by free and open bidding for timber quotas, as long as a credible forestry program can be put into place to monitor and enforce those quotas. Allocation to it by decree of other monopoly rights should be strictly avoided. Its rural development and poverty alleviation activities represent a loss to its accounts that a for-profit company would find hard to justify. Other potential conflicts between its commercial interests and its public governance functions should be resolved. As an autonomous state enterprise it should have a Board of Directors and fiduciary accountability to the Ministry of Finance to facilitate oversight of its activities.

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## **Annex 4**

### **Macroeconomic Analysis**

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**Annex 4:**  
**Macroeconomic Analysis**

**Introduction**

1. The macroeconomic analysis assesses the indirect impacts of the Nam Theun 2 project through its projected effects on the GOL budget and balance-of-payments. It also applies theory and cross-country comparative analysis to look at possible impacts on the exchange rate. This section projects the impact of net incremental government revenues from the project; examines the likely impact of the project on external balances; analyzes the development implications of the revenue stream; and assesses Laos's economic strategy of increasing reliance on hydropower in the context of its ability to program the revenues effectively. Supportive documentation and forecasts are attached.

**1. Background**

2. The Nam Theun 2 hydroelectric project is the largest and most preeminent of any project under consideration in Laos today, and as such its evaluation should be placed within the context of the Lao PDR's national economic and social strategy. This emphasizes rapid economic growth, under the New Economic Mechanism, which by 1997 had succeeded substantially in stabilizing the economy, in liberalizing trade, prices, interest rates and the exchange regime; and in making considerable progress in the task of re-defining the public sector's role in the economy. Although Laos remains one of the world's poorest countries with a per capita income of \$374, implementation of this strategy has produced sustained GDP growth rates of 5% - 8% during the 1990's, and significant increases in per capita income, while inflation has fallen to single-digit levels. Laos will join ASEAN in 1997, and aims to join WTO as soon as possible thereafter.

Lao PDR	
Nominal GDP ('96)	\$1.85 billion
Real GDP Growth	1994: 8.1%
	1995: 7.1%
	1996: 6.8%
GNP per capita ('95)	\$374
Population ('95)	4.8 million
Inflation ('96)	7.3%
Budget deficit/GDP ('96)	13.0%
Foreign financing/GDP('96)	5.1%

1996 figures preliminary  
Source: IMF

3. Laos's economic strategy also envisions a progressive reduction in the nation's dependence on timber exports and royalties to levels commensurate with sustainable commercial forestry, replacing and significantly augmenting those revenues with hydro-power exports and royalties, while further strengthening the domestic tax base (Table 1). Some of the new revenues will be utilized for a concerted effort, with the support of international institutions, to protect national rainforests. This would include preservation of the National Biodiversity Conservation Area (NBCA), the large catchment area east and north of the site that would be inundated to form the Nam Theun 2 facility.

4. The social strategy seeks to ensure equitable distribution of the economic benefits to be derived from rapid economic growth through provision of improved access to, and quality of, education, health, agricultural extension and communication services. This strategy follows the East Asian model of emphasizing productivity-enhancing investments, as opposed to income transfers, as a method to alleviate poverty, relying instead on the traditional extended family to continue to provide the main social safety net. Over the medium term, domestic sources of financing would slowly replace Official Development Assistance as the primary source of financing for social sector expenditures. GOL officials are looking to revenues from hydropower to help finance this strategy.

**Table 1**  
**Preliminary Domestic Revenue Projections, fiscal years**  
**Lao PDR**  
(in billions of Kip)

	1995/96*	1996/97	1997/98	1998/99	1999/2000
<b>Taxes</b>	140.7	162.5	185.0	213.0	245.0
(as % of GDP)	10.4%	8.1%	8.2%	8.4%	8.6%
of which:					
Profit Tax	24.3	27.0	31.0	35.7	41.7
Income Tax	11.4	13.0	15.0	17.3	20.2
Land Tax	3.1	5.0	6.0	7.0	8.0
Turnover Tax	32.3	37.0	42.0	50.0	57.0
Import Tax	33.4	45.0	55.0	66.0	75.0
Export Tax	6.2	6.2	6.5	6.8	7.0
Other	30.0	29.3	29.5	30.2	36.1
<b>Nontaxes</b>	79.6	83.0	105.0	132.0	162.0
(as % of GDP)	2.2%	4.2%	4.6%	5.2%	5.7%
of which:					
Leasing	1.0	2.0	2.1	2.2	2.3
Interest on Loans	5.4	5.9	6.6	6.7	6.8
Timber Royalties	33.0	28.3	29.7	31.2	32.8
Other, incl. Hydro	39.3	46.8	66.6	91.9	120.1

\* Original budget

Source: Ministry of Finance, 3/97



## 2. Macroeconomic scenarios

5. The economic projections described in this section are based on a simplified Laos Revised Minimum Standard Model<sup>1</sup> with 1995 as the base year. The main thrust is the continuation of the transformation of the Lao economy to a market-oriented one with reform measures that will alleviate the supply constraints inherent in a planned economic system. Increased investments, both foreign and domestic, and a significant rise in hydropower production, primarily for export, will sustain the high growth rates achieved in the first half of the 1990's throughout the projection period.

6. In all, four economic scenarios are forecast. The first, "base" scenario assumes that Nam Theun 2 is not built. The second assumes that it is, under the "most likely" scenario utilized in both the cost-benefit analysis and the financial analysis (sections I and IV). The third and fourth scenarios are derived from sensitivity analyses that also are run sections I and IV, to examine what the impacts would be on the macro accounts of the "worst case" scenarios regarding cost overruns and hydrological risk.

7. The projections should be viewed with the following limitations in mind. Economic statistics in Lao PDR are weak, particularly in income and production. The expenditure breakdown of national accounts is not officially available due to inadequate information regarding domestic private investment. The behavioral parameters in the model, such as price and income elasticities of imports, are based on very short series of historical data. Moreover, the period covered in these series is the period wherein the Lao economic structure is rapidly changing. It should also be noted, however, that economic analysis based on statistical models is often more robust when the methodology utilizes sensitivity analysis rather than merely forecasting levels.

## 3. Base-case scenario

8. Under the base-case scenario (that is, without Nam Theun 2), real GDP at market prices is projected to continue growing at a healthy rate of 7% until 1999, and 6.5% thereafter. The key to achieving these growth rates lies in the maintenance of macroeconomic stability and continued progress in structural adjustment of the economy.

9. **Sectoral growth.** Growth rates in agriculture are projected to rise from between 2% and 3% in 1996 to more than 4.5% on average throughout the projection period. To attain this, an enhanced incentive system will have to be implemented and rural infrastructure improved and strengthened. Livestock production and agro-industrial sectors will provide broad-based impetus to growth of the agricultural sector. Continued progress in improving agricultural productivity, in

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<sup>1</sup> The RMSM is a simple, savings-driven, open, Harrod-Domar-type growth model used extensively within the World Bank.

part through agricultural extension activities, will lead to substantial growth in rural incomes and better living standards.

10. Nonetheless, other sectors of the Lao economy are projected to expand faster than the agricultural sector so that its importance will diminish from 54% of GDP in 1995 to 45% in the 2000s. Much of GDP growth will be attributable to industrial sector expansion, which is projected to increase by 8% annually in the early 2000s, resulting from greater investment, especially private investment, in the garment, agro-processing, mining, chemical and hydropower sectors. As the needs of the country expand and diversify, more private commercial enterprises will be set up to satisfy these needs. The share of services and other sectors in the economy will increase slightly from about 25% percent in 1995 to more than 30% in the 2000s.

11. The Lao economy has experienced negative gross domestic savings in recent years, with consumption still exceeding GDP in 1995. In the same year, imports as a percentage of GDP were more than 43%, financed mainly by Official Development Assistance (ODA). The situation improved somewhat in 1996, but the economy in general may be characterized as having a very high propensity to consume, with significant leakages of expenditures overseas into purchases of imports. Although consumption will grow by about 4% - 5% during the projection period, its share of GDP is projected to decline to 82% by 2006, as the trade deficit declines from nearly 20% of GDP to around 2% in the 2000s. The goal is for both public and private investment to respond to the signals of the marketplace, with public investment concentrated in infrastructure, education and health care. Private domestic investment is projected to expand from 5.5% of GDP in 1995 to around 12% in the 2000s, with a concomitant decline in the share of public investment in the economy.

12. **Public sector outlook.** The GOL's macroeconomic strategy, supported by an IMF program, is to maintain tight financial policies to lower annual inflation to between 4% and 5%, and to increase domestic savings through further fiscal consolidation and efforts to enhance private savings. Key to that objective will be further strengthening of the domestic tax base, supplemented by hydropower revenues, as reliance on timber royalties diminishes and the authorities shift away from trade taxes. To achieve these goals, the overall fiscal deficit (excluding grants) is expected to improve during the latter part of the 1990's, declining from about 8% of GDP in 1996 to less than 3% in the 2000s.

13. **Money and prices.** Lao authorities will continue to maintain a prudent stance in monetary policy, with the effect of reducing growth in the monetary supply from 21% in 1996 to 16% in 1997 and stabilizing thereafter at less than 15%. Continued macroeconomic stability will lead to growing public confidence in the banks and more movement from the informal sector to the formal sector.

14. **Balance-of-payments and debt.** Trade and foreign investment will remain strong during the projection period. Although nominal exports grew modestly in 1996 (by 3.7%) in part because of European Union limitations on importation of garments from Laos, export earnings

are projected to pick up with robust growth in electricity exports in particular. Exports of timber and wood products, which are expected to account for more than 40% of merchandise exports in 1997, will decline in the 2000s in line with the GOL policy to restrict logging. Exports of manufactured and agro-industrial products will boost total export growth with an effective export promotion policy (and completion of bilateral treaties) in lucrative foreign markets like the USA. Total exports will grow at an average rate of 5% annually in 2000-2006 and will continue to improve in later years.

15. The strong export performance from hydropower will be matched by higher imports of investment goods in the period 1996-2000. Real import growth will average around seven percent during this period with higher import requirements for intermediate goods and raw materials. This will result in a high current account deficit during this period averaging around 16% of GDP but the deficit will be reduced to less than 5% of GDP in 2006 and will continue to fall thereafter.

16. In the capital account, capital grants are projected to increase marginally through 1999 and decline thereafter to around \$60 million in 2006. Foreign direct investments, including in particular those related to hydropower projects, will increase substantially in 1996-1998 and will average \$40 million in the early 2000s.

17. As shown in Table 2, although Lao debt is calculated to be more than \$2.1 billion, the bulk of this is in nonconvertible currencies, payment of which (to republics of the former Soviet Union) is currently under re-negotiation. The market expectation is that any payment of this debt will be accomplished at a deep discount or, more probably, that it will be forgiven altogether. Taking convertible currencies only, Lao debt amounted to just \$803 million in 1996. Of this, \$756 million was owed to multilateral institutions (IDA, the ADB, and the IMF) and \$22 million was bilateral debt to the Japanese government. There was no commercial debt of any magnitude. Until 1996 virtually all of Lao's debt was loaned on a concessional basis with the result that the average interest rate paid was about 1.5% in 1996. Accounting nonconvertible debt-service on a cash basis, the ratio of total debt-service to exports of goods and services (plus workers' remittances) is projected to rise from about 5.8% in 1996 to 9.9% in 2003, and then to decline, under the base-case scenario.

18. As regards GOL sovereign debt guarantees on nonconcessional or commercial borrowings, IMF staff report that nonconcessional debt increased to some \$12.5 million in 1996, backed by GOL sovereign guarantees of repayment. There were no known GOL counterguarantees of any risks to any privately financed projects in the hydropower sector or otherwise. Thus, the anticipated borrowing of \$60 million by the GOL on commercial terms to finance its equity purchase in the Nam Theun 2 project, coupled with a potential partial risk counterguarantee associated with \$100 million of commercial lending to the project, would entail by far the largest commercial debt transaction the GOL has ever undertaken. The potential implications of this financial undertaking for the macroeconomic accounts is examined in the next section; section IV and Annex 5 of this report assess the financial risks that the deal would entail.

**Table 2: Lao PDR: External Debt and Debt Service**  
(Millions of US Dollars)

	1992	1995	1996
<b>External Debt, end-of-period</b>			
Convertible Area	411.9	675.0	803.0
Bilateral Creditors	29.9	30.0	46.0
Multilateral Creditors	381.1	645.0	756.0
of which:			
AsDB	163.7	280.0	343.0
IDA	175.0	267.0	307.0
IMF	26.7	65.0	67.0
Nonconvertible Area 1/	734.4	1382.0	1372.0
<b>Debt Service</b>			
Debt Service	12.2	23.3	24.9
Amortization	7.9	17.1	19.0
Bilateral	2.2	2.5	4.4
Multilateral	2.9	5.2	5.2
Nonconvertible Area 1/	2.8	9.4	9.4
Interest	4.3	6.2	5.9
Bilateral	1.2	0.9	0.7
Multilateral	3.1	5.3	5.2
Nonconvertible Area 1/	0.0	0.0	0.0
<b>Memo Items:</b>			
Average Interest Rate	1.0		1.5
Debt Service as % of:			
GDP		1.3	1.3
Exports, GNFS	6.5	5.7	5.8

1/ Russia and Other CMEA  
Source: IMF

#### 4. Nam Theun 2 scenarios

19. Under the "most likely" Nam Theun 2 scenario, the projected effects of the project on economic growth would derive from two sources. The first source would be procurement by the construction project of Lao equipment, consumables and materials, and expenditures on Lao products by both Lao and foreign construction-project workers. Table 3 details projected construction-project procurement from Lao sources, based on data derived from construction cost estimates by Lahmeyer International. It is also assumed that foreign workers would spend 10%, and Lao workers 50%, of their salaries on the purchase of Lao products. Under these estimates and assumptions, Lao procurement would total about \$122 million (in 1996 dollars) over the four-year construction period.

20. Expenditures of this magnitude would represent a share in GDP ranging between 1 and 2 percent during the construction period, falling to zero in 2003 with construction project demobilization. Lao procurement expenditures would contribute to GDP growth as construction project expenditures increased, and then would have to be replaced by other sources of expenditure as the construction project phased down.<sup>2</sup> The second source of GDP growth attributable to Nam Theun 2 are the net revenues that would flow from the GOL's equity returns, royalties and taxes, once costs were subtracted. Table 4 shows the net incremental revenues that would accrue to the GOL from the Nam Theun 2 project under the most likely scenario, expressed in 1996 U.S. dollars, once debt payments and other costs (including unmitigated environmental and social costs) were subtracted out.

21. These revenues would produce a once-and-for-all increment to GDP as they came onstream, but thereafter would not contribute an increment to the GDP growth *rate* above the level projected to occur in the base case.<sup>3</sup> Because of the likelihood that a significant proportion of the revenues would be invested, it is not possible to project with accuracy when their impact would be felt in terms of increasing GDP. Time lags might be entailed in the translation of investment into output, but it is also the case that the impact on GDP might be brought forward by expectations of future income flows, and by borrowing against those flows to invest in earlier years. Finally, the projections of growth attributable to Nam Theun 2 take into account that the Lao economy already is projected to grow at a very healthy pace—6.5% to 7%—for the foreseeable future, meaning that it may already be growing at a rate very near to its maximum sustainable level without the effects of Nam Theun 2. This view is given added weight by the existence of quite severe human and physical capital constraints, as well as the evident constraints on institutional implementation capacity.

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<sup>2</sup> Taking into consideration the high import propensity of the Lao economy, and in line with the overall approach of making conservative economic assumptions, it is assumed that these expenditures would generate no second-round expenditure effects --- that is, that the GDP multiplier is one.

<sup>3</sup> In real terms the share of net incremental revenues from Nam Theun 2 to GDP would in fact decline over time, because GDP is projected to grow faster than net incremental revenues.

**Table 3: NTEC Construction Costs  
(1996 \$ millions)**

		1999	2000	2001	2002
<b>Construction Costs</b>		<b>\$96</b>	<b>\$199</b>	<b>\$199</b>	<b>\$96</b>
Equipment					
Lao	12.50%	\$12	\$25	\$25	\$12
Foreign	41.40%				
Consumables					
Lao	0.80%	\$1	\$2	\$2	\$1
Foreign	2.70%				
Materials					
Lao	4.10%	\$4	\$8	\$8	\$4
Foreign	26.20%				
Labor					
Lao	4.40%				
o/w 50%		\$2	\$4	\$4	\$2
Foreign	7.80%				
o/w 10%		\$1	\$2	\$2	\$1
<b>Total Lao Procurement</b>		<b>\$20</b>	<b>\$41</b>	<b>\$41</b>	<b>\$20</b>
<b>% 1996 GDP</b>		<b>1.05%</b>	<b>2.20%</b>	<b>2.20%</b>	<b>1.05%</b>
<b>Memo item:</b>					
<b>1996 GDP</b>		<b>\$1,848</b>			

*Source: Lahmeyer International estimates.*



**Table 4**  
**Net Incremental Revenues to the GOL**  
**Most Likely Nam Theun 2 Scenario**  
**(1996 \$ millions)**

<b>Average</b> 1998-2027	1998-2005	2006-2010	<b>Cumulative</b> 2011-2015	2016-2020	2021-2025
\$32.8	\$34.1	\$112.5	\$208.6	\$245.4	\$280.2
<b>Memo item:</b> 1996 GDP	\$1,848				

22. Smoothing these impacts on GDP over time, it is estimated that the net result of these two sources of growth would be to increase the GDP growth *rate*, above and beyond the rate forecast under the base case scenario, by about .5% per year during the construction period, and by about .6% annually during the two years following the commencement of operations. This assumes that some of the effect of the increase in net revenues to the GOL would be brought forward in terms of impact on GDP (offsetting the negative impact of debt payments in the early years). Nonetheless, the projection of Nam Theun 2's impact on the growth rate following the demobilization of construction crews is broadly consistent with the magnitude of average net incremental revenues over the 30-year life of the project (\$33 million in 1996 dollars), which if received in 1996, would have represented about 1.8% of GDP.

23. **Sensitivity analysis.** As presented in Table 5, with additional detail provided in tables attached to this annex, two alternative projections accompany the "most likely" scenario, both of which derive from pessimistic scenarios presented in sections I and IV. These are included to illustrate the downside risks that could arise from either a significant cost overrun or a severe drought. It should be stressed that the probabilities attached to these outcomes are low, and that they are shown mainly for the purpose of indicating what the implications would be for macro accounts under the most pessimistic of circumstances. (See Annexes 1 and 5 for more complete treatment of the assumptions and implications of these scenarios.)

#### **5. Net incremental government revenues**

24. Although the GOL expects a stream of revenues from the project, once implemented, there are also a number of expenditures that would be associated with it. Revenues will come in



the form of royalty fees, resource levies, and the GOL's equity share<sup>4</sup> of income from electricity sales to Thailand. The RMSM Nam Theun 2 scenarios utilize the estimates of these revenue inflows based on the results of the financial model (see Annex 5). Government expenditures directly related to the project include debt-service payments on GOL borrowing to finance its equity contribution to the project. Beyond this, in keeping with sections I and IV of the Economic Study, unmitigated environmental and social costs are attributed as GOL expenditures.

25. As summarized in Table 5, under the most likely Nam Theun 2 scenario, the GOL's net revenues, shown in nominal terms, would be negative initially because of the obligation to service debt associated with the GOL's equity purchase, averaging -\$4.5 million annually through 2002. These flows would quickly turn positive as production began. Under the hydrology risk scenario, on the other hand, it is assumed that the worst pattern of rainfall witnessed during the past 30 years would occur at a critical point during the first years of operation. In this case, net losses to the GOL would continue until 2008, whereupon net incremental revenues would revert to those of the most likely scenario. The cost overrun scenario shows consistently lower net revenues to the GOL than would be the case in the most likely scenario.

26. Government deficits would be marginally larger under the Nam Theun 2 scenarios than if the dam were not built, but would remain well within tolerable ranges in terms of maintaining a conservative fiscal stance, even under the two pessimistic scenarios --- an aspect that should provide considerable comfort about the risks to macroeconomic stability posed by the dam.

## 6. Impact on external balances

27. The debt-service payments attributable to the Nam Theun 2 project depend on the mix of the GOL's sources of financing for its purchase of \$100 million in project equity. The most likely scenario regarding this borrowing is that the GOL takes \$60 million from commercial sources with a maturity of 12 years, a grace period of 4 years and an interest rate of 3 percent over the London Inter-bank Offer Rate (LIBOR). The remaining \$40 million is assumed to be borrowed on IDA terms: Maturity of 35 years, grace period of 10 years and interest rate of 0.75%. This would increase both total debt and debt-service as compared with the base case (without Nam Theun 2) scenario. These expenditures would be offset by the inflows from the GOL's share in income from the project, which vary by scenario, as discussed above.

28. The current-account deficit in the balance-of-payments in proportion to GDP is projected under the base case scenario to decline quite rapidly during the forecast period, from more than 16% in 1998 to around 3% in the 2010s. The net impact of the Nam Theun 2 project on this trend would be marginally higher deficits during the construction period, which would then fall to an

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<sup>4</sup> It is likely that revenues from the Nam Theun 2 Project would be deposited in an offshore account and divided among the parties involved according to their equity contribution. The GOL share in the model would be classified as foreign investment income.

Table 5: Macroeconomic Impacts of Nam Theun 2 -- Various Scenarios

	1998	1999	2000	2001	2002	2003	2004
<b>Net Incremental Revenues to GOL (Mln USD)</b>							
Without Nam Theun 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Most Likely Scenario with NT2	-0.6	-3.0	-4.3	-5.7	-9.0	21.7	22.7
Construction Cost Overrun Scenario	-0.6	-3.0	-4.3	-5.7	-10.3	19.3	20.3
Hydrology Risk Scenario	-0.6	-3.0	-4.3	-5.7	-9.0	21.7	-9.3
<b>Government Surplus/Deficit (% of GDP)</b>							
Without Nam Theun 2	-7.4%	-7.0%	-5.8%	-5.1%	-3.2%	-2.3%	-1.0%
Most Likely Scenario with NT2	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-3.5%
Construction Cost Overrun Scenario	-7.5%	-7.6%	-6.5%	-5.6%	-4.1%	-3.7%	-3.5%
Hydrology Risk Scenario	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-4.0%
<b>Government Expenditure (% of GDP)</b>							
Without Nam Theun 2	25.9%	26.1%	23.8%	22.9%	21.0%	20.0%	18.6%
Most Likely Scenario with NT2	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%
Construction Cost Overrun Scenario	26.0%	26.3%	24.0%	23.2%	21.5%	22.5%	21.8%
Hydrology Risk Scenario	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%
<b>Current Account Surplus/Deficit (% of GDP)</b>							
Without Nam Theun 2	-16.2%	-13.1%	-11.7%	-10.7%	-9.9%	-8.9%	-8.1%
Most Likely Scenario with NT2	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.0%
Construction Cost Overrun Scenario	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.2%	-8.1%
Hydrology Risk Scenario	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.6%
<b>Debt Service / Total Exports (GFS + Workers Rem.)</b>							
Without Nam Theun 2	7.5%	8.2%	8.4%	8.7%	9.6%	9.9%	9.5%
Most Likely Scenario with NT2	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.1%
Construction Cost Overrun Scenario	7.5%	8.3%	8.6%	8.6%	9.6%	9.7%	9.3%
Hydrology Risk Scenario	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.2%
<b>Net Incremental Revenues/ Total Revenues</b>							
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	-0.2%	-0.7%	-1.1%	-1.3%	-2.0%	4.2%	4.3%
Construction Cost Overrun Scenario	-0.2%	-0.7%	-1.1%	-1.3%	-2.3%	3.8%	3.8%
Hydrology Risk Scenario	-0.2%	-0.7%	-1.1%	-1.3%	-2.0%	4.2%	-1.8%
<b>Net Incremental Revenues/Total Expenditures</b>							
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	-0.1%	-0.5%	-0.8%	-1.0%	-1.6%	3.5%	3.6%
Construction Cost Overrun Scenario	-0.1%	-0.5%	-0.8%	-1.0%	-1.9%	3.1%	3.2%
Hydrology Risk Scenario	-0.1%	-0.5%	-0.8%	-1.0%	-1.6%	3.5%	-1.5%
<b>Net Incremental Revenues/Total Investment</b>							
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	-0.1%	-0.6%	-0.8%	-0.9%	-1.4%	3.1%	3.0%
Construction Cost Overrun Scenario	-0.1%	-0.6%	-0.8%	-0.9%	-1.6%	2.7%	2.7%
Hydrology Risk Scenario	-0.1%	-0.6%	-0.8%	-0.9%	-1.4%	3.1%	-1.2%
<b>Memo Item: GDP Growth</b>							
Without Nam Theun 2	7.0%	7.0%	6.5%	6.5%	6.5%	6.5%	6.5%
Most Likely Scenario with NT2	7.0%	7.5%	7.0%	7.0%	7.0%	7.1%	7.1%

**Table 5: Macroeconomic Impacts of Nam Theun 2 – Various Scenarios**

	2005	2010	2015	2020	2025
<b>Net Incremental Revenues to GOL (Mln USD)</b>					
Without Nam Theun 2	0.0	0.0	0.0	0.0	0.0
Most Likely Scenario with NT2	23.7	56.9	86.1	99.5	130.4
Construction Cost Overrun Scenario	21.2	52.3	85.3	98.8	129.7
Hydrology Risk Scenario	-8.4	56.9	86.1	99.5	130.4
<b>Government Surplus/Deficit (% of GDP)</b>					
Without Nam Theun 2	0.3%	0.9%	0.7%	0.6%	0.5%
Most Likely Scenario with NT2	-3.0%	-2.1%	-1.4%	-0.8%	-0.6%
Construction Cost Overrun Scenario	-3.1%	-2.2%	-1.4%	-0.8%	-0.6%
Hydrology Risk Scenario	-3.5%	-2.2%	-1.5%	-0.8%	-0.6%
<b>Government Expenditure (% of GDP)</b>					
Without Nam Theun 2	17.3%	15.9%	15.5%	15.3%	15.0%
Most Likely Scenario with NT2	21.2%	20.4%	19.9%	19.5%	19.1%
Construction Cost Overrun Scenario	21.3%	20.4%	19.9%	19.5%	19.1%
Hydrology Risk Scenario	21.2%	20.4%	19.9%	19.5%	19.1%
<b>Current Account Surplus/Deficit (% of GDP)</b>					
Without Nam Theun 2	-6.4%	-2.6%	-1.6%	-0.2%	0.4%
Most Likely Scenario with NT2	-6.3%	-1.1%	0.1%	0.0%	0.2%
Construction Cost Overrun Scenario	-6.4%	-1.2%	0.1%	0.0%	0.2%
Hydrology Risk Scenario	-6.9%	-1.1%	0.1%	0.0%	0.2%
<b>Debt Service / Total Exports (GFS + Workers Rem.)</b>					
Without Nam Theun 2	8.7%	8.0%	8.7%	7.1%	5.6%
Most Likely Scenario with NT2	8.5%	8.2%	7.7%	6.6%	5.1%
Construction Cost Overrun Scenario	8.7%	8.4%	7.7%	6.6%	5.1%
Hydrology Risk Scenario	8.7%	8.2%	7.7%	6.6%	5.1%
<b>Net Incremental Revenues/ Total Revenues</b>					
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	4.3%	6.4%	5.8%	4.0%	3.1%
Construction Cost Overrun Scenario	3.8%	5.9%	5.7%	3.9%	3.1%
Hydrology Risk Scenario	-1.6%	6.4%	5.8%	4.0%	3.1%
<b>Net Incremental Revenues/Total Expenditures</b>					
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	3.7%	5.8%	5.4%	3.8%	3.0%
Construction Cost Overrun Scenario	3.3%	5.3%	5.3%	3.8%	3.0%
Hydrology Risk Scenario	-1.3%	5.7%	5.3%	3.8%	3.0%
<b>Net Incremental Revenues/Total Investment</b>					
Without Nam Theun 2	0.0%	0.0%	0.0%	0.0%	0.0%
Most Likely Scenario with NT2	2.9%	4.5%	4.3%	3.1%	2.5%
Construction Cost Overrun Scenario	2.6%	4.2%	4.3%	3.1%	2.5%
Hydrology Risk Scenario	-1.0%	4.5%	4.3%	3.1%	2.5%
<b>Memo Item: GDP Growth</b>					
Without Nam Theun 2	6.5%	6.5%	6.5%	6.5%	6.5%
Most Likely Scenario with NT2	6.5%	6.5%	6.5%	6.5%	6.5%

even smaller deficit in 2009, amounting to 2.2% of GDP. From 2010 onward the net inflows from the Nam Theun 2 project would keep the current account deficit lower than would be the case without Nam Theun 2. Virtually identical trends would be projected to occur under the two pessimistic scenarios, which, again, should provide considerable comfort about the risks involved in Nam Theun 2 in respect to developments in the external sector.

29. Similarly, the ratio of debt-service to exports (including remittances) remains well within the range of levels that would normally be considered commensurate with sustainable debt financing, particularly in light of the overwhelming proportion of this which is on concessional terms. This ratio would be only marginally affected by the occurrence of either of the two pessimistic scenarios relating to Nam Theun 2.

## 7. Macroeconomic risks

30. Under all but the most pessimistic of scenarios, Nam Theun 2 would yield substantial net revenues to the GOL beginning shortly after the production of electricity started. Nonetheless, there are several macroeconomic risks inherent to the GOL's economic strategy to rely on hydropower as the main source of foreign exchange revenues which should be factored into account in the evaluation of Nam Theun 2 as it contributes to that strategy. These may be categorized into two types: Those deriving directly from factors that might adversely affect hydropower revenues; and those stemming from hydropower export dependence itself, including its effect on the competitiveness of other Laotian exports. Each of these risks is considered in turn.

31. **Single-buyer risk.** One of the principal risks to be considered in respect to the Nam Theun 2 project has to do with its structure, by design, to export all, or nearly all, of the electricity produced to a neighboring country—Thailand; and within Thailand, to a single buyer, EGAT. This concern arises in part because of the small size of the Laotian economy in comparison to its neighbors; and more important, because it pertains to the entire Laotian hydropower export strategy, which relies almost exclusively on sales to Thailand.<sup>5</sup>

32. Single-buyer risk may arise from several sources. One is EGAT's monopsony power over the prices it is willing to pay. The reality is that, as discussed in Annex 1, although Power Purchase Agreements (PPAs) frequently extend over periods of 15 - 25 years, they also frequently are re-negotiated as market conditions change. Much will depend on the evolution of Thailand's unfulfilled electrical energy needs, and the price that it is willing to pay to meet them. This will in turn depend in part on the course of Thailand's economic growth, as well as on its increasing

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<sup>5</sup> It is important to re-iterate here that there are substantial benefits to be derived from entering into contractual relationships with EGAT as well, including its very strong, and bankable, financial reputation.

inclination to rely on Independent Power Producers (IPPs), who represent competitors to Laotian power sales.<sup>6</sup>

33. A second source of risk inherent for Laos relates to the inability of domestic demand to absorb the electrical production of Nam Theun 2 should the market in Thailand be closed due to regional political or military conflict. One case with some similarities is the El Cajon hydroelectric project, built in Honduras in the late 1970s and early 1980s. In this case, project appraisers projected optimistically that domestic electricity demand would be sufficient to absorb El Cajon's increment to national output, despite its very large size in proportion to GDP. This failed to materialize as forecast, in part because regional conflict reduced domestic economic growth and development. Given its size, the facility might have looked to regional exports, but the main destination of the exports would have been Nicaragua, whose ability to pay for the electricity also collapsed during the conflict. The upshot of this, and failure to anticipate exchange risks adequately, was that El Cajon turned into a serious balance-of-payments loss for Honduras.<sup>7</sup>

34. Consideration of this experience should be balanced, however, by review of the successful of Laos itself, which has been exporting electricity to Thailand from the Nam Ngum hydroelectric plant, approximately 80 km north of Vientiane, since 1971. As GOL officials are quick to point out, Thailand's purchase of power from Nam Ngum has never been interrupted, despite the military conflict in Southeast Asia and its aftermath. The critical difference with the Nicaraguan example appears to be that there was no economic collapse in Thailand during or after the Southeast Asian conflict. And, as evidenced by the private sponsors' willingness to risk their own capital in the Nam Theun 2 project, the likelihood that such a collapse would occur in Thailand is to be considered extremely remote.

35. **Single-export risk.** The second area of concern stems from the strategy to concentrate export capacity in a single product --- hydropower. An example of what to avoid would be those countries that relied heavily on copper exports in the 1960s and 1970s (e.g., Chile, Zaire, Zambia), and thereby were left vulnerable to dramatically falling copper prices as technologies shifted. As discussed above, Laos's hydropower-export strategy exposes the nation's external accounts to electricity pricing shifts, such as that which may be occurring now in Thailand as IPPs come on line. It also exposes the country to such things as hydrological risk: A prolonged drought, for example, could have negative repercussions for a Lao economy in which hydropower was the main foreign exchange earner.<sup>8</sup>

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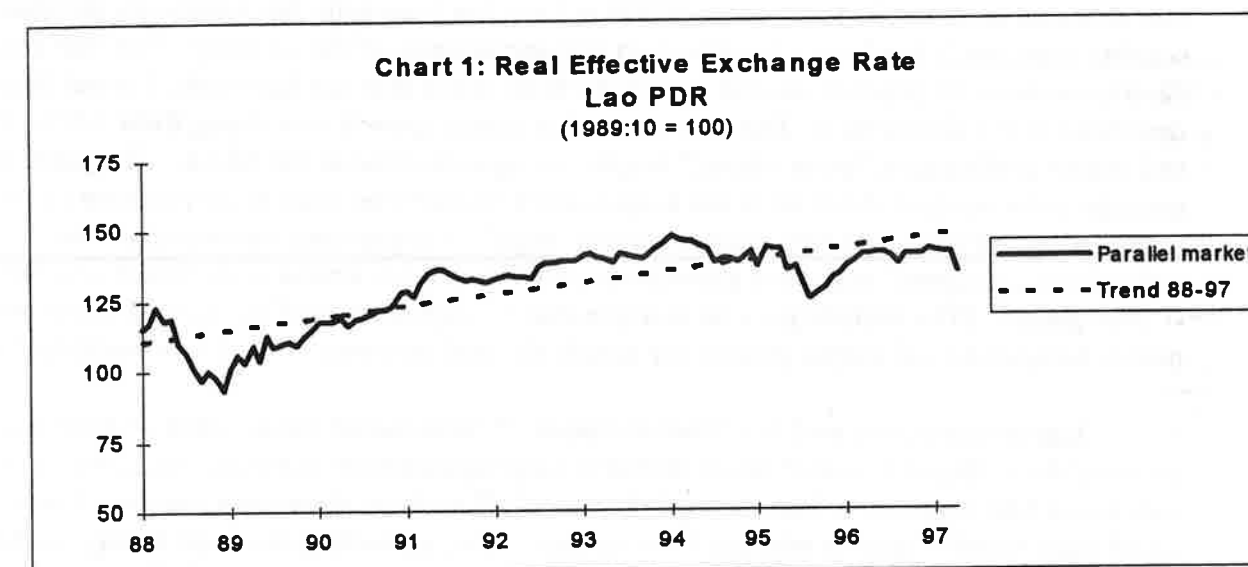
<sup>6</sup> This concern has been modeled explicitly within the sensitivity analysis of the project evaluation of Nam Theun 2 as a re-negotiation of the PPA to Laos's disadvantage after the fifteenth year of operation.

<sup>7</sup> An internal ex-post evaluation by the World Bank roundly criticized project appraisers for not considering risks to their demand forecasts when pronouncing the project viable.

<sup>8</sup> Hydrological risk has been modeled explicitly for purposes of sensitivity analysis within sections 1, 3 and 4. As with market shifts, however, the broader implications of this risk for the hydropower export strategy as a whole are beyond the scope of this analysis.

36. A second, more subtle, concern stems from the “Dutch Disease” effect. All else equal, a large increase in net foreign exchange revenues from the export of a single product—in this case, hydropower—will produce an appreciation of the real exchange rate. This, in turn, will tend to undermine the export competitiveness of other sectors, such as manufacturing and agriculture; and to encourage increases in imports. Thus, even if exogenous shocks are avoided for a period, large increases in export revenue derived from a single product will tend to engender even more export concentration, leaving the economy more exposed to the risk of future exogenous shocks.

37. One of the issues raised during the review process was based on the belief, as cited by the World Bank in the ‘Lao PDR Social Development Assessment and Strategy’ (August 15, 1995) that “... the real exchange rate ... has been appreciating since 1989.” The concern, in brief, was that real exchange rate appreciation would have a regressive effect and contribute to the widening mean the prices of agricultural goods versus non-agricultural goods, which would in turn harm the interests of farmers, the majority of whom are subsistence farmers falling below the poverty line. In the TOR for the Economic Impact Study, this concern was cited again, as applied to the projected increase in hydropower revenues.



38. **Analysis of the “Dutch Disease” risk.** Analysis of this concern may proceed in two parts. First, it is worthwhile examining the basis for the original concern about exchange rate appreciation in light of more recent data. Second, the Study considers the “Dutch Disease” risks potentially attributable to foreign exchange revenues that would flow in from Nam Theun 2, or hydropower more generally, and how such risks might be mitigated, or have been mitigated in other countries. As regards evidence of real exchange rate appreciation, the point to keep in mind is that the “true” exchange rate is not observable over the short-to-medium term. The best measure of the “true” rate is real effective exchange rate (REER) calculated by the IMF, which

adjusts the nominal rate for differentials in inflation rates among the country's principal trading partners. The main method of analysis is to determine whether the REER trend appears to be rising or falling. But since the REER is based on the nominal rate, which may deviate in the short term from the "true" rate, the key is to choose a base year in which it is believed that the "true" rate and the REER coincide and then examine trend from that point.

39. Chart 1, on the previous page, shows the REER for Laos since 1989. During 1989 - 1994, the period examined by Bank staff in the Social Development Assessment and Strategy, the upward trend in the REER was particularly pronounced. But there was a fairly substantial devaluation of the Kip in 1989 which appears to have overshot the "true" rate by a substantial margin, implying "... the need for subsequent real appreciation to bring the real rate closer to long-run equilibrium levels."<sup>9</sup> Examination of the REER utilizing 1989 as a base year, then, probably was not a correct procedure analytically, because it could not be determined whether the subsequent trend indicated convergence or divergence from the "true" long-run equilibrium.

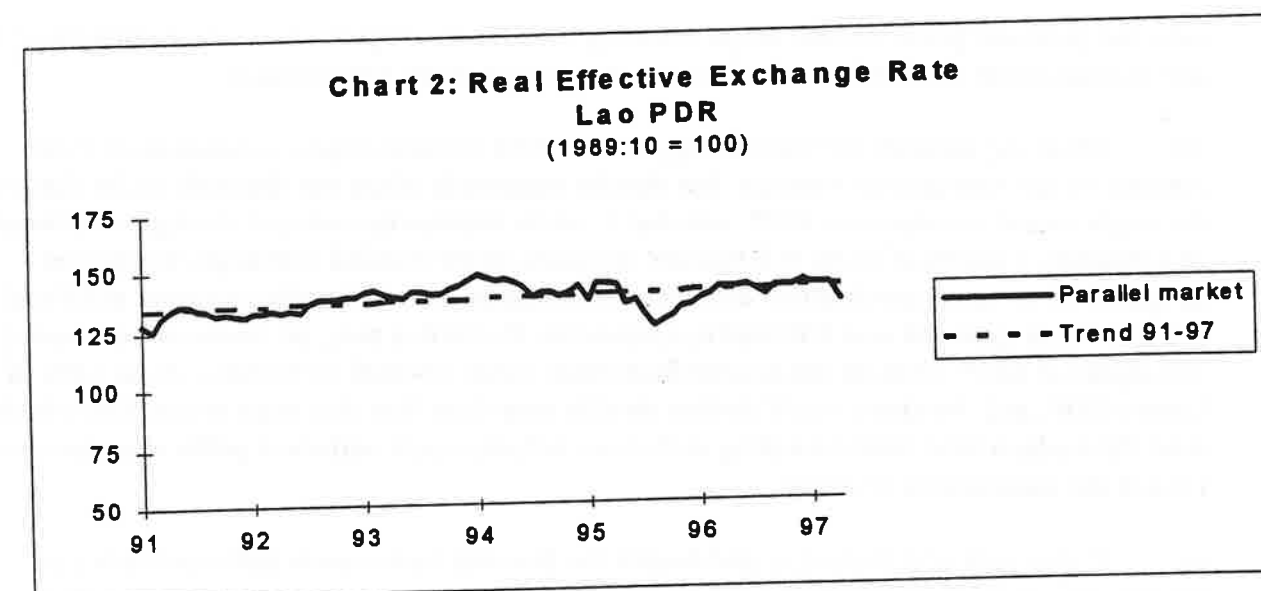
40. Chart 2, on the next page, shows the REER for Laos since 1991, a year in which the trend line in Chart 1 crosses the REER. It appears from this analysis that, subsequent to the correction that occurred in 1990, the trend of the REER in Laos has been quite flat, raising the question whether there really has been a trend toward real appreciation of the currency. The IMF report cited in footnote 10 provides several reasons to think that it may not have been, beyond the initial overshoot of the devaluation. The main one is that output growth was strong from 1989 - 1994, and export performance "quite robust," despite the upward trend of the REER. The paper also provides some analysis about what can keep exports competitive, even in the presence of an appreciating real exchange rate, suggesting that "rapid trade payments liberalization and technological progress" may have allowed Laos PDR to remain competitive even during the 1989 - 1994 period. (The analysis goes on to argue that "... appreciation of the internal terms-of-trade neither hampered total output growth nor unduly directed resources toward non-tradables.")

41. **Lao productivity and the "Dutch Disease."** This should not be taken to mean that the potential for a "Dutch Disease" effect related to large hydropower revenues should not be of concern to Lao authorities. But, as implied by the IMF analysis, there are a number of ways in which such an effect may be mitigated. In the short term, authorities can build foreign exchange reserves. This central banking authorities have in fact been doing in the Lao PDR; and with reserves currently covering just over three months' worth of imports, there is room to expand these holdings further. The more pressing question, however, is how such an impact can be mitigated over the medium-to-long term. The answer, from economic theory, is that the impacts of real exchange rate appreciation on competitiveness may be offset by productivity increases in the economy. The principal avenues available to public sector authorities to help achieve productivity increases are: (1) economic restructuring and reform; and (2) investment in physical and human capital.

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<sup>9</sup> 'The Lao People's Democratic Republic: Systemic Transformation and Adjustment,' IMF Occasional Paper 137, Washington, D.C., May 1996, p. 52.





42. The Indonesian experience with the economic impact of petroleum export revenues is directly relevant to Laos's strategy to rely on hydropower (or "white-oil") exports.<sup>10</sup> The oil booms of the 1970s gave rise to very large increases in Indonesia's gross savings. During the years of high oil revenues, Indonesian authorities avoided the worst impacts of "Dutch Disease" by devaluing the exchange rate periodically, and accompanied this with tight monetary and fiscal policies. Roughly half of total government resources were devoted to development expenditures, with an explicit policy to promote infrastructure projects with high-productivity returns. In addition, Indonesia pursued a strategy of converting a large portion of its oil revenues into basic education, with the result that human capital, measured by average years of schooling, rose from 1.6 years in 1960 to 4.6 years by 1985. This, of course, also increased Indonesian productivity. After the oil price busts of the mid-1980s, Indonesia shifted from inward-looking to export-oriented economic policies, replacing oil revenues with growing earnings from agricultural and manufacturing exports.

43. A country more the size of Laos in which the concern about "Dutch Disease" effect has formed a substantial part of economic planning is Cameroon. The country was a successful agricultural exporter until oil was discovered in the late 1970s; by 1980 oil revenues accounted for one-eighth of its GDP. Authorities resorted to holding a large portion of the oil revenues reserves in an off-shore banking account, in an attempt to mitigate any 'Dutch Disease' effects. To the extent that oil revenues were spent domestically, the government utilized them to

<sup>10</sup> This section draws on papers by Michael Roemer entitled 'Dutch Disease and Economic Growth: The Legacy of Indonesia,' HIIID discussion paper no. 489, June 1994; and by Benjamin, C., S. Devarajan and R. Weiner, 'Oil Revenues and the 'Dutch Disease' in a developing country: Cameroon,' OPEC Review, Summer 1986, and 'The 'Dutch' Disease in a Developing Country: Oil Reserves in Cameroon,' JDE 30 (1989), 71-92, North Holland.

raise the producer prices of cash crops, lowering the effective export tax on these commodities, and counteracting the cost increase from the real exchange rate appreciation.

44. These experiences experience suggest that there could be export concentration risks inherent to the hydropower strategy; but that the magnitude of the risk depends on the share of the single export in relation to GDP, and that it can in addition be managed through a combination of measures. Impacts of rising hydropower revenues on the nominal exchange rate may be mitigated by currency sterilization, accompanied by maintenance of stable monetary and fiscal policies. This approach was followed by Cameroon. But in this case, oil revenues represented one-eighth of GDP; whereas net income from Nam Theun 2 would represent at most 1.8% of Laos's GDP, and this share would decline steadily over time. It is also open to question whether over the medium term central banking authorities actually could withstand political pressures to release the accumulated reserves.

45. Under such circumstances, and despite the fact that hydropower still represents a small fraction of Lao GDP, it would be prudent to take measures that could correct for the "Dutch Disease" tendency of hydropower revenues, even without implementation of Nam Theun 2. The main lesson from the Indonesian experience for Laos is the importance of emphasizing productivity-enhancing investments, alongside a business climate friendly to private investment and export diversification. The question of how to implement such a strategy is critical, however, in light of the fact the all hydropower revenues would adhere to the GOL; and that there are additional claimants for the net income to be derived from hydropower, including the GOL's plans for poverty alleviation.

## 8. GOL implementation capacity

46. As highlighted in the microeconomic and institutional analysis, the institutional capacity of the GOL appears to be weak in comparison to the task of mitigating the negative impacts of Nam Theun 2, much less investing the income from Nam Theun 2. And based on interviews the Study team held in the Education, Health and Agriculture and Forestry Ministries, institutional capacity appears to be a serious constraint concerning the GOL's ability to achieve economic development and poverty alleviation goals. This finding correlates with the findings of a recent review of public expenditures by the World Bank, which highlights weak government institutions and a very limited number of trained staff, a situation exacerbated by rudimentary legal, administrative and institutional structures.<sup>11</sup> The risk is that in the absence of a strategy to mitigate its implementation capacity, increased GOL revenues could end up financing a series of white-elephant public investment projects.

47. Table 6 presents the GOL's initial 5-year public investment plan through 2000. Of the 1.5 billion Kip budgeted, more than 60% was slated to go to economic sectors, mainly infrastructure,

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<sup>11</sup> Lao PDR Public Expenditure Review: Improving Efficiency and Equity in Spending Priorities, World Bank 16094-LA (1997).

and agriculture and forestry, with 36% targeted to social sectors. The most striking aspect of the Lao capital budget, however, is that three-quarter of it has been financed by foreign savings, the overwhelming majority of which has arrived as Official Development Assistance (ODA); that is, either as grants or concessional loans from international financial institutions. The ratio of foreign to domestic financing of the capital budget was projected to change only very marginally by the end of the decade.

**Table 6**  
**Composition of Public Investment Plan, 1995/96-1999/2000**

	95/96*	96/97	97/98	98/99	99/00	Total '95/96-'99/2000
ECONOMIC SECTORS	137.2	164.4	185.5	199.7	213.3	900.1
SOCIAL SECTORS	52.8	86.6	109.2	132.5	156.0	536.9
OTHER	6.9	8.1	9.4	10.8	12.0	47.1
<b>TOTAL</b>	<b>196.8</b>	<b>259.0</b>	<b>304.0</b>	<b>343.0</b>	<b>381.2</b>	<b>1,484.0</b>
<b>o/w: Domestic Funds</b>	<b>48.0</b>	<b>61.3</b>	<b>78.4</b>	<b>95.4</b>	<b>114.8</b>	<b>397.</b>
<b>Foreign Funds</b>	<b>148.8</b>	<b>197.8</b>	<b>225.6</b>	<b>247.6</b>	<b>266.5</b>	<b>1,086.2</b>

\*Actual Figures. Actual expenditures for 1995/96 is lower than the proposed figure in the 1996-2000 PIP because of an SPC proposed increase in the allocation for rural development.

Source:; Lao PDR Public Expenditure Review, 1997.

48. **Changes in amount and composition of expenditures.** As noted in the Bank's public expenditure review, the GOL needs actively to identify and cut low-priority public investments, while improving implementation in the context of a re-orientation of its public expenditure program toward improved efficiency and equity. In particular, the Bank review recommended constraining the public expenditure program to the available resource envelope. Table 7 presents a comparison between the public investment programs of years 1991 - 1994/95 versus 1995/96 - 1999/2000. Levels of expenditure would for the most part remain unaffected by the Bank's recommendations, with the exception of amounts programmed for transport and communications infrastructure, and rural development. In respect to rural development, the PER found that "...no additional donor funding or project ideas have been identified." Similarly, for transport/communications, which received the lion's share of funding in the past five-years, expenditures should be pared to "...levels that can be effectively absorbed and implemented."

**Table 7**  
**Lao PDR: Public Investment Programs**  
**Comparison between Fiscal Years 1991-1994/95 and 1995/96-1999/2000**

	1991-1995		1996-2000			
	Actual PIP		Government PIP*		PER Proposed PIP	
	Billion Kip	% of Total	Billion Kip	% of Total	Billion Kip	% of Total
Agriculture	82.3	15.4	168.9	11.4	168.9	13.3
Industry	92.9	17.4	217.7	14.7	217.7	17.2
Transport/Communication	273.5	51.2	513.5	34.6	383.5	30.3
Education	35.4	6.6	145.4	9.8	145.4	11.5
Health	18.8	3.5	120.9	8.1	120.9	9.5
Information	9.4	1.8	30.4	2.0	30.4	2.4
Social Welfare	2.3	0.4	96.5	6.5	96.5	7.6
Public Building	13.5	2.5	47.1	3.2	47.1	3.7
Rural Development	6.4	1.2	143.8	9.7	55.9	4.4
Total	534.4	100.0	1,484.0	100.0	1,266.2	100.0
Total as Percent GDP			13.6		11.6	

\*The new Government-proposed PIP during 1995/96-1999/2000 amounts to 1,500 billion kip. The figure in this table is lower because it reflects actual 1995/96 capital expenditure which is lower than proposed.

Source: Lao PDR Public Expenditure Review, World Bank (1997).

49. As for the composition of expenditures, the Bank supported a shift in priorities in favor of social spending, including education and health in particular; and encouraging greater private sector participation and investment where there was no particular rationale for public sector involvement. Within specific sectors, the GOL was encouraged to establish and utilize prioritization criteria. Among the suggested strategic measures recommended to address the latter process were to (1) determine the appropriate role, if any, of the GOL in the project; (2) utilize cost-benefit analysis to determine the economic viability of projects; (3) leverage private investment wherever possible; (4) assure that recurrent operations and maintenance expenses are met; (5) recover project costs where feasible and desirable from users and beneficiaries; and (6) evaluate project or program impacts on the poor. (It is understood that for the most part the GOL plans to implement these recommended adjustments in its PIP.)

## 9. Income utilization scenarios

50. Even under quite conservative assumptions concerning social and environmental mitigation costs, the net cash flow to the GOL (in 1996 dollars) would average \$33 million annually from project initiation throughout the life of the concession agreement. If applied solely to the GOL's planned capital expenditures in the current fiscal year, annual revenues of this magnitude would have represented an augmentation of 12% of the resource envelope available under the public investment plan; or an increase of 38% if the increment were applied solely to the social sector line items in that plan. The principal issue is, how effectively could the GOL spend the income to be derived from Nam Theun 2 (and hydropower more generally) to achieve its economic development and poverty alleviation goals?

51. To come to grip with this question, the Economic Study discusses considers the following scenarios about how the net cash flow to the GOL from Nam Theun 2 could be managed:

- Tax cuts
- More rapid reduction of ODA
- Build reserves, or hold funds in overseas accounts
- Finance an accelerated program of public investments

52. **Tax cuts.** In regard to tax cuts, it would be extremely unwise to cut tax rates, because in real terms the revenue from Nam Theun 2 would be a once-and-for-all increment to the GOL budget. This means that either tax rates would have to be raised again in subsequent years, or expenditures would have to be reduced. The alternative would be to implement an annual tax rebate that would transfer the net revenues from Nam Theun 2 to enterprises or individual taxpayers. But the impact of this on economic behavior would decline over time as the real value of the rebate declined compared with rising national income. And, depending on how the rebate was managed, it might turn out to be a regressive option.

53. **More rapid reduction of ODA.** Another alternative would be to slow down and progressively replace ODA with domestic sources of financing. This is a laudable goal over the long-term, as the country's per capita income increases, and principal payments on its long-term debt to international financial institutions begin to come due. Over the medium-term, however, the Lao PDR should continue to avail itself of concessional financing of the sort that, currently, allows it to repay its average overseas loan based on an interest rate of 1.5%.

54. **Building reserves.** Another option would be for Laos to build up its foreign exchange reserves, and hold those reserves in overseas banking accounts to assure that they maintain their real value. This certainly is an excellent tool to utilize for macroeconomic management in the short term. Nonetheless, this would mean that the revenues from Nam Theun 2 would have no development impact in Laos; and it is an open question whether central banking authorities could withstand political pressures to disburse the funds.

55. **Accelerated public investment program.** The final option would be to utilize the incremental revenues from the Nam Theun 2 project for an accelerated public investment program in Laos. This, presumably, is the desired option of the GOL, which is the underlying rationale for proceeding with implementation of the project. If applied solely to the GOL's planned capital expenditures in the current fiscal year, annual revenues on the order of \$33 million per year would have represented an augmentation of 12% of the resource envelope available under the initial public investment plan. So, in practical terms, if the Nam Theun 2 revenues were available today, they could have re-instated almost the entire amount cut from that plan during the public expenditure review process. Whether doing so would have been a wise decision, however, is an open question. The risk, frankly, is that without significant improvement in the ability of the GOL to identify, prioritize and implement public sector projects, the increased net revenues from Nam Theun 2 could end up financing a series of white-elephant public investment projects.

56. Nonetheless, the GOL still has available to it several years to put into place a comprehensive strategy to improve implementation capacity in respect to public sector investment projects. As noted in the Bank's recent public expenditure review, the GOL needs actively to identify and cut low-priority public investments, while improving the effectiveness of investment projects in the context of a re-orientation of its public expenditure program toward improved efficiency and equity. It is also true that, to avoid the potential that increasing GOL expenditures might "crowd out" private ventures, authorities would need to assure that the projects that are identified do not compete with private sector production. And, beyond identifying priority sectors for public investment, the strategy requires articulation of measures that the GOL intends to take to ensure that implementation will succeed in light of evident absorptive capacity constraints.

57. Among the measures that should be considered to ensure effective implementation of the government's economic development and poverty alleviation strategy are (1) establishing a transparent and consistent system to identify, prioritize and allocate public investments toward the most economically viable projects; (2) relying wherever possible on competitively-bid concessions and/or private contracting to build and operate needed infrastructure, utilizing fiscally sustainable subsidy schemes as necessary to extend access to poor and rural areas; and (3) offering competitively-bid public grants to provincial and local governments, and NGOs, awarded to the best proposals to target the provision of improved social services to the poor.

58. As regards infrastructure, GOL institutional capacity limitations could be mitigated or circumvented even in the short-to-medium term through implementation of a strategy to rely on the private-sector implementation and/or ownership. What this would mean in respect to infrastructure would be a concentrated effort to rely on private concessions for telecommunications, electrification, toll roads, and so on. The point here is that public investment can be channeled to these sectors without necessarily meaning that the GOL must build or operate the services. The Nam Theun 2 model is a good one in respect to investment of public funds in concessions that are operated by foreign investors; and its success would greatly enhance the GOL's credibility in respect to future such undertakings.



59. Regarding social expenditures, the funds that would become available from Nam Theun 2 could provide the basis for the financing of recurrent expenditures associated with initial investment projects of donor institutions like IDA and the ADB, facilitating an expansion of donor projects in the social sphere over the medium term by ensuring their fiscal sustainability. Public sector implementation capacity constraints could be mitigated or reduced by resorting to such concepts as free and open bidding for school and health clinic construction contracts; agricultural extension services contracts; and so on. This could also involve policies to encourage public-private partnerships in the provision of services like basic education and outpatient clinic services, which without at least partial public financing may not be financially viable (although they would have to be demonstrably economically viable). As part of such an implementation strategy, the GOL also should consider the pluses and minuses of creating a "social fund" to which net incremental revenues from Nam Theun 2 would adhere.

#### 10. Poverty and poverty alleviation in Laos

60. Much of what is known about poverty in Laos derives from household and village surveys carried out in 1992-93,<sup>12</sup> supplemented by a World Bank report, 'Lao PDR Social Development Assessment and Strategy,' dated August 15, 1995. The latter document utilizes the survey results to analyze the distribution of income in Laos, determining how many persons could be considered poor using international standards. It also considers questions of income distribution between rural and urban populations and among the three regional groupings, examines the provision of social services among income groupings. The report makes recommendations about the elements of a viable poverty alleviation strategy, recognizing the central role that economic growth must play in that effort. Targetted interventions to help alleviate poverty would include expenditures to raise the productivity of agriculture and increase the access of rural areas to market infrastructure, while improving the performance of the educational system and the availability of health services to the rural poor.

61. Table 8 summarizes the findings of the Bank report concerning the incidence and depth of poverty in Laos, and its distribution between rural and urban populations and among regions. The data indicate that Laos is an extremely poor country, with more than 45% of the total population falling below the absolute poverty line, and more than one-fifth unable adequately to feed themselves. As compared with other low-income countries, however, the income distribution in Laos is extremely narrow, a residual in part of the socialist system; the *Gini coefficient* in Laos, which measures the dispersion of income among population deciles, is .32, as compared with Vietnam (.34) and Indonesia (.32 in 1998), which are among the lowest (ie., most equitable) anywhere in the world. The incidence of poverty is greater in the rural areas, and in the southern region of the country.



**Table 8**  
**Incidence and Depth of Poverty, by Region and Sector (in %)**  
**Lao PDR, 1992-1993**

Region	HIGHER POVERTY LINE					
	Head-Count Ratio			Poverty Gap Index		
	Rural	Urban	Total	Rural	Urban	Total
North	0.527	0.160	0.464	0.129	0.025	0.111
Center	0.469	0.257	0.404	0.118	0.060	0.100
South	0.662	0.288	0.598	0.224	0.017	0.188
All	0.530	0.239	0.461	0.144	0.045	0.121
Region	FOOD POVERTY LINE					
	Head-Count Ratio			Poverty Gap Index		
	Rural	Urban	Total	Rural	Urban	Total
North	0.246	0.021	0.207	0.045	0.003	0.038
Center	0.216	0.112	0.184	0.042	0.015	0.034
South	0.373	0.006	0.310	0.098	0.001	0.081
All	0.260	0.076	0.216	0.055	0.010	0.044

Note: The poverty gap index is the percentage of total consumption needed to raise the incomes of poor households up to the given poverty line. The head count ratio is the percentage of individuals in the population whose household expenditures per capita fall below the poverty line. The lower poverty line is the food poverty line, measured according to minimal necessary caloric intake—a daily intake of 2,100 calories per capita. The higher poverty line measures income against an international standard applied by the World Bank.

62. The World Bank report is supplemented by a National Poverty Alleviation Action Plan that was under preparation by the GOL in 1997 while the Economic Study was being conducted. Although this Plan only covers the period through the year 2000, it provides a good overview of the GOL's strategy for poverty alleviation. In particular, the report highlights the critical role of state intervention in agriculture, income generation, health and education in ensuring that rapid economic growth in the Lao PDR is equitable and broad-based, while proposing to set up a Social Development Fund to help grassroots participation in development and to help socially vulnerable

groups. The report recognizes the increasing importance of external assistance in social development in Laos, and recommends ongoing monitoring and review of the achievement of social development targets.<sup>13</sup>

# 11. Nam Theun 2 and poverty alleviation

63. Consideration of the extent to which Nam Theun 2 might contribute to alleviating poverty in Laos requires particular care. The first question relates to the project's potential contribution to GDP growth, and hence to poverty alleviation. Also to be considered is the extent to which revenues from Nam Theun 2 could contribute indirectly to poverty alleviation in the context of an overall economic development strategy that would include improved targeting of expenditures and program implementation capacity. The approach of the Study has been to distinguish among: (1) outcomes that would be caused directly by the project; and (2) outcomes over which implementation of the project may have some influence, either as a model, through conditionality attached to parallel financing by international financial institutions, or otherwise. Both negative and positive influences attributable to the project were considered.

64. **Direct impacts.** One concern is that construction-project expenditures could cause price rises that would have an adverse impact on the rural-urban terms-of-trade. This could adversely affect poverty alleviation efforts because the rural population also tends to be more poor. But because of its enclave nature, and because Laos has been largely successful in liberalizing prices and trade, there are few reasons to believe that the project would have any but the most short-term impact on local prices; whereas its impact on regional or national prices would be nil.<sup>14</sup> Another concern is that rising hydropower exports could, through appreciation of the real exchange rate, impoverish other sectors, like agriculture, from which the majority of the population falling below the poverty line derives a subsistence. The best way to guard against this would be to implement an outward-oriented economic strategy and to target public investments toward relieving human and physical capacity constraints. The Lao PDR's social strategy would be entirely compatible with this approach.

65. The Study also has estimated the impact on poverty directly attributable to Nam Theun 2's projected augmentation of GDP growth. The World Bank's Social Development Assessment and Strategy calculated that if per capita income were to grow at an annual average rate of 3.5%, the proportion of the Lao population falling below an absolute measure of the poverty line would decline from 46% (in 1995) to 22% by the year 2000, assuming no deterioration in the distribution of income. Based on the projected growth rates utilized in the macroeconomic

<sup>13</sup> The draft report shared with the Economic Study team included no budget estimates concerning the level of public expenditures that would be necessary to achieve the GOL's poverty alleviation strategy.

<sup>14</sup> A notable exception might be local prices for consumer services, if Lao authorities invoked internal residency restrictions to limit labor mobility. Based on experience with prior hydropower projects in Laos, however, this appears unlikely.

analysis, it is possible to project, under similar assumptions, what the impact of Nam Theun 2 would be on the number of persons falling below the absolute poverty line.

66. In Table 9, the figures utilized by the World Bank have been updated to 1996. The absolute poverty line has been adjusted for inflation, and consumption has been projected to rise in line with nominal economic growth.<sup>15</sup> Table 10 presents the projected results in 2006 of two scenarios, with and without Nam Theun 2, in which the former is represented by the "most likely" scenario, and the latter the base case scenario presented earlier in this section. Under either scenario, it is noteworthy that positive economic growth rates have reduced poverty levels by more than half during the ten-year forecast period, an indication of the central role that economic growth must play in reducing poverty in Laos. Comparing the results of the two scenarios, through 2006, it is evident that the poverty reduction attributable to Nam Theun 2's direct impact on economic growth, even under conservative assumptions, would be measurable and positive: The increment to GDP growth alone would reduce the number of persons falling below the poverty line by more than 13,000.

67. This very likely understates the direct poverty-reducing impact of the project to some extent, because during the construction period increased demand for goods and services in the Nakai Plateau would provide additional sources of income for local residents, most of whom are subsistence farmers who have been experiencing increasing rice deficits in recent years. And, although the Nam Theun 2 programs for environmental protection and resettlement are still under negotiation, the government's goal is to make local residents better off, so that if implemented effectively these programs also would contribute to poverty alleviation.

68. **Indirect impacts.** The final source of potential poverty reduction to be derived from Nam Theun 2, of course, would be the net revenues that would accrue from the project to the GOL. Even under quite conservative assumptions concerning social and environmental mitigation costs, to be borne by the GOL the net cash flow to the GOL (in 1996 dollars) would average \$33 million annually from project initiation throughout the life of the concession agreement. If applied solely to the GOL's planned capital expenditures in the current fiscal year, annual revenues of this magnitude would have represented an increase of 38% if the increment were applied solely to the social sector line items in that plan. To put these figures in perspective, it is estimated currently that each additional \$1 million could provide full immunization series to 67,000 Lao children, or finance the construction of 40 kilometers of rural roads.

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<sup>15</sup> In the absence of time series which could provide the basis to forecast rural-urban migration, the projections also hold this factor constant.

Table 9

	1996			1996			1996		
	Distribution of Total Consumption Expenditure Per Capita (%)			Cumulative population (In 000s)			Annual per capita consumption by decile (In Kip)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Poorest 10%	4.2	4.6	3.8	492	374	118	106,370	99,124	142,513
Second decile	5.4	6.0	5.0	984	748	236	136,762	129,292	187,517
Third decile	6.1	6.6	5.8	1,476	1,122	354	154,490	142,221	217,520
Fourth decile	6.8	7.4	6.5	1,968	1,496	472	172,219	159,460	243,772
Fifth decile	7.7	8.2	7.5	2,460	1,870	590	195,012	176,699	281,276
Sixth decile	8.5	9.0	8.8	2,952	2,244	708	215,273	193,938	330,030
Seventh decile	9.6	10.0	9.8	3,444	2,617	827	243,132	215,487	367,533
Eighth decile	11.3	11.4	12.4	3,936	2,991	945	286,187	245,655	465,042
Ninth decile	14.1	13.7	15.2	4,428	3,365	1,063	357,100	295,217	570,052
Richest 10%	26.3	23.1	25.2	4,920	3,739	1,181	666,081	497,775	945,086
Population (Mln)	4,920	3,739	1,181	Mean per capita consumption p.a.			253,263	215,487	375,034
Mean Consumption per capita per month (Kip)	21,105	17,957	31,253	Absolute poverty line			201,815	196,063	220,357
				Number of people falling below the poverty line (000s)			2,546	2,115	431

**Table 10**

**Without Nam Theun 2  
2006**

	Cumulative population (in 000s)			Annual per capita consumption by decile (in Kip)		
	Total	Rural	Urban	Total	Rural	Urban
Poorest 10%	592	450	142	203,835	189,949	273,094
Second decile	1,184	900	284	262,073	247,759	359,334
Third decile	1,776	1,350	426	296,046	272,535	416,828
Fourth decile	2,368	1,800	568	330,018	305,570	467,134
Fifth decile	2,960	2,250	711	373,697	338,604	539,001
Sixth decile	3,552	2,699	853	412,523	371,639	632,428
Seventh decile	4,144	3,149	995	465,908	412,932	704,295
Eighth decile	4,736	3,599	1,137	548,412	470,743	891,149
Ninth decile	5,328	4,049	1,279	684,302	565,717	1,092,376
Richest 10%	5,920	4,499	1,421	1,276,393	953,873	1,811,044
Mean per capita consumption p.a.				485,321	412,932	718,668
Absolute poverty line				256,055	248,756	279,580
Number of people falling below the poverty line (000s)				1,157	929	227

**With Nam Theun 2  
2006**

	Cumulative population (in 000s)			Annual per capita consumption by decile (in Kip)		
	Total	Rural	Urban	Total	Rural	Urban
Poorest 10%	592	450	142	206,205	192,157	276,269
Second decile	1,184	900	284	265,121	250,640	363,512
Third decile	1,776	1,350	426	299,488	275,704	421,674
Fourth decile	2,368	1,800	568	333,855	309,123	472,566
Fifth decile	2,960	2,250	710	378,042	342,542	545,269
Sixth decile	3,552	2,700	852	417,319	375,960	639,782
Seventh decile	4,144	3,149	995	471,325	417,734	712,484
Eighth decile	4,736	3,599	1,137	554,789	476,216	901,511
Ninth decile	5,328	4,049	1,279	692,259	572,295	1,105,078
Richest 10%	5,920	4,499	1,421	1,291,235	964,965	1,832,103
Mean per capita consumption p.a.				490,964	417,734	727,025
Absolute poverty line				256,055	248,756	279,580
Number of people falling below the poverty line (000s)				1,144	919	225

69. The extent to which net incremental revenues from Nam Theun 2 could translate into such outcomes in Laos, however, would depend largely on GOL absorptive capacity. The risk is that in the absence of a strategy to mitigate its demonstrably thin institutional capacity, increased GOL revenues could end up financing a series of white-elephant public investment projects. As noted in the Bank's recent public expenditure review, the GOL needs actively to identify and cut low-priority public investments, while improving the effectiveness of investment projects in the context of a re-orientation of its public expenditure program toward improved efficiency and equity.

70. The social that GOL representatives described to the Economic Study team follows the East Asian model of stressing productivity-enhancing public investments over income transfers as measures to alleviate poverty, relying instead on the extended family network as the principal safety net. Thus, the strategy emphasizes human capital development through targeted public investments in education, health and agricultural extension, coupled with reduced constraints to broad-based income growth through investments in physical infrastructure. These elements of the strategy are completely consistent with, and complementary to, an outward-oriented economic development strategy led by broad-based private sector growth. Nonetheless, beyond identifying priority sectors for public investment, the strategy requires articulation of measures that the GOL intends to take to ensure that implementation of its public investment program will succeed in light of institutional capacity constraints.

71. **Social fund model.** As part of such an implementation strategy, the GOL should consider the pluses and minuses of creating a "social fund" to which net incremental revenues from Nam Theun 2 would adhere. Such a fund could be responsible for implementation of specific elements of the GOL's social sector strategy under the policy direction of central government authorities, supplemented by donor financing and technical assistance. Experience in other countries indicates that social funds can move more quickly, with lower unit costs and stronger community participation, to supplement public institutional capacity under mechanisms that rely on implementation by both NGOs and private contractors.<sup>16</sup>

72. A preliminary review of the pluses and minuses of social funds indicates that they exhibit distinct advantages in terms of quicker disbursements, lower unit costs and better community participation and targeting of resources to the poor. Disadvantages include the fact that, in the absence of complementary policy reform they create a parallel structure to the government, and they are not effective in accomplishing some tasks, like targeting to the poorest of the poor and accomplishing tasks requiring some economies of scale, like teacher training. And they are less successful in countries in which popular participation at the local level is not encouraged by authorities. Coverage of recurrent expenditures stemming from the initial investment is the

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<sup>16</sup> In its recent poverty alleviation strategy the GOL has proposed to constitute a "social fund," led by the Lao Women's Union, the Lao Revolutionary Youth Union and other national and local groups. The details of this proposal, however, were not spelled out.

responsibility of the grantees; and their success will depend on the cost-recovery schemes that are permitted by the central government.

73. Social funds typically involve small grant-making (up to \$100,000) to local community-based organizations whose bids are reviewed on a competitive (selection-criteria) basis. They typically are financed by international donors, but several, including those in Chile, Peru and Guatemala, are assisted by government financing. In Bolivia, Malawi and Zambia, social funds are utilized as mechanisms to channel segments of the social budget to decentralized levels. Social funds that involve the participation of donor institutions involve auditing by those institutions.

## **12. Model for reform**

74. Laos is at a crossroads in its development where it has already implemented a fairly comprehensive series of economic stabilization and structural adjustment measures, and is well on the way to making the transition from central planning to market systems. It has put forward an economic and social strategy to continue that process which would broaden the base of economic growth, and improve environmental sustainability, while relying on the gains from hydropower. Nam Theun 2 is an integral part of that strategy. The project, in addition to yielding substantial net economic benefits for the Lao PDR, is intended to demonstrate that private investments in Laos can and will meet international standards, not only of profitability and risk, but also of environmental and social responsibility.

75. The former can be demonstrated by successful implementation of a large private concession led by credible foreign sponsors; the latter by strict adherence to the environmental and social standards of the World Bank. As designed, Nam Theun 2 could well become a model for future public-private partnerships that could help relieve Laos's human, physical and institutional capacity constraints, and usher in a period of sustained, rapid and environmentally and socially responsible economic development.



Lao PDR: Net Incremental Revenues (Base Case, No NT2 Project)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Net Incremental Revenues to GOL</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-7.9%	-7.4%	-7.4%	-7.0%	-5.8%	-5.1%	-3.2%	-2.3%	-1.0%	0.3%
Government Expenditure (% of GDP)	22.4%	24.8%	25.9%	26.1%	23.8%	22.9%	21.0%	20.0%	18.6%	17.3%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-16.2%	-15.7%	-16.2%	-13.1%	-11.7%	-10.7%	-9.9%	-8.9%	-8.1%	-6.4%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	28.6	30.1	42.2	55.6	63.8	70.9	83.3	92.5	96.6	96.2
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.2%	8.4%	8.7%	9.6%	9.9%	9.5%	8.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GOL Expenditures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Investment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	1848.0	1995.8	2085.7	2179.5	2266.7	2357.4	2451.6	2549.7	2651.7	2757.8

**Lao PDR: Net Incremental Revenues (Base Case, No NT2 Project)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Net Incremental Revenues to GOL</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%	0.8%	0.7%
Government Expenditure (% of GDP)	16.5%	16.3%	16.2%	16.0%	15.9%	15.8%	15.7%	15.7%	15.6%	15.5%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-4.9%	-3.8%	-3.4%	-3.0%	-2.6%	-2.4%	-2.2%	-2.0%	-1.8%	-1.6%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	101.9	107.8	114.3	120.9	127.7	137.6	151.9	168.5	183.5	196.2
Debt Service / Total Exports (GFS + Workers Rem.)	8.4%	8.2%	8.2%	8.1%	8.0%	8.1%	8.3%	8.6%	8.8%	8.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GOL Expenditures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Investment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	2868.1	2982.8	3102.1	3226.2	3355.2	3489.5	3629.0	3774.2	3925.2	4082.2

Lao PDR: Net Incremental Revenues (Base Case, No NT2 Project)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Net Incremental Revenues to GOL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Government Finance										
Government Surplus/Deficit (% of GDP)	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%
Government Expenditure (% of GDP)	15.5%	15.4%	15.4%	15.3%	15.3%	15.2%	15.2%	15.1%	15.1%	15.0%
Balance of Payments										
Current Account Surplus/Deficit (% of GDP)	-1.4%	-1.0%	-0.7%	-0.5%	-0.2%	-0.1%	0.1%	0.3%	0.4%	0.4%
Debt and Debt Service Ratios										
Total Debt Service (Mn USD)	207.1	216.7	225.6	234.2	242.8	251.8	261.3	270.1	279.5	289.4
Debt Service / Total Exports (GFS + Workers Rem.)	8.5%	8.1%	7.8%	7.4%	7.1%	6.8%	6.5%	6.2%	5.9%	5.6%
Net Incremental Revenues to GOL as Percentage of:										
GOL Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GOL Expenditures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Investment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net Incremental Revenues to GOL per capita as Percentage of GDP per capita	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Memo Item:										
GDP at mp (Mln 1996 USD)	4245.5	4415.3	4591.9	4775.6	4966.6	5165.2	5371.9	5586.7	5810.2	6042.6

Lao PDR: Net Incremental Revenues (Base Case, No NT2 Project)

	2026	2027
Net Incremental Revenues to GOL	0.0	0.0
Royalty Fees (+)	0.0	0.0
Resource Levies (+)	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0
Equity Share from Income from Sales of Electricity (+)	0.0	0.0
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0
Amortization	0.0	0.0
Interest	0.0	0.0
Government Finance		
Government Surplus/Deficit (% of GDP)	0.5%	0.5%
Government Expenditure (% of GDP)	15.0%	15.0%
Balance of Payments		
Current Account Surplus/Deficit (% of GDP)	0.3%	0.3%
Debt and Debt Service Ratios		
Total Debt Service (Mn USD)	296.0	297.4
Debt Service / Total Exports (GFS + Workers Rem.)	5.3%	4.9%
Net Incremental Revenues to GOL as Percentage of:		
GOL Revenues	0.0%	0.0%
GOL Expenditures	0.0%	0.0%
Total Investment	0.0%	0.0%
Net Incremental Revenues to GOL per capita as Percentage of GDP per capita	0.0%	0.0%
Memo Item:		
GDP at mp (Mln 1996 USD)	6284.3	6535.7

# Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)

## Lao PDR: Key Economic Indicators

Mid Year Population (mill)

Growth Rate of GDP

Consumption Growth

Private Consumption

Investment Growth (GDI)

Real Per Capita Growth Rates:

Gross Domestic Product (GDP)

Debt and Debt Service (LT+ST+IMF):

Total DOD (US\$M)

Total Debt/GDP

Debt Service (US\$M)

Debt Service / Total Exports (GFS + Workers Rem.)

Debt Service / GDP

Interest Burden (LT+ST+IMF):

Interest Paid (US\$M)

Interest Due (US\$M)

Interest / Total Exports (GFS & Workers rem.)

Interest / GDP

## Goods Market

As a Share of GDP in Kip (in current prices):

Resource Balance

Exports

Imports

Consumption

Private

Public

Investment

Private

Public

Gross Domestic Savings

Total Savings

Foreign Savings

Gross National Savings

... Rest of the Econ.Savings

... Government Savings

## VALUE ADDED

Growth rates

GDP at factor costs

Agriculture

Industry

o.w. Manufacturing

Electricity and Water

As a Share of GDP at market prices in Kip:

GDP at factor costs

Agriculture

Industry

o.w. Manufacturing

Electricity

Services

## PRICES

Nominal Exchange Rate (p.a.) (Kip/US\$)

Devaluation Rate (p.a.)

Nominal Exchange Rate (e.o.p.)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Estimates											
Mid Year Population (mill)	4.69	4.80	4.92	5.04	5.16	5.28	5.40	5.53	5.65	5.78	5.92
Growth Rate of GDP	6.90%	7.00%	7.00%	7.00%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	6.4%	5.0%	5.0%	3.8%	5.1%	4.7%	5.2%	5.0%	4.7%	4.8%	4.8%
Private Consumption	5.7%	2.7%	5.1%	3.9%	5.7%	5.2%	5.7%	5.2%	4.7%	4.9%	4.6%
Investment Growth (GDI)	10.0%	11.0%	17.0%	5.0%	5.0%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Real Per Capita Growth Rates:											
Gross Domestic Product (GDP)	4.4%	4.5%	4.5%	4.5%	4.0%	4.0%	4.1%	4.1%	4.1%	4.1%	4.1%
Debt and Debt Service (LT+ST+IMF):											
Total DOD (US\$M)	2262	2403	2587	2733	2859	2994	3177	3339	3457	3551	3668
Total Debt/GDP	122.4%	126.6%	128.0%	127.0%	125.9%	125.0%	125.8%	125.3%	122.9%	119.7%	117.2%
Debt Service (US\$M)	29	30	42	56	64	71	83	92	97	96	102
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.2%	8.4%	8.7%	9.6%	9.9%	9.5%	8.7%	8.4%
Debt Service / GDP	1.5%	1.6%	2.1%	2.6%	2.8%	3.0%	3.3%	3.5%	3.4%	3.2%	3.3%
Interest Burden (LT+ST+IMF):											
Interest Paid (US\$M)	6.82	6.48	7.85	9.21	10.94	13.61	17.66	22.59	26.80	28.24	30.68
Interest Due (US\$M)	6.82	6.48	7.85	9.21	10.94	13.61	17.66	22.59	26.80	28.24	30.68
Interest / Total Exports (GFS & Workers rem.)	1.4%	1.2%	1.4%	1.4%	1.4%	1.7%	2.0%	2.4%	2.6%	2.5%	2.5%
Interest / GDP	0.4%	0.3%	0.4%	0.4%	0.5%	0.6%	0.7%	0.8%	1.0%	1.0%	1.0%
As a Share of GDP in Kip (in current prices):											
Resource Balance	-18.2%	-17.6%	-17.3%	-13.7%	-12.1%	-10.7%	-9.8%	-8.6%	-7.1%	-5.4%	-3.8%
Exports	25.7%	26.9%	27.5%	44.7%	44.9%	44.2%	43.7%	43.2%	42.7%	42.2%	41.8%
Imports	43.9%	44.5%	44.7%	44.7%	44.9%	44.2%	43.7%	43.2%	42.7%	42.2%	41.8%
Consumption	100.00%	99.24%	96.96%	93.49%	91.81%	90.15%	88.94%	87.56%	85.75%	83.93%	82.04%
Private	91.51%	88.84%	86.90%	83.89%	82.86%	81.70%	81.00%	79.84%	78.16%	76.56%	74.73%
Public	8.49%	10.40%	10.06%	9.60%	8.95%	8.44%	7.94%	7.73%	7.60%	7.36%	7.31%
Investment	18.19%	18.34%	20.31%	20.23%	20.29%	20.57%	20.83%	21.07%	21.30%	21.52%	21.72%
Private	5.90%	5.89%	6.67%	5.75%	7.38%	7.91%	9.60%	10.57%	11.86%	13.09%	14.01%
Public	12.28%	12.45%	13.64%	14.47%	12.91%	12.66%	11.23%	10.51%	9.45%	8.43%	7.71%
Gross Domestic Savings	0.0%	0.8%	3.0%	6.5%	8.2%	9.9%	11.1%	12.4%	14.2%	16.1%	18.0%
Total Savings	18.2%	18.3%	20.3%	20.2%	20.3%	20.6%	20.8%	21.1%	21.3%	21.5%	21.7%
Foreign Savings	16.2%	15.7%	16.2%	13.1%	11.7%	10.7%	9.9%	8.9%	8.1%	6.4%	4.9%
Gross National Savings	2.0%	2.6%	4.1%	7.1%	8.6%	9.9%	10.9%	12.2%	13.2%	15.1%	16.8%
... Rest of the Econ.Savings	-2.4%	-2.4%	-2.1%	-0.4%	1.5%	2.3%	2.8%	4.0%	4.8%	6.4%	8.1%
... Government Savings	4.3%	5.0%	6.3%	7.5%	7.1%	7.6%	8.0%	8.2%	8.5%	8.7%	8.7%
VALUE ADDED											
Growth rates											
GDP at factor costs	5.5%	6.9%	7.0%	7.0%	6.5%	6.6%	6.6%	6.5%	6.5%	6.5%	6.5%
Agriculture	2.3%	5.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	12.0%	10.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
o.w. Manufacturing	12.0%	10.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Electricity and Water	15.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:											
GDP at factor costs	96.8%	96.8%	96.7%	96.7%	96.7%	96.7%	96.7%	96.8%	96.9%	96.9%	97.0%
Agriculture	50.5%	49.2%	48.9%	48.2%	47.9%	47.6%	47.4%	47.1%	46.8%	46.6%	46.3%
Industry	18.3%	18.8%	18.9%	19.1%	19.4%	19.7%	19.9%	20.2%	20.5%	20.8%	21.1%
o.w. Manufacturing	14.5%	14.9%	15.0%	15.2%	15.4%	15.6%	15.8%	16.1%	16.3%	16.5%	16.8%
Electricity	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.5%	1.5%	1.5%	1.5%	1.5%
Services	26.6%	27.3%	27.4%	28.0%	28.0%	28.0%	28.1%	28.1%	28.1%	28.1%	28.1%
PRICES											
Nominal Exchange Rate (p.a.) (Kip/US\$)	933	1050	1103	1158	1216	1276	1340	1407	1477	1551	1629
Devaluation Rate (p.a.)	14.1%	12.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Nominal Exchange Rate (e.o.p.)	992	1076	1130	1187	1246	1308	1374	1442	1514	1590	1629

Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)

Lao PDR: Key Economic Indicators

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Devaluation Rate (e.o.p.)	7.2%	8.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	2.4%
Real Exchange Rate Index (Kip/US\$)	0.98	1.04	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.39
Real Exchange Rate Index (IMF=US\$/Kip)	1.02	0.97	0.94	0.91	0.88	0.85	0.82	0.80	0.77	0.74	0.72
Terms of Trade	0.97	0.98	0.99	1.01	1.02	1.02	1.02	1.02	1.02	1.01	1.01
Inflation (e.o.p.)	10.9%	6.3%	4.5%	4.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	13.6%	9.2%	4.0%	3.9%	3.5%	3.8%	3.9%	3.8%	3.6%	3.5%	3.3%
Investment Deflator Growth	19.5%	5.0%	5.8%	6.1%	5.8%	5.4%	5.3%	5.2%	5.1%	5.0%	5.0%

PUBLIC SECTOR

Direct Taxes/GDP	3.9%	4.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
Indirect Taxes/GDP	8.2%	9.3%	9.3%	9.3%	9.3%	9.3%	9.0%	8.9%	8.8%	8.7%	8.7%
o.w. Timber Royalties/GDP	2.1%	2.1%	2.0%	2.0%	2.0%	2.0%	1.8%	1.8%	1.7%	1.7%	1.6%
Total Revenues/GDP	14.5%	17.4%	18.5%	19.1%	17.9%	17.9%	17.8%	17.7%	17.6%	17.6%	17.5%
Interest Payments/GDP	0.7%	1.0%	1.2%	1.1%	1.0%	0.9%	0.9%	0.9%	0.8%	0.7%	0.7%
Government Investment/GDP	12.3%	12.4%	13.6%	14.5%	12.9%	12.7%	11.2%	10.5%	9.4%	8.4%	7.7%
Total Expenditures/GDP	22.4%	24.8%	25.9%	26.1%	23.8%	22.9%	21.0%	20.0%	18.6%	17.3%	16.5%
Government Deficit(-)/GDP	-7.9%	-7.4%	-7.4%	-7.0%	-5.8%	-5.1%	-3.2%	-2.3%	-1.0%	0.3%	1.0%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-4.1%	-3.8%	-4.4%	-3.4%	-2.3%	-3.1%	-6.0%	-6.1%	-5.4%	-5.3%	-4.6%
Foreign Credit flow/GDP	7.7%	6.9%	7.5%	6.3%	4.4%	4.9%	6.2%	5.7%	3.9%	3.0%	2.0%
Government Savings/GDP	-2.4%	9.3%	9.3%	9.3%	9.3%	9.0%	8.9%	8.8%	8.7%	8.7%	8.7%
Non-Interest Deficit(-)/GDP	-7.3%	-6.5%	-6.2%	-5.8%	-4.8%	-4.1%	-2.3%	-1.4%	-0.2%	1.0%	1.7%

BALANCE OF PAYMENTS

Export real growth rate (MERCH FOB)	5.9%	3.2%	5.9%	21.0%	9.4%	4.7%	3.4%	4.3%	6.2%	6.3%	6.5%
Export real growth rate (GNFS)	10.1%	6.0%	6.3%	16.2%	8.5%	5.3%	4.4%	5.0%	6.3%	6.4%	6.5%
Import real growth rate (MERCH CIF)	16.5%	3.8%	6.8%	4.8%	4.3%	1.4%	1.7%	1.8%	1.9%	1.9%	1.9%
Import real growth rate (GNFS)	8.7%	3.4%	6.2%	4.4%	3.9%	1.5%	1.8%	1.8%	1.9%	1.9%	1.9%
Gross Reserves (CB only incl Gold) (months imp GFS)	2.4	2.4	2.4	2.4	2.4	2.5	2.8	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	2.8	2.9	2.9	3.0	3.0	3.1	3.5	3.8	3.8	3.8	3.8
As a share of GDP in Kip:											
Net Factor Payments	0.4%	0.6%	1.4%	1.8%	2.0%	2.4%	2.6%	2.7%	2.6%	2.5%	2.4%
Net Transfers	2.4%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.4%	1.6%	1.5%	1.3%
Current Account Balance	-16.2%	-15.7%	-16.2%	-13.1%	-11.7%	-10.7%	-9.9%	-8.9%	-8.1%	-6.4%	-4.9%

TRADE

as share of Merchandise imports (in constant prices)											
Food	20.2%	20.5%	20.2%	20.5%	20.7%	20.3%	19.7%	19.2%	18.7%	18.2%	17.8%
Other Consumer Goods	30.0%	31.0%	31.5%	32.4%	33.2%	33.4%	33.5%	33.7%	33.8%	34.0%	34.1%
Intermediate Goods	15.5%	14.4%	13.9%	13.6%	13.3%	13.4%	13.8%	14.1%	14.5%	14.8%	15.1%
POL and Other Energy	6.1%	5.8%	5.6%	5.5%	5.4%	5.5%	5.6%	5.7%	5.8%	5.9%	6.0%
Capital Goods	28.1%	28.3%	28.9%	28.1%	27.4%	27.4%	27.3%	27.3%	27.2%	27.1%	27.0%
As Share of Merchandise Exports:											
Commodity 1 - Timber	38.0%	36.6%	34.6%	28.5%	26.2%	25.3%	19.9%	17.4%	16.1%	14.9%	13.7%
Commodity 2 - Electricity	8.4%	8.4%	7.9%	19.5%	22.5%	21.6%	24.2%	24.1%	23.5%	22.9%	22.3%
Commodity 3 - Agr. & For.Prod.	3.9%	3.9%	4.1%	3.7%	3.6%	3.7%	3.9%	4.0%	4.1%	4.1%	4.2%
Commodity 4 - Coffee	6.7%	6.4%	6.4%	5.8%	5.6%	5.8%	6.0%	6.2%	6.3%	6.3%	6.4%
Manufacturing	34.9%	36.5%	38.3%	34.6%	34.1%	35.3%	37.2%	38.8%	40.1%	41.2%	42.3%
Garments	20.4%	21.5%	22.7%	20.8%	20.5%	21.1%	22.1%	22.9%	23.3%	23.7%	24.1%
Motorcycles	4.7%	4.5%	4.2%	3.3%	3.0%	2.8%	2.6%	2.5%	2.3%	2.1%	2.0%
Other Manufacturing	9.8%	10.5%	11.4%	10.4%	10.7%	11.4%	12.4%	13.5%	14.5%	15.3%	16.3%
Other	8.1%	8.3%	8.8%	7.9%	7.9%	8.3%	8.8%	9.5%	10.0%	10.5%	11.1%
Growth in Broad Monetary Aggregates	21.4%	16.4%	12.6%	12.6%	11.5%	13.1%	14.9%	15.0%	10.8%	10.8%	10.8%

Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)

Lao PDR: Key Economic Indicators	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
Mid Year Population (mill)	6.05	6.19	6.34	6.48	6.63	6.78	6.94	7.10	7.26	7.43	7.60
Growth Rate of GDP	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	5.6%	6.3%	6.3%	6.3%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.2%
Private Consumption	5.5%	6.2%	6.2%	6.2%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.2%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Real Per Capita Growth Rates:											
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Debt and Debt Service (LT+ST+IMF):											
Total DOD (US\$M)	3769	3871	3968	4061	4157	4256	4355	4455	4559	4659	4744
Total Debt/GDP	108.8%	100.9%	93.4%	86.2%	79.7%	73.7%	68.1%	62.9%	58.1%	53.6%	49.3%
Debt Service (US\$M)	108	114	121	128	138	152	169	184	196	207	217
Debt Service / Total Exports (GFS + Workers Rem.)	8.2%	8.2%	8.1%	8.0%	8.1%	8.3%	8.6%	8.8%	8.7%	8.5%	8.1%
Debt Service / GDP	3.1%	3.0%	2.8%	2.7%	2.6%	2.6%	2.6%	2.6%	2.5%	2.4%	2.3%
Interest Burden (LT+ST+IMF):											
Interest Paid (US\$M)	32.60	34.41	36.24	38.01	39.91	42.06	44.38	46.77	49.28	51.88	54.25
Interest Due (US\$M)	32.60	34.41	36.24	38.01	39.91	42.06	44.38	46.77	49.28	51.88	54.25
Interest / Total Exports (GFS & Workers rem.)	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.3%	2.2%	2.2%	2.1%	2.0%
Interest / GDP	0.9%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%
Goods Market											
As a Share of GDP in Kip (in current prices):											
Resource Balance	-2.8%	-2.5%	-2.2%	-1.9%	-1.7%	-1.6%	-1.5%	-1.3%	-1.2%	-1.0%	-0.7%
Exports	37.2%	35.8%	34.5%	33.3%	32.1%	31.0%	30.0%	29.0%	28.3%	27.7%	27.2%
Imports	40.0%	38.3%	36.7%	35.2%	33.9%	32.6%	31.4%	30.3%	29.5%	28.7%	27.9%
Consumption	81.28%	81.16%	81.03%	80.91%	80.93%	80.95%	80.96%	80.96%	80.90%	80.85%	80.69%
Private	73.97%	73.84%	73.72%	73.59%	73.60%	73.61%	73.61%	73.61%	73.55%	73.49%	73.32%
Public	7.31%	7.31%	7.32%	7.32%	7.33%	7.34%	7.35%	7.35%	7.36%	7.36%	7.36%
Investment	21.51%	21.31%	21.12%	20.95%	20.79%	20.64%	20.49%	20.35%	20.25%	20.15%	20.05%
Private	13.87%	13.75%	13.63%	13.51%	13.41%	13.31%	13.22%	13.13%	13.06%	13.00%	12.93%
Public	7.64%	7.57%	7.50%	7.44%	7.38%	7.33%	7.28%	7.23%	7.19%	7.15%	7.12%
Gross Domestic Savings	18.7%	18.8%	19.0%	19.1%	19.1%	19.1%	19.0%	19.0%	19.1%	19.1%	19.3%
Total Savings	21.5%	21.3%	21.1%	20.9%	20.8%	20.6%	20.5%	20.4%	20.3%	20.1%	20.0%
Foreign Savings	3.8%	3.4%	3.0%	2.6%	2.4%	2.2%	2.0%	1.8%	1.6%	1.4%	1.0%
Gross National Savings	17.7%	17.9%	18.2%	18.4%	18.4%	18.5%	18.5%	18.6%	18.7%	18.8%	19.0%
... Rest of the Econ.Savings	9.1%	9.4%	9.7%	10.0%	10.1%	10.3%	10.4%	10.6%	10.8%	10.9%	11.2%
... Government Savings	8.6%	8.5%	8.5%	8.4%	8.3%	8.2%	8.1%	8.0%	7.9%	7.9%	7.8%
VALUE ADDED											
Growth rates											
GDP at factor costs	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:											
GDP at factor costs	97.1%	97.2%	97.3%	97.4%	97.5%	97.6%	97.7%	97.8%	97.8%	97.9%	97.9%
Agriculture	46.1%	45.8%	45.6%	45.3%	45.0%	44.8%	44.5%	44.3%	44.0%	43.8%	43.6%
Industry	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%
o.w. Manufacturing	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%
Electricity	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.6%	1.6%
Services	28.4%	28.8%	29.2%	29.5%	29.9%	30.2%	30.5%	30.9%	31.1%	31.4%	31.7%
PRICES											
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629



**Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)**

Lao PDR: Key Economic Indicators	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
						Projected					
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.37	1.35	1.33	1.31	1.29	1.27	1.25	1.23	1.21	1.19	1.17
Real Exchange Rate Index (IMF=US\$/Kip)	0.73	0.74	0.75	0.77	0.78	0.79	0.80	0.81	0.83	0.84	0.85
Terms of Trade	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	3.9%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.0%
Investment Deflator Growth	3.0%	3.0%	3.1%	3.1%	3.2%	3.2%	3.3%	3.3%	3.5%	3.5%	3.5%
<b>PUBLIC SECTOR</b>											
Direct Taxes/GDP	5.8%	5.8%	5.8%	5.8%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%
Indirect Taxes/GDP	8.5%	8.3%	8.2%	8.0%	7.9%	7.7%	7.6%	7.5%	7.4%	7.3%	7.2%
o.w. Timber Royalties/GDP	1.6%	1.5%	1.5%	1.4%	1.4%	1.4%	1.3%	1.3%	1.2%	1.2%	1.2%
Total Revenues/GDP	17.3%	17.1%	17.0%	16.8%	16.7%	16.6%	16.5%	16.4%	16.3%	16.2%	16.1%
Interest Payments/GDP	0.6%	0.5%	0.4%	0.4%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%
Government Investment/GDP	7.6%	7.6%	7.5%	7.4%	7.4%	7.3%	7.3%	7.2%	7.2%	7.2%	7.1%
Total Expenditures/GDP	16.3%	16.2%	16.0%	15.9%	15.8%	15.7%	15.7%	15.6%	15.5%	15.5%	15.4%
Government Deficit(-)/GDP	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-3.9%	-3.6%	-3.2%	-2.8%	-2.7%	-2.5%	-2.3%	-2.1%	-2.0%	-1.8%	-1.5%
Foreign Credit flow/GDP	1.4%	1.3%	1.0%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.5%	0.3%
Government Savings/GDP	8.5%	8.3%	8.2%	8.0%	7.9%	7.7%	7.6%	7.5%	7.4%	7.3%	7.2%
Non-Interest Deficit(-)/GDP	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.0%	1.0%	0.9%	0.9%	0.8%
<b>BALANCE OF PAYMENTS</b>											
Export real growth rate (MERCH FOB)	5.7%	2.9%	3.0%	3.1%	3.1%	3.2%	3.2%	3.3%	5.1%	5.2%	5.7%
Export real growth rate (GNFS)	6.0%	4.1%	4.2%	4.2%	4.3%	4.4%	4.4%	4.5%	5.7%	5.7%	6.2%
Import real growth rate (MERCH CIF)	3.6%	3.7%	3.7%	3.7%	4.3%	4.3%	4.4%	4.4%	5.6%	5.6%	5.7%
Import real growth rate (GNFS)	3.6%	3.6%	3.7%	3.7%	4.2%	4.2%	4.2%	4.3%	5.3%	5.3%	5.4%
Gross Reserves (CB only incl Gold) (months imp GFS)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6
As a share of GDP in Kip:											
Net Factor Payments	2.2%	2.0%	1.8%	1.6%	1.5%	1.3%	1.2%	1.1%	1.0%	0.9%	0.8%
Net Transfers	1.2%	1.1%	1.0%	0.9%	0.8%	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%
Current Account Balance	-3.8%	-3.4%	-3.0%	-2.6%	-2.4%	-2.2%	-2.0%	-1.8%	-1.6%	-1.4%	-1.0%
<b>TRADE</b>											
as share of Merchandise imports (in constant prices)											
Food	17.2%	16.7%	16.2%	15.7%	15.1%	14.6%	14.0%	13.5%	12.9%	12.2%	11.6%
Other Consumer Goods	34.1%	34.1%	34.1%	34.1%	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Intermediate Goods	15.4%	15.7%	16.0%	16.3%	16.6%	16.9%	17.2%	17.5%	17.6%	17.7%	17.8%
POL and Other Energy	6.1%	6.2%	6.3%	6.5%	6.6%	6.8%	6.9%	7.0%	7.1%	7.2%	7.2%
Capital Goods	27.1%	27.2%	27.3%	27.4%	27.5%	27.6%	27.7%	27.8%	28.2%	28.7%	29.1%
As Share of Merchandise Exports:											
Commodity 1 - Timber	12.8%	12.2%	11.6%	11.1%	10.5%	10.0%	9.5%	9.1%	8.5%	7.9%	7.3%
Commodity 2 - Electricity	21.9%	22.0%	22.1%	22.2%	22.3%	22.4%	22.4%	22.5%	22.9%	23.3%	23.7%
Commodity 3 - Agr.& For.Prod.	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.1%	4.1%	4.0%	4.0%	3.9%
Commodity 4 - Coffee	6.5%	6.4%	6.4%	6.3%	6.3%	6.2%	6.2%	6.1%	6.0%	6.0%	5.9%
Manufacturing	42.9%	43.0%	43.1%	43.3%	43.4%	43.4%	43.5%	43.6%	43.8%	43.9%	44.1%
Garments	24.4%	24.4%	24.4%	24.3%	24.3%	24.2%	24.1%	24.1%	24.1%	24.1%	24.2%
Motorcycles	1.9%	1.8%	1.7%	1.6%	1.6%	1.5%	1.5%	1.4%	1.3%	1.2%	1.1%
Other Manufacturing	16.6%	16.9%	17.1%	17.3%	17.5%	17.7%	17.9%	18.1%	18.3%	18.6%	18.8%
Other	11.8%	12.1%	12.5%	13.0%	13.4%	13.8%	14.2%	14.6%	14.8%	15.0%	15.2%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)

Lao PDR: Key Economic Indicators	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Mid Year Population (mill)	7.77	7.95	8.14	8.32	8.51	8.71	8.91	9.12	9.33	9.54
<b>Growth Rate of GDP</b>	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	6.3%	6.3%	6.3%	6.4%	6.3%	6.3%	6.5%	6.6%	6.6%	6.6%
Private Consumption	6.2%	6.2%	6.3%	6.4%	6.3%	6.3%	6.6%	6.6%	6.6%	6.7%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rates:</b>										
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>										
Total DOD (US\$M)	4808	4849	4907	4951	4965	4946	4927	4902	4891	4893
Total Debt/GDP	45.1%	41.1%	37.5%	34.2%	30.9%	27.8%	25.0%	22.5%	20.2%	18.3%
Debt Service (US\$M)	226	234	243	252	261	270	280	289	296	297
Debt Service / Total Exports (GFS + Workers Rem.)	7.8%	7.4%	7.1%	6.8%	6.5%	6.2%	5.9%	5.6%	5.3%	4.9%
Debt Service / GDP	2.1%	2.0%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%
<b>Interest Burden (LT+ST+IMF):</b>										
Interest Paid (US\$M)	56.17	57.53	58.88	60.36	61.30	61.38	61.09	60.80	60.66	60.90
Interest Due (US\$M)	56.17	57.53	58.88	60.36	61.30	61.38	61.09	60.80	60.66	60.90
Interest / Total Exports (GFS & Workers rem.)	1.9%	1.8%	1.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.0%
Interest / GDP	0.5%	0.5%	0.5%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%
<b>Goods Market</b>										
As a Share of GDP in Kip (in current prices):										
<b>Resource Balance</b>	-0.5%	-0.2%	0.0%	0.1%	0.2%	0.4%	0.4%	0.4%	0.3%	0.2%
Exports	26.7%	26.3%	25.8%	25.3%	24.8%	24.3%	23.8%	23.4%	22.9%	22.4%
Imports	27.2%	26.5%	25.8%	25.2%	24.5%	23.9%	23.4%	23.0%	22.6%	22.2%
<b>Consumption</b>	80.54%	80.39%	80.30%	80.28%	80.24%	80.19%	80.30%	80.42%	80.59%	80.77%
Private	73.17%	73.02%	72.92%	72.90%	72.84%	72.79%	72.90%	73.01%	73.17%	73.34%
Public	7.37%	7.37%	7.38%	7.38%	7.39%	7.40%	7.40%	7.41%	7.42%	7.42%
<b>Investment</b>	19.95%	19.84%	19.74%	19.64%	19.53%	19.43%	19.33%	19.23%	19.13%	19.03%
Private	12.86%	12.80%	12.73%	12.67%	12.60%	12.53%	12.46%	12.40%	12.34%	12.28%
Public	7.08%	7.04%	7.01%	6.97%	6.93%	6.90%	6.86%	6.83%	6.79%	6.76%
<b>Gross Domestic Savings</b>	19.5%	19.6%	19.7%	19.7%	19.8%	19.8%	19.7%	19.6%	19.4%	19.2%
Total Savings	19.9%	19.8%	19.7%	19.6%	19.5%	19.4%	19.3%	19.2%	19.1%	19.0%
Foreign Savings	0.7%	0.5%	0.2%	0.1%	-0.1%	-0.3%	-0.4%	-0.4%	-0.3%	-0.3%
Gross National Savings	19.2%	19.4%	19.5%	19.6%	19.7%	19.8%	19.7%	19.6%	19.5%	19.3%
... Rest of the Econ.Savings	11.5%	11.7%	11.9%	12.0%	12.2%	12.3%	12.3%	12.3%	12.2%	12.1%
... Government Savings	7.7%	7.7%	7.6%	7.6%	7.5%	7.4%	7.4%	7.3%	7.3%	7.2%
<b>VALUE ADDED</b>										
<b>Growth rates</b>										
<b>GDP at factor costs</b>	6.6%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>										
<b>GDP at factor costs</b>	98.0%	98.0%	98.1%	98.1%	98.2%	98.2%	98.2%	98.3%	98.3%	98.3%
Agriculture	43.3%	43.1%	42.8%	42.6%	42.4%	42.1%	41.9%	41.7%	41.4%	41.2%
Industry	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%	21.1%
o.w. Manufacturing	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%
Electricity	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
Services	32.0%	32.3%	32.6%	32.8%	33.1%	33.4%	33.6%	33.9%	34.1%	34.4%
<b>PRICES</b>										
<b>Nominal Exchange Rate (p.a.) (Kip/US\$)</b>	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629

**Lao PDR: Key Economic Indicators (Base Case, No NT2 Project)**

Lao PDR: Key Economic Indicators	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.15	1.14	1.12	1.10	1.08	1.07	1.05	1.03	1.02	1.00
Real Exchange Rate Index (IMF=US\$/Kip)	0.87	0.88	0.89	0.91	0.92	0.94	0.95	0.97	0.98	1.00
Terms of Trade	1.02	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.04
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	4.0%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Investment Deflator Growth	3.5%	3.5%	3.5%	3.5%	3.4%	3.4%	3.5%	3.5%	3.5%	3.5%
<b>PUBLIC SECTOR</b>										
Direct Taxes/GDP	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%
Indirect Taxes/GDP	7.1%	7.1%	7.0%	6.9%	6.8%	6.8%	6.7%	6.6%	6.6%	6.5%
o.w. Timber Royalties/GDP	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%
Total Revenues/GDP	16.0%	15.9%	15.9%	15.8%	15.7%	15.7%	15.6%	15.5%	15.5%	15.4%
Interest Payments/GDP	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Government Investment/GDP	7.1%	7.0%	7.0%	7.0%	6.9%	6.9%	6.9%	6.8%	6.8%	6.8%
Total Expenditures/GDP	15.4%	15.3%	15.3%	15.2%	15.2%	15.1%	15.1%	15.0%	15.0%	15.0%
Government Deficit(-)/GDP	0.7%	0.6%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-1.2%	-1.0%	-1.0%	-0.9%	-0.6%	-0.4%	-0.4%	-0.4%	-0.4%	-0.5%
Foreign Credit flow/GDP	0.1%	-0.1%	0.0%	-0.1%	-0.2%	-0.4%	-0.4%	-0.4%	-0.3%	-0.2%
Government Savings/GDP	7.1%	7.1%	7.0%	6.9%	6.8%	6.8%	6.7%	6.6%	6.6%	6.5%
Non-Interest Deficit(-)/GDP	0.8%	0.7%	0.7%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%
<b>BALANCE OF PAYMENTS</b>										
Export real growth rate (MERCH FOB)	5.8%	5.8%	5.6%	5.5%	5.5%	5.6%	5.6%	5.6%	5.5%	5.5%
Export real growth rate (GNFS)	6.2%	6.3%	6.2%	5.9%	5.9%	6.0%	6.0%	6.0%	5.9%	5.9%
Import real growth rate (MERCH CIF)	5.7%	5.7%	5.8%	5.8%	5.6%	5.7%	6.5%	6.5%	6.8%	6.8%
Import real growth rate (GNFS)	5.4%	5.4%	5.5%	5.5%	5.4%	5.4%	6.1%	6.2%	6.4%	6.4%
Gross Reserves (CB only incl Gold) (months imp GFS)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.4
<b>As a share of GDP in Kip:</b>										
Net Factor Payments	0.7%	0.6%	0.5%	0.5%	0.4%	0.3%	0.3%	0.2%	0.2%	0.1%
Net Transfers	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
Current Account Balance	-0.7%	-0.5%	-0.2%	-0.1%	0.1%	0.3%	0.4%	0.4%	0.3%	0.3%
<b>TRADE</b>										
<b>as share of Merchandise imports (in constant prices)</b>										
Food	11.1%	10.5%	10.0%	9.5%	9.0%	8.6%	8.1%	7.7%	7.2%	6.8%
Other Consumer Goods	34.2%	34.2%	34.2%	34.1%	34.1%	34.1%	34.3%	34.5%	34.5%	34.6%
Intermediate Goods	17.9%	18.0%	18.0%	18.1%	18.3%	18.5%	18.8%	19.1%	19.4%	19.6%
POL and Other Energy	7.3%	7.3%	7.4%	7.4%	7.5%	7.7%	7.8%	8.0%	8.1%	8.2%
Capital Goods	29.6%	30.0%	30.4%	30.9%	31.0%	31.1%	30.9%	30.8%	30.8%	30.7%
<b>As Share of Merchandise Exports:</b>										
Commodity 1 - Timber	6.8%	6.3%	5.9%	5.4%	5.1%	4.7%	4.4%	4.1%	3.8%	3.5%
Commodity 2 - Electricity	24.1%	24.4%	24.8%	25.1%	25.5%	25.8%	26.1%	26.5%	26.7%	26.9%
Commodity 3 - Agr.& For.Prod.	3.8%	3.7%	3.6%	3.5%	3.5%	3.4%	3.3%	3.2%	3.2%	3.1%
Commodity 4 - Coffee	5.8%	5.7%	5.6%	5.6%	5.5%	5.4%	5.3%	5.3%	5.2%	5.1%
Manufacturing	44.3%	44.4%	44.5%	44.6%	44.6%	44.7%	44.7%	44.7%	44.8%	44.9%
Garments	24.2%	24.2%	24.2%	24.1%	24.1%	24.1%	24.0%	23.9%	23.9%	23.9%
Motorcycles	1.1%	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%
Other Manufacturing	19.0%	19.2%	19.4%	19.5%	19.7%	19.8%	20.0%	20.1%	20.3%	20.4%
Other	15.3%	15.5%	15.7%	15.8%	15.9%	16.0%	16.1%	16.2%	16.4%	16.5%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

**Lao PDR: Net Incremental Revenues (Most Likely Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Net Incremental Revenues to GOL</b>	0.0	0.0	-0.6	-3.0	-4.3	-5.7	-9.0	21.7	22.7	23.7
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0	15.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.3	2.1	2.6	2.8	3.9	4.4	4.6	4.6
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	20.4	22.5
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0	0.3	0.9	1.7	2.9	5.1	7.0	8.0	9.2
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.2	2.3	3.8
Interest	0.0	0.0	0.3	0.9	1.7	2.9	4.7	5.9	5.7	5.4
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-3.5%	-3.0%
Government Expenditure (% of GDP)	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%	21.2%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.0%	-6.3%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	28.6	30.1	42.4	56.4	65.6	73.2	86.7	96.6	102.3	105.4
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.1%	8.5%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	0.0%	0.0%	-0.2%	-0.7%	-1.1%	-1.3%	-2.0%	4.2%	4.3%	4.3%
GOL Expenditures	0.0%	0.0%	-0.1%	-0.5%	-0.8%	-1.0%	-1.6%	3.5%	3.6%	3.7%
Total Investment	0.0%	0.0%	-0.1%	-0.6%	-0.8%	-0.9%	-1.4%	3.1%	3.0%	2.9%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.4%	0.8%	0.8%	0.8%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	1848.0	1977.4	2115.8	2274.5	2433.7	2604.0	2786.3	2984.1	3196.0	3403.7

**Lao PDR: Net Incremental Revenues (Most Likely Scenario)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Net Incremental Revenues to GOL</b>	17.7	22.2	31.4	34.7	56.9	54.0	60.1	60.2	86.9	86.1
Royalty Fees (+)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Resource Levies (+)	0.0	0.0	8.0	8.6	9.1	9.2	9.4	9.5	9.6	27.9
Expenditures Not Covered by NT2 Budget (-)	4.6	4.7	4.8	5.0	5.1	5.3	5.5	5.6	5.8	6.0
Equity Share from Income from Sales of Electricity (+)	18.4	24.0	24.7	27.1	48.0	44.0	49.0	47.4	71.6	51.1
Debt Service of GOL Loan for Financing Its Equity (-)	11.1	12.0	11.4	10.9	10.0	8.9	7.8	6.1	3.5	1.9
Amortization	6.0	7.5	7.6	7.8	7.6	7.1	6.5	5.3	3.1	1.6
Interest	5.1	4.5	3.8	3.2	2.5	1.8	1.2	0.8	0.4	0.3
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-2.8%	-2.8%	-2.6%	-2.1%	-2.1%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%
Government Expenditure (% of GDP)	21.0%	20.8%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-4.7%	-4.3%	-3.2%	-2.2%	-1.1%	-0.8%	-0.2%	0.2%	0.6%	0.1%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	115.9	127.0	136.2	144.8	152.3	162.1	175.0	186.6	195.8	203.6
Debt Service / Total Exports (GFS + Workers Rem.)	8.6%	8.6%	8.6%	8.4%	8.2%	8.1%	8.1%	8.0%	7.8%	7.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	3.0%	3.5%	4.4%	4.3%	6.4%	5.5%	5.6%	5.0%	6.5%	5.8%
GOL Expenditures	2.6%	3.0%	3.8%	3.9%	5.8%	5.0%	5.0%	4.6%	6.0%	5.4%
Total Investment	2.0%	2.3%	3.0%	3.0%	4.5%	3.9%	4.0%	3.6%	4.8%	4.3%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.5%	0.6%	0.8%	0.8%	1.2%	1.0%	1.0%	0.9%	1.2%	1.1%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	3625.0	3860.6	4111.6	4378.8	4663.4	4966.6	5289.4	5633.2	5999.3	6389.3

Lao PDR: Net Incremental Revenues (Most Likely Scenario)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Net Incremental Revenues to GOL</b>	85.0	84.0	101.9	100.8	99.5	114.0	112.3	134.2	132.3	130.4
Royalty Fees (+)	15.0	15.0	44.9	44.9	44.9	44.9	44.9	89.7	89.7	89.7
Resource Levies (+)	27.5	27.1	22.3	21.8	21.4	42.0	41.0	26.6	25.6	24.5
Expenditures Not Covered by NT2 Budget (-)	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.8	8.0
Equity Share from Income from Sales of Electricity (+)	50.6	50.0	43.1	42.6	42.0	36.1	35.6	27.1	26.5	25.9
Debt Service of GOL Loan for Financing Its Equity (-)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7
Amortization	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Interest	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-0.9%	-0.9%	-0.7%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%
Government Expenditure (% of GDP)	19.8%	19.7%	19.6%	19.5%	19.5%	19.4%	19.3%	19.2%	19.2%	19.1%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	0.0%	0.0%	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	212.3	223.3	234.6	244.8	252.2	261.7	271.1	276.0	281.2	286.5
Debt Service / Total Exports (GFS + Workers Rem.)	7.5%	7.3%	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.4%	5.1%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	5.0%	4.5%	4.9%	4.4%	4.0%	4.1%	3.6%	3.9%	3.5%	3.1%
GOL Expenditures	4.8%	4.3%	4.7%	4.2%	3.8%	3.9%	3.5%	3.8%	3.4%	3.0%
Total Investment	3.9%	3.5%	3.9%	3.5%	3.1%	3.2%	2.9%	3.2%	2.8%	2.5%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.9%	0.8%	0.9%	0.8%	0.7%	0.8%	0.7%	0.7%	0.7%	0.6%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	6804.6	7246.9	7718.0	8219.6	8753.9	9322.9	9928.9	10574.3	11261.6	11993.6

Lao PDR: Net Incremental Revenues (Most Likely Scenario)

	2026	2027
<b>Net Incremental Revenues to GOL</b>	128.5	126.4
Royalty Fees (+)	89.7	89.7
Resource Levies (+)	23.4	22.3
Expenditures Not Covered by NT2 Budget (-)	8.3	8.5
Equity Share from Income from Sales of Electricity (+)	25.3	24.6
Debt Service of GOL Loan for Financing Its Equity (-)	1.7	1.7
Amortization	1.6	1.6
Interest	0.1	0.1
<b>Government Finance</b>		
Government Surplus/Deficit (% of GDP)	-0.7%	-0.2%
Government Expenditure (% of GDP)	19.1%	19.0%
<b>Balance of Payments</b>		
Current Account Surplus/Deficit (% of GDP)	0.2%	0.2%
<b>Debt and Debt Service Ratios</b>		
Total Debt Service (Mn USD)	289.8	290.3
Debt Service / Total Exports (GFS + Workers Rem.)	4.8%	4.4%
<b>Net Incremental Revenues to GOL as Percentage of:</b>		
GOL Revenues	2.8%	2.4%
GOL Expenditures	2.7%	2.4%
Total Investment	2.3%	2.0%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.5%	0.5%
<b>Memo Item:</b>		
GDP at mp (Mln 1996 USD)	12773.2	13603.4

**Lao PDR: Key Economic Indicators (Most Likely Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	<i>Estimates</i>										
Mid Year Population (mill)	4.69	4.80	4.92	5.04	5.16	5.28	5.40	5.53	5.65	5.78	5.92
<b>Growth Rate of GDP</b>	6.90%	7.00%	7.00%	7.50%	7.00%	7.00%	7.00%	7.10%	7.10%	6.50%	6.50%
Consumption Growth	6.4%	5.0%	4.2%	2.6%	4.1%	4.7%	5.6%	5.8%	5.1%	4.6%	4.5%
Private Consumption	5.7%	2.7%	4.3%	2.5%	4.6%	5.1%	6.1%	3.2%	4.9%	4.7%	4.2%
Investment Growth (GDI)	10.0%	11.0%	25.0%	15.0%	10.0%	6.7%	6.7%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>											
Gross Domestic Product (GDP)	4.4%	4.5%	4.5%	5.0%	4.5%	4.5%	4.6%	4.7%	4.7%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>											
Total DOD (US\$M)	2262	2403	2584	2758	2897	3015	3203	3313	3416	3465	3601
Total Debt/GDP	122.4%	126.6%	127.8%	127.5%	126.4%	124.1%	124.4%	121.3%	117.9%	113.4%	111.7%
Debt Service (US\$M)	29	30	42	56	66	73	87	97	102	105	116
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.1%	8.5%	8.6%
Debt Service / GDP	1.5%	1.6%	2.1%	2.6%	2.9%	3.0%	3.4%	3.5%	3.5%	3.5%	3.6%
<b>Interest Burden (LT+ST+IMF):</b>											
Interest Paid (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	20.62	25.46	28.64	28.99	30.89
Interest Due (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	20.62	25.46	28.64	28.99	30.89
Interest / Total Exports (GFS & Workers rem.)	1.4%	1.2%	1.4%	1.5%	1.7%	1.9%	2.2%	2.5%	2.5%	2.3%	2.3%
Interest / GDP	0.4%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	0.9%	1.0%
<b>Goods Market</b>											
As a Share of GDP in Kip (in current prices):											
<b>Resource Balance</b>	-18.2%	-17.6%	-17.9%	-14.8%	-13.0%	-11.0%	-10.0%	-8.9%	-7.0%	-5.3%	-3.4%
Exports	25.7%	26.9%	27.5%	30.8%	32.7%	34.4%	35.0%	36.0%	37.5%	38.9%	40.4%
Imports	43.9%	44.5%	45.4%	45.6%	45.7%	45.4%	45.0%	44.9%	44.5%	44.3%	43.8%
<b>Consumption</b>	100.00%	99.24%	96.19%	91.15%	88.11%	85.79%	84.38%	82.98%	80.76%	78.62%	76.30%
Private	91.51%	88.84%	86.14%	81.57%	79.19%	77.41%	76.52%	73.39%	71.34%	69.48%	67.26%
Public	8.49%	10.40%	10.05%	9.58%	8.92%	8.38%	7.87%	9.59%	9.42%	9.14%	9.04%
<b>Investment</b>	18.19%	18.34%	21.75%	23.68%	24.85%	25.23%	25.62%	25.93%	26.23%	26.68%	27.08%
Private	5.90%	5.89%	8.08%	9.13%	11.83%	12.41%	14.18%	15.14%	15.83%	16.40%	16.94%
Public	12.28%	12.45%	13.68%	14.55%	13.02%	12.82%	11.44%	10.79%	10.40%	10.28%	10.14%
<b>Gross Domestic Savings</b>	0.0%	0.8%	3.8%	8.9%	11.9%	14.2%	15.6%	17.0%	19.2%	21.4%	23.7%
Total Savings	18.2%	18.3%	21.8%	23.7%	24.8%	25.2%	25.6%	25.9%	26.2%	26.7%	27.1%
Foreign Savings	16.2%	15.7%	16.9%	14.2%	12.8%	11.3%	10.7%	9.1%	8.0%	6.3%	4.7%
Gross National Savings	2.0%	2.6%	4.9%	9.4%	12.1%	13.9%	14.9%	16.8%	18.2%	20.3%	22.4%
... Rest of the Econ.Savings	-2.4%	-2.4%	-1.3%	2.5%	5.6%	6.7%	7.5%	9.7%	11.3%	13.1%	15.0%
... Government Savings	4.3%	5.0%	6.2%	7.0%	6.5%	7.2%	7.4%	7.1%	6.9%	7.3%	7.3%
<b>VALUE ADDED</b>											
<b>Growth rates</b>											
GDP at factor costs	5.5%	6.9%	6.9%	7.5%	7.0%	7.0%	7.1%	7.1%	7.1%	6.5%	6.5%
Agriculture	2.3%	5.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	12.0%	10.0%	8.0%	13.0%	13.0%	10.0%	10.0%	10.0%	10.0%	8.0%	8.0%
o.w. Manufacturing	12.0%	10.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Electricity and Water	15.0%	7.0%	7.0%	7.5%	7.5%	7.5%	7.5%	85.0%	20.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:											
GDP at factor costs	96.8%	96.8%	96.7%	96.6%	96.6%	96.6%	96.7%	96.7%	96.7%	96.7%	96.7%
Agriculture	50.5%	49.2%	48.9%	47.9%	47.5%	47.0%	46.5%	46.0%	45.5%	45.2%	45.0%
Industry	18.3%	18.8%	18.9%	19.9%	21.0%	21.6%	22.2%	22.8%	23.5%	23.8%	24.1%
o.w. Manufacturing	14.5%	14.9%	15.0%	15.1%	15.3%	15.4%	15.5%	15.7%	15.8%	16.0%	16.3%
Electricity	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.5%	2.5%	2.8%	2.8%	2.8%
Services	26.6%	27.3%	27.4%	27.3%	26.7%	26.6%	26.5%	25.3%	24.9%	24.9%	24.8%



Lao PDR: Key Economic Indicators (Most Likely Scenario)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>Estimates</i>											
<b>PRICES</b>											
Nominal Exchange Rate (p.a.) (Kip/US\$)	933	1050	1103	1158	1216	1276	1340	1407	1477	1551	1621
Devaluation Rate (p.a.)	14.1%	12.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Nominal Exchange Rate (e.o.p.)	992	1076	1130	1187	1246	1308	1374	1442	1514	1590	1629
Devaluation Rate (e.o.p.)	7.2%	8.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	2.4%
Real Exchange Rate Index (Kip/US\$)	0.98	1.04	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.3
Real Exchange Rate Index (IMF=US\$/Kip)	1.02	0.97	0.94	0.91	0.88	0.85	0.82	0.80	0.77	0.74	0.72
Terms of Trade	0.97	0.98	0.99	1.01	1.01	1.02	1.02	1.01	1.01	1.01	1.01
Inflation (e.o.p.)	10.9%	6.3%	4.5%	4.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	13.6%	9.2%	4.0%	3.8%	3.3%	3.5%	3.7%	3.5%	3.2%	3.0%	2.9%
Investment Deflator Growth	19.5%	5.0%	6.1%	6.3%	6.2%	5.9%	5.9%	5.8%	5.8%	5.8%	5.6%
<b>PUBLIC SECTOR</b>											
Direct Taxes/GDP	3.9%	4.8%	5.1%	5.3%	5.3%	5.3%	5.3%	5.8%	5.8%	5.8%	5.8%
Indirect Taxes/GDP	8.2%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	9.4%	9.4%	9.3%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	2.1%	2.1%	2.0%	2.0%	2.0%	1.6%	1.4%	1.6%	1.6%	1.5%	1.5%
Total Revenues/GDP	14.5%	17.4%	18.5%	18.7%	17.5%	17.6%	17.4%	18.8%	18.2%	18.2%	18.1%
Interest Payments/GDP	0.7%	1.0%	1.2%	1.2%	1.1%	1.0%	1.1%	1.0%	0.9%	0.8%	0.8%
Government Investment/GDP	12.3%	12.4%	13.7%	14.5%	13.0%	12.8%	11.4%	10.8%	10.4%	10.3%	10.1%
Total Expenditures/GDP	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%	21.2%	21.0%
Government Deficit(-)/GDP	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-3.5%	-3.0%	-2.8%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-4.1%	-3.8%	-4.2%	-4.1%	-2.1%	-1.7%	-5.2%	-2.7%	-2.1%	-0.4%	0.3%
Foreign Credit flow/GDP	7.7%	6.9%	7.3%	7.6%	5.0%	4.0%	6.3%	3.7%	3.3%	1.4%	2.6%
Government Savings/GDP	-2.4%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	9.4%	9.4%	9.3%
Non-Interest Deficit(-)/GDP	-7.3%	-6.5%	-6.2%	-6.4%	-5.4%	-4.6%	-3.0%	-2.6%	-2.6%	-2.2%	-2.0%
<b>BALANCE OF PAYMENTS</b>											
Export real growth rate (MERCH FOB)	5.9%	3.2%	5.9%	21.1%	10.3%	9.1%	4.9%	6.6%	8.1%	7.2%	7.0%
Export real growth rate (GNFS)	10.1%	6.0%	6.3%	16.3%	9.3%	8.5%	5.6%	6.7%	7.8%	7.0%	6.8%
Import real growth rate (MERCH CIF)	16.5%	3.8%	8.9%	6.3%	4.4%	3.1%	3.1%	4.1%	3.0%	2.9%	2.3%
Import real growth rate (GNFS)	8.7%	3.4%	7.7%	5.6%	3.9%	2.8%	2.6%	3.5%	2.5%	2.5%	1.5%
Gross Reserves (CB only incl Gold) (months imp GFS)	2.4	2.4	2.4	2.4	2.4	2.5	2.8	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	2.8	2.9	2.9	2.9	2.9	3.1	3.5	3.7	3.7	3.7	3.7
<b>As a share of GDP in Kip:</b>											
Net Factor Payments	0.4%	0.6%	1.4%	1.8%	2.2%	2.7%	3.0%	2.6%	2.6%	2.5%	2.6%
Net Transfers	2.4%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.3%	1.6%	1.4%	1.3%
Current Account Balance	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.0%	-6.3%	-4.7%
<b>TRADE</b>											
<b>as share of Merchandise imports (in constant prices)</b>											
Food	20.2%	20.5%	18.9%	18.1%	17.5%	17.5%	17.4%	17.6%	17.0%	16.3%	15.1%
Other Consumer Goods	30.0%	31.0%	29.7%	29.0%	28.6%	28.4%	28.2%	27.7%	27.6%	27.4%	27.1%
Intermediate Goods	15.5%	14.4%	13.5%	12.8%	12.4%	12.1%	11.8%	11.7%	11.9%	12.0%	12.1%
POL and Other Energy	6.1%	5.8%	5.3%	4.9%	4.7%	4.6%	4.6%	4.5%	4.6%	4.5%	4.6%
Capital Goods	28.1%	28.3%	32.7%	35.2%	36.8%	37.4%	38.1%	38.4%	39.0%	39.7%	40.1%
<b>As Share of Merchandise Exports:</b>											
Commodity 1 - Timber	38.0%	36.6%	34.6%	28.5%	26.0%	24.0%	18.6%	16.3%	14.8%	13.6%	12.4%
Commodity 2 - Electricity	8.4%	8.4%	7.9%	19.5%	22.3%	23.6%	26.0%	26.3%	26.2%	26.2%	26.1%
Commodity 3 - Agr. & For. Prod.	3.9%	3.9%	4.1%	3.7%	3.6%	3.5%	3.8%	3.8%	3.8%	3.8%	3.8%
Commodity 4 - Coffee	6.7%	6.4%	6.4%	5.8%	5.6%	5.5%	5.8%	6.0%	6.1%	6.2%	6.1%
Manufacturing	34.9%	36.5%	38.3%	34.6%	34.8%	35.4%	37.3%	38.6%	39.7%	40.5%	41.0%
Garments	20.4%	21.5%	22.7%	20.9%	21.3%	21.8%	23.0%	23.7%	24.4%	24.5%	24.4%
Motorcycles	4.7%	4.5%	4.2%	3.3%	2.9%	2.7%	2.6%	2.4%	2.2%	2.1%	2.1%
Other Manufacturing	9.8%	10.5%	11.4%	10.4%	10.6%	10.9%	11.7%	12.4%	13.1%	13.8%	14.1%
Other	8.1%	8.3%	8.8%	7.9%	7.8%	8.0%	8.6%	9.0%	9.3%	9.8%	10.2%
Growth in Broad Monetary Aggregates	21.4%	16.4%	12.6%	13.1%	12.1%	13.7%	15.4%	15.7%	11.4%	10.8%	10.1%

Lao PDR: Key Economic Indicators (Most Likely Scenario)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
Mid Year Population (mill)	6.05	6.19	6.34	6.48	6.63	6.78	6.94	7.10	7.26	7.43	7.60
Growth Rate of GDP	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	5.2%	5.7%	5.8%	6.0%	6.2%	6.2%	6.2%	6.6%	6.9%	6.7%	6.7%
Private Consumption	5.0%	5.5%	5.7%	6.0%	6.2%	6.2%	6.2%	6.6%	7.0%	6.7%	6.7%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Real Per Capita Growth Rate:											
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Debt and Debt Service (LT+ST+HMF):											
Total DOD (US\$M)	3737	3847	3930	3985	4165	4202	4227	4242	4249	4248	4278
Total Debt/GDP	104.7%	97.3%	89.7%	82.1%	77.5%	70.6%	64.1%	58.1%	52.5%	47.4%	43.1%
Debt Service (US\$M)	127	136	145	152	162	175	187	196	204	212	223
Debt Service / Total Exports (GFS + Workers Rem.)	8.6%	8.6%	8.4%	8.2%	8.1%	8.1%	8.0%	7.8%	7.7%	7.5%	7.3%
Debt Service / GDP	3.6%	3.4%	3.3%	3.1%	3.0%	2.9%	2.8%	2.7%	2.5%	2.4%	2.3%
Interest Burden (LT+ST+HMF):											
Interest Paid (US\$M)	33.33	35.36	36.68	37.25	39.42	41.51	41.44	41.22	40.93	40.59	40.70
Interest Due (US\$M)	33.33	35.36	36.68	37.25	39.42	41.51	41.44	41.22	40.93	40.59	40.70
Interest / Total Exports (GFS & Workers rem.)	2.3%	2.2%	2.1%	2.0%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%
Interest / GDP	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%	0.4%
Goods Market											
As a Share of GDP in Kip (in current prices):											
Resource Balance	-2.0%	-1.0%	-0.3%	0.2%	0.6%	0.9%	1.1%	1.1%	0.7%	0.6%	0.5%
Exports	39.8%	38.8%	37.9%	36.8%	35.8%	34.8%	33.9%	32.6%	31.4%	30.5%	29.6%
Imports	41.7%	39.8%	38.2%	36.6%	35.2%	34.0%	32.7%	31.5%	30.7%	29.9%	29.1%
Consumption	75.20%	74.60%	74.14%	73.92%	73.87%	73.84%	73.81%	74.11%	74.66%	75.01%	75.34%
Private	66.18%	65.58%	65.12%	64.88%	64.81%	64.76%	64.71%	64.98%	65.50%	65.83%	66.14%
Public	9.02%	9.02%	9.03%	9.04%	9.06%	9.08%	9.10%	9.13%	9.16%	9.18%	9.20%
Investment	26.75%	26.43%	26.12%	25.84%	25.56%	25.30%	25.06%	24.82%	24.60%	24.39%	24.19%
Private	16.73%	16.53%	16.34%	16.16%	15.99%	15.83%	15.68%	15.53%	15.39%	15.26%	15.14%
Public	10.01%	9.89%	9.78%	9.67%	9.57%	9.47%	9.38%	9.29%	9.21%	9.13%	9.06%
Gross Domestic Savings	24.8%	25.4%	25.9%	26.1%	26.1%	26.2%	26.2%	25.9%	25.3%	25.0%	24.7%
Total Savings	26.7%	26.4%	26.1%	25.8%	25.6%	25.3%	25.1%	24.8%	24.6%	24.4%	24.2%
Foreign Savings	4.3%	3.2%	2.2%	1.1%	0.8%	0.2%	-0.2%	-0.6%	-0.1%	0.0%	0.0%
Gross National Savings	22.5%	23.2%	23.9%	24.7%	24.8%	25.1%	25.3%	25.4%	24.7%	24.4%	24.2%
... Rest of the Econ.Savings	15.3%	16.0%	16.2%	17.2%	17.4%	17.8%	17.5%	17.8%	16.9%	16.2%	16.0%
... Government Savings	7.2%	7.3%	7.6%	7.5%	7.4%	7.3%	7.7%	7.6%	7.8%	8.2%	8.1%
VALUE ADDED											
Growth rates											
GDP at factor costs	6.7%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:											
GDP at factor costs	96.8%	97.0%	97.1%	97.2%	97.3%	97.4%	97.5%	97.6%	97.7%	97.7%	97.8%
Agriculture	44.7%	44.5%	44.2%	44.0%	43.7%	43.5%	43.2%	43.0%	42.7%	42.5%	42.3%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	3.0%	3.0%	3.0%	3.0%
Services	25.2%	25.5%	25.9%	26.2%	26.6%	26.9%	27.2%	27.5%	27.8%	28.1%	28.4%

Lao PDR: Key Economic Indicators (Most Likely Scenario)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
PRICES											
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.37	1.35	1.33	1.31	1.29	1.27	1.25	1.23	1.21	1.19	1.17
Real Exchange Rate Index (IMF=US\$/Kip)	0.73	0.74	0.75	0.77	0.78	0.79	0.80	0.81	0.83	0.84	0.85
Terms of Trade	1.01	1.02	1.02	1.02	1.02	1.02	1.03	1.03	1.03	1.03	1.04
Inflation (e.a.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	3.8%	4.0%	4.1%	4.2%	4.2%	4.2%	4.2%	4.3%	4.4%	4.3%	4.3%
Investment Deflator Growth	2.7%	2.8%	2.8%	2.9%	2.9%	2.9%	3.0%	3.0%	3.1%	3.1%	3.2%
PUBLIC SECTOR											
Direct Taxes/GDP	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.9%	5.9%	5.9%	5.9%	5.9%
Indirect Taxes/GDP	9.2%	9.2%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.9%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.5%	1.7%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.7%	1.7%	1.7%
Total Revenues/GDP	18.0%	18.0%	18.4%	18.2%	18.1%	18.0%	18.4%	18.3%	18.4%	18.8%	18.8%
Interest Payments/GDP	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%
Government Investment/GDP	10.0%	9.9%	9.8%	9.7%	9.6%	9.5%	9.4%	9.3%	9.2%	9.1%	9.1%
Total Expenditures/GDP	20.8%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%	19.8%	19.7%
Government Deficit(-)/GDP	-2.8%	-2.6%	-2.1%	-2.1%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%	-0.9%	-0.5%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.5%	1.2%	1.5%	2.1%	-0.2%	2.4%	2.1%	2.2%	2.0%	1.6%	1.2%
Foreign Credit flow/GDP	2.3%	1.4%	0.7%	0.0%	2.4%	-0.3%	-0.4%	-0.5%	-0.6%	-0.6%	-0.7%
Government Savings/GDP	9.2%	9.2%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.5%
Non-Interest Deficit(-)/GDP	-2.0%	-1.8%	-1.3%	-1.4%	-1.4%	-1.4%	-1.0%	-1.0%	-0.8%	-0.3%	-0.4%
BALANCE OF PAYMENTS											
Export real growth rate (MERCH FOB)	6.4%	4.9%	5.0%	4.2%	4.3%	4.2%	4.3%	3.8%	3.8%	3.8%	3.8%
Export real growth rate (GNFS)	6.5%	5.4%	5.5%	4.9%	5.0%	5.0%	5.0%	4.0%	4.1%	4.7%	4.8%
Import real growth rate (MERCH CIF)	3.4%	3.7%	3.7%	3.7%	4.3%	4.3%	4.4%	4.4%	5.5%	5.6%	5.7%
Import real growth rate (GNFS)	3.1%	3.3%	3.7%	3.7%	4.2%	4.2%	4.3%	4.3%	5.3%	5.4%	5.5%
Gross Reserves (CB only incl Gold) (months imp GFS)	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	3.7	3.6	3.6	3.6	4.8	4.8	4.8	4.8	4.7	4.7	4.7
As a share of GDP in Kip:											
Net Factor Payments	2.4%	2.2%	2.0%	1.4%	1.4%	1.1%	1.0%	0.5%	0.7%	0.6%	0.6%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-4.3%	-3.2%	-2.2%	-1.1%	-0.8%	-0.2%	0.2%	0.6%	0.1%	0.0%	0.0%
TRADE											
as share of Merchandise imports (in constant prices)											
Food	15.4%	14.9%	14.5%	14.0%	13.5%	13.0%	12.5%	12.1%	11.5%	11.0%	10.5%
Other Consumer Goods	27.3%	27.4%	27.4%	27.4%	27.5%	27.7%	27.9%	28.1%	28.5%	28.9%	29.2%
Intermediate Goods	12.2%	12.4%	12.7%	12.9%	13.2%	13.5%	13.8%	14.2%	14.8%	15.4%	16.1%
POL and Other Energy	4.6%	4.7%	4.8%	4.9%	5.0%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%
Capital Goods	40.4%	40.6%	40.7%	40.8%	40.7%	40.6%	40.5%	40.4%	39.8%	39.3%	38.8%
As Share of Merchandise Exports:											
Commodity 1 - Timber	11.5%	10.7%	10.0%	9.4%	8.8%	8.3%	7.8%	7.4%	7.0%	6.6%	6.2%
Commodity 2 - Electricity	26.4%	26.9%	27.4%	28.1%	28.8%	29.5%	30.2%	31.0%	31.7%	32.5%	33.2%
Commodity 3 - Agr. & For.Prod.	3.8%	3.7%	3.7%	3.6%	3.6%	3.5%	3.4%	3.4%	3.4%	3.3%	3.3%
Commodity 4 - Coffee	6.3%	6.1%	6.0%	5.8%	5.7%	5.6%	5.5%	5.4%	5.3%	5.2%	5.1%
Manufacturing	41.2%	41.6%	41.9%	41.8%	41.6%	41.5%	41.4%	41.1%	40.9%	40.7%	40.4%
Garments	24.6%	24.9%	25.2%	24.8%	24.4%	24.1%	23.7%	23.5%	23.2%	23.0%	22.7%
Motorcycles	1.8%	1.7%	1.6%	1.5%	1.5%	1.4%	1.3%	1.2%	1.2%	1.1%	1.1%
Other Manufacturing	14.8%	15.0%	15.2%	15.3%	15.8%	16.1%	16.4%	16.4%	16.5%	16.6%	16.6%
Other	10.8%	10.9%	11.0%	11.2%	11.4%	11.6%	11.7%	11.7%	11.7%	11.7%	11.7%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

Lao PDR: Key Economic Indicators (Most Likely Scenario)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Mid Year Population (mill)	7.77	7.95	8.14	8.32	8.51	8.71	8.91	9.12	9.33	9.54
<b>Growth Rate of GDP</b>	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	6.7%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Private Consumption	6.8%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>										
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>										
Total DOD (US\$M)	4316	4359	4394	4429	4454	4482	4516	4548	4594	4646
Total Debt/GDP	39.3%	35.8%	32.6%	29.7%	26.9%	24.5%	22.3%	20.2%	18.5%	16.9%
Debt Service (US\$M)	235	245	252	262	271	276	281	286	290	290
Debt Service / Total Exports (GFS + Workers Rem.)	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.4%	5.1%	4.8%	4.4%
Debt Service / GDP	2.1%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%
<b>Interest Burden (LT+ST+IMF):</b>										
Interest Paid (US\$M)	41.50	42.55	43.62	44.68	45.68	46.60	47.75	49.05	50.59	52.43
Interest Due (US\$M)	41.50	42.55	43.62	44.68	45.68	46.60	47.75	49.05	50.59	52.43
Interest / Total Exports (GFS & Workers rem.)	1.3%	1.2%	1.1%	1.1%	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%
Interest / GDP	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
<b>Goods Market</b>										
As a Share of GDP in Kip (in current prices):										
<b>Resource Balance</b>	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%
Exports	28.7%	28.0%	27.3%	26.7%	26.0%	25.4%	24.8%	24.2%	23.7%	23.2%
Imports	28.4%	27.6%	27.0%	26.3%	25.6%	25.0%	24.4%	23.9%	23.3%	22.9%
<b>Consumption</b>	75.67%	75.85%	75.96%	76.13%	76.24%	76.35%	76.51%	76.67%	76.82%	76.97%
Private	66.44%	66.61%	66.70%	66.86%	66.96%	67.05%	67.20%	67.35%	67.49%	67.63%
Public	9.23%	9.24%	9.26%	9.27%	9.28%	9.30%	9.31%	9.32%	9.33%	9.33%
<b>Investment</b>	24.01%	23.83%	23.66%	23.50%	23.35%	23.21%	23.08%	22.96%	22.84%	22.73%
Private	15.02%	14.91%	14.80%	14.70%	14.61%	14.52%	14.44%	14.36%	14.29%	14.22%
Public	8.99%	8.92%	8.86%	8.80%	8.74%	8.69%	8.64%	8.59%	8.55%	8.51%
<b>Gross Domestic Savings</b>	24.3%	24.1%	24.0%	23.9%	23.8%	23.6%	23.5%	23.3%	23.2%	23.0%
Total Savings	24.0%	23.8%	23.7%	23.5%	23.4%	23.2%	23.1%	23.0%	22.8%	22.7%
Foreign Savings	0.2%	0.1%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Gross National Savings	23.8%	23.7%	23.7%	23.5%	23.5%	23.4%	23.3%	23.2%	23.1%	22.9%
... Rest of the Econ.Savings	15.6%	15.5%	15.6%	15.4%	15.4%	15.2%	15.2%	15.2%	15.2%	14.6%
... Government Savings	8.3%	8.2%	8.1%	8.2%	8.1%	8.1%	8.1%	8.0%	7.9%	8.3%
<b>VALUE ADDED</b>										
Growth rates										
<b>GDP at factor costs</b>	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.5%	6.5%	6.5%	6.5%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:										
<b>GDP at factor costs</b>	97.8%	97.9%	97.9%	98.0%	98.0%	98.1%	98.1%	98.1%	98.2%	98.2%
Agriculture	42.0%	41.8%	41.6%	41.3%	41.1%	40.9%	40.7%	40.4%	40.2%	40.0%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	3.0%	3.0%	3.0%	3.0%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Services	28.7%	28.9%	29.2%	29.5%	29.7%	30.0%	30.2%	30.5%	30.7%	31.0%

Lao PDR: Key Economic Indicators (Most Likely Scenario)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PRICES</b>										
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.15	1.14	1.12	1.10	1.08	1.07	1.05	1.03	1.02	1.00
Real Exchange Rate Index (IMR=US\$/Kip)	0.87	0.88	0.89	0.91	0.92	0.94	0.95	0.97	0.98	1.00
Terms of Trade	1.04	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06	1.06
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Consumption Deflator Growth	4.2%	4.2%	4.2%	4.2%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Investment Deflator Growth	3.2%	3.2%	3.3%	3.3%	3.3%	3.4%	3.4%	3.4%	3.5%	3.5%
<b>PUBLIC SECTOR</b>										
Direct Taxes/GDP	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	6.4%
Indirect Taxes/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.9%	1.8%	1.7%	1.8%	1.8%	1.9%	1.8%	1.8%	1.7%	1.6%
Total Revenues/GDP	18.9%	18.8%	18.7%	18.7%	18.6%	18.7%	18.6%	18.5%	18.4%	18.8%
Interest Payments/GDP	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%
Government Investment/GDP	9.0%	8.9%	8.9%	8.8%	8.7%	8.7%	8.6%	8.6%	8.5%	8.5%
Total Expenditures/GDP	19.6%	19.5%	19.5%	19.4%	19.3%	19.2%	19.2%	19.1%	19.1%	19.0%
Government Deficit(-)/GDP	-0.7%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%	-0.7%	-0.2%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.8%	0.8%	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.2%
Foreign Credit flow/GDP	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%
Government Savings/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
Non-Interest Deficit(-)/GDP	-0.2%	-0.2%	-0.3%	-0.2%	-0.2%	-0.1%	-0.2%	-0.2%	-0.3%	0.2%
<b>BALANCE OF PAYMENTS</b>										
Export real growth rate (MERCH FOB)	3.9%	4.3%	4.8%	4.7%	4.7%	4.8%	4.8%	4.9%	4.9%	5.0%
Export real growth rate (GNFS)	4.8%	5.3%	5.6%	5.3%	5.4%	5.4%	5.5%	5.5%	5.5%	5.5%
Import real growth rate (MERCH CIF)	5.7%	5.7%	5.8%	5.8%	5.6%	5.7%	6.0%	6.1%	6.1%	6.2%
Import real growth rate (GNFS)	5.5%	5.5%	5.5%	5.6%	5.4%	5.5%	5.8%	5.9%	5.9%	6.0%
Gross Reserves (CB only incl Gold) (months imp GFS)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	4.7	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5
As a share of GDP in Kip:										
Net Factor Payments	0.5%	0.5%	0.4%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>TRADE</b>										
as share of Merchandise Imports (in constant prices)										
Food	9.9%	9.4%	9.0%	8.5%	8.1%	7.7%	7.3%	6.9%	6.6%	6.2%
Other Consumer Goods	29.6%	30.0%	30.3%	30.7%	31.1%	31.4%	31.8%	32.0%	32.3%	32.6%
Intermediate Goods	16.8%	17.4%	18.0%	18.6%	19.1%	19.5%	20.2%	20.9%	21.5%	22.2%
POL and Other Energy	5.6%	5.7%	5.8%	5.9%	6.0%	6.0%	6.1%	6.2%	6.3%	6.3%
Capital Goods	38.1%	37.5%	36.9%	36.3%	35.8%	35.2%	34.6%	34.0%	33.3%	32.7%
As Share of Merchandise Exports:										
Commodity 1 - Timber	5.8%	5.5%	5.1%	4.8%	4.5%	4.2%	3.9%	3.7%	3.4%	3.2%
Commodity 2 - Electricity	34.0%	34.7%	35.2%	35.8%	36.3%	36.8%	37.3%	37.9%	38.4%	38.8%
Commodity 3 - Agr. & For Prod.	3.2%	3.2%	3.1%	3.1%	3.0%	2.9%	2.9%	2.8%	2.8%	2.7%
Commodity 4 - Coffee	5.0%	4.9%	4.8%	4.7%	4.6%	4.4%	4.3%	4.2%	4.1%	4.0%
Manufacturing	40.1%	39.7%	39.5%	39.3%	39.1%	38.9%	38.7%	38.4%	38.2%	37.9%
Garments	22.5%	22.1%	21.7%	21.3%	20.9%	20.5%	20.0%	19.6%	19.2%	18.8%
Motorcycles	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%
Other Manufacturing	16.7%	16.6%	16.9%	17.2%	17.4%	17.7%	17.9%	18.1%	18.3%	18.6%
Other	11.7%	12.0%	12.2%	12.4%	12.5%	12.7%	12.9%	13.0%	13.2%	13.3%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

Laos PDR: Government Accounts (Most Likely Scenario)

Government Accounts	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Direct Taxes</b>	38,123	66,809	96,424	114,173	133,047	148,031	164,751	183,431	222,847	248,261	274,981	304,645	337,933
<b>Indirect Taxes</b>	104,014	141,678	186,300	209,025	235,522	262,244	294,191	319,842	383,994	402,794	444,031	489,991	532,503
... Import duty taxes	27,225	54,575	64,716	74,479	84,614	94,577	104,857	114,929	128,682	142,569	157,790	173,499	183,706
... Others Indirect Taxes	49,744	50,882	79,727	89,147	100,146	111,442	139,515	155,252	192,140	192,612	213,337	236,292	261,717
... Timber Royalties	27,045	36,221	41,857	45,398	50,762	56,224	49,819	49,662	63,173	67,613	72,905	80,200	87,081
<b>Non-tax Revenue</b>	34,924	41,395	63,782	89,147	100,146	78,010	86,809	96,601	115,284	128,408	142,224	157,528	174,478
... Non-Tax Revenue	34,924	41,395	63,782	89,147	100,146	78,010	86,809	96,601	115,284	128,408	142,224	157,528	174,478
... Transfers from Abroad	0	0	0	0	0	0	0	0	0	0	0	0	0
... Current Official Grants	0	0	0	0	0	0	0	0	0	0	0	0	0
... Profit & Losses of the MS	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Current Revenues</b>	177,061	249,882	346,506	412,345	468,715	488,285	545,750	599,875	722,125	779,463	861,237	952,164	1,044,914
<b>Consumption</b>	113,367	146,412	207,347	223,987	239,842	248,546	259,914	271,380	368,628	403,171	433,323	474,674	524,858
o.w. Wages & Salaries	70,030	72,474	107,820	116,473	124,718	129,244	135,155	141,118	191,687	209,649	225,328	246,830	272,926
o.w. Other Consumption	43,337	73,938	99,526	107,514	115,124	119,302	124,759	130,263	176,942	193,522	207,995	227,843	251,932
<b>Total Transfers &amp; Subsidies</b>	19,747	17,248	19,932	22,638	24,936	28,221	31,454	36,331	40,815	40,980	45,011	49,450	54,194
Transfers to PS/Rest of the Econ	19,747	17,248	19,932	22,638	24,936	28,221	31,454	36,331	40,815	40,980	45,011	49,450	54,194
Transfers to Other NFPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfers to FS	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Subsidies</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
o.w. Export Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0
o.w. Other Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Interest Payment Domestic Debt</b>	6,783	3,779	959	-1,377	-3,243	-5,395	-6,568	-7,598	-11,169	-13,209	-15,045	-15,401	-15,122
o.w. Monetary System's Credit	6,388	3,779	2,388	1,549	1,549	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429
o.w. Private Sector Credit	395	0	-1,430	-2,926	-4,793	-6,824	-7,998	-9,027	-12,599	-14,638	-16,474	-16,831	-16,551
<b>Foreign Bonds</b>	5,072	7,668	18,251	28,406	32,501	35,413	38,308	44,118	50,322	52,357	54,124	59,928	63,898
<b>Interest Payments</b>	11,855	11,447	19,209	27,030	29,258	30,018	31,739	36,520	39,153	39,148	39,078	44,527	48,775
<b>Current Expenditures</b>	144,969	175,108	246,488	273,654	294,036	306,786	323,107	344,231	448,596	483,299	517,413	568,651	627,828
<b>Savings</b>	32,092	74,775	100,018	138,690	174,678	181,499	222,643	255,644	273,529	296,163	343,824	383,513	417,086
<b>Capital Revenue</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfers to Private Sector	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Investment</b>	160,413	211,829	248,139	304,800	364,191	362,777	397,507	394,517	414,514	445,065	487,540	532,430	582,385
<b>Total Capital Expenditures</b>	160,413	211,829	248,139	304,800	364,191	362,777	397,507	394,517	414,514	445,065	487,540	532,430	582,385
<b>Deficit (Accrual/due)</b>	-128,321	-137,054	-148,121	-166,109	-189,512	-181,278	-174,863	-138,874	-140,986	-148,901	-143,715	-148,916	-165,298
	-9.1%	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-3.5%	-3.0%	-2.8%	-2.8%
<b>Financing:</b>	128,321	137,054	148,121	166,109	189,512	181,278	174,863	138,874	140,986	148,901	143,715	148,916	165,298
<b>Foreign:</b>	141,609	208,543	222,922	259,448	291,101	239,942	226,354	317,441	242,941	240,728	161,528	134,954	136,413
Capital Official Grants	74,124	76,534	85,050	95,918	101,872	100,888	100,827	100,508	101,312	100,467	93,080	0	0
Foreign Borrowing	67,485	132,009	137,872	163,530	189,229	139,054	125,527	216,934	141,629	140,260	68,448	134,954	136,413
Adjustment to Scheduled Int	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment to Scheduled Prin	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Domestic:</b>	-13,288	-71,489	-74,801	-93,338	-101,588	-58,664	-51,491	-178,568	-101,955	-91,826	-17,813	13,963	28,885
MS Credit	-11,981	0	0	0	0	0	0	0	0	0	0	0	0
Domestic Borrowing from PS	-1,307	-71,489	-74,801	-93,338	-101,588	-58,664	-51,491	-178,568	-101,955	-91,826	-17,813	13,963	28,885
<b>Stock:</b>													
Domestic Debt	23,508	-47,981	-122,782	-216,120	-317,708	-376,372	-427,863	-606,431	-708,386	-800,212	-818,025	-804,062	-775,177
MS Credit	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508
Domestic Borrowing from PS	0	-71,489	-146,290	-239,628	-341,216	-399,880	-451,371	-629,939	-731,894	-823,720	-841,533	-827,570	-798,685
<b>Foreign Debt</b>	1,901,708	2,188,756	2,534,844	2,869,322	3,223,003	3,562,317	3,899,318	4,359,909	4,742,401	5,141,309	5,483,162	5,838,021	6,060,603
o.w. Total Foreign Arrears	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Memorandum Item:</b>													
Primary Deficit	-116,466	-125,607	-128,912	-139,080	-160,254	-151,260	-143,124	-102,354	-101,833	-109,753	-104,637	-104,390	-116,523

Lee PDR: Government Accounts (Most Likely Scenario)

Government Accounts	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Direct Taxes</b>	374,803	415,669	460,963	511,088	566,637	628,197	696,415	771,828	855,380	947,948	1,050,503	1,164,148	1,290,054
<b>Indirect Taxes</b>	592,774	681,148	742,972	811,418	886,950	1,023,737	1,121,171	1,261,221	1,455,600	1,597,787	1,796,540	1,967,252	2,155,811
... Import duty taxes	194,995	207,021	219,834	234,736	250,725	267,881	286,296	309,120	333,993	361,115	390,706	422,574	457,311
... Others Indirect Taxes	289,877	356,742	395,128	437,643	484,734	590,580	654,127	724,511	875,420	969,615	1,073,946	1,189,502	1,317,469
... Timber Royalties	107,903	117,385	128,010	139,039	151,491	165,275	180,748	227,590	246,188	267,058	331,888	355,175	381,009
<b>Non-tax Revenue</b>	193,251	214,045	237,077	262,586	290,840	322,135	356,796	395,188	437,710	484,808	536,973	594,751	658,741
... Non-Tax Revenue	193,251	214,045	237,077	262,586	290,840	322,135	356,796	395,188	437,710	484,808	536,973	594,751	658,741
... Transfers from Abroad	0	0	0	0	0	0	0	0	0	0	0	0	0
... Current Official Grants	0	0	0	0	0	0	0	0	0	0	0	0	0
... Profit & Losses of the MS	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Current Revenues</b>	1,160,829	1,310,863	1,441,012	1,585,092	1,744,427	1,974,068	2,174,383	2,428,237	2,748,691	3,030,543	3,384,016	3,726,150	4,104,614
<b>Consumption</b>	581,243	644,129	714,494	793,015	880,201	976,921	1,085,328	1,206,284	1,339,669	1,487,472	1,651,227	1,832,213	2,032,511
o.w. Wages & Salaries	302,246	334,947	371,537	412,368	457,705	507,999	564,371	627,268	696,628	773,485	858,638	952,751	1,056,908
o.w. Other Consumption	278,997	309,182	342,957	380,647	422,497	468,922	520,957	579,016	643,041	713,986	792,589	879,462	975,603
<b>Total Transfers &amp; Subsidies</b>	59,430	65,212	71,598	78,651	86,445	95,057	104,574	115,095	126,725	139,585	153,805	169,531	186,911
Transfers to PS/Rest of the Econ	59,430	65,212	71,598	78,651	86,445	95,057	104,574	115,095	126,725	139,585	153,805	169,531	186,911
Transfers to Other NFPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfers to FS	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Subsidies</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
o.w. Export Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0
o.w. Other Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Interest Payment Domestic Debt</b>	-14,544	-13,012	-10,935	-7,625	-7,968	-3,238	1,256	6,453	11,720	16,250	20,030	23,057	26,312
o.w. Monetary System's Credit	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429	1,429
o.w. Private Sector Credit	-15,974	-14,441	-12,365	-9,055	-9,397	-4,667	-173	5,024	10,291	14,820	18,601	21,628	24,881
<b>Foreign Bonds</b>	67,206	69,351	70,291	73,826	77,224	77,116	76,746	76,284	75,722	75,914	77,213	78,927	80,611
<b>Interest Payments</b>	52,661	56,339	59,356	66,200	69,256	73,878	78,002	82,737	87,442	92,164	97,244	101,984	106,969
<b>Current Expenditures</b>	693,334	765,680	845,447	937,867	1,035,902	1,145,856	1,267,905	1,404,116	1,553,836	1,719,220	1,902,275	2,103,728	2,326,407
<b>Savings</b>	467,495	545,183	595,565	647,226	708,525	828,212	906,478	1,024,121	1,194,854	1,311,322	1,481,740	1,622,423	1,778,203
<b>Capital Revenue</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfers to Private Sector	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Investment</b>	637,332	697,791	764,338	837,610	918,311	1,007,222	1,105,207	1,213,223	1,332,329	1,463,698	1,608,630	1,768,563	1,945,092
<b>Total Capital Expenditures</b>	637,332	697,791	764,338	837,610	918,311	1,007,222	1,105,207	1,213,223	1,332,329	1,463,698	1,608,630	1,768,563	1,945,092
<b>Deficit (Accrual/due)</b>	-169,837	-152,609	-168,774	-190,384	-209,786	-179,010	-198,729	-189,102	-137,474	-152,376	-126,889	-146,140	-166,111
Financing:	-2.6%	-2.1%	-2.1%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%	-0.9%	-0.9%	-0.7%	-0.7%	-0.8%
<b>Foreign:</b>	93,223	48,770	3,270	207,517	-26,716	-45,686	-61,114	-74,262	-89,006	-36,656	-24,442	-16,610	-28,440
Capital Official Grants	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Borrowing	93,223	48,770	3,270	207,517	-26,716	-45,686	-61,114	-74,262	-89,006	-36,656	-24,442	-16,610	-28,440
Adjustment to Scheduled Int	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment to Scheduled Prin	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Domestic:</b>	76,614	103,839	165,504	-17,133	236,501	224,696	259,843	263,364	226,481	189,032	151,331	162,750	195,321
MS Credit	0	0	0	0	0	0	0	0	0	0	0	0	0
Domestic Borrowing from PS	76,614	103,839	165,504	-17,133	236,501	224,696	259,843	263,364	226,481	189,032	151,331	162,750	195,321
<b>Stock:</b>	-698,563	-594,724	-429,220	-446,353	-209,852	14,844	274,688	538,052	764,532	953,564	1,104,895	1,267,645	1,462,111
Domestic Debt	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508	23,508
MS Credit	-722,071	-618,232	-452,728	-469,861	-233,360	-8,664	251,180	514,544	741,024	930,056	1,081,387	1,244,137	1,439,458
Domestic Borrowing from PS	6,239,995	6,374,933	6,464,372	6,758,058	6,817,512	6,857,995	6,883,049	6,894,956	6,892,119	6,941,632	7,003,359	7,072,918	7,130,111
Foreign Debt	0	0	0	0	0	0	0	0	0	0	0	0	0
o.w. Total Foreign Arrears	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Memorandum Item:</b>													
Primary Deficit	-117,176	-96,270	-109,418	-124,184	-140,530	-105,132	-120,727	-106,365	-50,033	-60,212	-29,646	-44,156	-59,111

Lee FDR: Government Accounts (Most Likely Scenario)

	2021	2022	2023	2024	2025	2026	2027
<b>Government Accounts</b>							
Direct Taxes	1,429,542	1,584,151	1,755,443	1,945,128	2,155,267	2,388,065	2,866,457
Indirect Taxes	2,398,303	2,626,470	2,929,640	3,209,505	3,518,848	3,860,803	4,238,839
... Import duty taxes	495,210	535,333	578,969	627,945	681,453	739,939	803,894
... Others Indirect Taxes	1,459,255	1,616,271	1,790,181	1,982,805	2,196,155	2,432,461	2,694,194
... Timber Royalties	443,838	474,867	560,490	598,755	641,240	688,403	740,751
Nontax Revenue	729,627	808,135	895,091	991,402	1,098,077	1,216,230	1,347,097
... Non-Tax Revenue	0	0	0	0	0	0	0
... Transfers from Abroad	0	0	0	0	0	0	0
... Current Official Grants	0	0	0	0	0	0	0
... Profit & Losses of the MS	0	0	0	0	0	0	0
<b>Total Current Revenues</b>	<b>4,557,473</b>	<b>5,018,756</b>	<b>5,580,174</b>	<b>6,146,036</b>	<b>6,772,193</b>	<b>7,465,098</b>	<b>8,452,393</b>
Consumption	2,254,717	2,500,839	2,773,546	3,075,677	3,410,309	3,780,900	4,191,274
o.w. Wages & Salaries	1,172,453	1,300,436	1,442,244	1,599,352	1,773,360	1,966,068	2,179,462
o.w. Other Consumption	1,082,264	1,200,403	1,331,302	1,476,325	1,636,948	1,814,832	2,011,811
<b>Total Transfers &amp; Subsidies</b>	<b>206,163</b>	<b>227,447</b>	<b>250,993</b>	<b>277,045</b>	<b>305,872</b>	<b>337,771</b>	<b>373,072</b>
Transfers to PS/Rest of the Econ	0	0	0	0	0	0	0
Transfers to Other NFPS	0	0	0	0	0	0	0
Transfers to PS	0	0	0	0	0	0	0
Total Subsidies	0	0	0	0	0	0	0
o.w. Export Subsidies	0	0	0	0	0	0	0
o.w. Other Subsidies	30,218	33,921	38,497	42,515	46,986	52,169	57,679
Interest Payment Domestic Debt	1,429	1,429	1,429	1,429	1,429	1,429	1,429
o.w. Monetary System's Credit	28,789	32,492	37,068	41,086	45,557	50,740	56,250
o.w. Private Sector Credit	82,397	84,019	85,522	87,392	89,506	92,011	95,017
Foreign Bonds	112,616	117,941	124,020	129,907	136,492	144,180	152,696
Interest Payments	2,573,496	2,846,226	3,148,559	3,482,629	3,852,672	4,262,851	4,717,042
<b>Current Expenditures</b>	<b>1,983,976</b>	<b>2,172,530</b>	<b>2,431,615</b>	<b>2,663,407</b>	<b>2,919,521</b>	<b>3,202,247</b>	<b>3,735,351</b>
Savings	0	0	0	0	0	0	0
Capital Revenue	0	0	0	0	0	0	0
Transfers to Private Sector	2,139,982	2,355,189	2,592,881	2,855,458	3,145,579	3,466,193	3,820,564
Investment	2,139,982	2,355,189	2,592,881	2,855,458	3,145,579	3,466,193	3,820,564
<b>Total Capital Expenditures</b>	<b>2,139,982</b>	<b>2,355,189</b>	<b>2,592,881</b>	<b>2,855,458</b>	<b>3,145,579</b>	<b>3,466,193</b>	<b>3,820,564</b>
<b>Deficit (Accrual/due)</b>	<b>-156,006</b>	<b>-182,659</b>	<b>-161,266</b>	<b>-192,051</b>	<b>-226,058</b>	<b>-263,946</b>	<b>-85,213</b>
Financing:	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%	-0.7%	-0.2%
Foreign:	156,006	182,659	161,266	192,051	226,058	263,946	85,213
Capital Official Grants	-29,145	-46,140	-39,625	-31,480	-33,109	-11,542	-1,215
Foreign Borrowing	0	0	0	0	0	0	0
Adjustment to Scheduled Int	-29,145	-46,140	-39,625	-31,480	-33,109	-11,542	-1,215
Adjustment to Scheduled Prin	0	0	0	0	0	0	0
Domestic:	185,151	228,800	200,891	223,531	259,167	275,488	86,428
MS Credit	0	0	0	0	0	0	0
Domestic Borrowing from PS	185,151	228,800	200,891	223,531	259,167	275,488	86,428
Stock:	1,648,117	1,876,917	2,077,808	2,301,339	2,560,506	2,835,994	2,922,422
Domestic Debt	23,508	23,508	23,508	23,508	23,508	23,508	23,508
MS Credit	1,624,609	1,853,409	2,054,300	2,277,831	2,536,998	2,812,486	2,898,914
Domestic Borrowing from PS	7,187,671	7,227,700	7,274,244	7,328,933	7,381,993	7,456,620	7,541,573
Foreign Debt	0	0	0	0	0	0	0
o.w. Total Foreign Arrears	0	0	0	0	0	0	0
Memorandum Item:	-43,390	-64,718	-37,246	-62,144	-89,567	-119,766	67,483
Primary Deficit							



Balance of Payments (US\$)

Lao PDR: Balance of Payments (Most Likely Scenario)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Merchandise Exports (FOB)	313.0	321.5	334.9	362.9	455.8	518.3	581.1	622.7	678.9	751.5	824.9	903.7	985.2
Nonfactor Services	131.8	154.2	175.6	192.1	210.9	231.9	254.1	278.5	305.4	334.9	365.2	398.3	434.4
Exports of GNFS	444.8	475.7	510.5	555.0	666.7	750.2	835.2	901.2	984.2	1086.4	1190.2	1302.0	1419.6
Merchandise Imports (FOB)	588.8	687.9	716.7	785.5	849.9	904.8	955.3	1009.0	1075.9	1135.2	1196.6	1253.1	1326.8
Nonfactor Services	159.0	123.8	127.6	132.1	137.4	142.6	147.6	149.6	151.6	153.7	155.8	157.9	162.4
o.w. Freight & Insurance of Merchandise Imp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imports of GNFS	747.8	811.7	844.3	917.7	987.3	1047.3	1102.9	1158.5	1227.5	1288.9	1352.4	1411.0	1489.2
Resource Balance	-303.0	-336.0	-333.8	-362.6	-320.6	-297.1	-267.7	-257.4	-243.3	-202.6	-162.2	-109.0	-69.7
Interest Payments	5.6	6.8	6.5	8.0	10.0	12.7	15.9	20.6	25.5	28.6	29.0	30.9	33.3
... Government	6.2	8.2	17.4	25.8	28.1	29.1	30.0	32.9	35.8	35.4	34.9	36.8	39.2
... o. w. Interest on Gapfill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the economy	-0.6	-1.4	-10.9	-17.8	-18.1	-16.4	-14.1	-12.3	-10.3	-6.8	-5.9	-5.9	-5.9
Profit Remittances = Inc. from FDI in Lao PDR	5.8	5.3	15.4	30.2	41.1	50.7	62.3	72.6	80.9	87.2	90.8	94.9	98.8
Other Factor Payments	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.3	4.5	4.8	5.1	5.4	5.7
Total Factor Payments	14.2	12.2	21.9	38.1	51.0	63.5	78.2	93.2	106.3	115.8	119.7	125.8	132.1
Interest Receipts	7.4	5.2	10.2	10.5	11.9	13.1	13.6	15.0	17.8	20.3	21.4	22.5	23.4
Profit Receipts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Factor Receipts	7.4	5.2	10.2	10.5	11.9	13.1	13.6	15.0	17.8	20.3	21.4	22.5	23.4
Net Factor Income	-6.8	-7.0	-11.7	-27.6	-39.2	-50.4	-64.7	-78.2	-70.3	-75.1	-75.9	-84.9	-84.7
FS Transfers to GS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FS Transfers to PS	76.4	43.0	47.0	49.0	51.0	54.0	57.0	60.0	63.0	64.9	43.1	40.1	0.0
Workers Remittances	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.4
Current Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for Budgetary Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for Official Public Entities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current receipts	76.8	43.4	47.5	49.5	51.6	54.7	57.7	60.8	63.9	64.2	41.3	1.4	0.0
GS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Foreign Transfers	76.8	43.4	47.5	49.5	51.6	54.7	57.7	60.8	63.9	64.2	41.3	1.4	0.0
Current Account Balance	-233.0	-299.6	-298.0	-340.7	-308.1	-292.9	-274.7	-274.8	-249.6	-231.7	-193.9	-152.5	-153.0
Capital Inflows:													
Capital Official Grants	109.3	82.0	81.0	87.0	88.0	83.0	79.0	75.0	72.0	68.0	60.0	0.0	0.0
... for budgetary financing	90.6	82.0	81.0	87.0	88.0	83.0	79.0	75.0	72.0	68.0	60.0	0.0	0.0
... for extra-budgetary entities	18.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Investment	88.4	128.0	117.0	118.0	142.0	139.0	128.0	116.0	96.0	104.0	104.0	100.0	100.0
Portfolio Investment	6.7	17.6	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Disbursement	82.5	153.9	131.8	159.8	106.2	91.2	99.0	136.9	130.0	82.8	50.8	72.8	78.2
... Net Disbursement Government (Loans)	82.5	141.4	131.3	148.3	163.5	114.4	98.4	161.9	100.7	94.9	44.1	82.8	83.7
... Net Disbursement Rest of Economy (Loans)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Net Disbursements, nei	0.0	12.5	0.5	11.5	-57.3	-23.2	0.6	-25.0	-3.0	0.0	0.0	0.0	0.0
M&L Term Capital inflows	286.9	381.5	333.8	364.8	336.2	313.2	306.0	327.9	298.0	254.8	214.8	172.8	178.2
... Total ST Capital Inflow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the Economy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Capital n.e.i.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Errors & Omissions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Capital Flows	-38.6	-22.3	-22.4	0.0	-5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjustments to Scheduled Debt Service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
with respect to Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
with respect to Principal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Account Balance	248.3	359.3	311.4	364.8	330.6	313.2	306.0	327.9	298.0	254.8	214.8	172.8	178.2
Change in Net International Reserves (neg. = incr.)	-15.3	-59.7	-13.5	-24.1	-22.4	-20.3	-31.3	-53.1	-48.4	-23.0	-21.0	-20.3	-25.2
Reserves Changes of Monetary Auth.	-25.8	-69.3	-10.0	-19.4	-16.5	-14.5	-23.9	-46.0	-41.4	-17.7	-16.9	-16.2	-21.1
IMF Credit	10.5	9.6	-3.5	-4.7	-5.9	-5.8	-7.4	-7.1	-7.0	-5.3	-4.1	-4.1	-4.1
Memorandum Item	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Gov't IMF Credit (flows)	10.5	9.6	-3.5	-4.7	-5.9	-5.8	-7.4	-7.1	-7.0	-5.3	-4.1	-4.1	-4.1
Monetary Sector IMF Credit (flows)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross Res of the Mon. Auth. incl. Gold (in US\$)	92.5	161.8	171.8	191.2	207.7	222.2	246.1	292.1	333.5	351.2	368.0	384.2	405.3
Annual growth Rates of Gross Reserves	51.4%	74.9%	6.2%	11.3%	8.6%	7.0%	10.8%	18.7%	14.2%	5.3%	4.8%	4.4%	5.5%

Lao PDR: Balance of Payments (Most Likely Scenario)

Balance of Payments (US\$)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Merchandise Exports (FOB)	1061.1	1143.7	1223.5	1309.7	1401.6	1500.9	1599.2	1704.8	1817.3	1938.1	2067.9	2214.8	2382.9	2561.6
Nonfactor Services	473.7	516.6	563.4	614.4	670.1	730.8	782.0	836.8	912.6	995.2	1085.3	1189.2	1302.9	1420.9
Exports of GNFS	1534.8	1660.4	1786.9	1924.2	2071.7	2231.7	2381.2	2541.6	2729.8	2933.2	3153.2	3404.0	3685.8	3982.5
Merchandise Imports (FOB)	1408.3	1495.2	1587.7	1695.4	1810.9	1934.8	2067.8	2232.6	2412.3	2608.1	2821.9	3052.0	3303.0	3576.6
Nonfactor Services	167.1	176.9	187.3	198.3	209.9	222.2	235.3	249.1	263.7	279.2	295.5	312.9	331.2	350.7
o.w. Freight & Insurance of Merchandise Imp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imports of GNFS	1575.4	1672.1	1775.0	1893.6	2020.8	2157.0	2303.0	2481.7	2675.9	2887.3	3117.4	3364.9	3634.2	3927.3
Resource Balance	-40.6	-11.7	11.9	30.5	50.9	74.7	78.2	59.9	53.9	46.0	35.8	39.1	51.6	55.2
Interest Payments	35.4	36.7	37.3	39.4	41.5	41.4	41.2	40.9	40.6	40.7	41.5	42.6	43.6	44.7
... Government	41.3	42.6	43.2	45.3	47.4	47.3	47.1	46.8	46.5	46.6	47.4	48.5	49.5	50.6
... o. w. Interest on Gapfill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the economy	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9
Profit Remittances = Inc. from FDI in Lao PDR	101.9	104.7	107.4	109.8	112.0	114.0	115.9	117.6	119.2	120.7	122.0	123.3	124.4	125.5
Other Factor Payments	6.1	6.5	6.8	7.2	7.7	8.1	8.6	9.2	9.7	10.3	10.9	11.6	12.2	13.0
Total Factor Payments	137.2	141.4	144.6	149.2	153.5	155.5	157.1	158.6	159.8	161.4	163.5	165.8	168.0	170.1
Interest Receipts	24.7	26.1	27.7	29.3	31.5	34.2	37.0	40.0	43.7	47.7	52.0	56.7	61.8	67.3
Profit Receipts	24.7	27.1	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0
Total Factor Receipts	49.4	53.3	55.7	58.3	61.5	65.0	69.0	73.0	77.7	82.7	88.0	93.7	99.8	106.3
Net Factor Income	-87.8	-88.1	-88.9	-90.1	-92.0	-90.5	-88.5	-85.6	-86.1	-79.0	-75.5	-72.1	-68.2	-63.8
FS Transfers to GS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FS Transfers to PS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Workers Remittances	1.5	1.7	1.9	2.1	2.3	2.6	2.9	3.2	3.5	3.9	4.4	4.9	5.4	6.0
Current Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for Budgetary Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for Official Public Entities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current receipts	1.5	1.7	1.9	2.1	2.3	2.6	2.9	3.2	3.5	3.9	4.4	4.9	5.4	6.0
GS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Foreign Transfers	1.5	1.7	1.9	2.1	2.3	2.6	2.9	3.2	3.5	3.9	4.4	4.9	5.4	6.0
Current Account Balance	-126.9	-98.2	-55.2	-43.3	-9.7	13.5	42.6	5.6	1.9	-3.8	-18.3	-12.6	2.7	4.4
Capital Inflows:														
Capital Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for budgetary financing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... for extra-budgetary entities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Investment	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Portfolio Investment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Disbursement	53.8	27.5	-14.2	148.4	-42.4	-63.3	-89.2	-41.5	-32.6	-21.1	-0.2	0.0	-8.1	-1.9
... Net Disbursement Government (Loans)	57.2	29.9	2.0	127.4	-16.4	-28.0	-37.5	-45.6	-54.6	-22.5	-15.0	-10.2	-17.5	-17.9
... Net Disbursement Rest of Economy (Loans)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Net Disbursements, nei	-3.4	-2.5	-16.2	21.0	-26.0	-35.2	-51.7	4.1	22.0	1.4	14.8	10.2	9.3	16.0
M&L Term Capital inflows	153.8	127.5	85.8	248.4	57.6	36.7	10.8	58.5	67.4	78.9	99.8	100.0	91.9	98.1
... Total ST Capital Inflow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the Economy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Capital n.e.i.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
... Errors & Omissions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Capital Flows	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjustments to Scheduled Debt Service														
with respect to Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
with respect to Principal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Account Balance	153.8	127.5	85.8	248.4	57.6	36.7	10.8	58.5	67.4	78.9	99.8	100.0	91.9	98.1
Change in Net International Reserves (neg. = incr.)	-26.9	-29.3	-30.6	-205.1	-47.9	-50.2	-53.3	-64.1	-69.3	-75.1	-81.5	-87.4	-94.6	-102.5
Reserves Changes of Monetary Auth.	-22.8	-25.2	-26.5	-201.0	-43.8	-46.1	-49.2	-60.0	-65.2	-71.0	-77.4	-83.3	-90.5	-98.4
IMF Credit	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Memorandum Item														
Budgetary Gov't IMF Credit (flows)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monetary Sector IMF Credit (flows)	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Gross Res of the Mon. Auth. incl. Gold (in US\$)	428.2	453.4	479.9	680.9	724.8	770.8	820.1	880.1	945.2	1016.2	1093.6	1176.9	1267.4	1365.8
Annual growth Rates of Gross Reserves	5.6%	5.9%	5.9%	41.9%	6.4%	6.4%	6.4%	7.3%	7.4%	7.5%	7.6%	7.6%	7.7%	7.8%

**Lao PDR: Balance of Payments (Most Likely Scenario)**

Balance of Payments (US\$)	2022	2023	2024	2025	2026	2027
Merchandise Exports (FOB)	2755.1	2964.6	3191.7	3437.7	3704.3	3993.3
Nonfactor Services	1549.6	1689.9	1843.0	2009.9	2191.9	2390.4
Exports of GNFS	4304.7	4654.6	5034.7	5447.6	5896.2	6383.7
Merchandise Imports (FOB)	3866.4	4181.6	4535.3	4921.8	5344.2	5806.1
Nonfactor Services	371.3	393.0	416.1	440.5	466.4	493.7
o.w. Freight & Insurance of Merchandise Imp.	0.0	0.0	0.0	0.0	0.0	0.0
Imports of GNFS	4237.7	4574.6	4951.4	5362.3	5810.6	6299.8
Resource Balance	67.0	80.0	83.2	85.3	85.6	83.8
Interest Payments	45.7	46.6	47.8	49.0	50.6	52.4
... Government	51.6	52.5	53.7	54.9	56.5	58.3
... o. w. Interest on Gapfill	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the economy	-5.9	-5.9	-5.9	-5.9	-5.9	-5.9
Profit Remittances = Inc. from FDI in Lao PDR	126.4	127.3	128.1	128.9	129.6	130.2
Other Factor Payments	13.8	14.6	15.5	16.4	17.4	18.4
Total Factor Payments	172.1	173.9	175.9	177.9	180.1	182.6
Interest Receipts	83.3	89.7	96.6	104.3	112.7	121.8
Profit Receipts	35.6	27.1	26.5	25.9	25.3	24.6
Total Factor Receipts	118.9	116.8	123.1	130.2	137.9	146.4
Net Factor Income	-53.2	-57.1	-52.8	-47.7	-42.2	-36.2
FS Transfers to GS	0.0	0.0	0.0	0.0	0.0	0.0
FS Transfers to PS	0.0	0.0	0.0	0.0	0.0	0.0
Workers Remittances	6.6	7.4	8.2	9.1	10.1	11.2
Current Official Grants	0.0	0.0	0.0	0.0	0.0	0.0
... for Budgetary Government	0.0	0.0	0.0	0.0	0.0	0.0
... for Official Public Entities	0.0	0.0	0.0	0.0	0.0	0.0
Current receipts	6.6	7.4	8.2	9.1	10.1	11.2
GS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0
PS Transfers to FS	0.0	0.0	0.0	0.0	0.0	0.0
Current Payments	0.0	0.0	0.0	0.0	0.0	0.0
Net Foreign Transfers	6.6	7.4	8.2	9.1	10.1	11.2
Current Account Balance	20.4	30.2	38.6	46.6	53.5	58.8
Capital Inflows:						
Capital Official Grants	0.0	0.0	0.0	0.0	0.0	0.0
... for budgetary financing	0.0	0.0	0.0	0.0	0.0	0.0
... for extra-budgetary entities	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Investment	100.0	100.0	100.0	100.0	100.0	100.0
Portfolio Investment	0.0	0.0	0.0	0.0	0.0	0.0
Net Disbursement	-12.2	-13.2	-8.3	-4.9	0.8	9.2
... Net Disbursement Government (Loans)	-28.3	-24.3	-19.3	-20.3	-7.1	-0.7
... Net Disbursement Rest of Economy (Loans)	0.0	0.0	0.0	0.0	0.0	0.0
... Net Disbursements, nei	16.1	11.1	11.0	15.5	7.9	10.0
M&L Term Capital inflows	87.8	86.8	91.7	95.1	100.8	109.2
... Total ST Capital Inflow	0.0	0.0	0.0	0.0	0.0	0.0
... Government	0.0	0.0	0.0	0.0	0.0	0.0
... Rest of the Economy	0.0	0.0	0.0	0.0	0.0	0.0
... Capital n.e.i.	0.0	0.0	0.0	0.0	0.0	0.0
... Errors & Omissions	0.0	0.0	0.0	0.0	0.0	0.0
Other Capital Flows	0.0	0.0	0.0	0.0	0.0	0.0
Adjustments to Scheduled Debt Service						
with respect to Interest	0.0	0.0	0.0	0.0	0.0	0.0
with respect to Principal	0.0	0.0	0.0	0.0	0.0	0.0
Capital Account Balance	87.8	86.8	91.7	95.1	100.8	109.2
Change in Net International Reserves (neg. = incr.)	-108.2	-117.0	-130.4	-141.7	-154.3	-168.0
Reserves Changes of Monetary Auth.	-104.1	-112.9	-126.3	-137.6	-150.2	-163.9
IMF Credit	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Memorandum Item						
Budgetary Gov't IMF Credit (flows)	0.0	0.0	0.0	0.0	0.0	0.0
Monetary Sector IMF Credit (flows)	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Gross Res of the Mon. Auth. incl. Gold (in US\$)	1469.9	1582.8	1709.1	1846.7	1996.9	2160.8
Annual growth Rates of Gross Reserves	7.6%	7.7%	8.0%	8.1%	8.1%	8.2%

Lao PDR: National Accounts (Most Likely Scenario)

National Accounts

1. CURRENT PRICES

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>GDP market prices</b>	1417818	1724807	1993187	2228682	2503645	2786057	3100324	3450040	3842793	4280256	4740812
Import duties	27225	54575	64716	74479	84614	94577	104857	114929	128682	142569	157790
<b>GDP factor cost</b>	1390593	1670232	1928471	2154203	2419031	2691479	2995467	3335111	3714111	4137688	4583022
Agriculture	767565	871593	981065	1089802	1200340	1322091	1456190	1603892	1766574	1945758	2143116
Industry (excl. electricity)	247126	314977	374193	422314	498689	586060	670452	766997	877445	1003797	1127465
o.w. Manufacturing	196266	250153	297182	335399	378531	425166	477547	536381	602463	676686	760054
Electricity & Water	18912	24750	28601	31980	35926	40165	44905	50204	56592	620547	68144
Services	356990	458912	544612	610107	684076	743164	823919	914019	973500	1067586	1178297
<b>Resource Balance</b>	-247854	-313625	-350479	-399802	-371103	-361156	-341687	-344923	-342317	-299263	-251645
Total Imports	611700	757621	886537	1011722	1142910	1273042	1407627	1552571	1727255	1904347	2098019
Total Exports	363846	443996	536058	611920	771807	911886	1065940	1207648	1384938	1605084	1846374
<b>Domestic Absorption</b>	1665672	2038432	2343665	2628484	2874748	3147212	3442011	3794963	4185109	4579519	4992457
o.w. Total Consumption	1426962	1724767	1978121	2143674	2282000	2454930	2659720	2911206	3188863	3456748	3727393
Government	113367	146412	207347	223987	239842	248546	259914	271380	368628	403171	433323
Private	1313595	1578355	1770774	1919687	2042158	2206383	2399806	2639826	2820235	3053577	3294070
o.w. Total Investment	238710	313665	365544	484810	592748	692283	782291	883757	996246	1122772	1265064
Government	160413	211829	248139	304800	364191	362777	397507	394517	414514	445065	487540
Private Investment	78297	101835	117405	180010	228557	329506	384784	489239	581732	677707	777525
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0
<b>Gross Domestic Savings</b>	-9144	39	15066	85008	221645	331127	440603	538834	653929	823508	1013419
Total Savings	238710	313665	365544	484810	592748	692283	782291	883757	996246	1122772	1265064
... Foreign Savings	190594	279588	312855	375658	356721	355969	350534	368245	351260	342394	300737
... Gross National Savings	48116	34076	52689	109152	236027	336313	431757	515512	644986	780378	964328
... Government Savings	32092	74775	100018	138690	174678	181499	222643	255644	273529	296163	343824
... Rest of the Econ. Savings	16024	-40698	-47329	-29538	61349	154814	209114	259868	371457	484214	620503

2. CONSTANT 1995 PRICES

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>GDP at market prices</b>	1417818	1515647	1621743	1735265	1865410	1995988	2135707	2285207	2447457	2621226	2791606
Import duties	27225	47957	52655	57990	63044	67757	72233	76126	81957	87309	92914
<b>GDP at factor costs</b>	1390593	1467691	1569087	1677275	1802365	1928231	2063475	2209081	2365500	2533917	2698692
Agriculture	767565	785219	824480	861582	900353	940869	983208	1027452	1073687	1122003	1172493
Industry (excl. electricity)	247126	276781	304459	328816	371562	419865	461852	508037	558840	614725	663902
o.w. Manufacturing	196266	219818	241800	261144	282035	304598	328966	355283	383706	414402	447554
Electricity & Water	18912	21749	23271	24900	26768	28775	30933	33253	35519	37823	39990
Services	356990	383942	416877	461977	503683	538722	587482	640339	671453	723367	783306
<b>Resource Balance</b>	-247854	-264581	-263307	-289808	-257440	-239211	-213715	-200647	-186212	-153898	-123452
Total Imports	611700	665182	688081	741347	782504	812996	836017	857581	887445	909927	932276
Total Exports	363846	400600	424774	451538	525065	573785	622302	656934	701233	756029	808824
<b>Domestic Absorption</b>	1665672	1780229	1885050	2025073	2122849	2235199	2349423	2485854	2633669	2775124	2915058
o.w. Total Consumption	1426962	1517647	1593584	1660742	1703868	1774320	1857664	1961148	2074857	2179989	2281239
Government	113367	128830	167040	173526	179079	179639	181535	182817	239851	254259	265203
Private Consumption	1313595	1388817	1426545	1487215	1524789	1594681	1676129	1778331	1835006	1925730	2016037
o.w. Total Investment	238710	262581	291465	364331	418981	460879	491758	524706	558812	595135	633818
Government	160413	177331	197853	229055	257427	241515	249878	234234	232508	235910	244266
Private Investment	78297	85250	93613	135276	161555	219365	241880	290472	326303	359224	389553
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0

Lao PDR: National Accounts (Most Likely Scenario)

National Accounts	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>1. CURRENT PRICES</b>											
GDP market prices	5250923	5815923	6441716	7134845	7902554	8752869	9694677	10737825	11893214	13172924	14590331
Import duties	173499	183706	194995	207021	219834	234736	250725	267881	286296	309120	333993
GDP factor cost	5077425	5632217	6246721	6927824	7682720	8518132	9443953	10469943	11606918	12863804	14256338
Agriculture	2360493	2599917	2863627	3154085	3474003	3826371	4214480	4641955	5112789	5631379	6202569
Industry (excl. electricity)	1266368	1402629	1553552	1720715	1905864	2110934	2338071	2589647	2868294	3176922	3518759
o.w. Manufacturing	853693	945550	1047291	1159980	1284794	1423037	1576156	1745751	1933593	2141648	2372089
Electricity & Water	149276	166114	184852	205703	228906	254727	283460	315434	351015	390610	434671
Services	1301288	1463556	1644690	1847322	2073947	2326100	2607941	2922906	3274821	3664894	4100339
Resource Balance	-177469	-113495	-66186	-19113	19303	49718	82930	121668	127316	97587	87755
Total Imports	2298361	2425833	2566242	2723695	2891348	3084571	3291620	3513530	3751415	4042416	4358844
Total Exports	2120892	2312338	2500055	2704582	2910651	3134289	3374550	3635197	3878731	4140004	4446599
Domestic Absorption	5428393	5929418	6507902	7153958	7883251	8703150	9611748	10616157	11765898	13075337	14502576
o.w. Total Consumption	4006215	4373804	4805519	5290080	5841619	6465802	7158838	7925756	8813768	9834684	10943779
Government	474674	524858	581243	644129	714494	793015	880201	976921	1085328	1206284	1339669
Private	3531541	3848946	4224276	4645951	5127125	5672787	6278636	6948834	7728440	8628400	9604110
o.w. Total Investment	1422178	1555613	1702384	1863877	2041632	2237348	2452910	2690401	2952130	3240652	3558797
Government	532430	582385	637332	697791	764338	837610	918311	1007222	1105207	1213223	1332329
Private Investment	889749	973229	1065052	1166086	1277294	1399739	1534599	1683179	1846923	2027429	2226469
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0
Gross Domestic Savings	1244709	1442118	1636197	1844764	2060935	2287067	2535840	2812069	3079447	3338240	3646552
Total Savings	1422178	1555613	1702384	1863877	2041632	2237348	2452910	2690401	2952130	3240652	3558797
... Foreign Savings	248477	249160	206709	159916	89943	70451	15802	-21917	-69319	-9181	-3042
... Gross National Savings	1173701	1306453	1495674	1703961	1951689	2166897	2437108	2712319	3021450	3249834	3561840
... Government Savings	383513	417086	467495	545183	595565	647226	708525	828212	906478	1024121	1194854
... Rest of the Econ.Savings	790188	889367	1028180	1158778	1356124	1519671	1728583	1884106	2114971	2225713	2366985
<b>2. CONSTANT 1995 PRICES</b>											
GDP at market prices	2973060	3166309	3372119	3591307	3824742	4073350	4338118	4620096	4920402	5240228	5580843
Import duties	98235	100013	102076	104203	106397	109240	112193	115260	118445	122969	127753
GDP at factor costs	2874826	3066296	3270043	3487104	3718345	3964110	4225925	4504836	4801957	5117259	5453089
Agriculture	1225256	1280392	1338010	1398220	1461140	1526891	1595602	1667404	1742437	1820846	1902785
Industry (excl. electricity)	717015	763621	813256	866118	922415	982372	1046226	1114231	1186656	1263789	1345935
o.w. Manufacturing	483359	514777	548238	583873	621825	662243	705289	751133	799957	851954	907331
Electricity & Water	84520	90436	96766	103540	110788	118543	126841	135720	145220	155386	166263
Services	848036	931847	1022011	1119226	1224002	1336303	1457256	1587481	1727643	1877238	2038107
Resource Balance	-85738	-59236	-42057	-26061	-14355	-6605	1315	10263	7265	-8214	-17306
Total Imports	949870	979155	1011722	1048789	1087444	1133206	1181258	1231723	1284731	1352645	1425148
Total Exports	864133	919919	969666	1022728	1073088	1126601	1182573	1241986	1291996	1344431	1407842
Domestic Absorption	3058798	3225545	3414176	3617367	3839097	4079955	4336803	4609832	4913137	5248442	5598149
o.w. Total Consumption	2383781	2506652	2648555	2801981	2970711	3155124	3351857	3560866	3795987	4058678	4331050
Government	282441	300799	320351	341174	363350	386968	412121	438909	467438	497822	530180
Private Consumption	2101341	2205853	2328204	2460807	2607360	2768155	2939736	3121957	3328549	3560856	3800870
o.w. Total Investment	675017	718893	765621	815386	868386	924831	984945	1048967	1117150	1189764	1267099
Government	252710	269136	286630	305261	325103	346235	368740	392708	418234	445419	474372
Private Investment	422306	449756	478991	510125	543283	578596	616205	656259	698915	744345	792727
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0

**Lao PDR: National Accounts (Most Likely Scenario)**

National Accounts	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>1. CURRENT PRICES</b>											
GDP market prices	16160251	17899094	19825036	21958210	24320913	26937844	29836356	33046747	36602577	40541015	44903228
Import duties	361115	390706	422574	457317	495210	535333	578969	627945	681453	739939	803894
GDP factor cost	15799136	17508388	19402462	21500893	23825703	26402511	29257387	32418803	35921124	39801076	44099334
Agriculture	6831696	7524635	8287859	9128496	10054400	11074217	12197475	13434665	14797343	16298238	17951368
Industry (excl. electricity)	3897377	4316735	4781216	5295674	5865489	6496616	7195651	7969903	8827465	9777300	10829338
o.w. Manufacturing	2627326	2910026	3223145	3569956	3954083	4379542	4850781	5372725	5950830	6591139	7300346
Electricity & Water	483702	538263	598979	666544	741730	825397	918502	1022109	1137403	1265702	1408473
Services	4586361	5128755	5734408	6410179	7164084	8006280	8945758	9992125	11158913	12459835	13910154
Resource Balance	74849	58271	63610	84044	89871	109124	130247	135596	138893	139481	136583
Total Imports	4703126	5077941	5481111	5919750	6397217	6902768	7451613	8065371	8734652	9464828	10261818
Total Exports	4777976	5136212	5544721	6003794	6487087	7011892	7581860	8200967	8873544	9604309	10398401
Domestic Absorption	16085401	17840822	19761426	21874166	24231043	26828719	29706109	32911151	36463685	40401534	44766645
o.w. Total Consumption	12175702	13543995	15037399	16678611	18514915	20537749	22780238	25283909	28061496	31142951	34561497
Government	1487472	1651227	1832213	2032515	2254717	2500839	2773546	3075677	3410309	3780900	4191274
Private	10688231	11892768	13205186	14646096	16260197	18036910	20006692	22208233	24651188	27362051	30370224
o.w. Total Investment	3909699	4296827	4724027	5195555	5716128	6290971	6925871	7627242	8402189	9258583	10205148
Government	1463698	1608630	1768563	1945092	2139982	2355189	2592881	2855458	3145579	3466193	3820564
Private Investment	2446001	2688198	2955464	3250463	3576146	3935781	4332990	4771785	5256610	5792390	6384584
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0
Gross Domestic Savings	3984548	4355099	4787637	5279599	5805999	6400095	7056118	7762838	8541081	9398064	10341731
Total Savings	3909699	4296827	4724027	5195555	5716128	6290971	6925871	7627242	8402189	9258583	10205148
... Foreign Savings	6182	29740	20591	-4424	-7194	-33225	-49221	-62948	-75910	-87118	-95801
... Gross National Savings	3903517	4267087	4703436	5199980	5723322	6324196	6975093	7690191	8478099	9345701	10300949
... Government Savings	1311322	1481740	1622423	1778211	1983976	2172530	2431615	2663407	2919521	3202247	3735351
... Rest of the Econ.Savings	2592195	2785347	3081013	3421769	3739346	4151666	4543478	5026784	5558578	6143454	6565598
<b>2. CONSTANT 1995 PRICES</b>											
GDP at market prices	5943597	6329931	6741377	7179566	7646238	8143244	8672554	9236270	9836628	10476009	11156949
Import duties	132815	138171	143694	149527	155689	161830	168289	175505	183135	191204	199741
GDP at factor costs	5810783	6191760	6597683	7030040	7490549	7981414	8504265	9060765	9653493	10284805	10957209
Agriculture	1988410	2077888	2171393	2269106	2371216	2477920	2589427	2705951	2827719	2954966	3087940
Industry (excl. electricity)	1433421	1526593	1625822	1731500	1844048	1963911	2091565	2227517	2372305	2526505	2690728
o.w. Manufacturing	966307	1029117	1096010	1167251	1243122	1323925	1409980	1501629	1599234	1703185	1813892
Electricity & Water	177901	190354	203679	217937	233192	249516	266982	285670	305667	327064	349959
Services	2211051	2396924	2596789	2811497	3042094	3290067	3556292	3841627	4147802	4476269	4828582
Resource Balance	-27740	-39692	-45380	-47420	-54668	-58771	-63459	-73903	-86027	-100059	-116257
Total Imports	1502592	1585358	1672215	1764932	1863948	1965404	2073372	2193385	2321752	2459114	2606164
Total Exports	1474852	1545666	1626835	1717512	1809280	1906633	2009913	2119482	2235726	2359056	2489907
Domestic Absorption	5971337	6369624	6786757	7226986	7700906	8202014	8736013	9310174	9922655	10576068	11273206
o.w. Total Consumption	4621877	4932448	5256165	5596906	5964871	6353136	6766959	7213130	7689304	8197549	8740083
Government	564642	601343	640431	682059	726393	773608	823893	877446	934480	995221	1059910
Private Consumption	4057235	4331105	4615734	4914847	5238478	5579528	5943066	6335685	6754824	7202328	7680173
o.w. Total Investment	1349460	1437175	1530592	1630080	1736035	1848878	1969055	2097043	2233351	2378519	2533123
Government	505206	538044	573017	610263	649930	692176	737167	785083	836113	890461	948341
Private Investment	844255	899131	957575	1019817	1086105	1156702	1231888	1311960	1397238	1488058	1584782
o.w. Changes in Stocks	0	0	0	0	0	0	0	0	0	0	0



Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Private</b>		<b>Private</b>										
GDP Growth (exogenous in public & private closure)		6.90%	7.00%	7.00%	7.50%	7.00%	7.00%	7.00%	7.10%	7.10%	6.50%	6.50%
GDP Inflation (p.a.) (exogenous in public & private closure)		13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
ICOR (=Incremental Capital Output Ratio)		2.44	2.47	2.57	2.80	3.21	3.30	3.29	3.23	3.22	3.49	3.49
MUV Growth Rate (=World Inflation)		-2.50%	1.70%	2.20%	2.60%	2.80%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Population Growth		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.30%	2.30%	2.30%	2.30%	2.30%
Nominal Devaluation Rate		0.14	0.13	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
(#BLANK means Real Exchange Rate is constant)												
Calculated ICOR for first year		2.44										
<b>EXTERNAL SECTOR</b>												
<b>(a) Trade Balance</b>												
RER-Elasticity of Imports:												
Food		0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.28	0.26	0.25	0.25
Other Consumer Goods		0.20	0.30	0.31	0.32	0.33	0.33	0.33	0.30	0.29	0.29	0.25
Primary Goods		0.45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.46
Manufactured Goods		0.30	0.20	0.20	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20
POL and Other Energy		0.40	0.40	0.40	0.42	0.44	0.46	0.48	0.50	0.50	0.50	0.50
Capital Goods		0.40	0.41	0.44	0.46	0.48	0.50	0.50	0.50	0.50	0.50	0.50
Nonfactor Services		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
		687.9	716.7	785.5	849.9	904.8	955.3	1009.0	1075.9	1135.2	1196.6	1253.1
GDP-Elasticity of Imports:		16.5%	3.8%	3.8%	6.3%	4.4%	3.1%	3.1%	4.1%	3.0%	2.9%	2.3%
Food		3.00	1.15	0.50	0.50	0.50	0.50	0.50	0.90	0.00	0.00	0.00
Other Consumer Goods		3.00	1.10	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.40
Primary Goods		3.00	1.10	0.50	0.50	0.50	0.50	0.50	0.70	0.70	0.70	0.70
Manufactured Goods		-1.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.70
POL and Other Energy		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.70	0.70	0.70	0.70
Capital Goods (exogenous in policy closure)		3.50	1.24	1.20	1.20	1.37	1.33	1.30	1.29	1.29	1.00	1.00
Non-Factor Services		-3.02	0.45	0.30	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00
		5.9%	3.2%	5.9%	21.1%	10.3%	9.1%	4.9%	6.6%	8.1%	7.2%	7.0%
GDI-Elasticity of:		-299.6	-298.0	-340.7	-308.1	-292.9	-274.7	-274.8	-249.6	-231.7	-193.9	-152.2
Capital Goods (in public & private closure)		2.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80
RER-Elasticity of Exports:												
Garments		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Motorcycles		0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60
Other Manufacturing		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Foreign Income Elasticity of Exports:												
Garments		1.50	1.45	1.40	1.30	1.20	1.10	1.00	1.00	1.00	1.00	1.00
Motorcycles		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Other Manufacturing		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Foreign Income Growth (World GDP Growth)		2.8%	2.8%	2.9%	2.9%	2.8%	3.0%	2.8%	2.8%	2.8%	2.8%	2.8%
Growth of GDP of Viet Nam		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth Garment Quota		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Potential Garment Exports > Quota? (n=no;y=yes)		n	n	n	n	n	n	n	n	n	n	n
Growth rates for Exports												
Commodity 1 - Timber		38.9%	-3.5%	-3.0%	0.0%	0.0%	0.0%	-20.0%	-8.0%	-3.0%	-3.0%	-3.0%
Commodity 2 - Electricity		9.4%	0.0%	0.0%	200.0%	26.0%	15.0%	15.0%	7.1%	7.1%	6.5%	6.5%
Commodity 3 - Agric. & Forest Products		-5.0%	9.0%	14.0%	12.0%	8.0%	8.0%	12.0%	8.0%	8.0%	8.0%	7.0%
Commodity 4 - Coffee		30.0%	15.0%	15.0%	11.0%	8.0%	8.0%	11.0%	11.0%	11.0%	9.0%	9.0%
Garments		-12.2%	8.0%	12.0%	12.5%	12.5%	12.5%	10.0%	10.0%	11.0%	8.0%	6.5%
Motorcycles		-12.0%	-2.6%	-2.0%	-2.0%	-2.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%
Other Manufacturing		-25.2%	10.0%	15.0%	12.0%	12.0%	13.0%	12.8%	12.8%	14.0%	13.0%	13.0%
Other Exports		-5.0%	5.0%	12.0%	10.0%	10.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Nonfactor Services		20.0%	12.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.1%	7.1%	6.5%	6.5%
International Prices (US\$) on... :												
... Import Products:												
Food		7.5%	-1.4%	-2.9%	0.0%	0.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Other Consumer Goods		-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Primary Goods		-6.0%	-3.7%	0.5%	2.0%	2.0%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS

Private

Manufactured Goods  
POL and Other Energy  
Capital Goods  
Non-Factor Services

... Export Products:  
Commodity 1 - Timber  
Commodity 2 - Electricity  
Commodity 3 - Agric. & Forest Products  
Commodity 4 - Coffee (other milds )  
Other Commodities  
Manufacturing  
Garments  
Motorcycles  
Other Manufacturing  
Other Exports  
Non-Factor Services

(b) Current Account (Mill of US\$)  
Freight & Insurance / Total Imports  
Interest Rate on Foreign Reserves  
Return on FDI/Portfolio Inv. (Profit Remittances)  
Depreciation Rate of FDI-capital stock  
Foreign Transfers to Government  
Foreign Transfers to Private Sector  
Current Official Grants  
Budgetary Current Grants/Total Current Grants

Growth Rates for:  
Workers Remittances  
Foreign Profits Remittances (receipt)  
Other factor payments (excl. interest & foreign profit paym.)  
Government Transfers to Foreign Sector  
Private Transfers to Foreign Sector

(c) Capital Account (Mill of US\$)  
Direct Foreign Investment ("Disbursements")  
Portfolio Investment  
Capital Official Grants  
Budgetary Capital Grants/Total Capital Grants  
Capital n.e.i. (asset accumulation)  
Reserves Asset Changes of Com. Banks (-=increase)  
Errors & Omissions (incl. unrecorded imports&capital flight)  
(neg. sign = net outflow out of LPDR)

(d) Stocks of Foreign Reserves (Mill of US\$)  
For. Res. of the Mon Auth. as Months of Imports (G&FS)

MONETARY SECTOR

Real Interest rates on  
Public Bonds/Gov't borrowing from Private Sec.  
Monetary Sector Lending Rate to gov't sec.  
Others  
Growth of Broad Money (exog. in policy closure)  
Currency in Circulation/M2  
Time Deposits/M2  
Foreign Deposits/M2  
State Enterprises/Total Credit  
Other Items  
Velocity of Broad Money

NATIONAL ACCOUNTS

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Private</b>											
Manufactured Goods	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
POL and Other Energy	17.8%	-6.2%	-5.3%	-2.8%	-2.8%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
Capital Goods	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
... Export Products:											
Commodity 1 - Timber	-0.4%	3.9%	5.7%	3.5%	3.5%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%
Commodity 2 - Electricity	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Commodity 3 - Agric. & Forest Products	-4.6%	-4.3%	-0.3%	1.8%	1.8%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Commodity 4 - Coffee (other milds )	-22.5%	-13.6%	-5.8%	2.4%	2.4%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Other Commodities	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Manufacturing	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Garments	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Motorcycles	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Manufacturing	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Exports	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services	-2.5%	1.7%	2.2%	2.6%	2.8%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
(b) Current Account (Mill of US\$)											
Freight & Insurance / Total Imports	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	4.8%	4.6%	4.5%	4.5%	4.5%
Interest Rate on Foreign Reserves	5.6%	6.3%	6.1%	6.2%	6.3%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%
Return on FDI/Portfolio Inv. (Profit Remittances)	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Depreciation Rate of FDI-capital stock	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Foreign Transfers to Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Transfers to Private Sector	43.0	47.0	49.0	51.0	54.0	57.0	60.0	63.0	44.9	43.1	40.1
Current Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Current Grants/Total Current Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth Rates for:											
Workers Remittances	10.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Foreign Profits Remittances (receipt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	20.4	22.5	18.4
Other factor payments (excl. interest & foreign profit paym.)	7.0%	7.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Government Transfers to Foreign Sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Transfers to Foreign Sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(c) Capital Account (Mill of US\$)											
Direct Foreign Investment ("Disbursements")	128.0	117.0	118.0	142.0	139.0	128.0	116.0	96.0	104.0	104.0	100.0
Portfolio Investment	17.6	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Official Grants	82.0	81.0	87.0	88.0	83.0	79.0	75.0	72.0	68.0	60.0	0.0
Budgetary Capital Grants/Total Capital Grants	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Capital n.e.i. (asset accumulation)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reserves Asset Changes of Com. Banks (-=increase)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Errors & Omissions (incl. unrecorded imports&capital flight) (neg. sign = net outflow out of LPDR)	-22.3	-22	0	-6	0	0	0	0	0	0	0
(d) Stocks of Foreign Reserves (Mill of US\$)											
For. Res. of the Mon Auth. as Months of Imports (G&FS)	2.357	2.38	2.4	2.4	2.4	2.5	2.8	3.0	3.0	3.0	3.0
<b>MONETARY SECTOR</b>											
Real Interest rates on											
Public Bonds/Gov't borrowing from Private Sec.	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Monetary Sector Lending Rate to gov't sec.	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Others											
Growth of Broad Money (exog. in policy closure)	7.2%	17.7%	19.3%	18.3%	16.8%	16.9%	17.1%	17.2%	12.9%	12.9%	12.9%
Currency in Circulation/M2	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Time Deposits/M2	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%
Foreign Deposits/M2	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
State Enterprises/Total Credit	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%
Other Items	-30000	-30000	-29000	-29000	-28000	-28000	-27000	-27000	-27000	-27000	-27000
Velocity of Broad Money	7.35	7.30	7.25	7.20	7.15	7.00	6.75	6.50	6.50	6.50	6.50



Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Private</b>		<b>Private</b>										
(a) Investment (in constant base year prices)												
Private Investment/GDPmp (exogenous in public closure)		5.0%	7.5%	8.0%	8.5%	9.3%	8.0%	8.5%	9.0%	10.0%	10.0%	10.0%
Gov't Investment/GDPmp (exog. in private & policy)		11.7%	12.2%	13.2%	13.8%	12.1%	11.7%	10.3%	9.5%	9.0%	8.8%	8.5%
Changes in Stocks/GDPmp		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		83.7%	80.4%	80.8%	82.8%	83.5%	78.7%	78.6%	77.9%	77.8%	77.8%	77.8%
(b) Consumption (in constant base year prices)		11.0%	10.8%	10.5%	10.3%	10.0%	9.8%	9.6%	9.4%	9.2%	9.0%	8.8%
Private Consumption/GDPmp (exog. in public & policy)		81.9%	82.6%	82.7%	83.6%	82.0%	81.4%	82.1%	82.1%	81.8%	81.4%	80.7%
Gov't Consumption/GDPmp (exog. in private & policy)		8.5%	10.3%	10.0%	9.6%	9.0%	8.5%	8.0%	9.8%	9.7%	9.5%	9.5%
(c) Value Added												
Growth of Agriculture		2.30%	5.00%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Growth of Industry		12.00%	10.00%	8.00%	13.00%	13.00%	10.00%	10.00%	10.00%	10.00%	8.00%	8.00%
Growth of Manufacturing		12.00%	10.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Growth of Electricity and Water		15.00%	7.00%	7.00%	7.50%	7.50%	7.50%	7.50%	85.00%	20.00%	7.00%	7.00%
Growth rate of Prices:												
Agriculture		11.0%	7.2%	6.3%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
Industry		13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
o.w. Manufacturing		13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Electricity & Water		13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>CENTRAL GOVERNMENT</b>												
(a) Current Account												
Tariffs on Imports (% change)												
Food		-25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Consumer Goods		20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Primary Goods		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufactured Goods		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
POL and Other Energy		12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital Goods		20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidies on Exports (% change)												
Commodity 1 - Timber		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 2 - Electricity		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 3 - Agric. & Forest Products		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 4 - Coffee		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Commodities		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufacturing Exports		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Exports		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Direct Taxes/GDPfc		-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-3.5%	-3.0%	-2.8%
Taxes on Inter'l Trade/Merch. Imports (CIF)		4.0%	5.0%	5.3%	5.5%	5.5%	5.5%	5.5%	6.0%	6.0%	6.0%	6.0%
Timber Royalties/GDPmp		8.5%	8.6%	8.6%	8.6%	8.6%	8.6%	8.5%	8.5%	8.5%	8.5%	8.5%
Other Indirect Taxes/GDPmp		2.1%	2.1%	2.0%	2.0%	2.0%	1.6%	1.4%	1.1%	1.1%	1.0%	1.1%
Non-Tax Revenues/GDPmp		3.0%	4.0%	4.0%	4.0%	4.0%	4.5%	4.5%	5.0%	4.5%	4.5%	4.5%
Profit and losses from the Monetary sector/GDPmp		2.4%	3.2%	4.0%	4.0%	2.8%	2.8%	2.8%	3.0%	3.0%	3.0%	3.0%
Wages & Salaries/Total Gov't Consumption		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidies/GDPmp		49.5%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Export Subsidies/Exports GNFS		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transfers to Private Sector /GDPmp		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transfers to Other NFPS/GDPmp		1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.8%	0.8%	0.8%
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(b) Capital Account												
Capital revenues (Kip)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Transfers to Private Sector (Kip)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Borrowing from MS/deficit		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Private</i>												
GDP Growth (exogenous in public & private closure)		6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
GDP Inflation (p.a.) (exogenous in public & private closure)		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
ICOR (=Incremental Capital Output Ratio)		3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49
MUV Growth Rate (=World Inflation)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Population Growth		2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%
Nominal Devaluation Rate		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(#BLANK means Real Exchange Rate is constant)												
Calculated ICOR for first year												
EXTERNAL SECTOR												
<u>(a) Trade Balance</u>												
RER-Elasticity of Imports:												
Food		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Other Consumer Goods		0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Primary Goods		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manufactured Goods		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
POL and Other Energy		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Capital Goods		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Nonfactor Services		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
		1326.8	1408.3	1495.2	1587.7	1695.4	1810.9	1934.8	2067.8	2232.6	2412.3	2608.1
GDP-Elasticity of Imports:		3.4%	3.7%	3.7%	3.7%	4.3%	4.3%	4.4%	4.4%	5.5%	5.6%	5.7%
Food		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Consumer Goods		0.50	0.50	0.50	0.50	0.70	0.70	0.70	0.70	1.00	1.00	1.00
Primary Goods		0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.50	1.50	1.50
Manufactured Goods		0.50	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.50	1.50	1.50
POL and Other Energy		0.50	0.80	0.80	0.80	0.90	0.90	0.90	0.90	1.00	1.00	1.00
Capital Goods (exogenous in policy closure)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-Factor Services		0.00	0.00	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
		6.4%	4.9%	5.0%	4.2%	4.3%	4.2%	4.3%	3.8%	3.8%	3.8%	3.9%
GDI-Elasticity of:		-153.0	-126.9	-98.2	-55.2	-43.3	-9.7	13.5	42.6	5.6	1.9	-3.8
Capital Goods (in public & private closure)		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
RER-Elasticity of Exports:												
Garments		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Motorcycles		0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Other Manufacturing		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Foreign Income Elasticity of Exports:												
Garments		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Motorcycles		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Other Manufacturing		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Foreign Income Growth (World GDP Growth)		2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
Growth of GDP of Viet Nam		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth Garment Quota		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Potential Garment Exports > Quota? (n=no;y=yes)		n	n	n	n	n	n	n	n	n	n	n
Growth rates for Exports		6.4%	4.9%	5.0%	4.2%	4.3%	4.2%	4.3%	3.8%	3.8%	3.8%	3.9%
Commodity 1 - Timber		-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%
Commodity 2 - Electricity		6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.0%	6.0%	6.0%	6.0%
Commodity 3 - Agric. & Forest Products		7.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Commodity 4 - Coffee		8.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Garments		7.0%	6.5%	6.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Motorcycles		-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Other Manufacturing		8.0%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	4.5%	4.5%	4.5%	4.5%
Other Exports		12.0%	6.5%	6.5%	6.5%	6.5%	5.5%	5.5%	4.5%	4.5%	4.0%	4.0%
Nonfactor Services		6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	4.5%	4.5%	6.5%	6.5%
International Prices (US\$) on... :												
... Import Products:												
Food		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Other Consumer Goods		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Primary Goods		2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Private</b>											
Manufactured Goods	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
POL and Other Energy	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
Capital Goods	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
... Export Products:											
Commodity 1 - Timber	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%
Commodity 2 - Electricity	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Commodity 3 - Agric. & Forest Products	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Commodity 4 - Coffee (other milds)	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Other Commodities	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Manufacturing	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Garments	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Motorcycles	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Manufacturing	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Exports	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
(b) Current Account (Mll of US\$)											
Freight & Insurance / Total Imports	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Interest Rate on Foreign Reserves	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%
Return on FDI/Portfolio Inv. (Profit Remittances)	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Depreciation Rate of FDI-capital stock	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Foreign Transfers to Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Transfers to Private Sector	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Current Grants/Total Current Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth Rates for:											
Workers Remittances	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Foreign Profits Remittances (receipt)	24.0	24.7	27.1	48.0	44.0	49.0	47.4	71.6	51.1	50.6	50.0
Other factor payments (excl. interest & foreign profit paym.)	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Government Transfers to Foreign Sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Transfers to Foreign Sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(c) Capital Account (Mll of US\$)											
Direct Foreign Investment ("Disbursements")	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Portfolio Investment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Official Grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Capital Grants/Total Capital Grants	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Capital n.e.i. (asset accumulation)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reserves Asset Changes of Com. Banks (=increase)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Errors & Omissions (incl. unrecorded imports&capital flight) (neg. sign = net outflow out of LPDR)	0	0	0	0	0	0	0	0	0	0	0
(d) Stocks of Foreign Reserves (Mll of US\$)											
For. Res. of the Mon Auth. as Months of Imports (G&FS)	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MONETARY SECTOR											
Real Interest rates on											
Public Bonds/Gov't borrowing from Private Sec.	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Monetary Sector Lending Rate to gov't sec.	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Others											
Growth of Broad Money (exog. in policy closure)	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%
Currency in Circulation/M2	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Time Deposits/M2	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%
Foreign Deposits/M2	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
State Enterprises/Total Credit	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%
Other Items	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000
Velocity of Broad Money	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
NATIONAL ACCOUNTS											

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS

Private

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(a) Investment (in constant base year prices)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Private Investment/GDPmp (exogenous in public closure)	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Gov't Investment/GDPmp (exog. in private & policy)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Changes in Stocks/GDPmp	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%
(b) Consumption (in constant base year prices)	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%
Private Consumption/GDPmp (exog. in public & policy)	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%
Gov't Consumption/GDPmp (exog. in private & policy)	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%
(c) Value Added	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Growth of Agriculture	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Growth of Industry	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Growth of Manufacturing	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Growth of Electricity and Water	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Growth rate of Prices:											
Agriculture	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
Industry	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
o.w. Manufacturing	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Electricity & Water	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

CENTRAL GOVERNMENT

(a) Current Account

Tariffs on Imports (% change)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Food	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Consumer Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Primary Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufactured Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
POL and Other Energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidies on Exports (% change)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 1 - Timber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 2 - Electricity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 3 - Agric. & Forest Products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 4 - Coffee	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Commodities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufacturing Exports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Exports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services	-2.8%	-2.6%	-2.1%	-2.1%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%	-0.9%	-0.9%
Direct Taxes/GDPfc	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Taxes on Inter'l Trade/Merch. Imports (CIF)	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Timber Royalties/GDPmp	1.1%	1.1%	1.1%	1.1%	1.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
Other Indirect Taxes/GDPmp	4.5%	4.5%	5.0%	5.0%	5.0%	5.0%	5.5%	5.5%	5.5%	6.0%	6.0%
Non-Tax Revenues/GDPmp	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Profit and losses from the Monetary sector/GDPmp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wages & Salaries/Total Gov't Consumption	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Subsidies/GDPmp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Export Subsidies/Exports GNFS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transfers to Private Sector /GDPmp	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Transfers to Other NFPS/GDPmp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(b) Capital Account											
Capital revenues (Kip)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Transfers to Private Sector (Kip)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Borrowing from MS/deficit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>Private</b>										
GDP Growth (exogenous in public & private closure)	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
GDP Inflation (p.a.) (exogenous in public & private closure)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
ICOR (=Incremental Capital Output Ratio)	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49
MUV Growth Rate (=World Inflation)	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Population Growth	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%
Nominal Devaluation Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(#BLANK means Real Exchange Rate is constant)										
Calculated ICOR for first year										
<b>EXTERNAL SECTOR</b>										
<b>(a) Trade Balance</b>										
<b>RER-Elasticity of Imports:</b>										
Food	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Other Consumer Goods	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Primary Goods	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manufactured Goods	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
POL and Other Energy	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Capital Goods	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Nonfactor Services	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
GDP-Elasticity of Imports:	2821.9	3052.0	3303.0	3576.6	3866.4	4181.6	4535.3	4921.8	5344.2	5806.1
Food	5.7%	5.7%	5.8%	5.8%	5.6%	5.7%	6.0%	6.1%	6.1%	6.2%
Other Consumer Goods	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primary Goods	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Manufactured Goods	1.50	1.40	1.40	1.40	1.20	1.20	1.40	1.40	1.40	1.40
POL and Other Energy	1.50	1.40	1.40	1.40	1.20	1.20	1.40	1.40	1.40	1.40
Capital Goods (exogenous in policy closure)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-Factor Services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GDI-Elasticity of:	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Capital Goods (in public & private closure)	3.9%	4.3%	4.8%	4.7%	4.7%	4.8%	4.8%	4.9%	4.9%	5.0%
	-18.3	-12.6	2.7	4.4	20.4	30.2	38.6	46.6	53.5	58.8
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
<b>RER-Elasticity of Exports:</b>										
Garments	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Motorcycles	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Other Manufacturing	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
<b>Foreign Income Elasticity of Exports:</b>										
Garments	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Motorcycles	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Other Manufacturing	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Foreign Income Growth (World GDP Growth)	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
Growth of GDP of Viet Nam	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth Garment Quota	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Potential Garment Exports > Quota? (n=no;y=yes)	n	n	n	n	n	n	n	n	n	n
<b>Growth rates for Exports</b>										
Commodity 1 - Timber	3.9%	4.3%	4.8%	4.7%	4.7%	4.8%	4.8%	4.9%	4.9%	5.0%
Commodity 2 - Electricity	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%
Commodity 3 - Agric. & Forest Products	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Commodity 4 - Coffee	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Garments	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Motorcycles	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Other Manufacturing	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Other Exports	4.5%	4.5%	7.0%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Nonfactor Services	4.0%	7.0%	7.0%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
	6.5%	7.0%	7.0%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>International Prices (US\$) on... :</b>										
<b>... Import Products:</b>										
Food	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Other Consumer Goods	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Primary Goods	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Private</i>											
Manufactured Goods		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
POL and Other Energy		2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
Capital Goods		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
... Export Products:											
Commodity 1 - Timber		3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%
Commodity 2 - Electricity		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Commodity 3 - Agric. & Forest Products		2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Commodity 4 - Coffee (other milds )		1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Other Commodities		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Manufacturing		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Garments		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Motorcycles		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Manufacturing		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Other Exports		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Non-Factor Services		2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
(b) Current Account (Mll of US\$)											
Freight & Insurance / Total Imports		4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Interest Rate on Foreign Reserves		6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%
Return on FDI/Portfolio Inv. (Profit Remittances)		11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Depreciation Rate of FDI-capital stock		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Foreign Transfers to Government		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Transfers to Private Sector		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Official Grants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Current Grants/Total Current Grants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth Rates for:											
Workers Remittances		11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Foreign Profits Remittances (receipt)		43.1	42.6	42.0	36.1	35.6	27.1	26.5	25.9	25.3	24.6
Other factor payments (excl. interest & foreign profit paym.)		6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Government Transfers to Foreign Sector		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Transfers to Foreign Sector		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(c) Capital Account (Mll of US\$)											
Direct Foreign Investment ("Disbursements")		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Portfolio Investment		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Official Grants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Budgetary Capital Grants/Total Capital Grants		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Capital n.e.i. (asset accumulation)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reserves Asset Changes of Com. Banks (-=increase)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Errors & Omissions (incl. unrecorded imports&capital flight) (neg. sign = net outflow out of LPDR)		0	0	0	0	0	0	0	0	0	0
(d) Stocks of Foreign Reserves (Mll of US\$)											
For. Res. of the Mon Auth. as Months of Imports (G&FS)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MONETARY SECTOR											
Real Interest rates on											
Public Bonds/Gov't borrowing from Private Sec.		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Monetary Sector Lending Rate to gov't sec.		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Others											
Growth of Broad Money (exog. in policy closure)		12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%
Currency in Circulation/M2		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Time Deposits/M2		23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%
Foreign Deposits/M2		42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
State Enterprises/Total Credit		17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%	17.6%
Other Items		-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000	-27000
Velocity of Broad Money		6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
NATIONAL ACCOUNTS											

Lao PDR: Key Assumptions (Most Likely Scenario)

GENERAL ASSUMPTIONS

Private

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
(a) Investment (in constant base year prices)										
Private Investment/GDPmp (exogenous in public closure)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Gov't Investment/GDPmp (exog. in private & policy)	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Changes in Stocks/GDPmp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(b) Consumption (in constant base year prices)										
Private Consumption/GDPmp (exog. in public & policy)	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%	77.8%
Gov't Consumption/GDPmp (exog. in private & policy)	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%
(c) Value Added										
Growth of Agriculture	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%	80.7%
Growth of Industry	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%
Growth of Manufacturing	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Growth of Electricity and Water	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%

Growth rate of Prices:

Agriculture	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%
Industry	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
o.w. Manufacturing	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Electricity & Water	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

CENTRAL GOVERNMENT

(a) Current Account

Tariffs on Imports (% change)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Food	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Consumer Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Primary Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufactured Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
POL and Other Energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidies on Exports (% change)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 1 - Timber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 2 - Electricity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 3 - Agric. & Forest Products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commodity 4 - Coffee	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Commodities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Manufacturing Exports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Exports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nonfactor Services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Direct Taxes/GDPfc	-0.7%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%	-0.7%	-0.2%
Taxes on Inter'l Trade/Merch. Imports (CIF)	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.5%
Timber Royalties/GDPmp	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Other Indirect Taxes/GDPmp	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
Non-Tax Revenues/GDPmp	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Profit and losses from the Monetary sector/GDPmp	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Wages & Salaries/Total Gov't Consumption	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidies/GDPmp	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Export Subsidies/Exports GNFS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transfers to Private Sector /GDPmp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transfers to Other NFPS/GDPmp	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
(b) Capital Account	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital revenues (Kip)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Transfers to Private Sector (Kip)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Borrowing from MS/deficit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

**Lao PDR: Net Incremental Revenues (Construction Cost Overrun Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Net Incremental Revenues to GOL</b>	0.0	0.0	-0.6	-3.0	-4.3	-5.7	-10.3	19.3	20.3	21.2
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0	15.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.3	2.1	2.6	2.8	3.9	4.4	4.6	4.6
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	20.4	22.5
<b>Debt Service of GOL Loan for Financing Its Equity (-)</b>	0.0	0.0	0.3	0.9	1.7	2.9	6.3	9.5	10.5	11.6
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.2	2.3	3.8
Interest	0.0	0.0	0.3	0.9	1.7	2.9	5.9	8.3	8.2	7.8
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.1%	-3.7%	-3.5%	-3.1%
Government Expenditure (% of GDP)	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.5%	22.5%	21.8%	21.3%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.2%	-8.1%	-6.4%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	28.6	30.1	42.4	56.4	65.6	73.2	87.9	99.0	104.7	107.9
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.6%	9.7%	9.3%	8.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	0.0%	0.0%	-0.2%	-0.7%	-1.1%	-1.3%	-2.3%	3.8%	3.8%	3.8%
GOL Expenditures	0.0%	0.0%	-0.1%	-0.5%	-0.8%	-1.0%	-1.9%	3.1%	3.2%	3.3%
Total Investment	0.0%	0.0%	-0.1%	-0.6%	-0.8%	-0.9%	-1.6%	2.7%	2.7%	2.6%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.4%	0.7%	0.7%	0.7%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	1848.0	1977.4	2115.8	2274.5	2433.7	2604.0	2786.3	2984.1	3196.0	3403.7



**Lao PDR: Net Incremental Revenues (Construction Cost Overrun Scenario)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Net Incremental Revenues to GOL</b>	13.7	16.8	26.3	29.9	52.3	49.7	55.8	55.8	84.4	85.3
Royalty Fees (+)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Resource Levies (+)	0.0	0.0	8.0	8.6	9.1	9.2	9.4	9.5	9.6	27.9
Expenditures Not Covered by NT2 Budget (-)	4.6	4.7	4.8	5.0	5.1	5.3	5.5	5.6	5.8	6.0
Equity Share from Income from Sales of Electricity (+)	18.4	24.0	24.7	27.1	48.0	44.0	49.0	47.4	71.6	51.1
Debt Service of GOL Loan for Financing Its Equity (-)	15.1	17.4	16.6	15.8	14.6	13.2	12.1	10.5	6.0	2.6
Amortization	7.6	10.7	10.7	10.9	10.7	10.3	10.0	9.2	5.3	2.3
Interest	7.5	6.8	5.8	4.9	3.9	2.9	2.1	1.3	0.7	0.4
<b>Government Finance</b>	-2.9%	-2.9%	-2.7%	-2.2%	-2.2%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%
Government Surplus/Deficit (% of GDP)	21.0%	20.9%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%
Government Expenditure (% of GDP)										
<b>Balance of Payments</b>	-4.8%	-4.3%	-3.3%	-2.3%	-1.2%	-0.8%	-0.2%	0.2%	0.6%	0.1%
Current Account Surplus/Deficit (% of GDP)										
<b>Debt and Debt Service Ratios</b>	119.9	132.4	141.3	149.7	156.9	166.4	179.3	190.9	198.3	204.4
Total Debt Service (Mn USD)	8.9%	9.0%	8.9%	8.7%	8.4%	8.3%	8.3%	8.2%	7.9%	7.7%
Debt Service / Total Exports (GFS + Workers Rem.)										
<b>Net Incremental Revenues to GOL as Percentage of:</b>	2.4%	2.6%	3.7%	3.7%	5.9%	5.1%	5.2%	4.6%	6.3%	5.7%
GOL Revenues	2.0%	2.3%	3.2%	3.3%	5.3%	4.6%	4.7%	4.2%	5.8%	5.3%
GOL Expenditures	1.6%	1.8%	2.5%	2.6%	4.2%	3.6%	3.7%	3.4%	4.7%	4.3%
Total Investment										
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.4%	0.5%	0.7%	0.7%	1.1%	0.9%	0.9%	0.8%	1.2%	1.1%
<b>Memo Item:</b>	3625.0	3860.6	4111.6	4378.8	4663.4	4966.6	5289.4	5633.2	5999.3	6389.3
GDP at mp (Mln 1996 USD)										

**Lao PDR: Net Incremental Revenues (Construction Cost Overrun Scenario)**

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Net Incremental Revenues to GOL</b>	84.3	83.2	101.2	100.0	98.8	113.3	111.6	133.4	131.6	129.7
Royalty Fees (+)	15.0	15.0	44.9	44.9	44.9	44.9	44.9	89.7	89.7	89.7
Resource Levies (+)	27.5	27.1	22.3	21.8	21.4	42.0	41.0	26.6	25.6	24.5
Expenditures Not Covered by NT2 Budget (-)	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.8	8.0
Equity Share from Income from Sales of Electricity (+)	50.6	50.0	43.1	42.6	42.0	36.1	35.6	27.1	26.5	25.9
Debt Service of GOL Loan for Financing Its Equity (-)	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5
Amortization	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Interest	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
<b>Government Finance</b>	-0.9%	-0.9%	-0.7%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%
Government Surplus/Deficit (% of GDP)	19.8%	19.7%	19.6%	19.5%	19.5%	19.4%	19.3%	19.2%	19.2%	19.1%
Government Expenditure (% of GDP)										
<b>Balance of Payments</b>	0.0%	0.0%	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%
Current Account Surplus/Deficit (% of GDP)										
<b>Debt and Debt Service Ratios</b>	213.1	224.1	235.4	245.6	252.9	262.4	271.8	276.8	281.9	287.2
Total Debt Service (Mn USD)	7.5%	7.4%	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.5%	5.1%
Debt Service / Total Exports (GFS + Workers Rem.)										
<b>Net Incremental Revenues to GOL as Percentage of:</b>	5.0%	4.5%	4.9%	4.4%	3.9%	4.0%	3.6%	3.9%	3.5%	3.1%
GOL Revenues	4.8%	4.3%	4.7%	4.2%	3.8%	3.9%	3.5%	3.8%	3.4%	3.0%
GOL Expenditures	3.9%	3.5%	3.8%	3.4%	3.1%	3.2%	2.9%	3.1%	2.8%	2.5%
Total Investment										
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.9%	0.8%	0.9%	0.8%	0.7%	0.8%	0.7%	0.7%	0.6%	0.6%
<b>Memo Item:</b>	6804.6	7246.9	7718.0	8219.6	8753.9	9322.9	9928.9	10574.3	11261.6	11993.6
GDP at mp (Mln 1996 USD)										

**Lao PDR: Net Incremental Revenues (Construction Cost Overrun Scenario)**

	2026	2027
<b>Net Incremental Revenues to GOL</b>	127.7	125.7
Royalty Fees (+)	89.7	89.7
Resource Levies (+)	23.4	22.3
Expenditures Not Covered by NT2 Budget (-)	8.3	8.5
Equity Share from Income from Sales of Electricity (+)	25.3	24.6
Debt Service of GOL Loan for Financing Its Equity (-)	2.5	2.4
Amortization	2.3	2.3
Interest	0.2	0.2
<b>Government Finance</b>		
Government Surplus/Deficit (% of GDP)	-0.7%	-0.2%
Government Expenditure (% of GDP)	19.1%	19.0%
<b>Balance of Payments</b>		
Current Account Surplus/Deficit (% of GDP)	0.2%	0.2%
<b>Debt and Debt Service Ratios</b>		
Total Debt Service (Mn USD)	290.5	291.0
Debt Service / Total Exports (GFS + Workers Rem.)	4.8%	4.4%
<b>Net Incremental Revenues to GOL as Percentage of:</b>		
GOL Revenues	2.8%	2.4%
GOL Expenditures	2.7%	2.4%
Total Investment	2.2%	2.0%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.5%	0.5%
<b>Memo Item:</b>		
GDP at mp (Mn 1996 USD)	12773.2	13603.4

Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	<b>Estimates</b>										
Mid Year Population (mill)	4.69	4.80	4.92	5.04	5.16	5.28	5.40	5.53	5.65	5.78	5.92
<b>Growth Rate of GDP</b>	6.90%	7.00%	7.00%	7.50%	7.00%	7.00%	7.00%	7.10%	7.10%	6.50%	6.50%
Consumption Growth	6.4%	5.0%	4.2%	2.6%	4.1%	4.7%	5.6%	5.8%	5.1%	4.6%	4.5%
Private Consumption	5.7%	2.7%	4.3%	2.5%	4.6%	5.1%	6.1%	3.2%	4.9%	4.7%	4.2%
Investment Growth (GDI)	10.0%	11.0%	25.0%	15.0%	10.0%	6.7%	6.7%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>											
Gross Domestic Product (GDP)	4.4%	4.5%	4.5%	5.0%	4.5%	4.5%	4.6%	4.7%	4.7%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>											
Total DOD (US\$M)	2262	2403	2584	2758	2897	3015	3245	3355	3458	3507	3641
Total Debt/GDP	122.4%	126.6%	127.8%	127.5%	126.4%	124.1%	126.0%	122.8%	119.3%	114.8%	112.9%
Debt Service (US\$M)	29	30	42	56	66	73	88	99	105	108	120
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.6%	9.7%	9.3%	8.7%	8.9%
Debt Service / GDP	1.5%	1.6%	2.1%	2.6%	2.9%	3.0%	3.4%	3.6%	3.6%	3.5%	3.7%
<b>Interest Burden (LT+ST+IMF):</b>											
Interest Paid (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	21.84	27.92	31.10	31.40	33.30
Interest Due (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	21.84	27.92	31.10	31.40	33.30
Interest / Total Exports (GFS & Workers rem.)	1.4%	1.2%	1.4%	1.5%	1.7%	1.9%	2.4%	2.7%	2.8%	2.5%	2.5%
Interest / GDP	0.4%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	1.0%	1.1%	1.0%	1.0%
<b>Goods Market</b>											
As a Share of GDP in Kip (in current prices):											
<b>Resource Balance</b>	-18.2%	-17.6%	-17.9%	-14.8%	-13.0%	-11.0%	-10.0%	-8.9%	-7.0%	-5.3%	-3.4%
Exports	25.7%	26.9%	27.5%	30.8%	32.7%	34.4%	35.0%	36.0%	37.5%	38.9%	40.4%
Imports	43.9%	44.5%	45.4%	45.6%	45.7%	45.4%	45.0%	44.9%	44.5%	44.3%	43.8%
<b>Consumption</b>	100.00%	99.24%	96.19%	91.15%	88.11%	85.79%	84.38%	82.98%	80.76%	78.62%	76.30%
Private	91.51%	88.84%	86.14%	81.57%	79.19%	77.41%	76.52%	73.39%	71.34%	69.48%	67.26%
Public	8.49%	10.40%	10.05%	9.58%	8.92%	8.38%	7.87%	9.59%	9.42%	9.14%	9.04%
<b>Investment</b>	18.19%	18.34%	21.75%	23.68%	24.85%	25.23%	25.62%	25.93%	26.23%	26.68%	27.08%
Private	5.90%	5.89%	8.08%	9.13%	11.83%	12.41%	14.18%	15.14%	15.83%	16.40%	16.94%
Public	12.28%	12.45%	13.68%	14.55%	13.02%	12.82%	11.44%	10.79%	10.40%	10.28%	10.14%
<b>Gross Domestic Savings</b>	0.0%	0.8%	3.8%	8.9%	11.9%	14.2%	15.6%	17.0%	19.2%	21.4%	23.7%
Total Savings	18.2%	18.3%	21.8%	23.7%	24.8%	25.2%	25.6%	25.9%	26.2%	26.7%	27.1%
Foreign Savings	16.2%	15.7%	16.9%	14.2%	12.8%	11.3%	10.7%	9.2%	8.1%	6.4%	4.8%
Gross National Savings	2.0%	2.6%	4.9%	9.4%	12.1%	13.9%	14.9%	16.7%	18.1%	20.3%	22.3%
... Rest of the Econ.Savings	-2.4%	-2.4%	-1.3%	2.5%	5.6%	6.7%	7.5%	9.6%	11.3%	13.1%	15.0%
... Government Savings	4.3%	5.0%	6.2%	7.0%	6.5%	7.2%	7.4%	7.1%	6.9%	7.2%	7.2%
<b>VALUE ADDED</b>											
<b>Growth rates</b>											
<b>GDP at factor costs</b>	5.5%	6.9%	6.9%	7.5%	7.0%	7.0%	7.1%	7.1%	7.1%	6.5%	6.5%
Agriculture	2.3%	5.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	12.0%	10.0%	8.0%	13.0%	13.0%	10.0%	10.0%	10.0%	10.0%	8.0%	8.0%
o.w. Manufacturing	12.0%	10.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Electricity and Water	15.0%	7.0%	7.0%	7.5%	7.5%	7.5%	7.5%	85.0%	20.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>											
<b>GDP at factor costs</b>	96.8%	96.8%	96.7%	96.6%	96.6%	96.6%	96.7%	96.7%	96.7%	96.7%	96.7%
Agriculture	50.5%	49.2%	48.9%	47.9%	47.5%	47.0%	46.5%	46.0%	45.5%	45.2%	45.0%
Industry	18.3%	18.8%	18.9%	19.9%	21.0%	21.6%	22.2%	22.8%	23.5%	23.8%	24.1%
o.w. Manufacturing	14.5%	14.9%	15.0%	15.1%	15.3%	15.4%	15.5%	15.7%	15.8%	16.0%	16.3%
Electricity	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.5%	2.5%	2.8%	2.8%	2.8%
Services	26.6%	27.3%	27.4%	27.3%	26.7%	26.6%	26.5%	25.3%	24.9%	24.9%	24.8%

**Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Estimates</b>											
<b>PRICES</b>											
Nominal Exchange Rate (p.a.) (Kip/US\$)	933	1050	1103	1158	1216	1276	1340	1407	1477	1551	1629
Devaluation Rate (p.a.)	14.1%	12.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Nominal Exchange Rate (e.o.p.)	992	1076	1130	1187	1246	1308	1374	1442	1514	1590	1629
Devaluation Rate (e.o.p.)	7.2%	8.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	2.4%
Real Exchange Rate Index (Kip/US\$)	0.98	1.04	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.39
Real Exchange Rate Index (IMF=US\$/Kip)	1.02	0.97	0.94	0.91	0.88	0.85	0.82	0.80	0.77	0.74	0.72
Terms of Trade	0.97	0.98	0.99	1.01	1.01	1.02	1.02	1.01	1.01	1.01	1.01
Inflation (e.o.p.)	10.9%	6.3%	4.5%	4.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	3.2%	2.9%
Consumption Deflator Growth	13.6%	9.2%	4.0%	3.8%	3.3%	3.5%	3.7%	3.5%	3.2%	3.0%	2.9%
Investment Deflator Growth	19.5%	5.0%	6.1%	6.3%	6.2%	5.9%	5.9%	5.8%	5.8%	5.8%	5.6%
<b>PUBLIC SECTOR</b>											
Direct Taxes/GDP	3.9%	4.8%	5.1%	5.3%	5.3%	5.3%	5.3%	5.8%	5.8%	5.8%	5.8%
Indirect Taxes/GDP	8.2%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	9.4%	9.4%	9.3%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	2.1%	2.1%	2.0%	2.0%	2.0%	1.6%	1.4%	1.6%	1.6%	1.5%	1.5%
Total Revenues/GDP	14.5%	17.4%	18.5%	18.7%	17.5%	17.6%	17.4%	18.8%	18.2%	18.2%	18.1%
Interest Payments/GDP	0.7%	1.0%	1.2%	1.2%	1.1%	1.0%	1.1%	10.8%	10.4%	10.3%	10.1%
Government Investment/GDP	12.3%	12.4%	13.7%	14.5%	13.0%	12.8%	11.4%	11.4%	11.4%	11.3%	11.0%
Total Expenditures/GDP	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.5%	22.5%	21.8%	21.3%	21.0%
Government Deficit(-)/GDP	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.1%	-3.7%	-3.5%	-3.1%	-2.9%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-4.1%	-3.8%	-4.2%	-4.1%	-2.1%	-1.7%	-6.8%	-2.6%	-2.1%	-0.3%	0.4%
Foreign Credit flow/GDP	7.7%	6.9%	7.3%	7.6%	5.0%	4.0%	7.9%	3.7%	3.3%	1.4%	2.5%
Government Savings/GDP	-2.4%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	9.4%	9.4%	9.3%
Non-Interest Deficit(-)/GDP	-7.3%	-6.5%	-6.2%	-6.4%	-5.4%	-4.6%	-3.0%	-2.6%	-2.6%	-2.2%	-2.0%
<b>BALANCE OF PAYMENTS</b>											
Export real growth rate (MERCH FOB)	5.9%	3.2%	5.9%	21.1%	10.3%	9.1%	4.9%	6.6%	8.1%	7.2%	7.0%
Export real growth rate (GNFS)	10.1%	6.0%	6.3%	16.3%	9.3%	8.5%	5.6%	6.7%	7.8%	7.0%	6.8%
Import real growth rate (MERCH CIF)	16.5%	3.8%	8.9%	6.3%	4.4%	3.1%	3.1%	4.1%	3.0%	2.9%	2.3%
Import real growth rate (GNFS)	8.7%	3.4%	7.7%	5.6%	3.9%	2.8%	2.6%	3.5%	2.5%	2.5%	1.9%
Gross Reserves (CB only incl Gold) (months imp GFS)	2.4	2.4	2.4	2.4	2.4	2.5	2.8	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	2.8	2.9	2.9	2.9	2.9	3.1	3.5	3.7	3.7	3.7	3.7
As a share of GDP in Kip:											
Net Factor Payments	0.4%	0.6%	1.4%	1.8%	2.2%	2.7%	3.1%	2.7%	2.7%	2.6%	2.7%
Net Transfers	2.4%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.3%	1.6%	1.4%	1.3%
Current Account Balance	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.2%	-8.1%	-6.4%	-4.8%
<b>TRADE</b>											
as share of Merchandise imports (in constant prices)											
Food	20.2%	20.5%	18.9%	18.1%	17.5%	17.5%	17.4%	17.6%	17.0%	16.3%	15.9%
Other Consumer Goods	30.0%	31.0%	29.7%	29.0%	28.6%	28.4%	28.2%	27.7%	27.6%	27.4%	27.3%
Intermediate Goods	15.5%	14.4%	13.5%	12.8%	12.4%	12.1%	11.8%	11.7%	11.9%	12.0%	12.1%
POL and Other Energy	6.1%	5.8%	5.3%	4.9%	4.7%	4.6%	4.6%	4.5%	4.6%	4.5%	4.6%
Capital Goods	28.1%	28.3%	32.7%	35.2%	36.8%	37.4%	38.1%	38.4%	39.0%	39.7%	40.2%
As Share of Merchandise Exports:											
Commodity 1 - Timber	38.0%	36.6%	34.6%	28.5%	26.0%	24.0%	18.6%	16.3%	14.8%	13.6%	12.4%
Commodity 2 - Electricity	8.4%	8.4%	7.9%	19.5%	22.3%	23.6%	26.0%	26.3%	26.2%	26.2%	26.3%
Commodity 3 - Agr.& For.Prod.	3.9%	3.9%	4.1%	3.7%	3.6%	3.5%	3.8%	3.8%	3.8%	3.8%	3.8%
Commodity 4 - Coffee	6.7%	6.4%	6.4%	5.8%	5.6%	5.5%	5.8%	6.0%	6.1%	6.2%	6.3%
Manufacturing	34.9%	36.5%	38.3%	34.6%	34.8%	35.4%	37.3%	38.6%	39.7%	40.5%	41.0%
Garments	20.4%	21.5%	22.7%	20.9%	21.3%	21.8%	23.0%	23.7%	24.4%	24.5%	24.4%
Motorcycles	4.7%	4.5%	4.2%	3.3%	2.9%	2.7%	2.6%	2.4%	2.2%	2.1%	2.0%
Other Manufacturing	9.8%	10.5%	11.4%	10.4%	10.6%	10.9%	11.7%	12.4%	13.1%	13.8%	14.6%
Other	8.1%	8.3%	8.8%	7.9%	7.8%	8.0%	8.6%	9.0%	9.3%	9.8%	10.2%
Growth in Broad Monetary Aggregates	21.4%	16.4%	12.6%	13.1%	12.1%	13.7%	15.4%	15.7%	11.4%	10.8%	10.8%

**Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
Mid Year Population (mill)	6.05	6.19	6.34	6.48	6.63	6.78	6.94	7.10	7.26	7.43	7.60
<b>Growth Rate of GDP</b>	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	5.2%	5.7%	5.8%	6.0%	6.2%	6.2%	6.2%	6.6%	6.9%	6.7%	6.7%
Private Consumption	5.0%	5.5%	5.7%	6.0%	6.2%	6.2%	6.2%	6.6%	7.0%	6.7%	6.7%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>											
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>											
Total DOD (US\$M)	3774	3881	3961	4013	4190	4223	4244	4257	4264	4261	4291
Total Debt/GDP	105.7%	98.1%	90.4%	82.7%	78.0%	71.0%	64.4%	58.3%	52.7%	47.6%	43.3%
Debt Service (US\$M)	132	141	150	157	166	179	191	198	204	213	224
Debt Service / Total Exports (GFS + Workers Rem.)	9.0%	8.9%	8.7%	8.4%	8.3%	8.3%	8.2%	7.9%	7.7%	7.5%	7.4%
Debt Service / GDP	3.7%	3.6%	3.4%	3.2%	3.1%	3.0%	2.9%	2.7%	2.5%	2.4%	2.3%
<b>Interest Burden (LT+ST+IMF):</b>											
Interest Paid (US\$M)	35.60	37.34	38.37	38.66	40.55	42.35	41.99	41.48	41.04	40.69	40.81
Interest Due (US\$M)	35.60	37.34	38.37	38.66	40.55	42.35	41.99	41.48	41.04	40.69	40.81
Interest / Total Exports (GFS & Workers rem.)	2.4%	2.4%	2.2%	2.1%	2.0%	2.0%	1.8%	1.7%	1.6%	1.4%	1.3%
Interest / GDP	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.6%	0.6%	0.5%	0.5%	0.4%
<b>Goods Market</b>											
As a Share of GDP in Kip (in current prices):											
<b>Resource Balance</b>	-2.0%	-1.0%	-0.3%	0.2%	0.6%	0.9%	1.1%	1.1%	0.7%	0.6%	0.5%
Exports	39.8%	38.8%	37.9%	36.8%	35.8%	34.8%	33.9%	32.6%	31.4%	30.5%	29.6%
Imports	41.7%	39.8%	38.2%	36.6%	35.2%	34.0%	32.7%	31.5%	30.7%	29.9%	29.1%
<b>Consumption</b>	75.20%	74.60%	74.14%	73.92%	73.87%	73.84%	73.81%	74.11%	74.66%	75.01%	75.34%
Private	66.18%	65.58%	65.12%	64.88%	64.81%	64.76%	64.71%	64.98%	65.50%	65.83%	66.14%
Public	9.02%	9.02%	9.03%	9.04%	9.06%	9.08%	9.10%	9.13%	9.16%	9.18%	9.20%
<b>Investment</b>	26.75%	26.43%	26.12%	25.84%	25.56%	25.30%	25.06%	24.82%	24.60%	24.39%	24.19%
Private	16.73%	16.53%	16.34%	16.16%	15.99%	15.83%	15.68%	15.53%	15.39%	15.26%	15.14%
Public	10.01%	9.89%	9.78%	9.67%	9.57%	9.47%	9.38%	9.29%	9.21%	9.13%	9.06%
<b>Gross Domestic Savings</b>	24.8%	25.4%	25.9%	26.1%	26.1%	26.2%	26.2%	25.9%	25.3%	25.0%	24.7%
Total Savings	26.7%	26.4%	26.1%	25.8%	25.6%	25.3%	25.1%	24.8%	24.6%	24.4%	24.2%
Foreign Savings	4.3%	3.3%	2.3%	1.2%	0.8%	0.2%	-0.2%	-0.6%	-0.1%	0.0%	0.0%
Gross National Savings	22.4%	23.2%	23.8%	24.7%	24.7%	25.1%	25.3%	25.4%	24.7%	24.4%	24.2%
... Rest of the Econ.Savings	15.3%	16.0%	16.2%	17.2%	17.4%	17.8%	17.5%	17.8%	16.9%	16.2%	16.0%
... Government Savings	7.1%	7.2%	7.6%	7.5%	7.4%	7.3%	7.7%	7.6%	7.8%	8.2%	8.1%
<b>VALUE ADDED</b>											
<b>Growth rates</b>											
<b>GDP at factor costs</b>	6.7%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>											
<b>GDP at factor costs</b>	96.8%	97.0%	97.1%	97.2%	97.3%	97.4%	97.5%	97.6%	97.7%	97.7%	97.8%
Agriculture	44.7%	44.5%	44.2%	44.0%	43.7%	43.5%	43.2%	43.0%	42.7%	42.5%	42.3%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	3.0%	3.0%	3.0%	3.0%
Services	25.2%	25.5%	25.9%	26.2%	26.6%	26.9%	27.2%	27.5%	27.8%	28.1%	28.4%

**Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
PRICES											
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.37	1.35	1.33	1.31	1.29	1.27	1.25	1.23	1.21	1.19	1.17
Real Exchange Rate Index (IMF=US\$/Kip)	0.73	0.74	0.75	0.77	0.78	0.79	0.80	0.81	0.83	0.84	0.85
Terms of Trade	1.01	1.02	1.02	1.02	1.02	1.02	1.03	1.03	1.03	1.03	1.04
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	3.8%	4.0%	4.1%	4.2%	4.2%	4.2%	4.2%	4.3%	4.4%	4.3%	4.3%
Investment Deflator Growth	2.7%	2.8%	2.8%	2.9%	2.9%	2.9%	3.0%	3.0%	3.1%	3.1%	3.2%
PUBLIC SECTOR											
Direct Taxes/GDP	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.9%	5.9%	5.9%	5.9%	5.9%
Indirect Taxes/GDP	9.2%	9.2%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.9%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.5%	1.7%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.7%	1.7%	1.7%
Total Revenues/GDP	18.0%	18.0%	18.4%	18.2%	18.1%	18.0%	18.4%	18.3%	18.4%	18.8%	18.8%
Interest Payments/GDP	0.9%	0.9%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%
Government Investment/GDP	10.0%	9.9%	9.8%	9.7%	9.6%	9.5%	9.4%	9.3%	9.2%	9.1%	9.1%
Total Expenditures/GDP	20.9%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%	19.8%	19.7%
Government Deficit(-)/GDP	-2.9%	-2.7%	-2.2%	-2.2%	-2.2%	-2.2%	-1.7%	-1.7%	-1.4%	-0.9%	-0.9%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.6%	1.3%	1.6%	2.2%	-0.1%	2.5%	2.2%	2.2%	2.0%	1.6%	1.2%
Foreign Credit flow/GDP	2.3%	1.4%	0.6%	0.0%	2.3%	-0.3%	-0.5%	-0.5%	-0.6%	-0.6%	-0.2%
Government Savings/GDP	9.2%	9.2%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.9%
Non-Interest Deficit(-)/GDP	-2.0%	-1.8%	-1.3%	-1.4%	-1.4%	-1.4%	-1.0%	-1.0%	-0.8%	-0.3%	-0.4%
BALANCE OF PAYMENTS											
Export real growth rate (MERCH FOB)	6.4%	4.9%	5.0%	4.2%	4.3%	4.2%	4.3%	3.8%	3.8%	3.8%	3.9%
Export real growth rate (GNFS)	6.5%	5.4%	5.5%	4.9%	5.0%	5.0%	5.0%	4.0%	4.1%	4.7%	4.8%
Import real growth rate (MERCH CIF)	3.4%	3.7%	3.7%	3.7%	4.3%	4.3%	4.4%	4.4%	5.5%	5.6%	5.7%
Import real growth rate (GNFS)	3.1%	3.3%	3.7%	3.7%	4.2%	4.2%	4.3%	4.3%	5.3%	5.4%	5.4%
Gross Reserves (CB only incl Gold) (months imp GFS)	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	3.7	3.7	3.6	3.6	4.8	4.8	4.8	4.8	4.7	4.7	4.7
As a share of GDP in Kip:											
Net Factor Payments	2.4%	2.3%	2.1%	1.5%	1.4%	1.1%	1.0%	0.5%	0.7%	0.6%	0.5%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-4.3%	-3.3%	-2.3%	-1.2%	-0.8%	-0.2%	0.2%	0.6%	0.1%	0.0%	0.0%
TRADE											
as share of Merchandise imports (in constant prices)											
Food	15.4%	14.9%	14.5%	14.0%	13.5%	13.0%	12.5%	12.1%	11.5%	11.0%	10.4%
Other Consumer Goods	27.3%	27.4%	27.4%	27.4%	27.5%	27.7%	27.9%	28.1%	28.5%	28.9%	29.2%
Intermediate Goods	12.2%	12.4%	12.7%	12.9%	13.2%	13.5%	13.8%	14.2%	14.8%	15.4%	16.1%
POL and Other Energy	4.6%	4.7%	4.8%	4.9%	5.0%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%
Capital Goods	40.4%	40.6%	40.7%	40.8%	40.7%	40.6%	40.5%	40.4%	39.8%	39.3%	38.7%
As Share of Merchandise Exports:											
Commodity 1 - Timber	11.5%	10.7%	10.0%	9.4%	8.8%	8.3%	7.8%	7.4%	7.0%	6.6%	6.2%
Commodity 2 - Electricity	26.4%	26.9%	27.4%	28.1%	28.8%	29.5%	30.2%	31.0%	31.7%	32.5%	33.3%
Commodity 3 - Agr.& For.Prod.	3.8%	3.7%	3.7%	3.6%	3.6%	3.5%	3.4%	3.4%	3.4%	3.3%	3.3%
Commodity 4 - Coffee	6.3%	6.1%	6.0%	5.8%	5.7%	5.6%	5.5%	5.4%	5.3%	5.2%	5.1%
Manufacturing	41.2%	41.6%	41.9%	41.8%	41.6%	41.5%	41.4%	41.1%	40.9%	40.7%	40.4%
Garments	24.6%	24.9%	25.2%	24.8%	24.4%	24.1%	23.7%	23.5%	23.2%	23.0%	22.7%
Motorcycles	1.8%	1.7%	1.6%	1.5%	1.5%	1.4%	1.3%	1.2%	1.2%	1.1%	1.1%
Other Manufacturing	14.8%	15.0%	15.2%	15.5%	15.8%	16.1%	16.4%	16.4%	16.5%	16.6%	16.6%
Other	10.8%	10.9%	11.0%	11.2%	11.4%	11.6%	11.7%	11.7%	11.7%	11.7%	11.7%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

**Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)**

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Mid Year Population (mill)	7.77	7.95	8.14	8.32	8.51	8.71	8.91	9.12	9.33	9.54
<b>Growth Rate of GDP</b>	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	6.7%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Private Consumption	6.8%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>										
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>										
Total DOD (US\$M)	4328	4370	4405	4440	4463	4491	4524	4556	4601	4653
Total Debt/GDP	39.4%	35.9%	32.7%	29.7%	27.0%	24.5%	22.3%	20.3%	18.5%	16.9%
Debt Service (US\$M)	235	246	253	262	272	277	282	287	290	291
Debt Service / Total Exports (GFS + Workers Rem.)	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.5%	5.1%	4.8%	4.4%
Debt Service / GDP	2.1%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%
<b>Interest Burden (LT+ST+IMF):</b>										
Interest Paid (US\$M)	41.60	42.65	43.70	44.77	45.76	46.68	47.82	49.11	50.64	52.48
Interest Due (US\$M)	41.60	42.65	43.70	44.77	45.76	46.68	47.82	49.11	50.64	52.48
Interest / Total Exports (GFS & Workers rem.)	1.3%	1.2%	1.1%	1.1%	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%
Interest / GDP	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
<b>Goods Market</b>										
As a Share of GDP in Kip (in current prices):										
<b>Resource Balance</b>	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%
Exports	28.7%	28.0%	27.3%	26.7%	26.0%	25.4%	24.8%	24.2%	23.7%	23.2%
Imports	28.4%	27.6%	27.0%	26.3%	25.6%	25.0%	24.4%	23.9%	23.3%	22.9%
<b>Consumption</b>	75.67%	75.85%	75.96%	76.13%	76.24%	76.35%	76.51%	76.67%	76.82%	76.97%
Private	66.44%	66.61%	66.70%	66.86%	66.96%	67.05%	67.20%	67.35%	67.49%	67.63%
Public	9.23%	9.24%	9.26%	9.27%	9.28%	9.30%	9.31%	9.32%	9.33%	9.33%
<b>Investment</b>	24.01%	23.83%	23.66%	23.50%	23.35%	23.21%	23.08%	22.96%	22.84%	22.73%
Private	15.02%	14.91%	14.80%	14.70%	14.61%	14.52%	14.44%	14.36%	14.29%	14.22%
Public	8.99%	8.92%	8.86%	8.80%	8.74%	8.69%	8.64%	8.59%	8.55%	8.51%
<b>Gross Domestic Savings</b>	24.3%	24.1%	24.0%	23.9%	23.8%	23.6%	23.5%	23.3%	23.2%	23.0%
Total Savings	24.0%	23.8%	23.7%	23.5%	23.4%	23.2%	23.1%	23.0%	22.8%	22.7%
Foreign Savings	0.2%	0.1%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Gross National Savings	23.8%	23.7%	23.7%	23.5%	23.5%	23.4%	23.3%	23.2%	23.1%	22.9%
... Rest of the Econ.Savings	15.6%	15.5%	15.6%	15.4%	15.4%	15.2%	15.2%	15.2%	15.2%	14.6%
... Government Savings	8.3%	8.2%	8.1%	8.2%	8.1%	8.1%	8.1%	8.0%	7.9%	8.3%
<b>VALUE ADDED</b>										
<b>Growth rates</b>										
<b>GDP at factor costs</b>	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.5%	6.5%	6.5%	6.5%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>										
<b>GDP at factor costs</b>	97.8%	97.9%	97.9%	98.0%	98.0%	98.1%	98.1%	98.1%	98.2%	98.2%
Agriculture	42.0%	41.8%	41.6%	41.3%	41.1%	40.9%	40.7%	40.4%	40.2%	40.0%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	3.0%	3.0%	3.0%	3.0%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Services	28.7%	28.9%	29.2%	29.5%	29.7%	30.0%	30.2%	30.5%	30.7%	31.0%



**Lao PDR: Key Economic Indicators (Construction Cost Overrun Scenario)**

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PRICES</b>										
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.15	1.14	1.12	1.10	1.08	1.07	1.05	1.03	1.02	1.00
Real Exchange Rate Index (IMF=US\$/Kip)	0.87	0.88	0.89	0.91	0.92	0.94	0.95	0.97	0.98	1.00
Terms of Trade	1.04	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06	1.06
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	4.2%	4.2%	4.2%	4.2%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Investment Deflator Growth	3.2%	3.2%	3.3%	3.3%	3.3%	3.4%	3.4%	3.4%	3.5%	3.5%
<b>PUBLIC SECTOR</b>										
Direct Taxes/GDP	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	6.4%
Indirect Taxes/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.9%	1.8%	1.7%	1.8%	1.8%	1.9%	1.8%	1.8%	1.7%	1.6%
Total Revenues/GDP	18.9%	18.8%	18.7%	18.7%	18.6%	18.7%	18.6%	18.5%	18.4%	18.8%
Interest Payments/GDP	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%
Government Investment/GDP	9.0%	8.9%	8.9%	8.8%	8.7%	8.7%	8.6%	8.6%	8.5%	8.5%
Total Expenditures/GDP	19.6%	19.5%	19.5%	19.4%	19.3%	19.2%	19.2%	19.1%	19.1%	19.0%
Government Deficit(-)/GDP	-0.7%	-0.7%	-0.8%	-0.6%	-0.7%	-0.5%	-0.6%	-0.6%	-0.7%	-0.2%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.9%	0.8%	0.9%	0.8%	0.9%	0.7%	0.7%	0.7%	0.7%	0.2%
Foreign Credit flow/GDP	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%
Government Savings/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
Non-Interest Deficit(-)/GDP	-0.2%	-0.2%	-0.3%	-0.2%	-0.2%	-0.1%	-0.2%	-0.2%	-0.3%	0.2%
<b>BALANCE OF PAYMENTS</b>										
Export real growth rate (MERCH FOB)	3.9%	4.3%	4.8%	4.7%	4.7%	4.8%	4.8%	4.9%	4.9%	5.0%
Export real growth rate (GNFS)	4.8%	5.3%	5.6%	5.3%	5.4%	5.4%	5.5%	5.5%	5.5%	5.5%
Import real growth rate (MERCH CIF)	5.7%	5.7%	5.8%	5.8%	5.6%	5.7%	6.0%	6.1%	6.1%	6.2%
Import real growth rate (GNFS)	5.5%	5.5%	5.5%	5.6%	5.4%	5.5%	5.8%	5.9%	5.9%	6.0%
Gross Reserves (CB only incl Gold) (months imp GFS)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	4.7	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5
<b>As a share of GDP in Kip:</b>										
Net Factor Payments	0.5%	0.5%	0.4%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>TRADE</b>										
<b>as share of Merchandise imports (in constant prices)</b>										
Food	9.9%	9.4%	9.0%	8.5%	8.1%	7.7%	7.3%	6.9%	6.6%	6.2%
Other Consumer Goods	29.6%	30.0%	30.3%	30.7%	31.1%	31.4%	31.8%	32.0%	32.3%	32.6%
Intermediate Goods	16.8%	17.4%	18.0%	18.6%	19.1%	19.5%	20.2%	20.9%	21.5%	22.2%
POL and Other Energy	5.6%	5.7%	5.8%	5.9%	6.0%	6.0%	6.1%	6.2%	6.3%	6.3%
Capital Goods	38.1%	37.5%	36.9%	36.3%	35.8%	35.2%	34.6%	34.0%	33.3%	32.7%
<b>As Share of Merchandise Exports:</b>										
Commodity 1 - Timber	5.8%	5.5%	5.1%	4.8%	4.5%	4.2%	3.9%	3.7%	3.4%	3.2%
Commodity 2 - Electricity	34.0%	34.7%	35.2%	35.8%	36.3%	36.8%	37.3%	37.9%	38.4%	38.8%
Commodity 3 - Agr.& For.Prod.	3.2%	3.2%	3.1%	3.1%	3.0%	2.9%	2.9%	2.8%	2.8%	2.7%
Commodity 4 - Coffee	5.0%	4.9%	4.8%	4.7%	4.6%	4.4%	4.3%	4.2%	4.1%	4.0%
Manufacturing	40.1%	39.7%	39.5%	39.3%	39.1%	38.9%	38.7%	38.4%	38.2%	37.9%
Garments	22.5%	22.1%	21.7%	21.3%	20.9%	20.5%	20.0%	19.6%	19.2%	18.8%
Motorcycles	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%
Other Manufacturing	16.7%	16.6%	16.9%	17.2%	17.4%	17.7%	17.9%	18.1%	18.3%	18.6%
Other	11.7%	12.0%	12.2%	12.4%	12.5%	12.7%	12.9%	13.0%	13.2%	13.3%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

**Lao PDR: Net Incremental Revenues (Hydrology Risk Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Net Incremental Revenues to GOL</b>	0.0	0.0	-0.6	-3.0	-4.3	-5.7	-9.0	21.7	-9.3	-8.4
Royalty Fees (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Resource Levies (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Expenditures Not Covered by NT2 Budget (-)	0.0	0.0	0.3	2.1	2.6	2.8	3.9	4.4	4.6	4.6
Equity Share from Income from Sales of Electricity (+)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	3.3	5.4
Debt Service of GOL Loan for Financing Its Equity (-)	0.0	0.0	0.3	0.9	1.7	2.9	5.1	7.0	8.0	9.2
Amortization	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.2	2.3	3.8
Interest	0.0	0.0	0.3	0.9	1.7	2.9	4.7	5.9	5.7	5.4
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-4.0%	-3.5%
Government Expenditure (% of GDP)	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%	21.2%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.6%	-6.9%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	28.6	30.1	42.4	56.4	65.6	73.2	86.7	96.6	102.3	105.4
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.2%	8.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	0.0%	0.0%	-0.2%	-0.7%	-1.1%	-1.3%	-2.0%	4.2%	-1.8%	-1.6%
GOL Expenditures	0.0%	0.0%	-0.1%	-0.5%	-0.8%	-1.0%	-1.6%	3.5%	-1.5%	-1.3%
Total Investment	0.0%	0.0%	-0.1%	-0.6%	-0.8%	-0.9%	-1.4%	3.1%	-1.2%	-1.0%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.4%	0.8%	-0.3%	-0.3%
<b>Memo Item:</b>										
GDP at mp (Mn 1996 USD)	1848.0	1977.4	2115.8	2274.5	2433.7	2604.0	2786.3	2984.1	3196.0	3403.7

**Lao PDR: Net Incremental Revenues (Hydrology Risk Scenario)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Net Incremental Revenues to GOL</b>	-14.3	-9.8	-3.2	34.7	56.9	54.0	60.1	60.2	86.9	86.1
Royalty Fees (+)	0.0	0.0	0.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Resource Levies (+)	0.0	0.0	4.6	8.6	9.1	9.2	9.4	9.5	9.6	27.9
Expenditures Not Covered by NT2 Budget (-)	4.6	4.7	4.8	5.0	5.1	5.3	5.5	5.6	5.8	6.0
Equity Share from Income from Sales of Electricity (+)	1.3	6.9	8.5	27.1	48.0	44.0	49.0	47.4	71.6	51.1
Debt Service of GOL Loan for Financing Its Equity (-)	11.1	12.0	11.4	10.9	10.0	8.9	7.8	6.1	3.5	1.9
Amortization	6.0	7.5	7.6	7.8	7.6	7.1	6.5	5.3	3.1	1.6
Interest	5.1	4.5	3.8	3.2	2.5	1.8	1.2	0.8	0.4	0.3
<b>Government Finance</b>										
Government Surplus/Deficit (% of GDP)	-3.3%	-3.3%	-3.1%	-2.2%	-2.2%	-2.2%	-2.2%	-1.7%	-1.7%	-1.5%
Government Expenditure (% of GDP)	21.0%	20.8%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%
<b>Balance of Payments</b>										
Current Account Surplus/Deficit (% of GDP)	-5.3%	-4.8%	-3.6%	-2.2%	-1.1%	-0.8%	-0.2%	0.2%	0.6%	0.1%
<b>Debt and Debt Service Ratios</b>										
Total Debt Service (Mn USD)	115.9	127.0	136.2	144.8	152.3	162.1	175.0	186.6	195.8	203.6
Debt Service / Total Exports (GFS + Workers Rem.)	8.7%	8.7%	8.7%	8.4%	8.2%	8.1%	8.1%	8.0%	7.8%	7.7%
<b>Net Incremental Revenues to GOL as Percentage of:</b>										
GOL Revenues	-2.5%	-1.6%	-0.5%	4.3%	6.4%	5.5%	5.6%	5.0%	6.5%	5.8%
GOL Expenditures	-2.1%	-1.3%	-0.4%	3.9%	5.7%	4.9%	5.0%	4.5%	6.0%	5.3%
Total Investment	-1.6%	-1.0%	-0.3%	3.0%	4.5%	3.9%	4.0%	3.6%	4.8%	4.3%
<b>Net Incremental Revenues to GOL per capita as Percentage of GDP per capita</b>	-0.4%	-0.3%	-0.1%	0.8%	1.2%	1.0%	1.0%	0.9%	1.2%	1.1%
<b>Memo Item:</b>										
GDP at mp (Mln 1996 USD)	3625.0	3860.6	4111.6	4378.8	4663.4	4966.6	5289.4	5633.2	5999.3	6389.3

Lao PDR: Net Incremental Revenues (Hydrology Risk Scenario)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Net Incremental Revenues to GOL	85.0	84.0	101.9	100.8	99.5	114.0	112.3	134.2	132.3	130.4
Royalty Fees (+)	15.0	15.0	44.9	44.9	44.9	44.9	44.9	89.7	89.7	89.7
Resource Levies (+)	27.5	27.1	22.3	21.8	21.4	42.0	41.0	26.6	25.6	24.5
Expenditures Not Covered by NT2 Budget (-)	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.8	8.0
Equity Share from Income from Sales of Electricity (+)	50.6	50.0	43.1	42.6	42.0	36.1	35.6	27.1	26.5	25.9
Debt Service of GOL Loan for Financing Its Equity (-)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7
Amortization	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Interest	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Government Finance										
Government Surplus/Deficit (% of GDP)	-1.0%	-1.0%	-0.7%	-0.8%	-0.8%	-0.7%	-0.7%	-0.6%	-0.6%	-0.6%
Government Expenditure (% of GDP)	19.8%	19.7%	19.6%	19.5%	19.5%	19.4%	19.3%	19.3%	19.2%	19.1%
Balance of Payments										
Current Account Surplus/Deficit (% of GDP)	0.0%	0.0%	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%
Debt and Debt Service Ratios										
Total Debt Service (Mn USD)	212.3	223.3	234.6	244.8	252.2	261.7	271.1	276.0	281.2	286.5
Debt Service / Total Exports (GFS + Workers Rem.)	7.5%	7.3%	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.4%	5.1%
Net Incremental Revenues to GOL as Percentage of:										
GOL Revenues	5.0%	4.5%	4.9%	4.4%	4.0%	4.1%	3.6%	3.9%	3.5%	3.1%
GOL Expenditures	4.8%	4.3%	4.7%	4.2%	3.8%	3.9%	3.5%	3.8%	3.4%	3.0%
Total Investment	3.9%	3.5%	3.9%	3.5%	3.1%	3.2%	2.9%	3.2%	2.8%	2.5%
Net Incremental Revenues to GOL per capita as Percentage of GDP per capita	0.9%	0.8%	0.9%	0.8%	0.7%	0.8%	0.7%	0.7%	0.7%	0.6%
Memo Item:										
GDP at mp (Mln 1996 USD)	6804.6	7246.9	7718.0	8219.6	8753.9	9322.9	9928.9	10574.3	11261.6	11993.6

Lao PDR: Net Incremental Revenues (Hydrology Risk Scenario)

	2026	2027
Net Incremental Revenues to GOL	128.5	126.4
Royalty Fees (+)	89.7	89.7
Resource Levies (+)	23.4	22.3
Expenditures Not Covered by NT2 Budget (-)	8.3	8.5
Equity Share from Income from Sales of Electricity (+)	25.3	24.6
Debt Service of GOL Loan for Financing Its Equity (-)	1.7	1.7
Amortization	1.6	1.6
Interest	0.1	0.1
Government Finance		
Government Surplus/Deficit (% of GDP)	-0.7%	-0.2%
Government Expenditure (% of GDP)	19.1%	19.0%
Balance of Payments		
Current Account Surplus/Deficit (% of GDP)	0.2%	0.2%
Debt and Debt Service Ratios		
Total Debt Service (Mn USD)	289.8	290.3
Debt Service / Total Exports (GFS + Workers Rem.)	4.8%	4.4%
Net Incremental Revenues to GOL as Percentage of:		
GOL Revenues	2.8%	2.4%
GOL Expenditures	2.7%	2.4%
Total Investment	2.3%	2.0%
Net Incremental Revenues to GOL per capita as Percentage of GDP per capita	0.5%	0.5%
Memo Item:		
GDP at mp (Mln 1996 USD)	12773.2	13603.4

Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Estimates</b>											
Mid Year Population (mill)	4.69	4.80	4.92	5.04	5.16	5.28	5.40	5.53	5.65	5.78	5.92
<b>Growth Rate of GDP</b>	6.90%	7.00%	7.00%	7.50%	7.00%	7.00%	7.00%	7.10%	7.10%	6.50%	6.50%
Consumption Growth	6.4%	5.0%	4.2%	2.6%	4.1%	4.7%	5.6%	5.8%	5.1%	4.6%	4.5%
Private Consumption	5.7%	2.7%	4.3%	2.5%	4.6%	5.1%	6.1%	3.2%	4.9%	4.7%	4.2%
Investment Growth (GDI)	10.0%	11.0%	25.0%	15.0%	10.0%	6.7%	6.7%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>											
Gross Domestic Product (GDP)	4.4%	4.5%	4.5%	5.0%	4.5%	4.5%	4.6%	4.7%	4.7%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>											
Total DOD (US\$M)	2262	2403	2584	2758	2897	3015	3203	3313	3416	3465	3601
Total Debt/GDP	122.4%	126.6%	127.8%	127.5%	126.4%	124.1%	124.4%	121.3%	117.9%	113.4%	111.7%
Debt Service (US\$M)	29	30	42	56	66	73	87	97	102	105	116
Debt Service / Total Exports (GFS + Workers Rem.)	5.9%	5.8%	7.5%	8.3%	8.6%	8.6%	9.5%	9.5%	9.2%	8.7%	8.7%
Debt Service / GDP	1.5%	1.6%	2.1%	2.6%	2.9%	3.0%	3.4%	3.5%	3.5%	3.5%	3.6%
<b>Interest Burden (LT+ST+IMF):</b>											
Interest Paid (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	20.62	25.46	28.64	28.99	30.89
Interest Due (US\$M)	6.82	6.48	7.97	9.98	12.73	15.92	20.62	25.46	28.64	28.99	30.89
Interest / Total Exports (GFS & Workers rem.)	1.4%	1.2%	1.4%	1.5%	1.7%	1.9%	2.2%	2.5%	2.6%	2.4%	2.3%
Interest / GDP	0.4%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.9%	1.0%	0.9%	1.0%
<b>Goods Market</b>											
As a Share of GDP in Kip (in current prices):											
<b>Resource Balance</b>	-18.2%	-17.6%	-17.9%	-14.8%	-13.0%	-11.0%	-10.0%	-8.9%	-7.0%	-5.3%	-3.4%
Exports	25.7%	26.9%	27.5%	30.8%	32.7%	34.4%	35.0%	36.0%	37.5%	38.9%	40.4%
Imports	43.9%	44.5%	45.4%	45.6%	45.7%	45.4%	45.0%	44.9%	44.5%	44.3%	43.8%
<b>Consumption</b>	100.00%	99.24%	96.19%	91.15%	88.11%	85.79%	84.38%	82.98%	80.76%	78.62%	76.30%
Private	91.51%	88.84%	86.14%	81.57%	79.19%	77.41%	76.52%	73.39%	71.34%	69.48%	67.26%
Public	8.49%	10.40%	10.05%	9.58%	8.92%	8.38%	7.87%	9.59%	9.42%	9.14%	9.04%
<b>Investment</b>	18.19%	18.34%	21.75%	23.68%	24.85%	25.23%	25.62%	25.93%	26.23%	26.68%	27.08%
Private	5.90%	5.89%	8.08%	9.13%	11.83%	12.41%	14.18%	15.14%	15.83%	16.40%	16.94%
Public	12.28%	12.45%	13.68%	14.55%	13.02%	12.82%	11.44%	10.79%	10.40%	10.28%	10.14%
<b>Gross Domestic Savings</b>	0.0%	0.8%	3.8%	8.9%	11.9%	14.2%	15.6%	17.0%	19.2%	21.4%	23.7%
Total Savings	18.2%	18.3%	21.8%	23.7%	24.8%	25.2%	25.6%	25.9%	26.2%	26.7%	27.1%
Foreign Savings	16.2%	15.7%	16.9%	14.2%	12.8%	11.3%	10.7%	9.1%	8.6%	6.9%	5.3%
Gross National Savings	2.0%	2.6%	4.9%	9.4%	12.1%	13.9%	14.9%	16.8%	17.6%	19.8%	21.8%
... Rest of the Econ.Savings	-2.4%	-2.4%	-1.3%	2.5%	5.6%	6.7%	7.5%	9.7%	11.2%	13.0%	15.0%
... Government Savings	4.3%	5.0%	6.2%	7.0%	6.5%	7.2%	7.4%	7.1%	6.4%	6.8%	6.8%
<b>VALUE ADDED</b>											
<b>Growth rates</b>											
<b>GDP at factor costs</b>	5.5%	6.9%	6.9%	7.5%	7.0%	7.0%	7.1%	7.1%	7.1%	6.5%	6.5%
Agriculture	2.3%	5.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	12.0%	10.0%	8.0%	13.0%	13.0%	10.0%	10.0%	10.0%	10.0%	8.0%	8.0%
o.w. Manufacturing	12.0%	10.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Electricity and Water	15.0%	7.0%	7.0%	7.5%	7.5%	7.5%	7.5%	85.0%	20.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>											
<b>GDP at factor costs</b>	96.8%	96.8%	96.7%	96.6%	96.6%	96.6%	96.7%	96.7%	96.7%	96.7%	96.7%
Agriculture	50.5%	49.2%	48.9%	47.9%	47.5%	47.0%	46.5%	46.0%	45.5%	45.2%	45.0%
Industry	18.3%	18.8%	18.9%	19.9%	21.0%	21.6%	22.2%	22.8%	23.5%	23.8%	24.1%
o.w. Manufacturing	14.5%	14.9%	15.0%	15.1%	15.3%	15.4%	15.5%	15.7%	15.8%	16.0%	16.3%
Electricity	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.5%	2.5%	2.8%	2.8%	2.8%
Services	26.6%	27.3%	27.4%	27.3%	26.7%	26.6%	26.5%	25.3%	24.9%	24.9%	24.8%

**Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Estimates</b>											
<b>PRICES</b>											
Nominal Exchange Rate (p.a.) (Kip/US\$)	933	1050	1103	1158	1216	1276	1340	1407	1477	1551	1629
Devaluation Rate (p.a.)	14.1%	12.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Nominal Exchange Rate (e.o.p.)	992	1076	1130	1187	1246	1308	1374	1442	1514	1590	1629
Devaluation Rate (e.o.p.)	7.2%	8.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	2.4%
Real Exchange Rate Index (Kip/US\$)	0.98	1.04	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.39
Real Exchange Rate Index (IMF=US\$/Kip)	1.02	0.97	0.94	0.91	0.88	0.85	0.82	0.80	0.77	0.74	0.72
Terms of Trade	0.97	0.98	0.99	1.01	1.01	1.02	1.02	1.01	1.01	1.01	1.01
Inflation (e.o.p.)	10.9%	6.3%	4.5%	4.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	13.8%	8.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	13.6%	9.2%	4.0%	3.8%	3.3%	3.5%	3.7%	3.5%	3.2%	3.0%	2.9%
Investment Deflator Growth	19.5%	5.0%	6.1%	6.3%	6.2%	5.9%	5.9%	5.8%	5.8%	5.8%	5.6%
<b>PUBLIC SECTOR</b>											
Direct Taxes/GDP	3.9%	4.8%	5.1%	5.3%	5.3%	5.3%	5.3%	5.8%	5.8%	5.8%	5.8%
Indirect Taxes/GDP	8.2%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	8.9%	8.9%	8.9%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	2.1%	2.1%	2.0%	2.0%	2.0%	1.6%	1.4%	1.6%	1.1%	1.0%	1.1%
Total Revenues/GDP	14.5%	17.4%	18.5%	18.7%	17.5%	17.6%	17.4%	18.8%	17.7%	17.7%	17.7%
Interest Payments/GDP	0.7%	1.0%	1.2%	1.2%	1.1%	1.0%	1.1%	1.0%	0.9%	0.8%	0.9%
Government Investment/GDP	12.3%	12.4%	13.7%	14.5%	13.0%	12.8%	11.4%	10.8%	10.4%	10.3%	10.1%
Total Expenditures/GDP	22.4%	24.8%	26.0%	26.3%	24.0%	23.2%	21.4%	22.5%	21.7%	21.2%	21.0%
Government Deficit(-)/GDP	-7.9%	-7.4%	-7.5%	-7.6%	-6.5%	-5.6%	-4.0%	-3.7%	-4.0%	-3.5%	-3.3%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	-4.1%	-3.8%	-4.2%	-4.1%	-2.1%	-1.7%	-5.2%	-2.7%	-1.6%	0.1%	0.7%
Foreign Credit flow/GDP	7.7%	6.9%	7.3%	7.6%	5.0%	4.0%	6.3%	3.7%	3.3%	1.4%	2.6%
Government Savings/GDP	-2.4%	9.3%	9.4%	9.4%	9.4%	9.5%	9.3%	10.0%	8.9%	8.9%	8.9%
Non-Interest Deficit(-)/GDP	-7.3%	-6.5%	-6.2%	-6.4%	-5.4%	-4.6%	-3.0%	-2.6%	-3.1%	-2.7%	-2.5%
<b>BALANCE OF PAYMENTS</b>											
Export real growth rate (MERCH FOB)	5.9%	3.2%	5.9%	21.1%	10.3%	9.1%	4.9%	6.6%	8.1%	7.2%	7.0%
Export real growth rate (GNFS)	10.1%	6.0%	6.3%	16.3%	9.3%	8.5%	5.6%	6.7%	7.8%	7.0%	6.8%
Import real growth rate (MERCH CIF)	16.5%	3.8%	8.9%	6.3%	4.4%	3.1%	3.1%	4.1%	3.0%	2.9%	2.3%
Import real growth rate (GNFS)	8.7%	3.4%	7.7%	5.6%	3.9%	2.8%	2.6%	3.5%	2.5%	2.5%	1.9%
Gross Reserves (CB only incl Gold) (months imp GFS)	2.4	2.4	2.4	2.4	2.4	2.5	2.8	3.0	3.0	3.0	3.0
Gross Reserves (CB only incl Gold) (months imp Goods)	2.8	2.9	2.9	2.9	2.9	3.1	3.5	3.7	3.7	3.7	3.7
<b>As a share of GDP in Kip:</b>											
Net Factor Payments	0.4%	0.6%	1.4%	1.8%	2.2%	2.7%	3.0%	2.6%	3.2%	3.0%	3.2%
Net Transfers	2.4%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.3%	1.6%	1.4%	1.3%
Current Account Balance	-16.2%	-15.7%	-16.9%	-14.2%	-12.8%	-11.3%	-10.7%	-9.1%	-8.6%	-6.9%	-5.3%
<b>TRADE</b>											
<b>as share of Merchandise imports (in constant prices)</b>											
Food	20.2%	20.5%	18.9%	18.1%	17.5%	17.5%	17.4%	17.6%	17.0%	16.3%	15.9%
Other Consumer Goods	30.0%	31.0%	29.7%	29.0%	28.6%	28.4%	28.2%	27.7%	27.6%	27.4%	27.3%
Intermediate Goods	15.5%	14.4%	13.5%	12.8%	12.4%	12.1%	11.8%	11.7%	11.9%	12.0%	12.1%
POL and Other Energy	6.1%	5.8%	5.3%	4.9%	4.7%	4.6%	4.6%	4.5%	4.6%	4.5%	4.6%
Capital Goods	28.1%	28.3%	32.7%	35.2%	36.8%	37.4%	38.1%	38.4%	39.0%	39.7%	40.2%
<b>As Share of Merchandise Exports:</b>											
Commodity 1 - Timber	38.0%	36.6%	34.6%	28.5%	26.0%	24.0%	18.6%	16.3%	14.8%	13.6%	12.4%
Commodity 2 - Electricity	8.4%	8.4%	7.9%	19.5%	22.3%	23.6%	26.0%	26.3%	26.2%	26.2%	26.3%
Commodity 3 - Agr.& For.Prod.	3.9%	3.9%	4.1%	3.7%	3.6%	3.5%	3.8%	3.8%	3.8%	3.8%	3.8%
Commodity 4 - Coffee	6.7%	6.4%	6.4%	5.8%	5.6%	5.5%	5.8%	6.0%	6.1%	6.2%	6.3%
Manufacturing	34.9%	36.5%	38.3%	34.6%	34.8%	35.4%	37.3%	38.6%	39.7%	40.5%	41.0%
Garments	20.4%	21.5%	22.7%	20.9%	21.3%	21.8%	23.0%	23.7%	24.4%	24.5%	24.4%
Motorcycles	4.7%	4.5%	4.2%	3.3%	2.9%	2.7%	2.6%	2.4%	2.2%	2.1%	2.0%
Other Manufacturing	9.8%	10.5%	11.4%	10.4%	10.6%	10.9%	11.7%	12.4%	13.1%	13.8%	14.6%
Other	8.1%	8.3%	8.8%	7.9%	7.8%	8.0%	8.6%	9.0%	9.3%	9.8%	10.2%
Growth in Broad Monetary Aggregates	21.4%	16.4%	12.6%	13.1%	12.1%	13.7%	15.4%	15.7%	11.4%	10.8%	10.8%

Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
Mid Year Population (mill)	6.05	6.19	6.34	6.48	6.63	6.78	6.94	7.10	7.26	7.43	7.60
<b>Growth Rate of GDP</b>	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	5.2%	5.7%	5.8%	6.0%	6.2%	6.2%	6.2%	6.6%	6.9%	6.7%	6.7%
Private Consumption	5.0%	5.5%	5.7%	6.0%	6.2%	6.2%	6.2%	6.6%	7.0%	6.7%	6.7%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
<b>Real Per Capita Growth Rate:</b>											
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
<b>Debt and Debt Service (LT+ST+IMF):</b>											
Total DOD (US\$M)	3737	3847	3930	3985	4165	4202	4227	4242	4249	4248	4278
Total Debt/GDP	104.7%	97.3%	89.7%	82.1%	77.5%	70.6%	64.1%	58.1%	52.5%	47.4%	43.1%
Debt Service (US\$M)	127	136	145	152	162	175	187	196	204	212	223
Debt Service / Total Exports (GFS + Workers Rem.)	8.7%	8.7%	8.4%	8.2%	8.1%	8.1%	8.0%	7.8%	7.7%	7.5%	7.3%
Debt Service / GDP	3.6%	3.4%	3.3%	3.1%	3.0%	2.9%	2.8%	2.7%	2.5%	2.4%	2.3%
<b>Interest Burden (LT+ST+IMF):</b>											
Interest Paid (US\$M)	33.33	35.36	36.68	37.25	39.42	41.51	41.44	41.22	40.93	40.59	40.70
Interest Due (US\$M)	33.33	35.36	36.68	37.25	39.42	41.51	41.44	41.22	40.93	40.59	40.70
Interest / Total Exports (GFS & Workers rem.)	2.3%	2.3%	2.1%	2.0%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%
Interest / GDP	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%	0.4%
<b>Goods Market</b>											
As a Share of GDP in Kip (in current prices):											
<b>Resource Balance</b>	-2.0%	-1.0%	-0.3%	0.2%	0.6%	0.9%	1.1%	1.1%	0.7%	0.6%	0.5%
Exports	39.8%	38.8%	37.9%	36.8%	35.8%	34.8%	33.9%	32.6%	31.4%	30.5%	29.6%
Imports	41.7%	39.8%	38.2%	36.6%	35.2%	34.0%	32.7%	31.5%	30.7%	29.9%	29.1%
<b>Consumption</b>	75.20%	74.60%	74.14%	73.92%	73.87%	73.84%	73.81%	74.11%	74.66%	75.01%	75.34%
Private	66.18%	65.58%	65.12%	64.88%	64.81%	64.76%	64.71%	64.98%	65.50%	65.83%	66.14%
Public	9.02%	9.02%	9.03%	9.04%	9.06%	9.08%	9.10%	9.13%	9.16%	9.18%	9.20%
<b>Investment</b>	26.75%	26.43%	26.12%	25.84%	25.56%	25.30%	25.06%	24.82%	24.60%	24.39%	24.19%
Private	16.73%	16.53%	16.34%	16.16%	15.99%	15.83%	15.68%	15.53%	15.39%	15.26%	15.14%
Public	10.01%	9.89%	9.78%	9.67%	9.57%	9.47%	9.38%	9.29%	9.21%	9.13%	9.06%
<b>Gross Domestic Savings</b>	24.8%	25.4%	25.9%	26.1%	26.1%	26.2%	26.2%	25.9%	25.3%	25.0%	24.7%
Total Savings	26.7%	26.4%	26.1%	25.8%	25.6%	25.3%	25.1%	24.8%	24.6%	24.4%	24.2%
Foreign Savings	4.8%	3.6%	2.2%	1.1%	0.8%	0.2%	-0.2%	-0.6%	-0.1%	0.0%	0.0%
Gross National Savings	22.0%	22.8%	23.9%	24.7%	24.8%	25.1%	25.3%	25.4%	24.7%	24.4%	24.2%
... Rest of the Econ.Savings	15.3%	16.0%	16.3%	17.2%	17.4%	17.9%	17.6%	17.8%	16.9%	16.2%	16.1%
... Government Savings	6.7%	6.8%	7.6%	7.5%	7.4%	7.3%	7.7%	7.6%	7.8%	8.2%	8.1%
<b>VALUE ADDED</b>											
<b>Growth rates</b>											
<b>GDP at factor costs</b>	6.7%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
<b>As a Share of GDP at market prices in Kip:</b>											
<b>GDP at factor costs</b>	96.8%	97.0%	97.1%	97.2%	97.3%	97.4%	97.5%	97.6%	97.7%	97.7%	97.8%
Agriculture	44.7%	44.5%	44.2%	44.0%	43.7%	43.5%	43.2%	43.0%	42.7%	42.5%	42.3%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	3.0%	3.0%	3.0%	3.0%
Services	25.2%	25.5%	25.9%	26.2%	26.6%	26.9%	27.2%	27.5%	27.8%	28.1%	28.4%



Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Projected										
PRICES											
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.37	1.35	1.33	1.31	1.29	1.27	1.25	1.23	1.21	1.19	1.17
Real Exchange Rate Index (IMF=US\$/Kip)	0.73	0.74	0.75	0.77	0.78	0.79	0.80	0.81	0.83	0.84	0.85
Terms of Trade	1.01	1.02	1.02	1.02	1.02	1.02	1.03	1.03	1.03	1.03	1.04
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	3.8%	4.0%	4.1%	4.2%	4.2%	4.2%	4.2%	4.3%	4.4%	4.3%	4.3%
Investment Deflator Growth	2.7%	2.8%	2.8%	2.9%	2.9%	2.9%	3.0%	3.0%	3.1%	3.1%	3.2%
PUBLIC SECTOR											
Direct Taxes/GDP	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.9%	5.9%	5.9%	5.9%	5.9%
Indirect Taxes/GDP	8.7%	8.7%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.9%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.1%	1.2%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.7%	1.7%	1.7%
Total Revenues/GDP	17.5%	17.6%	18.4%	18.2%	18.1%	18.0%	18.4%	18.3%	18.4%	18.8%	18.8%
Interest Payments/GDP	0.9%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%
Government Investment/GDP	10.0%	9.9%	9.8%	9.7%	9.6%	9.5%	9.4%	9.3%	9.2%	9.1%	9.1%
Total Expenditures/GDP	20.8%	20.7%	20.5%	20.4%	20.3%	20.2%	20.1%	20.0%	19.9%	19.8%	19.7%
Government Deficit(-)/GDP	-3.3%	-3.1%	-2.2%	-2.2%	-2.2%	-2.2%	-1.7%	-1.7%	-1.5%	-1.0%	-1.0%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.9%	1.7%	1.5%	2.1%	-0.2%	2.5%	2.1%	2.2%	2.0%	1.6%	1.2%
Foreign Credit flow/GDP	2.3%	1.4%	0.7%	0.0%	2.4%	-0.3%	-0.4%	-0.5%	-0.6%	-0.6%	-0.2%
Government Savings/GDP	8.7%	8.7%	9.5%	9.4%	9.3%	9.1%	9.5%	9.4%	9.6%	10.0%	9.9%
Non-Interest Deficit(-)/GDP	-2.4%	-2.3%	-1.3%	-1.4%	-1.4%	-1.4%	-1.0%	-1.0%	-0.8%	-0.3%	-0.4%
BALANCE OF PAYMENTS											
Export real growth rate (MERCH FOB)	6.4%	4.9%	5.0%	4.2%	4.3%	4.2%	4.3%	3.8%	3.8%	3.8%	3.9%
Export real growth rate (GNFS)	6.5%	5.4%	5.5%	4.9%	5.0%	5.0%	5.0%	4.0%	4.1%	4.7%	4.8%
Import real growth rate (MERCH CIF)	3.4%	3.7%	3.7%	3.7%	4.3%	4.3%	4.4%	4.4%	5.5%	5.6%	5.7%
Import real growth rate (GNFS)	3.1%	3.3%	3.7%	3.7%	4.2%	4.2%	4.3%	4.3%	5.3%	5.4%	5.4%
Gross Reserves (CB only incl Gold) (months imp GFS)	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	3.7	3.6	3.6	3.6	4.8	4.8	4.8	4.8	4.7	4.7	4.7
As a share of GDP in Kip:											
Net Factor Payments	2.9%	2.6%	2.0%	1.4%	1.4%	1.1%	1.0%	0.5%	0.7%	0.6%	0.5%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-4.8%	-3.6%	-2.2%	-1.1%	-0.8%	-0.2%	0.2%	0.6%	0.1%	0.0%	0.0%
TRADE											
as share of Merchandise imports (in constant prices)											
Food	15.4%	14.9%	14.5%	14.0%	13.5%	13.0%	12.5%	12.1%	11.5%	11.0%	10.4%
Other Consumer Goods	27.3%	27.4%	27.4%	27.4%	27.5%	27.7%	27.9%	28.1%	28.5%	28.9%	29.2%
Intermediate Goods	12.2%	12.4%	12.7%	12.9%	13.2%	13.5%	13.8%	14.2%	14.8%	15.4%	16.1%
POL and Other Energy	4.6%	4.7%	4.8%	4.9%	5.0%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%
Capital Goods	40.4%	40.6%	40.7%	40.8%	40.7%	40.6%	40.5%	40.4%	39.8%	39.3%	38.7%
As Share of Merchandise Exports:											
Commodity 1 - Timber	11.5%	10.7%	10.0%	9.4%	8.8%	8.3%	7.8%	7.4%	7.0%	6.6%	6.2%
Commodity 2 - Electricity	26.4%	26.9%	27.4%	28.1%	28.8%	29.5%	30.2%	31.0%	31.7%	32.5%	33.3%
Commodity 3 - Agr.& For.Prod.	3.8%	3.7%	3.7%	3.6%	3.6%	3.5%	3.4%	3.4%	3.4%	3.3%	3.3%
Commodity 4 - Coffee	6.3%	6.1%	6.0%	5.8%	5.7%	5.6%	5.5%	5.4%	5.3%	5.2%	5.1%
Manufacturing	41.2%	41.6%	41.9%	41.8%	41.6%	41.5%	41.4%	41.1%	40.9%	40.7%	40.4%
Garments	24.6%	24.9%	25.2%	24.8%	24.4%	24.1%	23.7%	23.5%	23.2%	23.0%	22.7%
Motorcycles	1.8%	1.7%	1.6%	1.5%	1.5%	1.4%	1.3%	1.2%	1.2%	1.1%	1.1%
Other Manufacturing	14.8%	15.0%	15.2%	15.5%	15.8%	16.1%	16.4%	16.4%	16.5%	16.6%	16.6%
Other	10.8%	10.9%	11.0%	11.2%	11.4%	11.6%	11.7%	11.7%	11.7%	11.7%	11.7%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Mid Year Population (mill)	7.77	7.95	8.14	8.32	8.51	8.71	8.91	9.12	9.33	9.54
Growth Rate of GDP	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Consumption Growth	6.7%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Private Consumption	6.8%	6.6%	6.5%	6.6%	6.5%	6.5%	6.6%	6.6%	6.6%	6.6%
Investment Growth (GDI)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Real Per Capita Growth Rate:										
Gross Domestic Product (GDP)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Debt and Debt Service (LT+ST+IMF):										
Total DOD (US\$M)	4316	4359	4394	4429	4454	4482	4516	4548	4594	4646
Total Debt/GDP	39.3%	35.8%	32.6%	29.7%	26.9%	24.5%	22.3%	20.2%	18.5%	16.9%
Debt Service (US\$M)	235	245	252	262	271	276	281	286	290	290
Debt Service / Total Exports (GFS + Workers Rem.)	7.2%	7.0%	6.6%	6.4%	6.1%	5.8%	5.4%	5.1%	4.8%	4.4%
Debt Service / GDP	2.1%	2.0%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%
Interest Burden (LT+ST+IMF):										
Interest Paid (US\$M)	41.50	42.55	43.62	44.68	45.68	46.60	47.75	49.05	50.59	52.43
Interest Due (US\$M)	41.50	42.55	43.62	44.68	45.68	46.60	47.75	49.05	50.59	52.43
Interest / Total Exports (GFS & Workers rem.)	1.3%	1.2%	1.1%	1.1%	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%
Interest / GDP	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
Goods Market										
As a Share of GDP in Kip (in current prices):										
Resource Balance	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%
Exports	28.7%	28.0%	27.3%	26.7%	26.0%	25.4%	24.8%	24.2%	23.7%	23.2%
Imports	28.4%	27.6%	27.0%	26.3%	25.6%	25.0%	24.4%	23.9%	23.3%	22.9%
Consumption	75.67%	75.85%	75.96%	76.13%	76.24%	76.35%	76.51%	76.67%	76.82%	76.97%
Private	66.44%	66.61%	66.70%	66.86%	66.96%	67.05%	67.20%	67.35%	67.49%	67.63%
Public	9.23%	9.24%	9.26%	9.27%	9.28%	9.30%	9.31%	9.32%	9.33%	9.33%
Investment	24.01%	23.83%	23.66%	23.50%	23.35%	23.21%	23.08%	22.96%	22.84%	22.73%
Private	15.02%	14.91%	14.80%	14.70%	14.61%	14.52%	14.44%	14.36%	14.29%	14.22%
Public	8.99%	8.92%	8.86%	8.80%	8.74%	8.69%	8.64%	8.59%	8.55%	8.51%
Gross Domestic Savings	24.3%	24.1%	24.0%	23.9%	23.8%	23.6%	23.5%	23.3%	23.2%	23.0%
Total Savings	24.0%	23.8%	23.7%	23.5%	23.4%	23.2%	23.1%	23.0%	22.8%	22.7%
Foreign Savings	0.2%	0.1%	0.0%	0.0%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Gross National Savings	23.8%	23.7%	23.7%	23.5%	23.5%	23.4%	23.3%	23.2%	23.1%	22.9%
... Rest of the Econ.Savings	15.6%	15.6%	15.6%	15.4%	15.4%	15.2%	15.2%	15.2%	15.2%	14.6%
... Government Savings	8.3%	8.2%	8.1%	8.1%	8.1%	8.1%	8.0%	8.0%	7.9%	8.3%
VALUE ADDED										
Growth rates										
GDP at factor costs	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.5%	6.5%	6.5%	6.5%
Agriculture	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Industry	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
o.w. Manufacturing	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Electricity and Water	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
As a Share of GDP at market prices in Kip:										
GDP at factor costs	97.8%	97.9%	97.9%	98.0%	98.0%	98.1%	98.1%	98.1%	98.2%	98.2%
Agriculture	42.0%	41.8%	41.6%	41.3%	41.1%	40.9%	40.7%	40.4%	40.2%	40.0%
Industry	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%
o.w. Manufacturing	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Electricity	3.0%	3.0%	3.0%	3.0%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Services	28.7%	28.9%	29.2%	29.5%	29.7%	30.0%	30.2%	30.5%	30.7%	31.0%

**Lao PDR: Key Economic Indicators (Hydrology Risk Scenario)**

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PRICES</b>										
Nominal Exchange Rate (p.a.) (Kip/US\$)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (p.a.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate (e.o.p.)	1629	1629	1629	1629	1629	1629	1629	1629	1629	1629
Devaluation Rate (e.o.p.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Real Exchange Rate Index (Kip/US\$)	1.15	1.14	1.12	1.10	1.08	1.07	1.05	1.03	1.02	1.00
Real Exchange Rate Index (IMF=US\$/Kip)	0.87	0.88	0.89	0.91	0.92	0.94	0.95	0.97	0.98	1.00
Terms of Trade	1.04	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06	1.06
Inflation (e.o.p.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (p.a.)	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Consumption Deflator Growth	4.2%	4.2%	4.2%	4.2%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Investment Deflator Growth	3.2%	3.2%	3.3%	3.3%	3.3%	3.4%	3.4%	3.4%	3.5%	3.5%
<b>PUBLIC SECTOR</b>										
Direct Taxes/GDP	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	6.4%
Indirect Taxes/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
o.w. Timber Royalties & NT2 Royalties & Levies/GDP	1.9%	1.8%	1.7%	1.8%	1.8%	1.9%	1.8%	1.8%	1.7%	1.6%
Total Revenues/GDP	18.9%	18.8%	18.7%	18.7%	18.6%	18.7%	18.6%	18.5%	18.4%	18.8%
Interest Payments/GDP	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.3%
Government Investment/GDP	9.0%	8.9%	8.9%	8.8%	8.7%	8.7%	8.6%	8.6%	8.5%	8.5%
Total Expenditures/GDP	19.6%	19.5%	19.5%	19.4%	19.3%	19.3%	19.2%	19.1%	19.1%	19.0%
Government Deficit(-)/GDP	-0.7%	-0.8%	-0.8%	-0.7%	-0.7%	-0.6%	-0.6%	-0.6%	-0.7%	-0.2%
Change in Credit from MS/GDP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Change in Borrowing from PS/GDP	0.9%	0.8%	0.9%	0.8%	0.9%	0.7%	0.7%	0.7%	0.7%	0.2%
Foreign Credit flow/GDP	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%
Government Savings/GDP	10.0%	9.9%	9.8%	9.9%	9.8%	9.8%	9.7%	9.6%	9.5%	9.4%
Non-Interest Deficit(-)/GDP	-0.2%	-0.2%	-0.3%	-0.2%	-0.2%	-0.1%	-0.2%	-0.2%	-0.3%	0.2%
<b>BALANCE OF PAYMENTS</b>										
Export real growth rate (MERCH FOB)	3.9%	4.3%	4.8%	4.7%	4.7%	4.8%	4.8%	4.9%	4.9%	5.0%
Export real growth rate (GNFS)	4.8%	5.3%	5.6%	5.3%	5.4%	5.4%	5.5%	5.5%	5.5%	5.5%
Import real growth rate (MERCH CIF)	5.7%	5.7%	5.8%	5.8%	5.6%	5.7%	6.0%	6.1%	6.1%	6.2%
Import real growth rate (GNFS)	5.5%	5.5%	5.5%	5.6%	5.4%	5.5%	5.8%	5.9%	5.9%	6.0%
Gross Reserves (CB only incl Gold) (months imp GFS)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Gross Reserves (CB only incl Gold) (months imp Goods)	4.7	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5
As a share of GDP in Kip:										
Net Factor Payments	0.5%	0.5%	0.4%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%
Net Transfers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current Account Balance	-0.2%	-0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>TRADE</b>										
as share of Merchandise imports (in constant prices)										
Food	9.9%	9.4%	9.0%	8.5%	8.1%	7.7%	7.3%	6.9%	6.6%	6.2%
Other Consumer Goods	29.6%	30.0%	30.3%	30.7%	31.1%	31.4%	31.8%	32.0%	32.3%	32.6%
Intermediate Goods	16.8%	17.4%	18.0%	18.6%	19.1%	19.5%	20.2%	20.9%	21.5%	22.2%
POL and Other Energy	5.6%	5.7%	5.8%	5.9%	6.0%	6.0%	6.1%	6.2%	6.3%	6.3%
Capital Goods	38.1%	37.5%	36.9%	36.3%	35.8%	35.2%	34.6%	34.0%	33.3%	32.7%
As Share of Merchandise Exports:										
Commodity 1 - Timber	5.8%	5.5%	5.1%	4.8%	4.5%	4.2%	3.9%	3.7%	3.4%	3.2%
Commodity 2 - Electricity	34.0%	34.7%	35.2%	35.8%	36.3%	36.8%	37.3%	37.9%	38.4%	38.8%
Commodity 3 - Agr.& For.Prod.	3.2%	3.2%	3.1%	3.1%	3.0%	2.9%	2.9%	2.8%	2.8%	2.7%
Commodity 4 - Coffee	5.0%	4.9%	4.8%	4.7%	4.6%	4.4%	4.3%	4.2%	4.1%	4.0%
Manufacturing	40.1%	39.7%	39.5%	39.3%	39.1%	38.9%	38.7%	38.4%	38.2%	37.9%
Garments	22.5%	22.1%	21.7%	21.3%	20.9%	20.5%	20.0%	19.6%	19.2%	18.8%
Motorcycles	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%
Other Manufacturing	16.7%	16.6%	16.9%	17.2%	17.4%	17.7%	17.9%	18.1%	18.3%	18.6%
Other	11.7%	12.0%	12.2%	12.4%	12.5%	12.7%	12.9%	13.0%	13.2%	13.3%
Growth in Broad Monetary Aggregates	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%

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## **Annex 5**

### **Financial Risk Analysis**

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## **Annex 5:**

### **Financial Risk Analysis**

#### **Introduction**

1. The objectives of the Financial Risk Analysis are twofold: first, to identify and assess the nature of financial risk of the Nam Theun 2 Hydropower Project (the “Project”) that would be undertaken by the Government of the Lao People’s Democratic Republic (the GOL) and second, to assess the implications of the government’s risks for the Lao economy. The methodology of and approach to the analysis incorporate six critical areas:

- review of the existing draft financial and contractual agreements;
- review of the technical, commercial, and cost assumptions;
- review of the project financing plan and financial model;
- evaluation of the risk allocation framework as currently proposed;
- summary of the financial model sensitivity analysis; and
- outline of the principal negotiating points available to the GOL.

2. The Risk Analysis was conducted through a review of the Project’s draft agreements made available to the Economic Study Team by the GOL and the Nam Theun Electric Corporation (NTEC), the private consortium formed to develop the Project, including the GOL as shareholder, a review of the project’s financing plan and financial model currently under development by NTEC and its financial advisor, SBC Warburg, and discussions held in Laos with designated officials of the GOL, NTEC, SBC Warburg, the Electric Generating Authority of Thailand (EGAT), and the World Bank during the January 12-31, 1997, field visit and the subsequent follow-up visit during July 7-17, 1997.

3. Given that most if not all of the Project’s major contractual agreements either have expired or are in the early stages of negotiation, our assessment of the risk of the Project to the GOL provides the most value in highlighting issues that deserve significant attention as the contractual agreements undergo further negotiation and review and move to final form.

#### **1. Financial and Contractual Arrangements**

4. The principal contractual arrangements for the development of the Nam Theun 2 Hydropower Project stem from the Project Development Agreement between the GOL and Transfield Corporate Pty Limited of Sydney, Australia (“Transfield”), entered into on November 8, 1993, establishing Transfield’s exclusive mandate to develop the project. This mandate was granted to Transfield in partial fulfilment of the GOL’s commitment to the Royal Thai Government under a Memorandum of Understanding dated June 4, 1993, to supply up to 1500 Megawatts by the year 2000. (The supply quantity has since been extended to 3000 Megawatts by the year 2006.) Based on our discussions with the GOL and the developers, the award to Transfield was not based on a competitive bidding process but was a sole source mandate.

5. In order to fulfill its mandate and assemble a development team, Transfield subsequently entered into a Joint Participation Agreement with Electricite de France (EDF) of Paris, France, the Italian-Thai Development Public Company Limited (ITD) of Bangkok, Thailand, Jasmine International Public Company Limited ("Jasmine") of Bangkok, Thailand, and the Phatra Thanakit Public Company Limited ("Phatra") of Bangkok, Thailand. These firms are collectively referred to as the Project Development Group (PDG).

6. The terms of the concession for the Project were subsequently outlined in the GOL Heads of Agreement, between the PDG and the GOL, entered into in June 1994. The stated objective of the GOL Heads of Agreement was to outline a path toward the completion of the Final Negotiations Phase, defined as the time from the signing of the agreement to financial closing. Among other terms to be discussed in more detail below, the GOL Heads of Agreement defined the GOL's role as a 25% equity shareholder in NTEC. A draft Concession Agreement was developed by counsel to the PDG and subsequently delivered to the GOL in May 1995. Our understanding is that in-depth discussions over the terms and conditions of this document are expected to occur in the near future but that the current drafts do not incorporate any comments received from the GOL. In addition, based on the terms contained therein, the GOL Heads of Agreement expired in February 1996, since the parties failed to enter into "the relevant Transaction Documents within twenty months of the date of this Agreement." Nevertheless, the GOL Heads of Agreement remains the only substantive transaction document outlining the terms of the concession agreed to by all parties.

7. What follows below is a discussion of the principal Project agreements with a focus directed toward highlighting the principal areas of risk from the perspective of the GOL, primarily in its role as sovereign sponsor and secondarily from the perspective of its role as NTEC shareholder.

### 1.1 Concession Agreement

8. The draft Concession Agreement lays out a number of areas of major contractual responsibility for GOL. Many of these are of the nature that could cause additional costs or expenses to be incurred by the GOL. While we recognize that this agreement has not yet been fully negotiated and should be viewed in the context of the PDG's opening position, we nevertheless highlight these as areas to focus on in the context of minimizing the GOL's risk exposure as it moves into the final negotiating phase of the Concession Agreement. Outlined below are the areas which warrant further attention:

- ***Protection of the Project.*** The Concession Agreement contains relatively broad language with respect to the GOL's role in ensuring that the Project goes forward. Conceptually this is not a problem, but the language should be reviewed with an eye toward minimizing the GOL's financial liability to NTEC, the Contractors, the Financiers, and the Shareholders. Given the GOL's role as Shareholder, one might expect that this clause to be less rigorous.

- **Exchange of any amount of Foreign Currency for Lao Kip.** It is unclear to what extent this exposes the GOL to foreign exchange risk.
- **To take all necessary actions as identified in the GOL Environmental Assessment and Management Plans.** A careful review of the EAMP should be undertaken to quantify what the risk is to the GOL in this regard.
- **Protection of the Catchment Area.** Conceptually this clause is not problematic. Nevertheless, it should be reviewed from a technical perspective in order to determine the downside risks assumed by the GOL.
- **Reservoir Area.** The Concession Agreement calls for the GOL to undertake the responsibility and the cost of clearing the reservoir area. Our understanding is that this work is underway.
- **Relocation of People and Property—Actual Cost and Liability with respect to delays.** This is perhaps the single most important responsibility of the GOL and by its very nature is a critical path item. This language needs to be refined in order to clarify the extent to which the GOL is liable for costs associated with delays.

9. In analyzing the risk borne by the GOL through the draft Concession Agreement, the exposure to reductions in Royalty and Resource Levy under several provisions raises the risk profile already inherent in these income streams due to their linkages to fluctuations in the Project's Gross Electrical Revenues and Net Income. These areas are as follows: I) due to lack of rainfall in order to meet O&M and debt service payments; ii) due to change in Lao law; iii) due to "other actions by any Authority which increases the costs of the Project or reduces the returns to NTEC or any Contractor"; and finally, iv) due to Scope Change as defined in the agreement. The GOL's role as a significant shareholder also exposes the GOL to the risk of fluctuations within the net income stream. The offset requirements for events and actions which are outside the control of the GOL appears to be an aggressive position for NTEC to assume. In effect, it creates additional coverage for both the debt providers and equity shareholders for risks that they should be prepared to assume in the normal course of the Project's financing structure.

10. The Concession Agreement contains broad provisions which permit NTEC to take over the GOL Works (the downstream channel and the road system associated with the Project) in the event that the GOL fails to perform its obligations under the Concession Agreement. The agreement further provides for these costs to be borne by the GOL and allows for offsets against the Royalty and Resource Levy. This risk should be quantified from the GOL's perspective, and the language should be refined to limit the circumstances under which this action can be taken and to provide for an adequate cure period.

11. Based on our review of the draft Concession Agreement and our discussion with GOL officials, compensation for Land and Water rights granted to NTEC under the terms of the agreement does not appear to have been fully negotiated at this time. Our understanding is that this may fall outside of the Concession Agreement and may alternatively be addressed through the GOL's role as NTEC shareholder.



12. The Concession Agreement also contains clauses which impose certain restrictions on the GOL, most notably the limitation on access to the NTEC records on a not more than semi-annual basis. This is highly unusual but is most likely rendered meaningless given the GOL's role as shareholder.

## 1.2 Power Purchase Agreement

13. As discussed above, the contractual arrangements for the EGAT Power Purchase Agreement were based on the 1993 MOU between the Lao and Thai governments. This led to a subsequent MOU, entered into in February 1994 (the "EGAT MOU"), between the PDG, the GOL as represented by the Coordinating Committee on Electricity Cooperation and Development in Lao PDR (CECD-L), and EGAT, which called for a definition of the technical scope of the project, establishment of a tariff structure, and the negotiation of a Heads of Agreement for the purchase of power by EGAT. This agreement was subsequently signed on March 16, 1995. Our understanding is that NTEC and EGAT entered into a Power Purchase Agreement (PPA) but that this agreement subsequently expired in October 1996.

14. Our review of the PPA has been limited to a draft copy dated December 7, 1995, which requires EGAT to purchase the Net Electrical Output of the Facility delivered by NTEC at the Delivery Point. Given the nature of our assignment, our focus was on areas that are likely to pose a significant risk to NTEC (including the GOL). Furthermore, given that this agreement has expired, we are highlighting contractual clauses under the assumption that they are likely to reappear in a subsequent agreement.

15. Recent build-up of budgetary pressures at the Royal Thai Government level have resulted in a review and subsequent downgrading of the Thai sovereign credit rating by the major debt rating agencies. We suggest that the GOL review whether this will have any impact on the creditworthiness of EGAT in the eyes of the private project lenders. A downgrading of EGAT's credit might trigger the need for additional guarantees (though the value of the Government of Thailand's guarantee has also been impacted). It is far more likely that EGAT will retain strong credit in the eyes of outside lenders.

16. In general, we would suggest a review of EGAT termination rights under an event of default. We would pay particular attention to the numerous "hair trigger" events of default (Clauses 10.2(a), (b), (c), (d), (e), (j), and (k)). These allow EGAT to terminate the PPA immediately by simply delivering a written termination notice. While most of these give rise to an event of default with the passage of time, certain clauses are relatively short (e.g., 10.2(a)—payment failure beyond 30 days) or might be triggered by an event out of the control of NTEC (i.e., Force Majeure).

17. The currently negotiated tariff structure entails a 50/50 split in the currency of payments by EGAT between U.S. dollars and Thai baht. Furthermore, the PPA tariff structure calls for a calculation of the tariff in U.S. dollars to be then converted to Baht at the then prevailing US dollar/Baht exchange rate. This approach effectively shifts the currency risk to EGAT.

18. While we recognize that NTEC intends to structure a foreign exchange reserve fund mechanism to hedge against any unforeseen foreign exchange rate risk, we suggest a complete third party review of this mechanism to more fully understand the extent to which NTEC remains exposed to foreign exchange risk.

19. A review of the PPA by the project lender's third party "independent" engineer highlighted a number of risks which bear mentioning: 1) With respect to Planned Project Outages, NTEC should seek to insure that these are scheduled only during the dry season; 2) The independent engineer questioned the ability of NTEC to comply with the PPA provision that NTEC forecast, on a monthly basis, the Net Electrical Output, Water Level, and Spilled Water.

20. We note that the version of the PPA we reviewed had provisions for a number of liquidated damage payments by NTEC to EGAT for the failure to commission the project by a certain date. As we are unaware of the actual dollar amounts, we caution that EGAT in general should justify requiring damages of NTEC in excess of the loss of generation revenues. To the extent NTEC fails to deliver power on demand, EGAT's damages should be limited to the differential cost of replacement power. Similarly, to the extent that EGAT were to default on its obligations to take power from NTEC, damages should be limited to the loss of any revenues from spot market sales.

### 1.3 Turnkey Contract

21. The construction contract is structured on a lump-sum, turnkey basis. Therefore, the focus from a risk-analysis perspective has been on the areas of the contract that allow the turnkey contractor to pass increased costs back to NTEC as owner of the Project. In particular, we have looked specifically for circumstances in which the contractor can pass on increased costs which would not be covered by other parties. *The clarity and completeness of these linkages between the major contractual agreements are critical in insuring a proper risk allocation among the major parties to the transaction.*

22. We have reviewed the Lender's Engineers' Preliminary Report in order to capture areas of concern from a technical perspective when viewed in the context of a lender providing seventy percent (70%) of the project's capital cost. Many, though not all, of the technical issues fall under the scope of the Turnkey Contract. With respect to the two most significant areas within the Turnkey Contract, construction cost and schedule, the report indicates that a realistic cost estimate has been put forth and that the 4.5 year construction schedule is "realistic and possibly conservative." While the independent engineer does not consider the contract to be a true lump-sum, fixed-price contract, the report takes comfort in the limitations on the Contractor's ability to pass on increased costs.

23. The independent engineer's report has highlighted at least three circumstances under which the Turnkey Contractor would be allowed to claim additional costs and which are likely to result in NTEC having to increase its equity contribution in order to fund these over-runs. These

are: 1) Ground conditions outside of the Defined Work Area (4.11); 2) Force Majeure (24.1); and 3) Lack of water supply for Test on Completion (22.3 and 4.19).

24. We note that the Contractor is relying on the "accuracy of the sub-surface data identified as such in the Process Design" with respect to the Contractor's assumption of responsibility for "all foreseeable and unforeseeable sub-surface conditions in the Defined Work Area." This raises the question as to who bears responsibility for this risk. If the intent is to place the risk on the Process Design, then the risk shifts to the Process Design Engineer (in this case, a subsidiary of EDF which is also acting in the capacity of joint venture partner in the consortium acting as Turnkey Contractor). A review of Clause 3.3 of the draft Process Design Agreement dated June 19, 1995, indicates that "the Process Designer makes no warranty regarding: A) sub-surface conditions at the Project Land beyond the accuracy of the sub-surface data identified as such in Schedule 1 and forming part of the Process Design." This would appear to limit the risk of the Process Designer with respect to sub-surface conditions. The question then arises as to whether these risks are to be borne by NTEC (in which case the GOL would share in this risk to the extent of its equity commitment), are for the account of the entity which gathered the data, or are to be borne by the GOL under the terms of the Concession Agreement. We note that at the time of the report's writing (September 1995), the independent engineer had not reviewed the definition of the Defined Work Area.

25. The independent engineer's report has raised a concern over the lack of a single contractual interface between the Process Design and the Turnkey Contractor. There does not appear to be a strong reason for the contractual separation of these tasks and the current structure increases the probability of conflict and miscommunication.

26. We are unable to comment at this time on the adequacy of the liquidated damages payable by the Turnkey Contractor as no amounts have been set forth in the draft contract submitted for our review.

27. Given the nature of the procurement and the sole source nature of the EPC contract, we think it is especially important that the GOL direct the necessary resources toward an independent assessment of the project's capital and operating costs. As we have indicated, the senior debt providers require independent engineering review and this perhaps can be extended to incorporate a review on behalf of the GOL.

28. The overlapping roles played by a number of the PDG joint venture partners raises the importance of having an independent engineer oversee the post financial closing process. While it is very likely that a number of the third party lenders will require this, close scrutiny should be paid to the scope of work of the independent engineer to insure that sufficient depth and latitude of oversight are built into this role from the outset.

#### **1.4 Operating and Maintenance Agreement**

29. The Operating and Maintenance Agreement, the principal contractual relationship which governs the life of the Project beyond the completion of construction and acceptance testing, should be carefully aligned with the EGAT PPA with respect to scheduled and forced outages. At this writing, it appears as if this document has not been the subject of significant negotiation among the Project's participants. In fact, EDF has not signed off on the O&M charges included in the SBC Warburg model.

#### **1.5 GOL's Role as Shareholder**

30. The critical contractual arrangements setting forth the rights and responsibilities of the NTEC shareholders are contained in the Joint Venture Agreement. As of this writing, this agreement has not been negotiated and our understanding is that a draft is not available for review. Nevertheless, a number of major issues have been identified with respect to the role that the GOL is expected to have as a shareholder. As both shareholder and sovereign sponsor, the GOL has placed itself on opposite sides of a complex business arrangement. While this is certainly not without precedent, especially in terms of other large scale public use infrastructure developments, it does produce a number of conflicts which should be recognized and addressed carefully throughout the final negotiating phase. While the interests of the equity shareholders and the sovereign are not directly opposed, the GOL will continue to face pressure to reduce the impact of the Royalty Payments and Resource Levy on the equity returns. Furthermore, as the GOL evaluates the tradeoffs among each of its three sources of revenue, it should recognize the significantly higher risk profile of the Resource Levy and even higher risk profile of the equity distributions. The timing of the payment of each revenue stream is also significant since the risk of renegotiation of the tariff structure increases in the latter years as does the likelihood of major equipment overhauls as the project moves out toward the end of its useful life.

31. The GOL has indicated that its interest in participating as an equity investor are driven primarily by a desire to increase the overall return to the Government. In general, the GOL does not want to be constrained or limited to seeking returns simply from royalty payments or resource levies. In effect, they have concluded that an equity investment is the most direct route to satisfying this objective.

32. While we recognize the GOL's point with respect to increasing their overall return, by participating on an equity level they in effect, step into the shoes of the developer. The primary concern here is the constraint this places on the GOL's ability to negotiate a risk allocation approach which is in the best interest of the Government and the Lao people in general. A secondary, though not less significant concern, is the additional risk assumed by the GOL in the event that the Project were to face serious difficulty requiring additional equity funding or a loss of investment.

33. Consideration should also be given to crafting an equity investment vehicle which provides the GOL some access to the "upside" return of the project's cashflows while protecting or limiting the GOL's exposure to the full range of the equity's risk allocation.

34. Funding of the GOL's equity contribution is also an issue which needs to be addressed and will have a major impact on the GOL's return on equity. The working assumption being discussed among the project participants is that the GOL will have a twenty-five percent (25%) stake in NTEC. Depending on the amount of the total project cost, this could amount to a \$100 million contribution. To the extent that the GOL can maximize its in-kind contributions for its equity commitment, it not only increases its equity return but also reduces the extent to which it will need to tap higher-cost commercial sources of funding. Consideration should be given to the type of security and guarantees that the GOL might be expected to provide to the Thai banks (or other commercial or market based lenders) which it may approach for funding of its equity investment. It is highly likely that the GOL will be required to provide a sovereign guarantee for these loans; the impact that this borrowing may have on the GOL's ability to access additional debt financing should be considered. Conversely, IDA type loans are less likely to pose a constraint on additional GOL borrowing since the terms are generally of a structure that has minimal impact from a servicing perspective.

#### **1.6 Current Project-Negotiations Status**

35. At the time of the Study Team's Field Visit, negotiations of the major contractual and financial arrangements for the Project were in a holding pattern, following the expiration of the EGAT Power Purchase Agreement and the lack of progress toward signing a Concession Agreement. Officials of NTEC pointed out to members of the Economic Impact Study Team that a letter received from the Prime Minister's Office of the GOL in June 1996 affirming the Project Development Group's exclusive mandate to develop the Nam Theun project was the sole official document that the developers could point to now that all other agreements had expired. Nevertheless, NTEC appeared to be continuing the project development effort at what appeared to be full speed. The Study Team, however, did not receive a detailed breakdown of the efforts currently being funded. From our discussions, it appeared that most of the development effort was focused on design engineering and environmental mitigation. Their most significant effort was a value engineering study which was completed in August 1996. This led to a reconfiguration of the Project away from the 681 Megawatt-3 turbine configuration toward the approximately 900 Megawatt-4 turbine configuration. The project has since been reconfigured back to the original 681 Megawatt-3 turbine configuration.

36. NTEC indicated that much of the financing effort had been dormant throughout 1996 and that discussions with the international bank project lending group (which includes Deutsche Morgan Grenfell, BZW, and Societe Generale) had been put on hold since late 1995. Discussions with the World Bank regarding the partial risk guarantee for the international bank portion of the Project's debt structure have been on a strictly informal basis. SBC Warburg, financial advisors to the Project Development Group, continues to work on the Project and was involved in updating the Project's Financial Model to include the new 900 Megawatt configuration.

37. We note that much of the GOL's efforts to date on the contractual and financial arrangements associated with the Project have been carried out without the assistance of a qualified, independent financial advisory firm experienced in working with sovereign governments and private developers on large-scale infrastructure projects. Given the complexity of this development effort and the almost herculean task of assembling a project financing package in excess of \$1.5 billion in a part of the developing world which, to date, has not had a track record with respect to private, non-recourse financing, we strongly urge the GOL to retain the services of a financial advisor prior to the resumption of any contract negotiations. This urgency is further heightened by the GOL's role as a significant equity investor, second to EDF among the NTEC participants.

## 2. Project Financing Plan and Financial Model

38. The sheer size of the project and its location in a non-investment grade rated developing country have produced a number of hurdles for the Project's overall financing. In general, the financing plan is based on the principles of non-recourse project financing. Each of the NTEC consortium members is expecting to make a significant equity contribution in order to fulfill the 30% total equity allotment of the funding structure. As discussed earlier, the GOL's 25% stake in the equity funding is significant, and it has reduced the pressure on the other shareholders to seek outside funding.

39. In addition to the 30% portion of the capital cost funded from equity, the Project's debt financing is structured as follows:

Project Funding Source	Percentage of Total Project Capital Cost
Thai-based Banks:	27%
Export Credit Agencies (i.e. Thai EXIM):	19%
EFIC (Australian ECA):	11%
International Banks (supported by the Partial Risk Guarantee):	7%
International Finance Corporation (IFC A):	3%
International Finance Corporation (IFC B):	3%
Total Project Debt:	70%
Equity Commitments (includes PDG and GOL):	30%
	100%



40. As highlighted above, the Project is expected to seek funding from a number of financing sources including direct lending from Thai banks, direct loans from export credit agencies and funding from the International Finance Corporation. In addition, in order to fully fund the Project's remaining debt financing requirements, the Project is currently contemplating senior debt financing from international banks and is expected that it will seek a Partial Risk Guarantee from the World Bank in order to facilitate funding commitments from these lenders.

41. The Partial Risk Guarantee is designed to cover two principal areas of risk: 1. Sovereign contractual obligations; and, 2. Non-insurable force-majeure events. With respect to obligations of the GOL, the primary areas of coverage are:

- *Governments required consents and approvals*
- *Changes in taxes and duties*
- *Obligations under the site lease*
- *Provision of GOL provided infrastructure (GOL Works)*
- *Resettlement obligations to the extent the GOL has the legal power require relocation*
- *Environmental obligations*

42. Non-insurable force majeure events are generally expected to be limited to political risks such as civil disturbances, insurrection, war, sabotage and expropriation.

43. Partial risk guarantees are typically not provided for financings in non-IBRD countries but our understanding is that the World Bank is willing to consider this structure based on the assumption that the principal credit risk of the Project (i.e. the purchase of power by EGAT) has been mitigated given that the power purchaser is an acceptable credit risk to the Project's debt providers. With that risk removed, the sovereign risks are the same regardless of whether the country is classified as IBRD or IDA. The guarantee is based on the total project cost and can be available for up to 25% of the project's funding requirements based on the assumption that the guarantee is available for project costs not covered by other lenders.

44. The Partial Risk Guarantee provides the international lenders with 100% non-accelerable coverage of shortfalls in principal and interest payments resulting from failure of the GOL to meet its contractual obligations and is expected to be structured as co-terminus with the underlying debt obligations.

45. The GOL will be required to enter into a counter-guarantee with the World Bank to support its obligations under the Partial Risk Guarantee. As a result, obligations of the GOL under the concession agreement which are covered under the partial risk guarantee will give rise to contingent liability exposure to the Project. The most significant and potentially problematic of these is its role in relocating the Lao people living in the inundation area.

46. Given the non-recourse nature of the Project's financing, we do not believe that the GOL is expected to provide a sovereign guarantee of the NTEC debt financing outside of the obligations under the counter guarantee with the World Bank.

47. Based on our discussions with SBC Warburg, the debt financing (at 70% of the total project cost) is stretching the limitations of the regional debt providers (the Thai-based lending institutions) and the export credit agencies and this constraint has in part, led to the need for the GOL to accept some contingent liability exposure for the Project through the partial risk guarantee mechanism. The Study Team has not had any direct discussions with lenders to confirm the working assumptions of the project financing but our understanding is that the project has generally been well received. To the extent that project costs were to increase, it appears that additional debt financing is more likely to come from the IFC financing and from the international lenders participating in the World Bank's partial risk guarantee program.

48. Based on our discussions with the project participants including officials from the World Bank, the GOL is not expected to provide additional counter-guarantees to the other lenders participating in the project financing. Nevertheless, as the discussions and negotiations progress, the GOL should give careful consideration to the total package of Governments obligations which private market lenders might seek to be included in the partial risk guarantee policy or in any other form of political risk insurance. These need to be weighed along side of the risks it will assume as an equity investor.

49. Our discussions with the project participants confirmed the significance of the availability of the partial risk guarantee, raising it to a critical level within the overall financing structure. Much in the way the IFC A/B loan structure has operated, all debt providers, whether or not they participate directly in political risk coverage, take significant comfort in the guarantees of the GOL's obligations that this coverage provides.

### **3. Risk Allocation Framework**

50. As currently envisioned, and as we have discussed throughout this analysis, the risk allocation framework allocates significant risks to the GOL in its role as sovereign sponsor which are expected to be included in the coverage extended to the international banks through the partial risk guarantee. The attached Risk Allocation Matrix outlines the principal risk allocation framework across the Development, Construction and Operating phases of the Project based on a review of the contractual agreements made available to the Study Team as of this writing.

51. It is important to understand the risk exposure to the GOL under the current risk allocation framework. Notwithstanding the exposure from its participation as an equity shareholder, the exposure under the Partial Risk Guarantee is limited to coverage of debt service shortfalls caused by a failure on the part of the GOL. An example of this might be a civil disturbance which resulted in significant damage to the transmission line under the jurisdiction of



the Lao P.D.R. For the Partial Risk Guarantee mechanism to be triggered, the Project would have to experience an unplanned outage of significant duration as to exhausted reserve funds prior to a payment due date. In this example, the Project is likely to be able to make the repairs in time to avert a payment default.

52. A more serious example would involve damage directly to the facility due to a GOL fault to an extent which would require six months or greater to repair. In this instance, the GOL would be exposed to the debt service coverage assumed by the Partial Risk Guarantee provider. This would be in addition to any exposure it would have for the cost of repair under the Concession Agreement which has not been subject to any negotiation between the GOL and the PDG at this writing.

53. The currently proposed offsets to the Royalty and Resource Levy exacerbate the risks already inherent in the variability of these revenue streams. A more conventional approach would be to limit these offsets to areas of concern which are in the control of the GOL. As we have discussed earlier, the GOL's shareholder commitment further argues for mitigating the impact of risks such as hydrology on the Royalty and Resource Levy.

54. The more conventional risk allocations such as Completion, Performance, and Operations (which have been allocated to the appropriate parties within the NTEC consortium) need to be evaluated with respect to the adequacy of liability caps (from both a financial and technical/engineering perspective) associated with these risks. These have not been made available to us at the time of this writing and our understanding is that negotiations with respect to these variables has not commenced.

55. Further evaluation of the risk allocation framework will be necessary as the contractual arrangements get closer to final form. As each of the risk parties to the Project in many instances is called upon to perform multiple roles (e.g., Contractor/Equity Shareholder, Operator/Equity Shareholder), we stress that it is important to recognize the inherent conflicts that this poses for the PDG, NTEC, and the GOL.

#### **4. Summary of Financial Model Sensitivity Analyses**

56. The Financial Model constructed by the study team was designed to incorporate the impact of the non-recourse project financing on the rate of return for the Project, the PDG, and the GOL. It is based on the capital and operating cost data incorporated into the Cost-Benefit Analysis Model and on the financing assumptions incorporated into the SBC Warburg model. Tariff assumptions used were those supplied by the GOL and the World Bank in order to project a likely outcome of the renegotiated EGAT PPA. We have not adjusted the interest rates to current market conditions, nor have we incorporated any hedging devices for foreign exchange risks beyond any costs allocated in the Lahmeyer data. (A more detailed discussion of the Financial Model is incorporated in the appendix entitled *Project Financing Module Overview*.)

57. A number of modifications were made in order to more fully assess the returns to the PDG. These principally involved taking into account both the Sponsor's Fee and the outflows and inflows of the Development Costs at the assumed 2:1 reimbursement ratio. We have also limited our analysis to returns calculated on a nominal basis.

58. The Financial Model results demonstrate that under base case assumptions, the Project is relatively robust from an equity return perspective. Base case returns at the Project level were 20.88% (IRR), 22.74% at the PDG level, and 23.38% at the GOL level. The Project is sensitive to hydrology risk and more significantly, to downside impacts to the construction costs.

59. In order to assess the impact of hydrology risk we constructed a worst case scenario based on a simulation of the worst case historical rainfall data extended across a five year period; this scenario resulted in a "break-even" condition, defined as a minimum debt service coverage at or equal to 1.0x. The Worst Case Hydrology Scenario reduced the equity return to 16.24% at the Project level and 17.91% at the PDG level. Minimum Debt Service Coverage fell to .97x (indicating a high likelihood of default) while Average Debt Service Coverage fell to 1.36x from 1.65x in the Base Case. We have conservatively calculated the average debt service coverage over an eight (8) year time horizon since this is the period during which the Project must service the bulk of senior debt; we believe this approach is consistent with that which may be taken by potential lenders. We note that as the shorter maturity debt is retired the debt service coverage levels improve significantly.

60. We then analyzed to what extent would Royalty Fees need to be reduced in order to allow the Project to meet debt service requirements. This "Royalty Haircut" scenario required a five (5) year holiday on Royalty Fees from operating years two (2) through six (6) in order to avert a debt service default.

61. Construction cost overruns were analyzed based on the impact to the Project participants IRR. All overruns are assumed to be funded from additional equity contributions shared among the NTEC joint venture members. In this regard, a 30% overrun resulted in a Project IRR of 15.72%, a PDG IRR of 17.11% and a GOL IRR of 19.27%. We note that in this case, the GOL equity share is increased to \$162.98 million from an assumed \$100.19 million in the Base Case.

62. Worst Case tariff assumptions based on a renegotiation of the tariff downward by 10% in year 15 reduced the Project IRR to 20.76%, the PDG to 22.65%, and the GOL to 23.17%. Under these assumptions the impact minimum and average debt service coverage ratios were negligible.

63. While the Project appears to generate relatively robust returns and adequate debt service coverage over the full term of the loan life, we note that we have analyzed these risks in discrete cases and that the downside impact would be far greater if the Project were to be exposed to multiple risks during operations. A simple example of this would be if the Project were to face a drought scenario following significant cost overruns. Similarly, reductions in the final negotiated

tariff or higher O&M costs would also reduce the “cushion” available to withstand subsequent shocks to the financial structure.

## **5. Outline of the Principal Negotiating Points Available to the GOL**

64. The GOL faces a complex negotiation as it sets forth to complete the Concession Agreement with the Project Development Group and moves toward a renegotiated PPA with EGAT. Many additional underlying contractual agreements accompany these arrangements and will require careful evaluation and review.

65. The most striking issue facing the GOL at this stage is its interest in preserving its return from Royalty and Resource income in a manner which is acceptable to the developers. Exposure to hydrology is well understood in hydropower projects provided that the PPA provides acceptable relief. The most significant issue is with respect to the developer’s stated position that the project as currently configured does not meet its hurdle rates of return and the expectation that the GOL will accommodate them in this regard. Equally, if not more significant, is expectation that the GOL will allow offsets to the Royalty Fee or the Resource Levy to avoid debt service or O&M payment defaults.

66. Subsequent discussions held with the Project Development Group appear to indicate a higher degree of sensitivity with respect to the developer’s compensation from the Sponsor Fee and Development Cost reimbursement provisions. In addition, any final resolution of these issues should incorporate adequate compensation to the GOL for its land and water rights while compensating the developers for assuming the early stage development risks of the project in the context of a sole source negotiation.

67. The GOL and the NTEC team should be commended for taking on one of the most challenging infrastructure developments in the project community. In this regard, we strongly suggest that the GOL seek and receive qualified legal, technical, and financial advisory support as it moves through the final negotiating phase. The dynamic nature of the global power market combined with the regional issues facing the GOL and the other countries in South East Asia will continue to generate a rich brew of complex business, financial, and policy issues placing the Nam Theun 2 Hydropower Facility in a small, rarefied circle of world class infrastructure development projects.

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

<b>Pre-Completion: Development Phase</b>			
<b>Activity</b>	<b>Responsibility</b>	<b>Mitigation of Risk</b>	<b>Risk Sharing</b>
Technical Feasibility	Project Development Group (PDG)	Feasibility study by independent engineer; qualifications and expertise of consortium partners	Allocation of risk and responsibility through Joint Participation Agreement.
Environmental Assessment	Project Development Group (PDG)	Review of EAMP by qualified, independent environmental engineer; standards established by the World Bank; qualifications and expertise of consortium partners	GOL through inadequate assessment of environmental impacts and required mitigation.
Relocation and Resettlement	GOL	Resettlement Action Management Plan subject to World Bank approval	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing.
Protection of National Biodiversity Catchment Area	GOL	GOL will protect the Reservoir catchment area according to the Environmental Assessment Management Plan	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing.
Financing	Project Development Group (PDG)	Consortium shares cost of development phase through Joint Participation Agreement; NTEC responsible for arranging debt financing and equity funding commitments	GOL through opportunity cost of project revenues if project fails to go forward.

**Nam Theun 2 Hydropower Project**  
***Risk Allocation Matrix***

<b>Pre-Completion: Development Phase</b>		
Approvals	GOL	<p>Lenders will require project to obtain all required GOL consents and approvals prior to funding.</p> <p>GOL through opportunity cost of project revenues if project fails to go forward. Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing.</p>

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

<b>Pre-Completion: Construction Phase</b>			
<b>Activity</b>	<b>Responsibility</b>	<b>Mitigation of Risk</b>	<b>Risk Sharing</b>
Contractual Performance (Expertise and Credit Worthiness of JV Participants)	NTEC	Financially sound joint venture participants with demonstrated track records in constructing hydro-power facilities.	GOL through opportunity cost of project revenues if project fails to go forward.
Cost Overruns due to:			
Interconnect Completion	Turnkey Contractor	Fixed price, date certain turnkey contract. Liquidated damages for delay subject to an agreed upon liability cap.	NTEC for amounts which exceed liability cap.
Change Orders by Owner	NTEC	Contingency available to fund change orders subject to lenders approval	
Geological	Turnkey Contractor/Process Designer	Fixed price, date certain turnkey contract; Process design warranties	NTEC for amounts which exceed liability cap.
Inflation	Turnkey Contractor	Fixed price, date certain turnkey contract.	
Natural Force Majeure	Commercial risk insurance providers/Power Purchaser/GOL	Construction risk insurance coverage to the extent available; extensions under Concession Agreement	Power Purchase Agreement provisions for allowable force majeure; NTEC for amounts which exceed insurance coverage.
Contractor Fault	Turnkey Contractor	Fixed price, date certain turnkey contract.	NTEC to the extent amounts not covered by Turnkey Contractor

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

<b>Pre-Completion: Construction Phase</b>			
Provision of Sovereign Sponsor Provided Infrastructure (GOL Works)	GOL	Counter-guarantee provisions; GOL's consent to NTEC's ability to take over GOL Works in the event of a failure of GOL to meet obligations under Concession Agreement.	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing.
Delays in Construction Completion	Turnkey Contractor	Fixed price, date certain turnkey contract; liquidated damages for delay subject to the liability cap.	NTEC for amounts which exceed liability cap.
Equipment Performance (Availability)	Process Designer; Turnkey Contractor	Process Design warranty by Process Designer; commissioning, testing and operating trial by the Turnkey Contractor subject to the liability cap and warranty period.	NTEC for amounts which exceed liability cap.
Financial Risks:			
Interest Rate Increases	Lenders	Fixed rate financing and/or interest rate hedging to the extent available for financing term	
Foreign Exchange Fluctuations	Turnkey Contractor	Contractor responsible for hedging foreign exchange fluctuations during construction period	
Lenders Funding of Construction Drawdowns	Lenders	Firm financing commitments from reputable debt providers based on contractual agreement	
Changes in Tax Rates	GOL	Concession Agreement terms governing the taxation of Project revenues.	

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

<b>Pre-Completion: Construction Phase</b>			
Changes in Laws; Lapse of Governmental Consents	GOL	Concession Agreement terms governing adjustments to Royalty Fee or Resources Levy; extension of the Concession period; compensation to NTEC	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Changes in Regulatory Requirements	GOL	Concession Agreement terms governing adjustments to Royalty Fee or Resources Levy; extension of the Concession period; compensation to NTEC	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Political Force Majeure:			
Civil Disturbance	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Sabotage	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
War	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Expropriation	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing



**Nam Theun 2 Hydropower Project**  
***Risk Allocation Matrix***

<b>Pre-Completion: Construction Phase</b>			
Natural Force Majeure	Commercial risk insurance providers/Power Purchaser/GOL	Construction risk insurance coverage to the extent available; extensions under Concession Agreement	Power Purchase Agreement provisions for allowable force majeure; NTEC for amounts which exceed insurance coverage.
Non-Availability of Required Commercial Insurance	Power Purchaser/GOL	Events which extend beyond coverage of available insurance will lead to suspension of obligations or extensions of duration of agreements.	Partial risk guarantee to the extent coverage is extended to non-commercially insurable risks

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

Post-Completion: Operating Phase			
Activity	Responsibility	Mitigation of Risk	Risk Sharing
Hydrology	NTEC/Power Purchaser/GOL	EGAT pursuant to the Power Purchase Guarantee up to 2,432 GwH	GOL pursuant to Concession Agreement clause re: offsets to Royalty Fee and Resource Levy
Power Purchaser Credit Risk	NTEC	Credit worthiness of EGAT	
O&M Performance	NTEC	Penalty provisions of O&M Agreement	
National Biodiversity Catchment Area Maintenance	O&M operator/GOL	Environmental Assessment Management Plan stipulations and obligations; Penalty provisions of O&M Agreement	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Change in Law/Lapse of Consents	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Foreign Exchange:			
Conversion	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
Repatriation	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing

**Nam Theun 2 Hydropower Project**  
**Risk Allocation Matrix**

<b>Post-Completion: Operating Phase</b>			
<b>Devaluation</b>	<b>Power Purchaser</b>	<b>Tariff structured as U.S. \$/Thai Baht split to match project debt service obligation</b>	
<b>Natural Force Majeure</b>	Commercial risk insurance providers/Power Purchaser/GOL	Commercial risk insurance coverage to the extent available; extensions under Concession Agreement	Power Purchase Agreement provisions for allowable force majeure; NTEC for amounts which exceed insurance coverage.
<b>Political Force Majeure:</b>			
<b>Civil Disturbance</b>	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
<b>Sabotage</b>	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
<b>War</b>	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
<b>Expropriation</b>	GOL	Concession Agreement provisions regarding GOL's obligation to compensate NTEC for loss during continuation of Force Majeure event	Partial risk guarantee coverage of GOL's sovereign contractual obligations post financial closing
<b>Tariff Renegotiation</b>	NTEC	Provisions of Power Purchase Agreement	GOL

**Nam Theun 2 Hydropower Project**  
***Risk Allocation Matrix***

Post-Completion: Operating Phase			
Non-Availability of Commercial Insurance	Power Purchaser/GOL	Events which extend beyond coverage of available insurance will lead to suspension of obligations or extensions of duration of agreements.	Partial risk guarantee to the extent coverage is extended to non-commercially insurable risks



## **Addendum**

### **Project Financing Module Overview**

#### **General Principles**

The project financing module consists of a single Excel file (FINMOD.XLS). This module interfaces with two other files used in the cost benefit analysis: the Economic Cost Benefit Model (A680\_10.XLS) and the Government of Laos Loan Amortization Model (GOL\_LOAN.XLS). The purpose of the project financing module is to calculate rates of return for the project, the project developers, and the Government of Laos. This is achieved by using assumptions developed by SBC Warburg and the Louis Berger team. The model draws on the assumptions and financial data inputs to develop a financial structure representative of how a project with the size and characteristics of the Nam Thuen II project would be financed on a non-recourse basis. It is important to note that the model produces results from a financing point of view versus an economic point of view. Therefore, the model focuses solely on cash outlays that directly result from undertaking the project.

#### **General Module Organization and Logic**

The file is comprised of eight (8) key spreadsheets including:

- An assumptions worksheet;
- A capital expenditure sources and uses buildup worksheet;
- A debt service projection;
- A reserves worksheet;
- Depreciation schedules;
- Operations;
- Profit and loss statements; and
- Cash flow statements.

These worksheets generally build on each other resulting in pro forma estimates of profits and losses and project cash flows. The cash flow statement is the key product of the model as it calculates debt coverage ratios and internal rates of return.

#### **Worksheet Overview**

This section will describe each worksheet in detail, identifying the source of key assumptions, as well as processing logic of the worksheet.

- The assumptions worksheet draws on key assumptions developed by SBC Warburg. These assumptions are identified below:

- *Funding Distribution:* The relative distribution of sources of funding is assumed to be exactly the same as SBC Warburg's model.
- *Transaction Fees:* transaction fees are assumed to be the same as SBC Warburg's model. For consistency purposes, we did not assume additional transaction fees, such as equity commitment fees or debt and equity placement fees.
- *Depreciable Life of a Facility:* The model assumes 25-year, straight-line depreciation for all assets subject to depreciation.
- *Ownership Structure:* The model assumes 25% ownership is retained by the Government of Laos and 75% is retained by the project development group.
- *Government of Laos Equity Commitment:* As a 25% owner in the project, the Government of Laos' equity contribution is equal to 25% of the total required equity.
- *Development Cost Reimbursements:* The model assumes 65% of the development costs (including premiums) are paid at the financial close and 35% are paid at the conclusion of construction.
- *Interest Rates:* Interest rates are assumed to be the same as those in SBC Warburg's model.
- *Debt Repayment Terms:* Each source of debt and the terms of repayment are assumed to be the same as those in SBC Warburg's model.
- *Reserve Funds:* A 6-month debt-service reserve is assumed for the model. In addition, a major overall reserve is not funded in this project. Instead the assumptions for recurring renewal and replacement expenditures are assumed to be the same as in the economic cost benefit model.
- *Return on Invested Funds:* A 7% return is assumed for funds on deposit in debt service reserves.
- *Operating Term:* 25 years.
- *Annual Inflation Rate:* 4.5% which represents the weighted average of inflations assumptions for the Thai Baht (6%) and the U.S. dollar (3%).
- *Years Until Operation:* It is assumed that the period of the time from when the cost estimates were calculated to the startup of operations will be 5.7 years.
- *Environmental Mitigation:* Expenditures in real terms for environmental mitigation paid for by the project are assumed to be \$4.5M for Years 1-4, \$3.5M for Year 5, and \$2.75M for Years 6-25.
- *Year 1 Cost:* The model links to the cost benefit model for these costs in real terms.
- *Project Schedule:* The model assumes that project development started in May 1993 and will conclude in April 1998. Detailed design and construction will commence in May 98 and conclude in January 2003. Operations will commence in January 2003 and conclude in January 2028.

The assumptions worksheet also includes a data convergence section which is used to avoid circularity in calculating transaction fees which are based on the total loan of the project.

**Project Financing Module Overview**  
**Page 3**

- **Project Financing Capital Sources and Uses Buildup:** This worksheet calculates the total funding requirement for the project using hard cost data from the cost benefit model, namely, development costs and design and construction costs. This worksheet calculates project financing arrangement fees, placement fees, risk premium fees, as well as commitment fees during construction. This worksheet contains a detailed spreadsheet which calculates the amount of construction draws on a monthly basis to derive an estimate of the interest costs which are incurred during construction. Based on the sizing of the total funding requirement and on the resulting debt-service schedules, this worksheet also determines a necessary debt-service reserve that will be prefunded by the project. The primary output of this worksheet is a total funding requirement for the project and a calculation of the pro-rata share each source of funding will be required to provide. It is important to note that the sources of debt financing exceed by a small margin the maximum commitment level as identified in the SBC Warburg model. However, this concern could be alleviated by funding debt service in the early years (through cash sweeps) on project distributions, and therefore, is not a critical concern. However, to the extent costs of the project exceed current estimates, the model assumes that these maximum commitments will have to be observed and therefore will require equity to fund any cost overruns.
- **Debt Amortization Schedules:** Using the financing terms and interest rates in the assumptions worksheet, this worksheet calculates approximate principal and interest payments on an annual basis through the project's life. The repayment structure is assumed to be level principal payments, with the exception of the financing from Thai banks which assumes a two-tiered repayment structure similar to that used in the SBC Warburg model. It is assumed that the use of this structure by SBC was to address the low debt-service coverage experience in the early years of the project.
- **Income From Reserves:** This worksheet maintains the balances of each debt-service reserve fund. It is assumed that deposits are made at the beginning of the period and therefore interest earned is based on a full year deposit. Fund balances are maintained for each reserve fund until the final principal payment. At that time, the fund balance is liquidated, which is consistent with industry practice -- to use reserve fund balances to payoff final principal payments. Interest earned by the reserve fund is counted as taxable income and the liquidation of the fund provides a cash infusion in the cash flow statements.
- **Depreciation Schedules:** This worksheet calculates depreciation charges on an annual basis through the life of the project. It is based on the simplified assumptions contained in the SBC Warburg model which provide for a 25-year, straight-line depreciation of fixed assets, as well as interest during construction and transaction fees experienced during the development of the project. Recurring capital improvements are assumed to be financed on a pay-as-you-go basis and are expensed in the year that they are incurred. Therefore, additions to basis are not considered by the model.



- **Operations:** This worksheet calculates the annual operational costs, as well as the annual operating revenues generated by the project. The data for this worksheet is provided through links to the economic cost benefit model. This linkage allows alternative tariff scenarios to flow through the project financing module.
- **Profit and Loss Statement:** This worksheet calculates the income for the project for the purposes of identifying royalty payments in resource levies due to the Laos government. Royalty payments are based on a percentage of the electricity payments from EGAT. These payment percentages are based on scenarios contained in the economic cost benefit model. Resource levies are calculated based on a percentage of pre-tax income from the project. The resource levy rate is also linked to the economic cost benefit model and can be changed using different scenarios within that model.
- **Cash Flow Statement:** This worksheet calculates the project's cash flows from the beginning of development through the conclusion of the operating term. Drawing on information from the preceding worksheets, this worksheet calculates rates of return for the project, project developers, and the Government of Laos. The project rate of return is the key indicator of the project's attractiveness without regard to ownership structure. The project developer rate of return considers both the investments and the returns experienced by the project developers since they started their efforts in 1993.

Specifically, this rate of return differs from the project rate of return in that it includes the developers' \$35M in project development expenditures and \$100M in development fees paid out at financial close and at completion of construction. The Government of Laos' internal rate of return is determined by taking its pro-rata share of project cash flows and adding royalty receipts, resource levy receipts, and subtracting unmitigated environmental and social expenditures and interest expenses associated with the financing of its equity contribution. The unmitigated environmental expenditures are provided by the economic cost benefit analysis. The interest expenditures are provided by the Government of Laos' loan spreadsheet.

### Functionality

The project financing model has been designed to allow alternative scenarios in the economic cost benefit analysis to flow through to the project financing results. Specifically, the user can manipulate the following items in the economic cost benefit model to effect a change in the financial results:

- Generation output;
- Tariff structure;
- Construction cost estimates;
- Unmitigated environmental and social costs;

## **Project Financing Module Overview**

### **Page 5**

- Royalty payment structure; and
- Tax payment structure.

In addition, nearly all the key financing assumptions can be manipulated to identify their effect on the financial results of the project.

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

FINANCIAL RESULTS SENSITIVITY ANALYSIS

HYDROLOGY RISK

FINANCIAL RETURNS UNDER DIFFERENT OPTIONS

	Total Funding Requirement	Required Equity %	GOL Equity Amount	Min. Debt Coverage	1st Eight Yr. Avg. Debt Coverage	Project IRR	PDG IRR	GOL IRR
1. <b>Base Case</b> Generation Output (gwh): Tariff Structure: GOL Financing: Construction Cost Overruns: Royalty Scenario: Tax Scenario: E&S Costs Unmitigated by Project:	\$ 1,335.82	30%	\$ 100.19	1.40	1.65	20.88%	22.74%	23.38%
Exp. Val. 5.7 Const Nom 60%/40% 0% #1 #1 High								
2. <b>Downside #1: Hydrology Worst Case</b> Generation Output (gwh): Tariff Structure: GOL Financing: Construction Cost Overruns: Royalty Scenario: Tax Scenario: E&S Costs Unmitigated by Project:	\$ 1,335.82	30%	\$ 100.19	0.97	1.36	16.24%	17.91%	19.32%
5 yr Drought @ 3786 5.7 Const Nom 60%/40% 0% #1 #1 High								
3. <b>Upside #1: Hydrology Best Case</b> Generation Output (gwh): Tariff Structure: GOL Financing: Construction Cost Overruns: Royalty Scenario: Tax Scenario: E&S Costs Unmitigated by Project:	\$ 1,335.82	30%	\$ 100.19	1.40	1.67	21.17%	23.03%	23.65%
Highest 10% 5.7 Const Nom 60%/40% 0% #1 #1 High								
4. <b>Required Royalty Halcut Under Worst Case</b> Generation Output (gwh): Tariff Structure: GOL Financing: Construction Cost Overruns: Royalty Scenario: Tax Scenario: E&S Costs Unmitigated by Project:	\$ 1,335.82	30%	\$ 100.19	1.03	1.40	16.84%	18.55%	18.12%
5 yr Drought @ 3786 5.7 Const Nom 60%/40% 0% 5yr Holiday from Yr 2 thru Yr 6 #1 High								

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

FINANCIAL RESULTS SENSITIVITY ANALYSIS

CONSTRUCTION COST RISK

FINANCIAL RETURNS UNDER DIFFERENT OPTIONS

1. **Base Case**  
Generation Output (gwh):  
Tariff Structure:  
GOL Financing:  
Construction Cost Overruns:  
Royalty Scenario:  
Tax Scenario:  
E&S Costs Unmitigated by Project:
2. **Downside #1: 10% Cost Overrun**  
Generation Output (gwh):  
Tariff Structure:  
GOL Financing:  
Construction Cost Overruns:  
Royalty Scenario:  
Tax Scenario:  
E&S Costs Unmitigated by Project:
3. **Downside #2: 20% Cost Overrun**  
Generation Output (gwh):  
Tariff Structure:  
GOL Financing:  
Construction Cost Overruns:  
Royalty Scenario:  
Tax Scenario:  
E&S Costs Unmitigated by Project:
4. **Downside #3: 30% Cost Overrun**  
Generation Output (gwh):  
Tariff Structure:  
GOL Financing:  
Construction Cost Overruns:  
Royalty Scenario:  
Tax Scenario:  
E&S Costs Unmitigated by Project:
5. **Required Royalty Halcut Under Worst Case**  
Generation Output (gwh):  
Tariff Structure:  
GOL Financing:  
Construction Cost Overruns:  
Royalty Scenario:  
Tax Scenario:  
E&S Costs Unmitigated by Project:

Total Funding Requirement	Required Equity %	GOL Equity Amount	Min. Debt Coverage	1st Eight Yr. Avg. Debt Coverage	Project IRR	PDQ IRR	GOL IRR
\$ 1,335.82	30%	\$ 100.19	1.40	1.65	20.88%	22.74%	23.38%
\$ 1,419.54	34%	\$ 121.12	1.40	1.65	18.90%	20.61%	21.83%
\$ 1,503.27	38%	\$ 142.05	1.40	1.65	17.19%	18.75%	20.48%
\$ 1,587.00	41%	\$ 162.98	1.40	1.65	15.72%	17.11%	19.27%
NOT REQUIRED							

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

FINANCIAL RESULTS SENSITIVITY ANALYSIS

TARIFF STRUCTURE RISK

FINANCIAL RETURNS UNDER DIFFERENT OPTIONS

1. Base Case									
Generation Output (gwh):	Exp. Val.								
Tariff Structure:	Base								
GOL Financing:	60%/40%								
Construction Cost Overruns:	0%								
Royalty Scenario:	#1								
Tax Scenario:	#1								
E&S Costs Unmitigated by Project:	50%								
2. Downside #1: 5.7% -10% In Yr 15									
Generation Output (gwh):	Exp. Val.								
Tariff Structure:	2nd Worst								
GOL Financing:	60%/40%								
Construction Cost Overruns:	0%								
Royalty Scenario:	#1								
Tax Scenario:	#1								
E&S Costs Unmitigated by Project:	50%								
3. Downside #2:NAM NGUM									
Generation Output (gwh):	Exp. Val.								
Tariff Structure:	Worst								
GOL Financing:	60%/40%								
Construction Cost Overruns:	0%								
Royalty Scenario:	#1								
Tax Scenario:	#1								
E&S Costs Unmitigated by Project:	50%								
4. Upside #1: Coal									
Generation Output (gwh):	Exp. Val.								
Tariff Structure:	Best								
GOL Financing:	60%/40%								
Construction Cost Overruns:	0%								
Royalty Scenario:	#1								
Tax Scenario:	#1								
E&S Costs Unmitigated by Project:	50%								
5. Required Royalty Halcut Under Worst Case									
Generation Output (gwh):	Exp. Val.								
Tariff Structure:	Worst								
GOL Financing:	60%/40%								
Construction Cost Overruns:	0%								
Royalty Scenario:	10 year holiday								
Tax Scenario:	#1								
E&S Costs Unmitigated by Project:	50%								
Total Funding Requirement		\$ 1,335.82	30%	\$ 100.19	1.40	1.65	20.88%	22.74%	23.38%
		\$ 1,335.82	30%	\$ 100.19	1.40	1.65	20.76%	22.65%	23.17%
		\$ 1,335.82	30%	\$ 100.19	1.43	1.69	20.87%	22.85%	22.95%
		\$ 1,335.82	30%	\$ 100.19	1.45	1.71	22.04%	23.87%	24.46%
		NOT REQUIRED							

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS	From:		Jun-93	Jun-94	Jun-95	Jun-96	May-97	May-98	Jan-99	Jan-00	Jan-01	Jan-02	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08
	To:		Jan-94	Jan-95	Jan-96	Jan-97	Jan-98	Jan-99	Jan-00	Jan-01	Jan-02	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09
Operating Year:			-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	
CASH FLOW STATEMENT																		
BASE CASE																		
Revenues & Costs																		
Electricity Payments from EGAT																		
Operational Costs																		
Subtotal																		
Laos Royalty Payments																		
Royalty Payment Rate																		
Royalty Payment Amount																		
Subtotal																		
Operating Cash Flow																		
Non-Operating Cash Flows																		
Interest Income																		
Reserve Liquidation																		
Non-Operating Income																		
Taxes & Resource Levies																		
Cash Flow before Project Expenditures																		
Interest Paid																		
Principal Repayment																		
Project Expenditures																		
Capital Improvements																		
Equity Contributions																		
Net After-Resource Levy Cash Flow																		
(400.74)																		
Project IRR (Nominal)																		
NPV Check																		
\$ (45.09) \$ (37.44) \$ (77.85) \$ (81.75) \$ (158.61) \$ 73.05 \$ 81.46 \$ 89.83 \$ 73.75 \$ 96.01																		
20.88%																		
\$0.00																		

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS																					
From:	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24				
To:	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26			
Operating Year:	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CASH FLOW STATEMENT																					
BASE CASE																					
Revenues & Costs																					
Electricity Payments from EGAT	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14		
Operational Costs	(39.00)	(40.92)	(41.71)	(43.59)	(45.57)	(47.63)	(49.79)	(52.05)	(54.41)	(56.88)	(59.46)	(62.16)	(64.99)	(67.94)	(71.03)	(74.26)	(77.64)	(81.17)	(84.87)		
Subtotal	260.14	258.21	257.43	255.54	253.57	251.50	249.34	247.09	244.73	242.26	239.67	236.97	234.15	231.20	228.11	224.87	221.47	217.92	214.22		
Laos Royalty Payments																					
Royalty Payment Rate	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	30%		
Royalty Payment Amount	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(89.74)		
Subtotal	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.96)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(14.87)	(89.74)		
Operating Cash Flow																					
	245.18	243.26	242.47	240.58	238.61	236.55	234.39	232.13	229.77	227.30	224.71	222.00	219.19	216.28	213.27	210.16	206.95	203.64	200.23		
Non-Operating Cash Flows																					
Interest Income	9.10	9.73	10.41	6.07	6.49	5.78	6.18	-	-	-	-	-	-	-	-	-	-	-	-		
Reserve Liquidation	-	-	72.53	-	16.65	-	94.54	-	-	-	-	-	-	-	-	-	-	-	-		
Non-Operating Income	9.10	9.73	82.94	6.07	23.15	5.78	100.73	-	-	-	-	-	-	-	-	-	-	-	-		
Taxes & Resource Levies																					
	(8.05)	(8.56)	(9.13)	(9.23)	(9.40)	(9.49)	(9.60)	(27.85)	(27.50)	(27.13)	(22.25)	(21.85)	(21.42)	(41.96)	(41.03)	(26.60)	(26.60)	(26.60)	(26.60)		
Cash Flow before Project Expenditures																					
	246.23	244.43	316.29	237.42	252.36	232.84	325.51	204.28	202.27	200.17	172.55	170.26	167.86	144.37	142.20	108.53	108.53	108.53	108.53		
Interest Paid																					
	(46.89)	(35.36)	(23.83)	(15.59)	(10.64)	(6.12)	(2.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Principal Repayment																					
	(100.52)	(100.52)	(100.52)	(45.70)	(45.70)	(37.01)	(37.01)	-	-	-	-	-	-	-	-	-	-	-	-		
Project Expenditures																					
Capital Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Equity Contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Net After-Resource Levy Cash Flow																					
	\$ 98.83	\$ 108.56	\$ 191.94	\$ 176.14	\$ 196.02	\$ 189.70	\$ 286.46	\$ 204.28	\$ 202.27	\$ 200.17	\$ 172.55	\$ 170.26	\$ 167.86	\$ 144.37	\$ 142.20	\$ 108.53	\$ 108.53	\$ 108.53	\$ 108.53		
(400.74)																					
Project IRR (Nominal)																					
NPV Check																					

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS	From:		Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
	To:		Jan-25	Jan-26	Jan-27	Jan-28	Jan-29
Operating Year:			22	23	24	25	26
CASH FLOW STATEMENT							
BASE CASE							
Revenues & Costs							
Electricity Payments from EGAT			\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14
Operational Costs			(77.64)	(81.18)	(84.87)	(88.74)	(88.74)
Subtotal			221.50	217.96	214.26	210.39	210.39
Less Royalty Payments							
Royalty Payment Rate			30%	30%	30%	30%	30%
Royalty Payment Amount			(89.74)	(89.74)	(89.74)	(89.74)	(89.74)
Subtotal			(89.74)	(89.74)	(89.74)	(89.74)	(89.74)
Operating Cash Flow			131.75	128.22	124.52	120.65	120.65
Non-Operating Cash Flows							
Interest Income			-	-	-	-	-
Reserve Liquidation			-	-	-	-	-
Non-Operating Income			-	-	-	-	-
Taxes & Resource Levies			(25.59)	(24.53)	(23.42)	(22.26)	(22.26)
Cash Flow before Project Expenditures			106.17	103.69	101.10	98.40	98.40
Interest Paid			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Principal Repayment			-	-	-	-	-
Project Expenditures			-	-	-	-	-
Capital Improvements			-	-	-	-	-
Equity Contributions			-	-	-	-	-
Net After-Resource Levy Cash Flow			(400.74)	\$ 106.17	\$ 103.69	\$ 101.10	\$ 98.40
Project IRR (Nominal)							
NPV Check							



## THUEN II COST BENEFIT ANALYSIS PROJECT FINANCING MODULE

PERIODS	From:	Jan-83	Jun-84	Jan-85	Jun-85	Jan-86	Jun-86	Jan-87	May-87	Jan-88	May-88	Jan-89	Jun-89	Jan-90	Jun-90	Jan-91	Jan-92	Jan-93	Jan-94	Jan-95	Jan-96	Jan-97	Jan-98	Jan-99	Jan-00	Jan-01	Jan-02	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09
To:	Operating Year:	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5																		
<b>DEBT SERVICE COVERAGE CALCULATIONS</b>																																		
<b>BASE CASE</b>																																		
<b>Cash Flow before Project Expenditures</b>																																		
<b>Resource Levies</b>																																		
<b>Cash Flow Available for Debt Service</b>																																		
<b>Debt Service Requirements</b>																																		
<b>Coverage Ratio</b>																																		
<b>Min Coverage</b>																																		
<b>Average Coverage</b>																																		
<b>Average 1st Eight Years</b>																																		

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS		From: To: Operating Year:																			
		Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24			
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
DEBT SERVICE COVERAGE CALCULATIONS																					
BASE CASE																					
Cash Flow before Project Expenditures																					
Resource Levies																					
		246.23	244.43	316.29	237.42	252.36	232.84	325.51	204.28	202.27	200.17	172.55	170.26	167.86	144.37	142.20	108.53				
		(8.05)	(8.56)	(9.13)	(9.23)	(9.40)	(9.49)	(9.60)	(27.85)	(27.50)	(27.13)	(22.25)	(21.85)	(21.42)	(41.96)	(41.03)	(26.60)				
		238.18	235.87	307.16	228.19	242.96	223.35	315.91	176.43	174.78	173.05	150.30	148.41	146.43	102.41	101.17	81.93				
		147.40	135.88	124.35	61.29	56.33	43.14	39.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
		1.62	1.74	2.47	3.72	4.31	5.18	8.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
		Min Coverage																			
		Average Coverage																			
		Average 1st Eight Years																			

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS	From:		Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
	To:		Jan-25	Jan-26	Jan-27	Jan-28	Jan-29
Operating Year:			22	23	24	25	
DEBT SERVICE COVERAGE CALCULATIONS							
BASE CASE			106.17	103.69	101.10	98.40	
Cash Flow before Project Expenditures			(25.59)	(24.53)	(23.42)	(22.26)	
Resource Leases			80.58	79.16	77.69	76.14	
Cash Flow Available for Debt Service			0.00	0.00	0.00	0.00	
Debt Service Requirements			N/A	N/A	N/A	N/A	
Coverage Ratio							
Min Coverage							
Average Coverage							
Average 1st Eight Years							

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

[illegible]

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS	From:		Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24
	To:	Operating Year:	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	
PROJECT DEVELOPMENT GROUP IRR																			
BASE CASE																			
Project Development Costs																			
Developer Fees																			
Pro Rata Share of Project Cash Flows																			
Project Cash Flow To/From PDG																			
Project IRR to PDG																			
NPV Check																			
GOL INTERNAL RATE OF RETURN																			
BASE CASE																			
Pro Rata Share of Project Cash Flows																			
Royalty Receipts																			
Resource Levy Receipts																			
Environment & Social Exp. Unmit. by Project																			
Interest Expense																			
Project Cash Flow To/From GOL																			
Project IRR to GOL																			
NPV Check																			

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS	From:		Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
	To:		Jan-25	Jan-26	Jan-27	Jan-28	Jan-29
		Operating Year:	22	23	24	25	26
PROJECT DEVELOPMENT GROUP IRR							
BASE CASE							
Project Development Costs							
Developer Fees							
Pro Rata Share of Project Cash Flows			79.62	77.77	75.83	73.80	73.80
Project Cash Flow To/From PDG			79.62	77.77	75.83	73.80	73.80
Project IRR to PDG							
NPV Check							
GOL INTERNAL RATE OF RETURN							
BASE CASE							
Pro Rata Share of Project Cash Flows			\$ 26.54	\$ 25.92	\$ 25.28	\$ 24.60	\$ 24.60
Royalty Receipts			89.74	89.74	89.74	89.74	89.74
Resource Levy Receipts			25.59	24.53	23.42	22.26	22.26
Environment & Social Exp. Unmit. by Project			(7.78)	(8.01)	(8.25)	(8.50)	(8.50)
Interest Expense			(0.15)	(0.14)	(0.14)	(0.14)	(0.14)
Project Cash Flow To/From GOL			\$ 133.94	\$ 132.04	\$ 130.04	\$ 127.96	\$ 127.96
Project IRR to GOL							
NPV Check							

**NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

PERIODS	Operating Year:																	
From:	To:																	
Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
PROFIT & LOSS STATEMENT																		
Operating Profit																		
Electricity Payments from EGAT	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	
Operational Costs	(33.52)	(35.03)	(36.61)	(38.27)	(39.46)	(39.00)	(40.92)	(41.71)	(43.59)	(45.57)	(47.63)	(49.79)	(52.05)	(54.41)	(56.88)	(59.46)	(62.04)	
Depreciation & Amortization	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	
Subtotal	220.16	218.64	217.06	215.41	215.21	214.68	212.75	211.97	210.08	208.11	206.04	203.88	201.63	199.27	196.80	194.21	191.74	
Less Royalty Payments																		
Royalty Payment Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
Royalty Payment Amount	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	
Subtotal	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	\$ (14.96)	
Profit Before Interest & Taxes																		
Non-Operating Income	6.95	7.44	7.96	8.51	9.11	9.10	9.73	10.41	6.07	6.49	5.78	6.18	-	-	-	-	-	
Interest Expense	6.95	7.44	7.96	8.51	9.11	9.10	9.73	10.41	6.07	6.49	5.78	6.18	-	-	-	-	-	
Interest on Project Borrowings	(101.33)	(91.90)	(82.47)	(71.47)	(58.93)	(46.89)	(35.36)	(23.83)	(15.59)	(10.64)	(6.12)	(2.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	
Profit Before Taxes																		
Resource Levies	110.82	119.23	127.60	137.49	150.44	161.93	172.17	183.60	185.60	189.00	190.74	193.07	186.67	184.31	181.84	149.34	146.87	
Resource Levy Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Levy Amount (Rate * Profits)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Taxes Paid	-	-	-	-	-	(8.05)	(8.56)	(9.13)	(9.23)	(9.40)	(9.49)	(9.60)	(27.85)	(27.50)	(27.13)	(22.21)	(21.84)	
Net Income	\$ 110.82	\$ 119.23	\$ 127.60	\$ 137.49	\$ 150.44	\$ 153.88	\$ 163.61	\$ 174.47	\$ 176.37	\$ 179.60	\$ 181.26	\$ 183.47	\$ 158.82	\$ 156.81	\$ 154.71	\$ 127.04	\$ 124.57	

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS		Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
From:		17	18	19	20	21	22	23	24	25	
To:											
Operating Year:											
PROFIT & LOSS STATEMENT											
<b>Operating Profit</b>											
Electricity Payments from EGAT	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14
Operational Costs	(62.16)	(64.99)	(67.94)	(71.03)	(74.26)	(77.64)	(81.18)	(84.87)	(88.74)	(92.74)	(96.88)
Depreciation & Amortization	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)	(45.46)
Subtotal	191.51	188.69	185.74	182.65	179.41	176.03	172.50	168.80	164.93	160.94	156.94
<b>Laos Royalty Payments</b>											
Royalty Payment Rate	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Royalty Payment Amount	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)
Subtotal	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)	\$ (44.87)
<b>Profit Before Interest &amp; Taxes</b>	146.64	143.82	140.86	137.78	134.54	131.26	127.93	124.55	121.12	117.64	114.12
<b>Non-Operating Income</b>											
Interest Income	-	-	-	-	-	-	-	-	-	-	-
Non-Operating Income	-	-	-	-	-	-	-	-	-	-	-
<b>Interest Expense</b>	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Interest on Project Borrowings	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
<b>Profit Before Taxes</b>	146.64	143.82	140.86	137.78	134.54	131.26	127.93	124.55	121.12	117.64	114.12
<b>Resource Levies</b>											
Resource Levy Rate	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Levy Amount (Rate * Profits)	(22.00)	(21.57)	(21.13)	(20.69)	(20.25)	(19.81)	(19.37)	(18.93)	(18.49)	(18.05)	(17.61)
Taxes Paid	(21.85)	(21.42)	(20.98)	(20.54)	(20.10)	(19.66)	(19.22)	(18.78)	(18.34)	(17.90)	(17.46)
<b>Net Income</b>	\$ 124.80	\$ 122.40	\$ 119.88	\$ 117.24	\$ 114.54	\$ 111.79	\$ 109.00	\$ 106.17	\$ 103.30	\$ 100.39	\$ 97.44



NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS		From:	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18
		To:	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
Operating Year:			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Operations																		
Operational Costs																		
Annual O&M			\$ 19.28	20.15	21.05	22.00	22.99	24.02	25.10	26.23	27.41	28.65	29.94	31.28	32.69	34.16	35.70	37.31
O&M Insurance			1.93	2.01	2.11	2.20	2.30	2.40	2.51	2.62	2.74	2.86	2.99	3.13	3.27	3.42	3.57	3.73
NTEC Administration Costs			3.86	4.03	4.21	4.40	4.60	4.80	5.02	5.25	5.48	5.73	5.99	6.26	6.54	6.83	7.14	7.46
Pay-As-You Go Capital Improvements <sup>1</sup>			2.67	2.80	2.93	3.07	3.21	3.36	3.52	3.69	3.87	4.05	4.25	4.46	4.68	4.90	5.15	5.40
Environmental Mitigation			5.78	6.04	6.32	6.60	6.96	7.36	7.76	8.16	8.59	9.02	9.46	9.90	10.34	10.78	11.22	11.66
Total			\$ 33.52	\$ 35.03	\$ 36.61	\$ 38.27	\$ 39.46	\$ 40.92	\$ 41.71	\$ 43.59	\$ 45.57	\$ 47.63	\$ 49.79	\$ 52.05	\$ 54.41	\$ 56.88	\$ 59.46	
Electricity Payments from EGAT																		
Demand (gwh)			5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Tariff			\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70
Total			\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14
(1) In lieu of Overhead Reserve																		

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

PERIODS		Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16
		Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17
From:		1	2	3	4	5	6	7	8	9	10	11	12	13	14
To:															
Operating Year:															
<b>Depreciation Calculations</b>															
<b>25 Year Straight Line</b>															
Book Value (Beg of Period)		\$ 1,136.52	\$ 1,091.06	\$ 1,045.60	\$ 1,000.14	\$ 954.68	\$ 909.22	\$ 863.76	\$ 818.30	\$ 772.84	\$ 727.37	\$ 681.91	\$ 636.45	\$ 590.99	
Depreciation Charge		45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	
Book Value (End of Period)		\$ 1,091.06	\$ 1,045.60	\$ 1,000.14	\$ 954.68	\$ 909.22	\$ 863.76	\$ 818.30	\$ 772.84	\$ 727.37	\$ 681.91	\$ 636.45	\$ 590.99	\$ 545.53	

NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27
Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
14	15	16	17	18	19	20	21	22	23	24	25
\$ 545.53	\$ 500.07	\$ 454.61	\$ 409.15	\$ 363.69	\$ 318.23	\$ 272.77	\$ 227.30	\$ 181.84	\$ 136.38	\$ 90.92	\$ 45.46
45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46	45.46
\$ 500.07	\$ 454.61	\$ 409.15	\$ 363.69	\$ 318.23	\$ 272.77	\$ 227.30	\$ 181.84	\$ 136.38	\$ 90.92	\$ 45.46	\$ -

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

PERIODS	From:											
	To:											
	Operating Year:											
	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27	Jan-28	Jan-29	Jan-30
17	18	19	20	21	22	23	24	25	26	27	28	29
Operations												
Operational Costs												
Annual O&M	38.99	40.74	42.57	44.49	46.49	48.58	50.77	53.06	55.44			
O&M Insurance	3.90	4.07	4.26	4.45	4.65	4.86	5.08	5.31	5.54			
NTEC Administration Costs	7.80	8.15	8.51	8.90	9.30	9.72	10.15	10.61	11.09			
Pay-As-You Go Capital Improvements <sup>1</sup>	5.87	5.95	6.25	6.58	6.89	7.24	7.61	7.99	8.40			
Environmental Mitigation	5.81	6.07	6.35	6.63	6.93	7.24	7.57	7.91	8.26			
Total	\$ 62.16	\$ 64.99	\$ 67.94	\$ 71.03	\$ 74.26	\$ 77.64	\$ 81.18	\$ 84.87	\$ 88.74			
Electricity Payments from EGAT												
Demand (gwh)	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248			
Tariff	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70	\$ 5.70			
Total	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14	\$ 299.14			
(1) In lieu of Overhaul Reserve												

**NAM THUEN II COST-BENEFIT MODEL  
PROJECT FINANCING MODULE**

PERIODS										
	From:	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11
	To: Operating Year:	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12
		1	2	3	4	5	6	7	8	9
<b>INCOME FROM RESERVES</b>										
<b>Debt Service Reserve Funds</b>										
<b>EFIC</b>		\$ 14.03	\$ 15.02	\$ 16.07	\$ 17.19	\$ 18.39	\$ 19.68	\$ 21.06	\$ 22.53	\$ 24.11
Beginning Balance		0.98	1.05	1.12	1.20	1.29	1.38	1.47	1.58	1.69
Interest Earned (End of Period)										
Deposits (End of Period)										
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 15.02	\$ 16.07	\$ 17.19	\$ 18.39	\$ 19.68	\$ 21.06	\$ 22.53	\$ 24.11	\$ 25.80
<b>ECA's</b>		\$ 23.69	\$ 25.35	\$ 27.12	\$ 29.02	\$ 31.05	\$ 33.23	\$ 35.55	\$ 38.04	\$ 40.71
Beginning Balance		1.66	1.77	1.90	2.03	2.17	2.33	2.49	2.66	2.85
Interest Earned (End of Period)										
Deposits (End of Period)										
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 25.35	\$ 27.12	\$ 29.02	\$ 31.05	\$ 33.23	\$ 35.55	\$ 38.04	\$ 40.71	\$ 43.55
<b>Thai Banks</b>		42.21	\$ 45.17	\$ 48.33	\$ 51.71	\$ 55.33	\$ 59.21	\$ 63.35	\$ 67.78	\$ -
Beginning Balance		2.95	3.16	3.38	3.62	3.87	4.14	4.43	4.74	-
Interest Earned (End of Period)										
Deposits (End of Period)									(72.53)	-
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 45.17	\$ 48.33	\$ 51.71	\$ 55.33	\$ 59.21	\$ 63.35	\$ 67.78	\$ -	\$ -
<b>IFC A</b>		\$ 4.25	\$ 4.55	\$ 4.87	\$ 5.21	\$ 5.58	\$ 5.97	\$ 6.38	\$ 6.83	\$ 7.31
Beginning Balance		0.30	0.32	0.34	0.36	0.39	0.42	0.45	0.48	0.51
Interest Earned (End of Period)										
Deposits (End of Period)										
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 4.55	\$ 4.87	\$ 5.21	\$ 5.58	\$ 5.97	\$ 6.38	\$ 6.83	\$ 7.31	\$ 7.82
<b>IFC B</b>		\$ 6.64	\$ 7.10	\$ 7.60	\$ 8.13	\$ 8.70	\$ -	\$ -	\$ -	\$ -
Beginning Balance		0.46	0.50	0.53	0.57	0.61	-	-	-	-
Interest Earned (End of Period)										
Deposits (End of Period)						(9.31)				
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 7.10	\$ 7.60	\$ 8.13	\$ 8.70	\$ -	\$ -	\$ -	\$ -	\$ -
<b>WB</b>		\$ 8.47	\$ 9.06	\$ 9.69	\$ 10.37	\$ 11.10	\$ 11.87	\$ 12.70	\$ 13.59	\$ 14.55
Beginning Balance		0.59	0.63	0.68	0.73	0.78	0.83	0.89	0.95	1.02
Interest Earned (End of Period)										
Deposits (End of Period)										
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 9.06	\$ 9.69	\$ 10.37	\$ 11.10	\$ 11.87	\$ 12.70	\$ 13.59	\$ 14.55	\$ 15.56
<b>Major Overhaul Reserve Fund</b>		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Beginning Balance										
Interest Earned (End of Period)										
Deposits (End of Period)										
Cash Withdrawn (End. of Period)										
Ending Balance		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>TOTAL</b>		\$ 99.29	\$ 106.24	\$ 113.68	\$ 121.64	\$ 130.15	\$ 129.95	\$ 139.05	\$ 148.79	\$ 86.67
Beginning Balance		6.95	7.44	7.96	8.51	9.11	9.10	9.73	10.41	6.07
Interest Earned (End of Period)										
Deposits (End of Period)						(9.31)			(72.53)	-
Cash Withdrawn (End. of Period)										
Ending Balance		\$ 106.24	\$ 113.68	\$ 121.64	\$ 130.15	\$ 129.95	\$ 139.05	\$ 148.79	\$ 86.67	\$ 92.74

Prepared By  
Scully Capital Services, Inc.

**NAM THUEN II COST BENEFIT MODEL  
PROJECT FINANCING MODULE**

PERIODS		Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20
From:	Jan-13	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21
To:										
Operating Year:		10	11	12	13	14	15	16	17	18

INCOME FROM RESERVES										
<b>Debt Service Reserve Funds</b>										
<b>EFIC</b>										
Beginning Balance	\$	25.80	\$	27.61	\$	29.54	\$	-	\$	-
Interest Earned (End of Period)		1.81		1.93		2.07		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		-		-		(31.61)		-		-
Ending Balance	\$	27.61	\$	29.54	\$	-	\$	-	\$	-
<b>ECA's</b>										
Beginning Balance	\$	43.55	\$	46.60	\$	49.87	\$	-	\$	-
Interest Earned (End of Period)		3.05		3.26		3.49		-		-
Deposits (End of Period)		-		-		(53.36)		-		-
Cash Withdrawn (End. of Period)		-		-		-		-		-
Ending Balance	\$	46.60	\$	49.87	\$	-	\$	-	\$	-
<b>Thai Banks</b>										
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)		-		-		-		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		-		-		-		-		-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-
<b>IFC A</b>										
Beginning Balance	\$	7.82	\$	8.37	\$	8.95	\$	-	\$	-
Interest Earned (End of Period)		0.55		0.59		0.63		-		-
Deposits (End of Period)		-		-		(9.58)		-		-
Cash Withdrawn (End. of Period)		-		-		-		-		-
Ending Balance	\$	8.37	\$	8.95	\$	-	\$	-	\$	-
<b>IFC B</b>										
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)		-		-		-		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		-		-		-		-		-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-
<b>WB</b>										
Beginning Balance	\$	15.56	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)		1.09		-		-		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		(16.65)		-		-		-		-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-
<b>Major Overhaul Reserve Fund</b>										
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)		-		-		-		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		-		-		-		-		-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-
<b>TOTAL</b>										
Beginning Balance	\$	92.74	\$	82.58	\$	88.36	\$	-	\$	-
Interest Earned (End of Period)		6.49		5.78		6.18		-		-
Deposits (End of Period)		-		-		-		-		-
Cash Withdrawn (End. of Period)		(16.65)		-		(94.54)		-		-
Ending Balance	\$	82.58	\$	88.36	\$	-	\$	-	\$	-

**NAM THUEN II COST BENEFIT MODEL  
PROJECT FINANCING MODULE**

PERIODS		Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27
From:		Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
To:		19	20	21	22	23	24	25
Operating Year:								
<b>INCOME FROM RESERVES</b>								
<b>Debt Service Reserve Funds</b>								
<b>EFIC</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>ECA's</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>Thai Banks</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>IFC A</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>IFC B</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>WB</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>Major Overhaul Reserve Fund</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-
<b>TOTAL</b>								
Beginning Balance	\$	-	\$	-	\$	-	\$	-
Interest Earned (End of Period)								
Deposits (End of Period)								
Cash Withdrawn (End. of Period)								
Ending Balance	\$	-	\$	-	\$	-	\$	-

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

PERIODS	From:		To:		Operating Year:		Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23
<b>DEBT AMORTIZATION SCHEDULES</b>																							
<b>EFIC</b>																							
Beginning Balance	\$ 149.08	\$ 136.65	\$ 124.23	\$ 111.81	\$ 99.38	\$ 86.96	\$ 74.54	\$ 62.12	\$ 49.69	\$ 37.27	\$ 24.85	\$ 12.42	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42	12.42
Interest Payment	15.64	14.28	12.92	11.56	10.20	8.84	7.48	6.12	4.78	3.40	2.04	0.68	-	-	-	-	-	-	-	-	-	-	-
Total Payment	28.07	26.71	25.35	23.99	22.63	21.27	19.90	18.54	17.18	15.82	14.46	13.10	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 136.65	\$ 124.23	\$ 111.81	\$ 99.38	\$ 86.96	\$ 74.54	\$ 62.12	\$ 49.69	\$ 37.27	\$ 24.85	\$ 12.42	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>ECA's</b>																							
Beginning Balance	\$ 251.67	\$ 230.70	\$ 209.72	\$ 188.75	\$ 167.78	\$ 146.81	\$ 125.83	\$ 104.86	\$ 83.89	\$ 62.92	\$ 41.94	\$ 20.97	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97	20.97
Interest Payment	26.41	24.11	21.82	19.52	17.22	14.93	12.63	10.33	8.04	5.74	3.44	1.15	-	-	-	-	-	-	-	-	-	-	-
Total Payment	47.38	45.09	42.79	40.49	38.20	35.90	33.60	31.31	29.01	26.71	24.42	22.12	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 230.70	\$ 209.72	\$ 188.75	\$ 167.78	\$ 146.81	\$ 125.83	\$ 104.86	\$ 83.89	\$ 62.92	\$ 41.94	\$ 20.97	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Thal Banks</b>																							
Beginning Balance	\$ 360.67	\$ 331.82	\$ 302.98	\$ 274.11	\$ 245.25	\$ 216.39	\$ 187.54	\$ 158.69	\$ 129.84	\$ 100.99	\$ 72.14	\$ 43.29	\$ 14.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85	28.85
Interest Payment	41.55	38.09	34.62	31.15	27.68	24.21	20.74	17.27	13.80	10.33	6.86	3.39	-	-	-	-	-	-	-	-	-	-	-
Total Payment	70.40	66.94	63.48	60.01	56.54	53.07	49.60	46.13	42.66	39.19	35.72	32.25	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 331.82	\$ 302.98	\$ 274.11	\$ 245.25	\$ 216.39	\$ 187.54	\$ 158.69	\$ 129.84	\$ 100.99	\$ 72.14	\$ 43.29	\$ 14.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>IFC A</b>																							
Beginning Balance	\$ 43.41	\$ 39.80	\$ 36.18	\$ 32.56	\$ 28.94	\$ 25.32	\$ 21.71	\$ 18.09	\$ 14.47	\$ 10.85	\$ 7.24	\$ 3.62	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62
Interest Payment	4.89	4.46	4.04	3.61	3.19	2.76	2.34	1.91	1.49	1.06	0.64	0.21	-	-	-	-	-	-	-	-	-	-	-
Total Payment	8.51	8.08	7.66	7.23	6.81	6.38	5.96	5.53	5.11	4.68	4.26	3.83	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 39.80	\$ 36.18	\$ 32.56	\$ 28.94	\$ 25.32	\$ 21.71	\$ 18.09	\$ 14.47	\$ 10.85	\$ 7.24	\$ 3.62	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>IFC B</b>																							
Beginning Balance	\$ 43.41	\$ 34.73	\$ 26.05	\$ 17.37	\$ 8.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68
Interest Payment	4.59	3.57	2.55	1.53	0.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Payment	13.27	12.25	11.23	10.21	9.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 34.73	\$ 26.05	\$ 17.37	\$ 8.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>WB</b>																							
Beginning Balance	\$ 86.83	\$ 78.15	\$ 69.46	\$ 60.78	\$ 52.10	\$ 43.41	\$ 34.73	\$ 26.05	\$ 17.37	\$ 8.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68
Interest Payment	8.25	7.38	6.51	5.64	4.78	3.91	3.04	2.17	1.30	0.43	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Payment	16.93	16.06	15.19	14.33	13.46	12.59	11.72	10.85	9.99	9.12	-	-	-	-	-	-	-	-	-	-	-	-	-
Ending Balance	\$ 78.15	\$ 69.46	\$ 60.78	\$ 52.10	\$ 43.41	\$ 34.73	\$ 26.05	\$ 17.37	\$ 8.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Debt Service</b>																							
Beginning Balance	\$ 935.07	\$ 851.84	\$ 768.61	\$ 685.37	\$ 576.17	\$ 466.97	\$ 366.45	\$ 265.94	\$ 165.42	\$ 119.72	\$ 74.03	\$ 37.01	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Principal Payment	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23	83.23
Interest Payment	101.33	91.90	82.47	71.47	58.93	46.89	35.36	23.83	15.59	10.64	6.12	2.04	-	-	-	-	-	-	-	-	-	-	-
Total Payment	184.56	175.13	165.70	150.67	138.13	124.40	109.04	92.55	74.34	56.33	43.14	39.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Balance	\$ 851.84	\$ 768.61	\$ 685.37	\$ 576.17	\$ 466.97	\$ 366.45	\$ 265.94	\$ 165.42	\$ 119.72	\$ 74.03	\$ 37.01	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PERIODS		From:	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27
		To:	Jan-20	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25	Jan-26	Jan-27	Jan-28
		Operating Year:	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25
DEBT AMORTIZATION SCHEDULES											
<b>EFIC</b>											
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		-	-	-	-	-	-	-	-	-	-
Total Payment		-	-	-	-	-	-	-	-	-	-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
<b>ECA's</b>											
Beginning Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$
<b>Thai Banks</b>											
Beginning Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$
<b>IFC A</b>											
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		-	-	-	-	-	-	-	-	-	-
Total Payment		-	-	-	-	-	-	-	-	-	-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
<b>IFC B</b>											
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		-	-	-	-	-	-	-	-	-	-
Total Payment		-	-	-	-	-	-	-	-	-	-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
<b>WB</b>											
Beginning Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		-	-	-	-	-	-	-	-	-	-
Total Payment		-	-	-	-	-	-	-	-	-	-
Ending Balance	\$	-	\$	-	\$	-	\$	-	\$	-	\$
<b>Total Debt Service</b>											
Beginning Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$
Principal Payment		-	-	-	-	-	-	-	-	-	-
Interest Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Payment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Balance	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

**PROJECT FINANCING SOURCES AND USES BUILD-UP**

**PROJECT COST CATEGORIES**

**Development Costs**

Developers' Cost	\$	35.00	
Developers' Premium		35.00	
Sponsors Fees		30.00	
Subtotal - Development Costs	\$		100.00

**Design and Construction**

Facilities		837.28	
Subtotal - Design & Construction Costs			837.28

**Construction Cost Overruns <sup>1</sup>**

**Upfront Transaction Costs**

Arrangement Fees	%	\$	
Equity	0.0%	0.00	
EFIC	2.5%	3.73	
ECA's	2.5%	6.29	
Thai Banks	1.8%	6.31	
IFC A	2.0%	0.87	
IFC B	2.5%	1.09	
WB	2.5%	2.17	
Subtotal		20.45	
Placement Fees			
Equity	0.00%	0.00	
Subtotal		0.00	
Risk Premium Fees			
Equity	0.00%	0.00	
EFIC	10.00%	14.91	
ECA's	10.00%	25.17	
Thai Banks	0.00%	0.00	
IFC A	0.00%	0.00	
IFC B	0.00%	0.00	
WB	10.00%	8.68	
Subtotal		48.76	
Total Upfront Transaction Costs			\$ 69.21

**Commitment Fees During Construction**

Equity	0.00%	-	
EFIC	0.37%	2.68	
ECA's	0.37%	4.53	
Thai Banks	0.37%	6.40	
IFC A	0.25%	0.52	
IFC B	0.37%	0.77	
WB	0.00%	-	
Subtotal			14.91

**Interest During Construction**

EFIC	32.55
ECA's	54.95
Thai Banks	87.28
IFC A	10.16

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IFC B			10.26	
WB			19.93	
	Subtotal		<u>215.12</u>	215.12
<b>Reserve Funds</b>				
Debt Service Reserve Funds				
EFIC			14.03	
ECA's			23.69	
Thai Banks			42.21	
IFC A			4.25	
IFC B			6.64	
WB			<u>8.47</u>	
	Subtotal - Debt Service Reserve		99.29	
	Total Reserve Pre-Funding Reqs			99.29
<b>TOTAL CAPITAL COSTS</b>				<u>\$ 1,335.82</u>
<b>Total Deposits from Financing Sources</b>				
	<b>Base</b>	<b>After Cost</b>		
	<b>%</b>	<b>Overrun</b>	<b>%</b>	<b>\$</b>
Equity <sup>1</sup>	30.0%	30%		400.74
EFIC	11.2%	11%		149.08
ECA's	18.8%	19%		251.67
Thai Banks	27.0%	27%		360.67
IFC A	3.3%	3%		43.41
IFC B	3.3%	3%		43.41
WB	6.5%	7%		86.83
	Subtotal	100%		<u>\$ 1,335.82</u>

**Construction Cost Overrun <sup>1</sup>**

(1) Construction Overruns on Equity's Account

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE										
EQUITY FUNDING										
# Months	Month Begins	Month Ends	Percentage Draw	Total Req'd Drawdown (Beg of Period)	Pro Rata Contribution 30%	Semi-Annual Committ. Fee (Beg of Period)	Construction Fund Balance (Beg of Period)	Interest During Construction (End of Period)	Fund Balance (End of Period)	
Development Costs (@50%)				\$ 65.00						
Upfront Transaction Costs				69.21						
Subtotal				134.21						
0	May-98	Jun-98	0.00%	0.00					\$ 40.26	\$ 40.26
Total Month 0 Draw				134.21	40.26		\$ -	\$ -	\$ 40.95	\$ 40.95
1	May-98	Jun-98	0.27%	2.30	0.69		40.26	-	40.95	41.64
2	Jun-98	Jul-98	0.27%	2.30	0.69		40.95	-	41.64	42.33
3	Jul-98	Aug-98	0.27%	2.30	0.69		41.64	-	42.33	43.02
4	Aug-98	Sep-98	0.27%	2.30	0.69		42.33	-	43.02	43.71
5	Sep-98	Oct-98	0.27%	2.30	0.69		43.02	-	43.71	44.40
6	Oct-98	Nov-98	0.27%	2.30	0.69	0.00	43.71	-	44.40	45.09
7	Oct-98	Dec-98	0.27%	2.30	0.69		44.40	-	45.09	45.78
8	Dec-98	Jan-99	1.2%	10.40	3.12		45.09	-	48.21	51.33
9	Jan-99	Feb-99	1.2%	10.40	3.12		48.21	-	51.33	54.45
10	Feb-99	Mar-99	1.2%	10.40	3.12		51.33	-	54.45	57.57
11	Mar-99	Apr-99	1.2%	10.40	3.12		54.45	-	57.57	60.69
12	Apr-99	May-99	1.2%	10.40	3.12	0.00	57.57	-	60.69	63.81
13	May-99	Jun-99	1.2%	10.40	3.12		60.69	-	63.81	66.93
14	Jun-99	Jul-99	1.2%	10.40	3.12		63.81	-	66.93	70.05
15	Jul-99	Aug-99	1.2%	10.40	3.12		66.93	-	70.05	73.18
16	Aug-99	Sep-99	1.2%	10.40	3.12		70.05	-	73.18	76.30
17	Sep-99	Oct-99	1.2%	10.40	3.12	0.00	73.18	-	76.30	79.42
18	Oct-99	Nov-99	1.2%	10.40	3.12		76.30	-	79.42	82.54
19	Nov-99	Dec-99	1.2%	10.40	3.12		79.42	-	82.54	85.66
20	Dec-99	Jan-00	2.6%	21.63	6.49		82.54	-	89.02	95.51
21	Jan-00	Feb-00	2.6%	21.63	6.49		89.02	-	95.51	102.00
22	Feb-00	Mar-00	2.6%	21.63	6.49		95.51	-	102.00	108.49
23	Mar-00	Apr-00	2.6%	21.63	6.49	0.00	102.00	-	108.49	114.98
24	Apr-00	May-00	2.6%	21.63	6.49		108.49	-	114.98	121.46
25	May-00	Jun-00	2.6%	21.63	6.49		114.98	-	121.46	127.95
26	Jun-00	Jul-00	2.6%	21.63	6.49		121.46	-	127.95	134.44
27	Jul-00	Aug-00	2.6%	21.63	6.49		127.95	-	134.44	140.93
28	Aug-00	Sep-00	2.6%	21.63	6.49	0.00	134.44	-	140.93	147.41
29	Sep-00	Oct-00	2.6%	21.63	6.49		140.93	-	147.41	153.90
30	Oct-00	Nov-00	2.6%	21.63	6.49		147.41	-	153.90	160.39
31	Nov-00	Dec-00	2.6%	21.63	6.49		153.90	-	160.39	167.20
32	Dec-00	Jan-01	2.7%	22.71	6.81		160.39	-	167.20	174.01
33	Jan-01	Feb-01	2.7%	22.71	6.81		167.20	-	174.01	180.83
34	Feb-01	Mar-01	2.7%	22.71	6.81		174.01	-	180.83	187.64
35	Mar-01	Apr-01	2.7%	22.71	6.81	0.00	180.83	-	187.64	194.45
36	Apr-01	May-01	2.7%	22.71	6.81		187.64	-	194.45	201.26
37	May-01	Jun-01	2.7%	22.71	6.81		194.45	-	201.26	208.08
38	Jun-01	Jul-01	2.7%	22.71	6.81		201.26	-	208.08	214.89
39	Jul-01	Aug-01	2.7%	22.71	6.81		208.08	-	214.89	221.70
40	Aug-01	Sep-01	2.7%	22.71	6.81		214.89	-	221.70	228.51
41	Sep-01	Oct-01	2.7%	22.71	6.81	0.00	221.70	-	228.51	235.32
42	Oct-01	Nov-01	2.7%	22.71	6.81		228.51	-	235.32	242.14
43	Nov-01	Dec-01	2.7%	22.71	6.81		235.32	-	242.14	248.95
44	Dec-01	Jan-02	1.5%	12.32	3.70		242.14	-	248.95	255.76
45	Jan-02	Feb-02	1.5%	12.32	3.70		248.95	-	255.76	262.57
46	Feb-02	Mar-02	1.5%	12.32	3.70		255.76	-	262.57	269.38
47	Mar-02	Apr-02	1.5%	12.32	3.70	0.00	262.57	-	269.38	276.19
48	Apr-02	May-02	1.5%	12.32	3.70		269.38	-	276.19	283.00
49	May-02	Jun-02	1.5%	12.32	3.70		276.19	-	283.00	289.81
50	Jun-02	Jul-02	1.5%	12.32	3.70		283.00	-	289.81	296.62
51	Jul-02	Aug-02	1.5%	12.32	3.70		289.81	-	296.62	303.43
52	Aug-02	Sep-02	1.5%	12.32	3.70		296.62	-	303.43	310.24
53	Sep-02	Oct-02	1.5%	12.32	3.70	0.00	303.43	-	310.24	317.05
54	Oct-02	Nov-02	1.5%	12.32	3.70		310.24	-	317.05	323.86
55	Nov-02	Dec-02	1.5%	12.32	3.70		317.05	-	323.86	330.67
56	Dec-02	Jan-03	2.0%	16.49	4.95		323.86	-	330.67	337.48
<b>TOTALS</b>				100.0% \$ 971.46	\$ 291.44	\$ -	\$ -	\$ -		

**NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE										
EPIC FUNDING										
#	Month	Month	Percentage	Total Req'd	Pro Rata	Semi-Annual	Construction	Interest		
Months	Begins	Ends	Draw	Drawdown	Contribution	Commit. Fees	Fund Balance	During		
				(Beg of Period)	11%	(Beg of Period)	(Beg of Period)	Construction	(End of Period)	Fund Balance
				\$						(End of Period)
Development Costs				65.00						
Transaction Costs				69.21						
Subtotal				134.21						
0	May-98	Jun-98	0.0%	0.00						
Total Month 0 Draw				134.21	14.98		\$ -	\$ -		\$ 14.98
1	May-98	Jun-98	0.3%	2.30	0.26		14.98	0.13		15.37
2	Jun-98	Jul-98	0.3%	2.30	0.26		15.37	0.13		15.76
3	Jul-98	Aug-98	0.3%	2.30	0.26		15.76	0.14		16.15
4	Aug-98	Sep-98	0.3%	2.30	0.26		16.15	0.14		16.55
5	Sep-98	Oct-98	0.3%	2.30	0.26		16.55	0.14		16.95
6	Oct-98	Nov-98	0.3%	2.30	0.26	0.49	16.95	0.15		17.85
7	Oct-98	Dec-98	0.3%	2.30	0.26		17.85	0.16		18.26
8	Dec-98	Jan-99	1.2%	10.40	1.16		18.26	0.16		19.58
9	Jan-99	Feb-99	1.2%	10.40	1.16		19.58	0.17		20.91
10	Feb-99	Mar-99	1.2%	10.40	1.16		20.91	0.18		22.25
11	Mar-99	Apr-99	1.2%	10.40	1.16		22.25	0.19		23.60
12	Apr-99	May-99	1.2%	10.40	1.16	0.47	23.60	0.21		25.44
13	May-99	Jun-99	1.2%	10.40	1.16		25.44	0.22		26.82
14	Jun-99	Jul-99	1.2%	10.40	1.16		26.82	0.23		28.22
15	Jul-99	Aug-99	1.2%	10.40	1.16		28.22	0.25		29.62
16	Aug-99	Sep-99	1.2%	10.40	1.16		29.62	0.26		31.04
17	Sep-99	Oct-99	1.2%	10.40	1.16		31.04	0.27		32.47
18	Oct-99	Nov-99	1.2%	10.40	1.16	0.44	32.47	0.28		34.35
19	Nov-99	Dec-99	1.2%	10.40	1.16		34.35	0.30		35.81
20	Dec-99	Jan-00	2.6%	21.63	2.41		35.81	0.31		38.53
21	Jan-00	Feb-00	2.6%	21.63	2.41		38.53	0.34		41.28
22	Feb-00	Mar-00	2.6%	21.63	2.41		41.28	0.36		44.06
23	Mar-00	Apr-00	2.6%	21.63	2.41		44.06	0.38		46.85
24	Apr-00	May-00	2.6%	21.63	2.41	0.38	46.85	0.41		50.06
25	May-00	Jun-00	2.6%	21.63	2.41		50.06	0.44		52.91
26	Jun-00	Jul-00	2.6%	21.63	2.41		52.91	0.46		55.78
27	Jul-00	Aug-00	2.6%	21.63	2.41		55.78	0.49		58.68
28	Aug-00	Sep-00	2.6%	21.63	2.41		58.68	0.51		61.60
29	Sep-00	Oct-00	2.6%	21.63	2.41	0.33	61.60	0.54		64.88
30	Oct-00	Nov-00	2.6%	21.63	2.41		64.88	0.56		67.86
31	Nov-00	Dec-00	2.6%	21.63	2.41		67.86	0.59		70.86
32	Dec-00	Jan-01	2.7%	22.71	2.53		70.86	0.62		74.01
33	Jan-01	Feb-01	2.7%	22.71	2.53		74.01	0.64		77.19
34	Feb-01	Mar-01	2.7%	22.71	2.53		77.19	0.67		80.39
35	Mar-01	Apr-01	2.7%	22.71	2.53		80.39	0.70		83.63
36	Apr-01	May-01	2.7%	22.71	2.53	0.24	83.63	0.73		87.13
37	May-01	Jun-01	2.7%	22.71	2.53		87.13	0.76		90.42
38	Jun-01	Jul-01	2.7%	22.71	2.53		90.42	0.79		93.74
39	Jul-01	Aug-01	2.7%	22.71	2.53		93.74	0.82		97.09
40	Aug-01	Sep-01	2.7%	22.71	2.53		97.09	0.84		100.47
41	Sep-01	Oct-01	2.7%	22.71	2.53		100.47	0.87		103.88
42	Oct-01	Nov-01	2.7%	22.71	2.53	0.17	103.88	0.90		107.49
43	Nov-01	Dec-01	2.7%	22.71	2.53		107.49	0.93		110.96
44	Dec-01	Jan-02	1.5%	12.32	1.37		110.96	0.96		113.30
45	Jan-02	Feb-02	1.5%	12.32	1.37		113.30	0.99		115.66
46	Feb-02	Mar-02	1.5%	12.32	1.37		115.66	1.01		118.04
47	Mar-02	Apr-02	1.5%	12.32	1.37		118.04	1.03		120.44
48	Apr-02	May-02	1.5%	12.32	1.37	0.11	120.44	1.05		122.97
49	May-02	Jun-02	1.5%	12.32	1.37		122.97	1.07		125.41
50	Jun-02	Jul-02	1.5%	12.32	1.37		125.41	1.09		127.88
51	Jul-02	Aug-02	1.5%	12.32	1.37		127.88	1.11		130.37
52	Aug-02	Sep-02	1.5%	12.32	1.37		130.37	1.13		132.87
53	Sep-02	Oct-02	1.5%	12.32	1.37		132.87	1.16		135.40
54	Oct-02	Nov-02	1.5%	12.32	1.37	0.05	135.40	1.18		138.01
55	Nov-02	Dec-02	1.5%	12.32	1.37		138.01	1.20		140.58
56	Dec-02	Jan-03	2.0%	16.49	1.84		140.58	1.22		143.65
TOTALS			100.0%	\$ 971.46	\$ 108.42	\$ 2.68		\$ 32.55		

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE									
ECA's REQUIREMENTS									
#	Month	Month	Percentage	Total Req'd	Pro Rata	Semi-Annual	Construction	Interest	Fund Balance
Months	Begins	Ends	Draw	Drawdown	Contribution	Comm. Fee	Fund Balance	During	(End of Period)
				(Beg of Period)	19%	(Beg of Period)	(Beg of Period)	Construction	(End of Period)
Development Costs (@ 50%)				\$ 65.00					
Transaction Costs				69.21					
Subtotal				134.21					
0	May-98	Jun-98	0.00%	0.00					
Total Month 1 Draw				134.21	25.29		\$ 25.29	\$ 0.22	\$ 25.94
1	May-98	Jun-98	0.27%	2.30	0.43		25.94	0.23	26.60
2	Jun-98	Jul-98	0.27%	2.30	0.43		26.60	0.23	27.26
3	Jul-98	Aug-98	0.27%	2.30	0.43		27.26	0.24	27.93
4	Aug-98	Sep-98	0.27%	2.30	0.43		27.93	0.24	28.61
5	Sep-98	Oct-98	0.27%	2.30	0.43		28.61	0.25	30.13
6	Oct-98	Nov-98	0.27%	2.30	0.43	0.83	30.13	0.26	30.82
7	Oct-98	Dec-98	0.27%	2.30	0.43		30.82	0.27	33.05
8	Dec-98	Jan-99	1.24%	10.40	1.96		33.05	0.29	35.30
9	Jan-99	Feb-99	1.24%	10.40	1.96		35.30	0.31	37.56
10	Feb-99	Mar-99	1.24%	10.40	1.96		37.56	0.33	39.85
11	Mar-99	Apr-99	1.24%	10.40	1.96	0.79	39.85	0.35	42.95
12	Apr-99	May-99	1.24%	10.40	1.96		42.95	0.37	45.28
13	May-99	Jun-99	1.24%	10.40	1.96		45.28	0.39	47.63
14	Jun-99	Jul-99	1.24%	10.40	1.96		47.63	0.41	50.01
15	Jul-99	Aug-99	1.24%	10.40	1.96		50.01	0.43	52.40
16	Aug-99	Sep-99	1.24%	10.40	1.96		52.40	0.46	54.82
17	Sep-99	Oct-99	1.24%	10.40	1.96	0.74	54.82	0.48	57.99
18	Oct-99	Nov-99	1.24%	10.40	1.96		57.99	0.50	60.45
19	Nov-99	Dec-99	1.24%	10.40	1.96		60.45	0.53	65.05
20	Dec-99	Jan-00	2.58%	21.63	4.07		65.05	0.57	69.69
21	Jan-00	Feb-00	2.58%	21.63	4.07		69.69	0.61	74.37
22	Feb-00	Mar-00	2.58%	21.63	4.07		74.37	0.65	79.10
23	Mar-00	Apr-00	2.58%	21.63	4.07	0.65	79.10	0.69	84.50
24	Apr-00	May-00	2.58%	21.63	4.07		84.50	0.73	89.31
25	May-00	Jun-00	2.58%	21.63	4.07		89.31	0.78	94.16
26	Jun-00	Jul-00	2.58%	21.63	4.07		94.16	0.82	99.06
27	Jul-00	Aug-00	2.58%	21.63	4.07		99.06	0.86	103.99
28	Aug-00	Sep-00	2.58%	21.63	4.07	0.55	103.99	0.90	109.52
29	Sep-00	Oct-00	2.58%	21.63	4.07		109.52	0.95	114.55
30	Oct-00	Nov-00	2.58%	21.63	4.07		114.55	1.00	119.62
31	Nov-00	Dec-00	2.58%	21.63	4.07		119.62	1.04	124.94
32	Dec-00	Jan-01	2.71%	22.71	4.28		124.94	1.09	130.31
33	Jan-01	Feb-01	2.71%	22.71	4.28		130.31	1.13	135.72
34	Feb-01	Mar-01	2.71%	22.71	4.28		135.72	1.18	141.17
35	Mar-01	Apr-01	2.71%	22.71	4.28	0.41	141.17	1.23	147.09
36	Apr-01	May-01	2.71%	22.71	4.28		147.09	1.28	152.65
37	May-01	Jun-01	2.71%	22.71	4.28		152.65	1.33	158.26
38	Jun-01	Jul-01	2.71%	22.71	4.28		158.26	1.38	163.91
39	Jul-01	Aug-01	2.71%	22.71	4.28		163.91	1.43	169.61
40	Aug-01	Sep-01	2.71%	22.71	4.28		169.61	1.48	175.37
41	Sep-01	Oct-01	2.71%	22.71	4.28	0.29	175.37	1.53	181.46
42	Oct-01	Nov-01	2.71%	22.71	4.28		181.46	1.58	187.31
43	Nov-01	Dec-01	2.71%	22.71	4.28		187.31	1.63	191.26
44	Dec-01	Jan-02	1.47%	12.32	2.32		191.26	1.66	195.25
45	Jan-02	Feb-02	1.47%	12.32	2.32		195.25	1.70	199.27
46	Feb-02	Mar-02	1.47%	12.32	2.32	0.18	199.27	1.73	203.32
47	Mar-02	Apr-02	1.47%	12.32	2.32		203.32	1.77	207.59
48	Apr-02	May-02	1.47%	12.32	2.32		207.59	1.81	211.72
49	May-02	Jun-02	1.47%	12.32	2.32		211.72	1.84	215.88
50	Jun-02	Jul-02	1.47%	12.32	2.32		215.88	1.88	220.08
51	Jul-02	Aug-02	1.47%	12.32	2.32		220.08	1.91	224.31
52	Aug-02	Sep-02	1.47%	12.32	2.32		224.31	1.95	228.59
53	Sep-02	Oct-02	1.47%	12.32	2.32	0.09	228.59	1.99	232.98
54	Oct-02	Nov-02	1.47%	12.32	2.32		232.98	2.03	237.33
55	Nov-02	Dec-02	1.47%	12.32	2.32		237.33	2.06	242.50
56	Dec-02	Jan-03	1.97%	16.49	3.11				
TOTALS			100.0%	\$ 971.46	\$ 183.02	\$ 4.53		\$ 54.95	

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE										
THAI BANKS REQUIREMENTS										
#	Month	Month	Percentage	Total Req'd	Pro Rata	Semi-Annual	Construction	Interest		
Months	Begin	End	Draw	Drawdown	Contribution	Commit. Fees	Fund Balance	During		
				(Beg of Period)	27%	(Beg of Period)	(Beg of Period)	Construction	(End of Period)	Fund Balance
										(End of Period)
Development Costs (@ 50%)				\$ 65.00						
Transaction Costs				69.21						
Subtotal				134.21						
0	May-98	Jun-98	0.0%	0.00						
Total Month 1 Draw				134.21	36.24		\$ -	\$ -		\$ 36.24
1	May-98	Jun-98	0.3%	2.30	0.62		36.24	0.34		37.20
2	Jun-98	Jul-98	0.3%	2.30	0.62		37.20	0.35		38.18
3	Jul-98	Aug-98	0.3%	2.30	0.62		38.18	0.36		39.16
4	Aug-98	Sep-98	0.3%	2.30	0.62		39.16	0.37		40.15
5	Sep-98	Oct-98	0.3%	2.30	0.62		40.15	0.38		41.15
6	Oct-98	Nov-98	0.3%	2.30	0.62	1.20	41.15	0.39		43.36
7	Oct-98	Dec-98	0.3%	2.30	0.62		43.36	0.41		44.39
8	Dec-98	Jan-99	1.2%	10.40	2.81		44.39	0.42		47.62
9	Jan-99	Feb-99	1.2%	10.40	2.81		47.62	0.45		50.88
10	Feb-99	Mar-99	1.2%	10.40	2.81		50.88	0.48		54.17
11	Mar-99	Apr-99	1.2%	10.40	2.81		54.17	0.51		57.50
12	Apr-99	May-99	1.2%	10.40	2.81	1.13	57.50	0.55		61.99
13	May-99	Jun-99	1.2%	10.40	2.81		61.99	0.59		65.38
14	Jun-99	Jul-99	1.2%	10.40	2.81		65.38	0.62		68.81
15	Jul-99	Aug-99	1.2%	10.40	2.81		68.81	0.65		72.27
16	Aug-99	Sep-99	1.2%	10.40	2.81		72.27	0.69		75.76
17	Sep-99	Oct-99	1.2%	10.40	2.81		75.76	0.72		79.29
18	Oct-99	Nov-99	1.2%	10.40	2.81	1.05	79.29	0.75		83.91
19	Nov-99	Dec-99	1.2%	10.40	2.81		83.91	0.80		87.51
20	Dec-99	Jan-00	2.6%	21.63	5.84		87.51	0.83		94.18
21	Jan-00	Feb-00	2.6%	21.63	5.84		94.18	0.89		100.91
22	Feb-00	Mar-00	2.6%	21.63	5.84		100.91	0.96		107.71
23	Mar-00	Apr-00	2.6%	21.63	5.84		107.71	1.02		114.57
24	Apr-00	May-00	2.6%	21.63	5.84	0.92	114.57	1.09		122.42
25	May-00	Jun-00	2.6%	21.63	5.84		122.42	1.16		129.42
26	Jun-00	Jul-00	2.6%	21.63	5.84		129.42	1.23		136.49
27	Jul-00	Aug-00	2.6%	21.63	5.84		136.49	1.30		143.62
28	Aug-00	Sep-00	2.6%	21.63	5.84		143.62	1.36		150.82
29	Sep-00	Oct-00	2.6%	21.63	5.84	0.79	150.82	1.43		158.88
30	Oct-00	Nov-00	2.6%	21.63	5.84		158.88	1.51		166.22
31	Nov-00	Dec-00	2.6%	21.63	5.84		166.22	1.58		173.64
32	Dec-00	Jan-01	2.7%	22.71	6.13		173.64	1.65		181.42
33	Jan-01	Feb-01	2.7%	22.71	6.13		181.42	1.72		189.27
34	Feb-01	Mar-01	2.7%	22.71	6.13		189.27	1.80		197.20
35	Mar-01	Apr-01	2.7%	22.71	6.13		197.20	1.87		205.20
36	Apr-01	May-01	2.7%	22.71	6.13	0.58	205.20	1.95		213.86
37	May-01	Jun-01	2.7%	22.71	6.13		213.86	2.03		222.02
38	Jun-01	Jul-01	2.7%	22.71	6.13		222.02	2.11		230.26
39	Jul-01	Aug-01	2.7%	22.71	6.13		230.26	2.18		238.57
40	Aug-01	Sep-01	2.7%	22.71	6.13		238.57	2.26		246.97
41	Sep-01	Oct-01	2.7%	22.71	6.13		246.97	2.34		255.44
42	Oct-01	Nov-01	2.7%	22.71	6.13	0.39	255.44	2.42		264.39
43	Nov-01	Dec-01	2.7%	22.71	6.13		264.39	2.51		273.03
44	Dec-01	Jan-02	1.5%	12.32	3.33		273.03	2.59		278.95
45	Jan-02	Feb-02	1.5%	12.32	3.33		278.95	2.65		284.92
46	Feb-02	Mar-02	1.5%	12.32	3.33		284.92	2.70		290.95
47	Mar-02	Apr-02	1.5%	12.32	3.33		290.95	2.76		297.04
48	Apr-02	May-02	1.5%	12.32	3.33	0.24	297.04	2.82		303.42
49	May-02	Jun-02	1.5%	12.32	3.33		303.42	2.88		309.83
50	Jun-02	Jul-02	1.5%	12.32	3.33		309.83	2.94		315.89
51	Jul-02	Aug-02	1.5%	12.32	3.33		315.89	3.00		322.22
52	Aug-02	Sep-02	1.5%	12.32	3.33		322.22	3.06		328.60
53	Sep-02	Oct-02	1.5%	12.32	3.33		328.60	3.12		335.05
54	Oct-02	Nov-02	1.5%	12.32	3.33	0.10	335.05	3.18		341.65
55	Nov-02	Dec-02	1.5%	12.32	3.33		341.65	3.24		348.22
56	Dec-02	Jan-03	2.0%	16.49	4.45		348.22	3.30		355.97
TOTALS			100.0%	\$ 971.46	\$ 262.29	\$ 6.40		\$ 87.28		

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

IDC & COMMITMENT FEE BUILD-UP SCHEDULE							IFC A REQUIREMENTS		
#	Month	Month	Percentage	Total Req'd	Pro Rata	Semi-Annual	Construction	Interest	Fund Balance
Months	Begins	Ends	Draw	Drawdown	Contribution	Commit. Fees	Fund Balance	During	(End of Period)
				(Beg of Period)	3%	(Beg of Period)	(Beg of Period)	Construction	(End of Period)
				\$ 65.00					
Development Costs				69.21					
Transaction Costs				134.21					
Subtotal				0.00					\$ 4.36
0	May-98	Jun-98	0.0%	134.21	4.36		\$ -	0.04	4.48
Total Month 1 Draw	May-98	Jun-98	0.3%	2.30	0.07		4.48	0.04	4.59
1	Jun-98	Jul-98	0.3%	2.30	0.07		4.59	0.04	4.71
2	Jul-98	Aug-98	0.3%	2.30	0.07		4.71	0.04	4.83
3	Aug-98	Sep-98	0.3%	2.30	0.07		4.83	0.04	4.95
4	Sep-98	Oct-98	0.3%	2.30	0.07	0.10	4.95	0.05	5.17
5	Oct-98	Nov-98	0.3%	2.30	0.07		5.17	0.05	5.29
6	Nov-98	Dec-98	0.3%	2.30	0.07		5.29	0.05	5.68
7	Dec-98	Jan-99	1.2%	10.40	0.34		5.68	0.05	6.07
8	Jan-99	Feb-99	1.2%	10.40	0.34		6.07	0.06	6.46
9	Feb-99	Mar-99	1.2%	10.40	0.34		6.46	0.06	6.86
10	Mar-99	Apr-99	1.2%	10.40	0.34	0.09	6.86	0.06	7.35
11	Apr-99	May-99	1.2%	10.40	0.34		7.35	0.07	7.76
12	May-99	Jun-99	1.2%	10.40	0.34		7.76	0.07	8.17
13	Jun-99	Jul-99	1.2%	10.40	0.34		8.17	0.08	8.58
14	Jul-99	Aug-99	1.2%	10.40	0.34		8.58	0.08	9.00
15	Aug-99	Sep-99	1.2%	10.40	0.34		9.00	0.08	9.42
16	Sep-99	Oct-99	1.2%	10.40	0.34	0.08	9.42	0.09	9.93
17	Oct-99	Nov-99	1.2%	10.40	0.34		9.93	0.09	10.36
18	Nov-99	Dec-99	1.2%	10.40	0.34		10.36	0.10	11.16
19	Dec-99	Jan-00	2.6%	21.63	0.70		11.16	0.10	11.97
20	Jan-00	Feb-00	2.6%	21.63	0.70		11.97	0.11	12.78
21	Feb-00	Mar-00	2.6%	21.63	0.70		12.78	0.12	13.61
22	Mar-00	Apr-00	2.6%	21.63	0.70	0.07	13.61	0.13	14.51
23	Apr-00	May-00	2.6%	21.63	0.70		14.51	0.13	15.35
24	May-00	Jun-00	2.6%	21.63	0.70		15.35	0.14	16.19
25	Jun-00	Jul-00	2.6%	21.63	0.70		16.19	0.15	17.05
26	Jul-00	Aug-00	2.6%	21.63	0.70		17.05	0.16	17.91
27	Aug-00	Sep-00	2.6%	21.63	0.70	0.06	17.91	0.17	18.84
28	Sep-00	Oct-00	2.6%	21.63	0.70		18.84	0.18	19.72
29	Oct-00	Nov-00	2.6%	21.63	0.70		19.72	0.18	20.61
30	Nov-00	Dec-00	2.6%	21.63	0.70		20.61	0.19	21.53
31	Dec-00	Jan-01	2.7%	22.71	0.74		21.53	0.20	22.47
32	Jan-01	Feb-01	2.7%	22.71	0.74		22.47	0.21	23.42
33	Feb-01	Mar-01	2.7%	22.71	0.74		23.42	0.22	24.38
34	Mar-01	Apr-01	2.7%	22.71	0.74	0.05	24.38	0.23	25.39
35	Apr-01	May-01	2.7%	22.71	0.74		25.39	0.24	26.36
36	May-01	Jun-01	2.7%	22.71	0.74		26.36	0.25	27.35
37	Jun-01	Jul-01	2.7%	22.71	0.74		27.35	0.25	28.34
38	Jul-01	Aug-01	2.7%	22.71	0.74		28.34	0.26	29.34
39	Aug-01	Sep-01	2.7%	22.71	0.74		29.34	0.27	30.35
40	Sep-01	Oct-01	2.7%	22.71	0.74	0.03	30.35	0.28	31.40
41	Oct-01	Nov-01	2.7%	22.71	0.74		31.40	0.29	32.43
42	Nov-01	Dec-01	2.7%	22.71	0.74		32.43	0.30	33.14
43	Dec-01	Jan-02	1.5%	12.32	0.40		33.14	0.31	33.84
44	Jan-02	Feb-02	1.5%	12.32	0.40		33.84	0.31	34.56
45	Feb-02	Mar-02	1.5%	12.32	0.40		34.56	0.32	35.28
46	Mar-02	Apr-02	1.5%	12.32	0.40	0.02	35.28	0.33	36.03
47	Apr-02	May-02	1.5%	12.32	0.40		36.03	0.34	36.77
48	May-02	Jun-02	1.5%	12.32	0.40		36.77	0.34	37.51
49	Jun-02	Jul-02	1.5%	12.32	0.40		37.51	0.35	38.26
50	Jul-02	Aug-02	1.5%	12.32	0.40		38.26	0.36	39.01
51	Aug-02	Sep-02	1.5%	12.32	0.40		39.01	0.36	39.78
52	Sep-02	Oct-02	1.5%	12.32	0.40	0.01	39.78	0.37	40.56
53	Oct-02	Nov-02	1.5%	12.32	0.40		40.56	0.38	41.33
54	Nov-02	Dec-02	1.5%	12.32	0.40		41.33	0.38	
55	Dec-02	Jan-03	2.0%	16.49	0.54				
56									
TOTALS			100.0%	\$ 971.46	\$ 31.57	\$ 0.52		\$ 10.16	



**NAM THUEN II COST-BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

**IDC & COMMITMENT FEE BUILD-UP SCHEDULE**

**IFC B REQUIREMENTS**

# Months	Month Begins	Month Ends	Percentage Draw	Total Req'd Drawdown (Beg of Period)	Pro Rata Contribution 3%	Semi-Annual Commit. Fee (Beg of Period)	Construction Fund Balance (Beg of Period)	Interest During Construction (End of Period)	Fund Balance (End of Period)
Development Costs				\$ 65.00					
Transaction Costs				69.21					
Subtotal				134.21					
0	May-98	Jun-98	0.0%	0.00					
Total Month 1 Draw				134.21	4.36		\$ -	\$ -	\$ 4.36
1	May-98	Jun-98	0.3%	2.30	0.07		4.36	0.04	4.48
2	Jun-98	Jul-98	0.3%	2.30	0.07		4.48	0.04	4.59
3	Jul-98	Aug-98	0.3%	2.30	0.07		4.59	0.04	4.71
4	Aug-98	Sep-98	0.3%	2.30	0.07		4.71	0.04	4.83
5	Sep-98	Oct-98	0.3%	2.30	0.07		4.83	0.04	4.95
6	Oct-98	Nov-98	0.3%	2.30	0.07		4.95	0.05	5.21
7	Oct-98	Dec-98	0.3%	2.30	0.07	0.14	5.21	0.05	5.34
8	Dec-98	Jan-99	1.2%	10.40	0.34		5.34	0.05	5.73
9	Jan-99	Feb-99	1.2%	10.40	0.34		5.73	0.05	6.12
10	Feb-99	Mar-99	1.2%	10.40	0.34		6.12	0.06	6.51
11	Mar-99	Apr-99	1.2%	10.40	0.34		6.51	0.06	6.91
12	Apr-99	May-99	1.2%	10.40	0.34	0.14	6.91	0.06	7.45
13	May-99	Jun-99	1.2%	10.40	0.34		7.45	0.07	7.86
14	Jun-99	Jul-99	1.2%	10.40	0.34		7.86	0.07	8.27
15	Jul-99	Aug-99	1.2%	10.40	0.34		8.27	0.08	8.68
16	Aug-99	Sep-99	1.2%	10.40	0.34		8.68	0.08	9.10
17	Sep-99	Oct-99	1.2%	10.40	0.34		9.10	0.08	9.52
18	Oct-99	Nov-99	1.2%	10.40	0.34	0.13	9.52	0.09	10.08
19	Nov-99	Dec-99	1.2%	10.40	0.34		10.08	0.09	10.51
20	Dec-99	Jan-00	2.6%	21.63	0.70		10.51	0.10	11.31
21	Jan-00	Feb-00	2.6%	21.63	0.70		11.31	0.11	12.12
22	Feb-00	Mar-00	2.6%	21.63	0.70		12.12	0.11	12.93
23	Mar-00	Apr-00	2.6%	21.63	0.70		12.93	0.12	13.76
24	Apr-00	May-00	2.6%	21.63	0.70	0.11	13.76	0.13	14.70
25	May-00	Jun-00	2.6%	21.63	0.70		14.70	0.14	15.54
26	Jun-00	Jul-00	2.6%	21.63	0.70		15.54	0.14	16.38
27	Jul-00	Aug-00	2.6%	21.63	0.70		16.38	0.15	17.24
28	Aug-00	Sep-00	2.6%	21.63	0.70		17.24	0.16	18.10
29	Sep-00	Oct-00	2.6%	21.63	0.70	0.09	18.10	0.17	19.07
30	Oct-00	Nov-00	2.6%	21.63	0.70		19.07	0.18	19.95
31	Nov-00	Dec-00	2.6%	21.63	0.70		19.95	0.19	20.84
32	Dec-00	Jan-01	2.7%	22.71	0.74		20.84	0.19	21.77
33	Jan-01	Feb-01	2.7%	22.71	0.74		21.77	0.20	22.71
34	Feb-01	Mar-01	2.7%	22.71	0.74		22.71	0.21	23.66
35	Mar-01	Apr-01	2.7%	22.71	0.74		23.66	0.22	24.62
36	Apr-01	May-01	2.7%	22.71	0.74	0.07	24.62	0.23	25.65
37	May-01	Jun-01	2.7%	22.71	0.74		25.65	0.24	26.63
38	Jun-01	Jul-01	2.7%	22.71	0.74		26.63	0.25	27.62
39	Jul-01	Aug-01	2.7%	22.71	0.74		27.62	0.26	28.61
40	Aug-01	Sep-01	2.7%	22.71	0.74		28.61	0.27	29.62
41	Sep-01	Oct-01	2.7%	22.71	0.74		29.62	0.28	30.63
42	Oct-01	Nov-01	2.7%	22.71	0.74	0.05	30.63	0.28	31.70
43	Nov-01	Dec-01	2.7%	22.71	0.74		31.70	0.29	32.73
44	Dec-01	Jan-02	1.5%	12.32	0.40		32.73	0.30	33.44
45	Jan-02	Feb-02	1.5%	12.32	0.40		33.44	0.31	34.15
46	Feb-02	Mar-02	1.5%	12.32	0.40		34.15	0.32	34.87
47	Mar-02	Apr-02	1.5%	12.32	0.40		34.87	0.32	35.59
48	Apr-02	May-02	1.5%	12.32	0.40	0.03	35.59	0.33	36.35
49	May-02	Jun-02	1.5%	12.32	0.40		36.35	0.34	37.09
50	Jun-02	Jul-02	1.5%	12.32	0.40		37.09	0.34	37.84
51	Jul-02	Aug-02	1.5%	12.32	0.40		37.84	0.35	38.59
52	Aug-02	Sep-02	1.5%	12.32	0.40		38.59	0.36	39.35
53	Sep-02	Oct-02	1.5%	12.32	0.40		39.35	0.37	40.11
54	Oct-02	Nov-02	1.5%	12.32	0.40	0.01	40.11	0.37	40.90
55	Nov-02	Dec-02	1.5%	12.32	0.40		40.90	0.38	41.68
56	Dec-02	Jan-03	2.0%	16.49	0.54		41.68	0.39	42.60
<b>TOTALS</b>			100.0%	\$ 971.46	\$ 31.57	\$ 0.77	\$ -	\$ 10.26	

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE									
IFC B REQUIREMENTS									
#	Month Begins	Month Ends	Percentage Draw	Total Req'd Drawdown (Beg of Period)	Pro Rata Contribution 3%	Semi-Annual Commit. Fees (Beg of Period)	Construction Fund Balance (Beg of Period)	Interest During Construction (End of Period)	Fund Balance (End of Period)
				\$					
Development Costs				65.00					
Transaction Costs				69.21					
Subtotal				134.21					
0	May-98	Jun-98	0.0%	0.00	4.36		\$ -	\$ -	\$ 4.36
Total Month 1 Draw				134.21	0.07		4.36	0.04	4.48
1	May-98	Jun-98	0.3%	2.30	0.07		4.48	0.04	4.59
2	Jun-98	Jul-98	0.3%	2.30	0.07		4.59	0.04	4.71
3	Jul-98	Aug-98	0.3%	2.30	0.07		4.71	0.04	4.83
4	Aug-98	Sep-98	0.3%	2.30	0.07		4.83	0.04	4.95
5	Sep-98	Oct-98	0.3%	2.30	0.07	0.14	4.95	0.05	5.21
6	Oct-98	Nov-98	0.3%	2.30	0.07		5.21	0.05	5.34
7	Oct-98	Dec-98	0.3%	2.30	0.07		5.34	0.05	5.73
8	Dec-98	Jan-99	1.2%	10.40	0.34		5.73	0.06	6.12
9	Jan-99	Feb-99	1.2%	10.40	0.34		6.12	0.06	6.51
10	Feb-99	Mar-99	1.2%	10.40	0.34		6.51	0.06	6.91
11	Mar-99	Apr-99	1.2%	10.40	0.34	0.14	6.91	0.06	7.45
12	Apr-99	May-99	1.2%	10.40	0.34		7.45	0.07	7.86
13	May-99	Jun-99	1.2%	10.40	0.34		7.86	0.07	8.27
14	Jun-99	Jul-99	1.2%	10.40	0.34		8.27	0.08	8.68
15	Jul-99	Aug-99	1.2%	10.40	0.34		8.68	0.08	9.10
16	Aug-99	Sep-99	1.2%	10.40	0.34		9.10	0.08	9.52
17	Sep-99	Oct-99	1.2%	10.40	0.34	0.13	9.52	0.09	10.08
18	Oct-99	Nov-99	1.2%	10.40	0.34		10.08	0.09	10.51
19	Nov-99	Dec-99	1.2%	10.40	0.34		10.51	0.10	11.31
20	Dec-99	Jan-00	2.6%	21.63	0.70		11.31	0.11	12.12
21	Jan-00	Feb-00	2.6%	21.63	0.70		12.12	0.11	12.93
22	Feb-00	Mar-00	2.6%	21.63	0.70		12.93	0.12	13.76
23	Mar-00	Apr-00	2.6%	21.63	0.70	0.11	13.76	0.13	14.70
24	Apr-00	May-00	2.6%	21.63	0.70		14.70	0.14	15.54
25	May-00	Jun-00	2.6%	21.63	0.70		15.54	0.14	16.38
26	Jun-00	Jul-00	2.6%	21.63	0.70		16.38	0.15	17.24
27	Jul-00	Aug-00	2.6%	21.63	0.70		17.24	0.16	18.10
28	Aug-00	Sep-00	2.6%	21.63	0.70	0.09	18.10	0.17	19.07
29	Sep-00	Oct-00	2.6%	21.63	0.70		19.07	0.18	19.95
30	Oct-00	Nov-00	2.6%	21.63	0.70		19.95	0.19	20.84
31	Nov-00	Dec-00	2.6%	21.63	0.70		20.84	0.19	21.77
32	Dec-00	Jan-01	2.7%	22.71	0.74		21.77	0.20	22.71
33	Jan-01	Feb-01	2.7%	22.71	0.74		22.71	0.21	23.66
34	Feb-01	Mar-01	2.7%	22.71	0.74		23.66	0.22	24.62
35	Mar-01	Apr-01	2.7%	22.71	0.74	0.07	24.62	0.23	25.65
36	Apr-01	May-01	2.7%	22.71	0.74		25.65	0.24	26.63
37	May-01	Jun-01	2.7%	22.71	0.74		26.63	0.25	27.62
38	Jun-01	Jul-01	2.7%	22.71	0.74		27.62	0.26	28.61
39	Jul-01	Aug-01	2.7%	22.71	0.74		28.61	0.27	29.62
40	Aug-01	Sep-01	2.7%	22.71	0.74		29.62	0.28	30.63
41	Sep-01	Oct-01	2.7%	22.71	0.74	0.05	30.63	0.28	31.70
42	Oct-01	Nov-01	2.7%	22.71	0.74		31.70	0.29	32.73
43	Nov-01	Dec-01	2.7%	22.71	0.74		32.73	0.30	33.44
44	Dec-01	Jan-02	1.5%	12.32	0.40		33.44	0.31	34.15
45	Jan-02	Feb-02	1.5%	12.32	0.40		34.15	0.32	34.87
46	Feb-02	Mar-02	1.5%	12.32	0.40		34.87	0.32	35.59
47	Mar-02	Apr-02	1.5%	12.32	0.40	0.03	35.59	0.33	36.35
48	Apr-02	May-02	1.5%	12.32	0.40		36.35	0.34	37.09
49	May-02	Jun-02	1.5%	12.32	0.40		37.09	0.34	37.84
50	Jun-02	Jul-02	1.5%	12.32	0.40		37.84	0.35	38.59
51	Jul-02	Aug-02	1.5%	12.32	0.40		38.59	0.36	39.35
52	Aug-02	Sep-02	1.5%	12.32	0.40		39.35	0.37	40.11
53	Sep-02	Oct-02	1.5%	12.32	0.40	0.01	40.11	0.37	40.90
54	Oct-02	Nov-02	1.5%	12.32	0.40		40.90	0.38	41.68
55	Nov-02	Dec-02	1.5%	12.32	0.40		41.68	0.39	42.60
56	Dec-02	Jan-03	2.0%	16.49	0.54				
TOTALS			100.0%	\$ 971.46	\$ 31.57	\$ 0.77	\$ 0.77	\$ 10.26	

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

IDC & COMMITMENT FEE BUILD-UP SCHEDULE									
WB REQUIREMENTS									
# Months	Month Begins	Month Ends	Percentage Draw	Total Req'd Drawdown (Beg of Period)	Pro Rata Contribution 7%	Semi-Annual Commit. Fee (Beg of Period)	Construction Fund Balance (Beg of Period)	Interest During Construction (End of Period)	Fund Balance (End of Period)
Development Costs (@50%)				\$ 65.00					
Transaction Costs				69.21					
Subtotal				134.21					
0	May-98	Jun-98	0.0%	0.00					
Total Month 1 Draw				134.21	8.72		\$	\$	\$ 8.72
1	May-98	Jun-98	0.3%	2.30	0.15		8.72	0.08	8.95
2	Jun-98	Jul-98	0.3%	2.30	0.15		8.95	0.08	9.19
3	Jul-98	Aug-98	0.3%	2.30	0.15		9.19	0.09	9.42
4	Aug-98	Sep-98	0.3%	2.30	0.15		9.42	0.09	9.66
5	Sep-98	Oct-98	0.3%	2.30	0.15		9.66	0.09	9.90
6	Oct-98	Nov-98	0.3%	2.30	0.15		9.90	0.09	10.14
7	Nov-98	Dec-98	0.3%	2.30	0.15	0.00	10.14	0.09	10.38
8	Dec-98	Jan-99	1.2%	10.40	0.68		10.38	0.10	11.16
9	Jan-99	Feb-99	1.2%	10.40	0.68		11.16	0.10	11.94
10	Feb-99	Mar-99	1.2%	10.40	0.68		11.94	0.11	12.72
11	Mar-99	Apr-99	1.2%	10.40	0.68		12.72	0.12	13.52
12	Apr-99	May-99	1.2%	10.40	0.68	0.00	13.52	0.13	14.32
13	May-99	Jun-99	1.2%	10.40	0.68		14.32	0.13	15.13
14	Jun-99	Jul-99	1.2%	10.40	0.68		15.13	0.14	15.95
15	Jul-99	Aug-99	1.2%	10.40	0.68		15.95	0.15	16.77
16	Aug-99	Sep-99	1.2%	10.40	0.68		16.77	0.16	17.60
17	Sep-99	Oct-99	1.2%	10.40	0.68		17.60	0.16	18.44
18	Oct-99	Nov-99	1.2%	10.40	0.68	0.00	18.44	0.17	19.29
19	Nov-99	Dec-99	1.2%	10.40	0.68		19.29	0.18	20.14
20	Dec-99	Jan-00	2.6%	21.63	1.41		20.14	0.19	21.74
21	Jan-00	Feb-00	2.6%	21.63	1.41		21.74	0.20	23.35
22	Feb-00	Mar-00	2.6%	21.63	1.41		23.35	0.22	24.97
23	Mar-00	Apr-00	2.6%	21.63	1.41		24.97	0.23	26.61
24	Apr-00	May-00	2.6%	21.63	1.41	0.00	26.61	0.25	28.26
25	May-00	Jun-00	2.6%	21.63	1.41		28.26	0.26	29.93
26	Jun-00	Jul-00	2.6%	21.63	1.41		29.93	0.28	31.61
27	Jul-00	Aug-00	2.6%	21.63	1.41		31.61	0.29	33.31
28	Aug-00	Sep-00	2.6%	21.63	1.41		33.31	0.31	35.03
29	Sep-00	Oct-00	2.6%	21.63	1.41	0.00	35.03	0.33	36.76
30	Oct-00	Nov-00	2.6%	21.63	1.41		36.76	0.34	38.51
31	Nov-00	Dec-00	2.6%	21.63	1.41		38.51	0.36	40.27
32	Dec-00	Jan-01	2.7%	22.71	1.48		40.27	0.37	42.12
33	Jan-01	Feb-01	2.7%	22.71	1.48		42.12	0.39	43.99
34	Feb-01	Mar-01	2.7%	22.71	1.48		43.99	0.41	45.87
35	Mar-01	Apr-01	2.7%	22.71	1.48		45.87	0.43	47.78
36	Apr-01	May-01	2.7%	22.71	1.48	0.00	47.78	0.44	49.70
37	May-01	Jun-01	2.7%	22.71	1.48		49.70	0.46	51.63
38	Jun-01	Jul-01	2.7%	22.71	1.48		51.63	0.48	53.59
39	Jul-01	Aug-01	2.7%	22.71	1.48		53.59	0.50	55.57
40	Aug-01	Sep-01	2.7%	22.71	1.48		55.57	0.52	57.56
41	Sep-01	Oct-01	2.7%	22.71	1.48		57.56	0.54	59.57
42	Oct-01	Nov-01	2.7%	22.71	1.48	0.00	59.57	0.55	61.60
43	Nov-01	Dec-01	2.7%	22.71	1.48		61.60	0.57	63.65
44	Dec-01	Jan-02	1.5%	12.32	0.80		63.65	0.59	65.04
45	Jan-02	Feb-02	1.5%	12.32	0.80		65.04	0.60	66.45
46	Feb-02	Mar-02	1.5%	12.32	0.80		66.45	0.62	67.87
47	Mar-02	Apr-02	1.5%	12.32	0.80		67.87	0.63	69.30
48	Apr-02	May-02	1.5%	12.32	0.80	0.00	69.30	0.64	70.74
49	May-02	Jun-02	1.5%	12.32	0.80		70.74	0.66	72.20
50	Jun-02	Jul-02	1.5%	12.32	0.80		72.20	0.67	73.67
51	Jul-02	Aug-02	1.5%	12.32	0.80		73.67	0.69	75.16
52	Aug-02	Sep-02	1.5%	12.32	0.80		75.16	0.70	76.66
53	Sep-02	Oct-02	1.5%	12.32	0.80		76.66	0.71	78.17
54	Oct-02	Nov-02	1.5%	12.32	0.80	0.00	78.17	0.73	79.70
55	Nov-02	Dec-02	1.5%	12.32	0.80		79.70	0.74	81.24
56	Dec-02	Jan-03	2.0%	16.49	1.07		81.24	0.76	83.07
<b>TOTALS</b>				100.0% \$ 971.46	\$ 63.15	\$ -	\$	19.93	

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

IDC & COMMITMENT FEE BUILD-UP SCHEDULE						TOTAL REQUIREMENTS			
# Months	Month Begins	Month Ends	Percentage Draw	Total Req'd Drawdown (Beg of Period)	Pro Rata Contribution 100%	Semi-Annual Commit. Fee (Beg of Period)	Construction Fund Balance (Beg of Period)	Interest During Construction (End of Period)	Fund Balance (End of Period)
				\$ 65.00					
				69.21					
Development Costs (@ 50%)				134.21					134.21
Transaction Costs				0.00					137.37
Subtotal				134.21	134.21			0.86	140.55
0	May-98	Jun-98	0.0%	2.30	2.30		134.21	0.88	143.75
Total Month 1 Draw	May-98	Jun-98	0.3%	2.30	2.30		137.37	0.90	146.97
1	Jun-98	Jul-98	0.3%	2.30	2.30		140.55	0.92	150.22
2	Jul-98	Aug-98	0.3%	2.30	2.30		143.75	0.95	156.26
3	Aug-98	Sep-98	0.3%	2.30	2.30	2.77	146.97	0.97	159.58
4	Sep-98	Oct-98	0.3%	2.30	2.30		150.22	1.02	171.02
5	Oct-98	Nov-98	0.3%	2.30	2.30		156.26	1.04	182.54
6	Nov-98	Dec-98	0.3%	2.30	2.30		159.58	1.12	194.14
7	Dec-98	Jan-99	1.2%	10.40	10.40		171.02	1.20	205.81
8	Jan-99	Feb-99	1.2%	10.40	10.40		182.54	1.27	220.19
9	Feb-99	Mar-99	1.2%	10.40	10.40	2.63	194.14	1.35	232.04
10	Mar-99	Apr-99	1.2%	10.40	10.40		205.81	1.45	243.98
11	Apr-99	May-99	1.2%	10.40	10.40		220.19	1.53	255.99
12	May-99	Jun-99	1.2%	10.40	10.40		232.04	1.61	268.09
13	Jun-99	Jul-99	1.2%	10.40	10.40		243.98	1.69	280.26
14	Jul-99	Aug-99	1.2%	10.40	10.40		255.99	1.78	294.96
15	Aug-99	Sep-99	1.2%	10.40	10.40	2.44	268.09	1.86	307.33
16	Sep-99	Oct-99	1.2%	10.40	10.40		280.26	1.96	331.00
17	Oct-99	Nov-99	1.2%	10.40	10.40		294.96	2.05	354.83
18	Nov-99	Dec-99	1.2%	21.63	21.63		307.33	2.21	378.82
19	Dec-99	Jan-00	2.6%	21.63	21.63		331.00	2.36	402.97
20	Jan-00	Feb-00	2.6%	21.63	21.63		354.83	2.52	429.42
21	Feb-00	Mar-00	2.6%	21.63	21.63	2.14	378.82	2.68	453.91
22	Mar-00	Apr-00	2.6%	21.63	21.63		402.97	2.87	478.57
23	Apr-00	May-00	2.6%	21.63	21.63		429.42	3.03	503.39
24	May-00	Jun-00	2.6%	21.63	21.63		453.91	3.20	528.38
25	Jun-00	Jul-00	2.6%	21.63	21.63		478.57	3.36	555.36
26	Jul-00	Aug-00	2.6%	21.63	21.63	1.82	503.39	3.53	580.71
27	Aug-00	Sep-00	2.6%	21.63	21.63		528.38	3.72	606.22
28	Sep-00	Oct-00	2.6%	21.63	21.63		555.36	3.89	633.00
29	Oct-00	Nov-00	2.6%	21.63	21.63		580.71	4.06	659.95
30	Nov-00	Dec-00	2.6%	22.71	22.71		606.22	4.25	687.09
31	Dec-00	Jan-01	2.7%	22.71	22.71		633.00	4.43	714.41
32	Jan-01	Feb-01	2.7%	22.71	22.71		659.95	4.62	743.28
33	Feb-01	Mar-01	2.7%	22.71	22.71	1.36	687.09	4.80	770.99
34	Mar-01	Apr-01	2.7%	22.71	22.71		714.41	5.00	798.89
35	Apr-01	May-01	2.7%	22.71	22.71		743.28	5.19	826.98
36	May-01	Jun-01	2.7%	22.71	22.71		770.99	5.39	855.27
37	Jun-01	Jul-01	2.7%	22.71	22.71		798.89	5.58	883.75
38	Jul-01	Aug-01	2.7%	22.71	22.71		826.98	5.78	913.36
39	Aug-01	Sep-01	2.7%	22.71	22.71	0.93	855.27	5.97	942.25
40	Sep-01	Oct-01	2.7%	22.71	22.71		883.75	6.18	960.95
41	Oct-01	Nov-01	2.7%	22.71	22.71		913.36	6.38	979.79
42	Nov-01	Dec-01	2.7%	12.32	12.32		942.25	6.52	998.77
43	Dec-01	Jan-02	1.5%	12.32	12.32		960.95	6.66	1,017.89
44	Jan-02	Feb-02	1.5%	12.32	12.32		979.79	6.80	1,037.72
45	Feb-02	Mar-02	1.5%	12.32	12.32	0.58	998.77	6.94	1,057.13
46	Mar-02	Apr-02	1.5%	12.32	12.32		1,017.89	7.09	1,076.68
47	Apr-02	May-02	1.5%	12.32	12.32		1,037.72	7.23	1,096.37
48	May-02	Jun-02	1.5%	12.32	12.32		1,057.13	7.37	1,116.21
49	Jun-02	Jul-02	1.5%	12.32	12.32		1,076.68	7.52	1,136.20
50	Jul-02	Aug-02	1.5%	12.32	12.32		1,096.37	7.67	1,156.59
51	Aug-02	Sep-02	1.5%	12.32	12.32	0.25	1,116.21	7.81	1,176.88
52	Sep-02	Oct-02	1.5%	12.32	12.32		1,136.20	7.97	1,201.49
53	Oct-02	Nov-02	1.5%	12.32	12.32		1,156.59	8.12	
54	Nov-02	Dec-02	2.0%	16.49	16.49		1,176.88		
55	Dec-02	Jan-03							
56									
TOTALS				100.0%	\$ 971.46	\$ 971.46	\$ 14.91	\$ 215.12	

NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE

PROJECT FINANCING ASSUMPTIONS

Distribution of Funding Sources

Funding Distribution Transaction Fees	TIMING	EQUITY					
		30%	11%	19%	27%	3%	3%
Arrangement Fees	@ Closing	0.00%	2.50%	2.50%	1.75%	2.00%	2.50%
Risk Premium Fee	@ Closing	0.00%	10.00%	10.00%	0.00%	0.00%	2.50%
Placement Fees	@ Closing	0.00%	N/A	N/A	N/A	0.00%	10.00%
Commitment Fees	Semi Annual	0.00%	0.75%	0.75%	0.75%	N/A	N/A
% Applied every six months			0.37%	0.37%	0.37%	0.50%	0.75%
						0.25%	0.37%
							0.00%
							7%

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

Depreciable Life of Facility	25					
Ownership Structure						
Government of Laos	25.00%					
Project Development Group	75.00%					
GOL Equity Commitment						
	1998	1999	2000	2001	2002	2003
	11.27	9.36	19.46	20.44	11.09	28.56
	\$ 100.19 = Passed to GOL Debt Module					
Development Cost Reimbursements						
Financial Closing	65% (Sponsor's fees plus 50% of developer costs)					
COD	35%					
Interest Rates (Effective)						
	Type	BASE	Margin	Total	Nominal <sup>1</sup> Rate	
EFIC	Fixed			10.95%	10.44%	
ECA's	Fixed			10.95%	10.44%	
Thai Banks	Float					
Short-Term		10.50%	1.50%	12.00%	11.39%	
Medium Term		10.50%	1.50%	12.00%	11.39%	
Long Term		10.50%	1.50%	12.00%	11.39%	
IFC A	Fixed			11.75%	11.16%	
IFC B	Fixed			11.75%	11.16%	
WB	Fixed			10.00%	9.57%	
(1) Used During Construction Period - Assumes Monthly Compounding						
Debt Repayment Terms						
	Term	Stage 1 Principal Repay %	Stage 2 Payments Repay %	Stage 3 Payments Repay %	Payments Per Year	
EFIC	12 Level	Level	Level	Level	2	
ECA's	12 Level	Level	Level	Level	2	
Thai Banks	8	8.0%	15.2%		2	
IFC A	12 Level	Level	Level	Level	2	
IFC B	5 Level	Level	Level	Level	2	
WB	10 Level	Level	Level	Level	2	
Reserve Funds						
Requirements						
Debt Service	6 Months					
Major Overhaul	= R. Anderson's Assumptions Used					
Annual Contribution	15					
Year of Overhaul	50%					
Reduction in Output						
Return on Invested Funds						
Debt Service Reserves	7.0%					
Operating Assumptions						
Operating Term (years)	25					
	USD (\$)	Thai Baht				
Annual Inflation Rate	0.03	0.06	4.5% (Applies to O&M, Environmental Costs)			
Years Until Operation	5.70					
Environmental Mitigation						
Years 1 - 4	\$	4.50				
Year 5	\$	3.50				
Years 6 - 25	\$	2.75				
Year 1 Costs						
O&M		15.00				
O&M Insurance		1.50				
NTEC Admin		3.00				

**NAM THUEN II COST BENEFIT ANALYSIS  
PROJECT FINANCING MODULE**

<b>Project Schedule</b>					
<b>Development &amp; Permits</b>					
Development Start Date	May-93				
Development Completion Date	Apr-98	<u>Days</u>	<u>Months</u>	<u>Years</u>	
Activity Duration		1,825	60	5.0	
<b>Detailed Design, Construction &amp; Start-Up</b>					
Design & Construction Start Date	May-98				
Design & Construction Completion Date	Jan-03	<u>Days</u>	<u>Months</u>	<u>Years</u>	
Activity Duration		1,706	56	4.7	
<b>Operations</b>					
Operations Start Date	Jan-03	<u>Days</u>	<u>Months</u>	<u>Years</u>	
Operations Completion Date	Jan-28				
Activity Duration		9,131	300	25.0	
<b>Total Project Duration</b>					
Begin Project	May-93				
Complete Project	Jan-28	<u>Days</u>	<u>Months</u>	<u>Years</u>	
Duration		12,664	416	34.7	

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**Annex 6**

**List of Meetings Held**

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**Annex 6:  
List of Meetings Held**

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## **Annex 7**

## **Bibliography**

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**Annex 7:  
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**Annex 8:**  
**Inception Report and Terms of Reference**

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**Government of the  
Lao People's Democratic Republic**

**ECONOMIC IMPACT STUDY OF  
NAM THEUN 2 DAM PROJECT**

**Inception Report**

submitted by

**LOUIS BERGER INTERNATIONAL, INC.**

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*December 20, 1996*



## INTRODUCTION

Louis Berger International, Inc. (LBII) is extremely pleased to have been chosen by the Government of the Lao People's Democratic Republic (GOL) to conduct an Economic Impact Study of the proposed Nam Theun 2 Dam project. The study's principal objective is to provide the GOL with the best possible analysis of the economic viability of the proposed Nam Theun 2 project, and of its potential to help alleviate poverty in Laos. It can be stated categorically that there is no conflict-of-interest inherent to LBII's carrying out of this objective, and in particular, that LBII has no significant involvement with the project's sponsors, the Thai Export-Import Bank, the Electricity Generating Authority of Thailand, or any other similarly interested party. The LBII Economic Study team is committed to provide its analysis, and present options and recommendations based on that analysis, as outlined in this Inception Report, solely from the standpoint of the interests of the Lao PDR.

LBII finds the Terms of Reference (TOR) for this study to be comprehensive and sufficiently detailed. The Economic Impact Study will be divided into five components, which will be carried out in the context of a series of other studies relating to Nam Theun 2, as well as of a program of public consultations designed to ensure that the analysis benefits from the most complete information that can be assembled about the proposed project.

LBII is confident that it will provide an insightful and comprehensive study that is fully accepted by the GOL. An important element of project administration will be to ensure effective coordination among the various study teams performing analyses relating to Nam Theun 2. This is particularly true with regard to the collection and sharing of data among the various studies.<sup>1</sup> Where data or estimates about important concepts are not available, LBII will make reasonable estimates of the ranges and magnitudes involved and refine these estimates once the other studies can provide the requested data. In respect to all components, the Economic Study team is prepared to provide independent assessments of data reliability and to provide alternative, preliminary estimates as feasible.

In addition, LBII will review applicable World Bank Operational Directives and provide any information gathered during the normal course of the study that might help inform a Bank decision on the Nam Theun 2 project's compliance with those Operational Directives.

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<sup>1</sup> A discussion of co-ordination among the institutions and study teams relating to Nam Theun 2 is contained in section I C, below, supplemented by a table summarizing anticipated data needs and sources.

