

Lao National Mekong Committee

**REPORT
ON THE OUTCOMES OF
STUDIES AND
ANALYSIS CARRIED
OUT IN SUB-AREA 7L**

April 2004

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INTRODUCTION

Patterned according to the format contained in **Basin Development Plan. Draft guideline. Sub-area analysis** prepared by MRC Secretariat BDP Team (Phnom Penh, Cambodia, September 2002), this report is written in order to provide an introduction to the problems, expectations, as well as the vision of the future of sub-area 7L, mainly regarding water related issues. It is based heavily on the internal documents of the Planning and Cooperation Committee, data conveyed by the relevant provinces in the sub-area, as well as existing documents at Lao National Mekong Committee, collaborative efforts of line ministries when the National Overview report of the Sector has been written, and existing literature. Sincere thanks are to be expressed to all concerned parties who have made this report to be written.

MAP OF SUB-AREA 7L

EXECUTIVE SUMMARY

I. Formed by two provinces, Attapeu and Sekong, located at the southernmost corner of the Lao People's Democratic Republic, sub-area 7L is one of the tiniest sub-area in the country with its total area of 17,985 km². The north of sub-area 7L touches the provinces of Saravane, while at the east, its limits run along the border with Vietnam, and on the west sub-area 7L is bordering Champassak Province, and adjuncts Cambodia on the south.

II. Forests cover 1,131,290 hectares or 62.15% of the total area of sub-area 7L sheltering two National Biodiversity Conservation Areas of 333,500 hectares: Dong Ampham (Attapeu Province) with its 200,000 hectares, and Se Sab (Sekong Province) of 133,500 hectares. Sekong Province is still filled with high-valued precious wood such as Santal.

III. Once endowed with natural resources, sub-area 7L is becoming a region with its natural resources wealth depleting. The causes originate from unsatisfactory planning and administration, poverty of the population and the lack of opportunities.

IV. The Development objectives to be implemented in sub-area 7L aim at:

-To improve the living conditions of the population, to meet the basic needs of the population, particularly in the remote ethnic areas, close to the border, according to the rural development principle.

-To strive to create a sustainable economic structure where the development of agriculture and forestry is linked to industry and handicraft as well as service, commodity production expanding in accordance to the general policy of establishing the province as a strategic unit, the district as a planning and finance unit, and the village as implementation unit.

-To increase revenues for sustained self-sufficiency of the concerned provinces.

-To actively develop human resources to meet requirements in the short term, and in the future.

V. Within the context of the above policy, the struggling targets are to strive to foster economic growth at a fast pace around 6.9 to 7.2 % per year. In order to achieve such a goal, internal capital has to be mobilized to reach 25 to 30% of the GDP, with the Public Investment Program to continue to be around 15 to 20% of the GDP.

Economic sector growth objectives:

- Agricultural and forestry growth: 4.4%
- Industrial and handicraft growth: 11%
- Service sector growth: 3.3%

GDP structure up to the year 2005:

- Agriculture and forestry covers 62%
- Industry and handicraft: 27.9%
- Service sector: 9.75%

The annual revenue per capita up to the year 2005 is to reach US\$ 500.

VI. Long term objectives of sub-area 7L are:

To develop the strategic plan of the Mekong River Commission and of the Lao National Mekong Committee in the promotion of the social and economic development to free the country from poverty and to gradually improve the living of the population, to foster the local ownership spirit, and to further the participatory implementation by the population of the strategic plan of the Mekong River Commission.

To enforce the regulations on water use, including the management of river bank erosion in sub-area 7L.

To strengthen the efficiency of sectors and works in the development of watersheds.

To control environmental, socio-economic and trans-boundary issues.

To train officials and to improve the planning for a better work, including the coordination in the exchange of data.

VII. In the short term, the 2001-2005 Plan aims at ensuring a continuing orderly society and a political stability for a sustained economic growth. By the year 2005, it is expected to reach the goal of stopping the slash and burn cultivation up to 66.7% as well as to create stable jobs for the population practicing swidden culture; to reduce up to 52% the number of poorest families; to reach the production of an amount of rice needed and which is 35,592 tonnes; to reform the activities of the State enterprises and the private sector to progressively expand; to train officials to secure the development in the future.

- To present projects for funding.
- To cooperate in the implementation of projects already funded.
- To strive to continue to create the economic structure of various sectors for the economic development to be linked to the development of the ethnic people living in the remote areas, and to better settle the poverty issue in the rural areas.
- To reach a GDP growth of 7%, including 8% in the agricultural and forestry sector, 4% in the industrial sector, and 12% in the service sector. Revenues collected for the budget have to be around 13 to 15% of the GDP in the year 2005, and with the projection of the growth of the population of sub-area 7L to reach 109,753 people in the year 2005, the revenue per capita should be US\$ 242.
- To eradicate poverty within 57.6% of the poorest families.
- To eradicate the slash and burn cultivation by the year 2005.

VIII. Vision nurtured by sub-area 7L is:

A wealthy and strong economy operating within a fair society.

Healthy environment in the Mekong Basin regarding sub-area 7L.

Cooperation with the National Mekong Committees, and promotion of the coordination regarding, and management of sustainable water and water resources in the Mekong Basin within the Lao People's Democratic Republic.

IX. The Government has carried out its decentralization policy in order to strengthen the local administration by relying on the sustainable exploitation of the natural resources as well as the protection of the environment and water resources.

Legal documents have already adopted to help achieve this policy such as the Forestry Law, Water and Water Resources Law, Law on Agriculture,

Electricity Law, Environmental Protection Law, Decision on the Decentralization, Decree on the Management of the Economic and Social Plan (2002).

X. Development objectives, plans and policies of Attapeu Province.

With its 13 ethnic minorities devoting to eek their livelihood out from the overwhelming subsistence economy, while the province itself shares border with Vietnamese province of Kongtum (70 km), and 170 km of border with Cambodia. Attapeu Province has forests, forest products, minerals, and many rivers favorable for eventual hydropower plants and river navigation, while a national road is under construction to link with neighboring countries.

XI. Development objectives, plans and policies of Sekong Province.

Sekong Province is natural resources rich with forests, and land apt for agricultural production and a basis for the industrial expansion in the future.

The struggling targets for the next five years are to ensure a sustainable economic growth, to eradicate the slash and burn cultivation, and to create stable jobs up to 66% for resettled population who up to now are practicing swidden culture; to reduce poverty within 52% of the poor families in the province, to produce 35,000 tonnes of rice from a cultivated area of 9,000 hectares. The macro-economic goals up to the year 2005 are:

- Average growth of GDP: 7.5% per year.
- Growth of agricultural: 15.4% per year.
- Growth of industry and handicraft: 8.2% per year.
- Augmentation of service: 10.2% per year.

By the year 2005, to strive to create an economic structure in the sectors of agriculture, forestry, industry and services as follows:

- Agricultural and forestry sectors to cover 76.2% of GDP.
- Industry and handicraft growth of GDP: 4.9% of the GDP.
- Service sector: 18.9% of the GDP.
- One digit annual inflation
- Stable exchange rate
- Revenues to amount 40.780 million kip in five year (2001-2005)

- Revenue to reach 10.160 million kip in 2004-2005 or 0.6% of GDP, with a deficit of 321.64 billion kip or 17.42% of GDP.
- With an expected population of 86,946 persons in 2005, the aimed revenue per capita is US\$ 223.
- Strong economic growth and fair social development.
- Environment in the Mekong Basin in the area of Sekong to be improved.
- Coordination with the Lao National Mekong Committee and to promote the coordination about the use of water, the management of sustainable water resources in the international Mekong Basin as well as within the Lao People's Democratic Republic.

XII. Sub-area 7L, bordering two foreign countries, and sheltering many potentialities should overcome rapidly the widespread poverty of its population. In the same time, it will be encountering many challenges and constraints.

INTRODUCTION

1. The longest river in Southeast Asia, a geographic spine for the sub-region, the Mekong River, over a total of 4,800 km, with its length of 1,760 km is winding throughout the Lao People's Democratic Republic. Its tributaries contribute the biggest share of some 5,270 m³/s equivalent to 35% of the whole river runoff. The 202,000 km² catchment area covers nearly 90% of the national territory or one quarter of the entire Mekong basin. These mere figures show the significance of the Mekong River to the country and its population.

2. The Mekong is considered as one of the most important resources of the country to harness in order to achieve the target that has been set since 1996 when the 6th Party Congress defined long-term development objective as freeing the country from the status of least developed country by the year 2020. This will be achieved by transferring the nation from a natural resource based economy to an intensive economy, a goal re-emphasized and strengthened in 2001 by the 7th Party Congress and the Government's Fifth Socio-Economic Development Plan (2001-2005). This has the following objectives:

- 7-7.5% annual GDP growth
- 4-5% annual growth for agriculture
- 10-11% annual growth for industry
- 8-9% annual growth for the service sector
- Agriculture and forestry products cover 47% of GDP
- Industrial products covers 27% of GDP
- Single digit annual inflation
- Stable exchange rate
- Increased annual budget revenue: the budget revenue should be 18% of GDP by 2004-2005. The budget deficit should be around 5% of GDP
- Reduced trade deficit to 6% of GDP
- Public investment covers 12-14% of GDP and saving should be about 12% of GDP in 2005
- In 2005, the population would be around 5.9 million, and the GDP per capita should be US\$ 500 to 550.

3. For the development in Lao People's Democratic Republic, the basic principles adhered to poverty alleviation such as: social equity, gender equality, environmental sustainability, technical feasibility, economic viability and good governance.

4. All these targets and principles are translated directly or indirectly for implementation in the sub-area 7L.

CONTEXT AND SCOPE CONTEXT OF THE SUB-AREA ANALYSIS

As sub-area has been delineated to provide a more focused analysis of local concerns and requirements, they are also the regional scale units for integrating and reporting on water resources planning in a catchment context. The current version regarding the sub-area has been delineated with the help of the National Mekong Committees, in a consultation process.

The outcomes for each sub-area analysis will be:

- Summary of present conditions and context for development
- Summary of water availability, ecological demands and present water uses
- Identification of opportunities, concerns and risks

- Formulation of development objectives.

Located in the southeastern corner of the Lao People's Democratic Republic, sub-area 7L as defined by the Mekong River Commission is formed by two provinces: Attapeu and Sekong with a total area of 17,985 km². The north of sub-area 7L touches the provinces of Saravane, while at the east, its limits run along the border with Vietnam, and on the west sub-area 7L is bordering Champassak Province, and in the south, sub-area 7L is touching Cambodia.

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PART I. NATIONAL OVERVIEW

National macro issues for water related basin planning and ranging from Irrigated agriculture, Integrated watershed management to Flood control and management do not impinge on the Mekong River or the water use, in general, as the pace and the scope are contrived by under-development.

I. Irrigated agriculture

I.1. As the agriculture and forestry sector provides the economic livelihood, the social and cultural base for more than 80 per cent of the population, and accounts for about 53 per cent of GDP, the Government is earnestly striving to modernize this sector to fully meet sustainable practice, and to achieve food security and better life for all Lao people. The goal of poverty eradication and graduation from Less Developed Country status depends on a more productive agriculture and forestry sector.

I.2. As most of the irrigation schemes located in the upland and mountainous area are of small size (less than 100 ha), and made with natural materials which are temporary, the role assigned to irrigation in this respect is crucial and is planned to develop along the following directions:

-To expand the development of irrigation to the rural areas, and contributing to change natural economy, semi-natural economy into commodity production.

- To protect the environment by stabilizing the areas of production, and to create new settlements for people previously practicing slash and burn cultivation, as well as to avert all setbacks linked to the irrigation works.
- To build new irrigation schemes, to rehabilitate and to improve existing irrigation projects, to strengthen facilities for the implementation of the development of irrigation.
- To develop human resources, particularly at managerial level.

I.3. The last few years, especially since 1996, the Government has given great importance to the irrigation sector translated by the leap forward of the irrigated area during the dry season from 24,000 hectares in 1996 to 214,832 in 2003. It results that about 65% of agricultural production of the country, as well as 20% of rural population benefit from irrigation.

I.4. In the meantime, the Government will support small-scale irrigation projects initiated or practiced by families or communities, to foster the participation of farmers and private sector in the irrigation development, and to secure the socio-economic development as well as the protection of the environment.

II. Integrated watershed development.

II.1. Laos is a resource-rich country, in terms of natural resources in proportion to the population, with high potential for future economic growth. However, unsustainable resource management practices are beginning to reverse this favorable situation; the fragile mountain ecosystems are severely at risk. For instance, forest cover has declined from 70% to 47% over the last 50 years.

II.2. In order to preserve the natural resources as a basis for Lao People's Democratic Republic's sustainable development and maintenance of the overall system of the natural resources, the integrated watershed management approach was fully endorsed in 2002 by the National Agriculture and Forestry Conference.

II.3. The country is divided into 64 watersheds with 53 watersheds or 91% of the land area drained into the Mekong River and the remaining into Vietnam from Xieng Khuang and Huaphan provinces.

II.4. Eight of case studies or model development representing district and provincial level integrated watershed management plans have been developed nationwide.

II.5. By 2010 integrated water management should have been developed for the whole country at district and provincial levels.

III. Fisheries

III.1. While the Lao are living mostly along rivers, and have their life intertwined with them, fish is one of the main food for the population and accounts for about 42% of animal protein consumed.

III.2. In 2001, fish production amounts 73,100 tonnes and contributes as 7 to 8 % of GDP. The trend is progressing over the years as from 1996 to 2001 capture fisheries as well as aquaculture increased 152% with the production of fish from aquaculture totaling 18,000 tonnes in 1996 up to 43,100 in 2001.

III.3. With the increasing population from 4,7 million people in 1996 to an estimated 8,2 million in 2020, the total demand in fish amounting 48,000 tonnes in 1996 is expected to reach 188,600 tonnes in 2020.

III.4. To meet this demand, increase in production from capture fisheries may not be possible in the spirit of sustainable use, appropriate management and protection of natural resources including aquatic biodiversity. The only way is the increase in fish production from aquaculture or enhanced fisheries that are still in infancy.

III.5. The Lao Government since 1989 attached priority to develop its fishery resources by seeking funds and know-how to develop technical manpower, fishery infrastructure, credit schemes, processing and cold chain including marketing avenues and by cooperation with regional and international ventures for the sound exploitation and management of its resources in accordance to the “FAO Code of Conduct for Responsible Fisheries.”

III.6. The Government’s policy regarding fisheries products will center around:

- The contribution to food security with more emphasis in supplying more animal protein to the rural area particularly the rural farming communities.
- The contribution to poverty reduction in the sense of getting a complementary source of income.
- Gradual integration of sustainable aquaculture farming into agricultural mixed farming, generating new employment in the sub-sector.
- Supplementary food supplies to the growing urban population by promoting peri-urban semi-intensive aquaculture (pond, cage, pen...) with attention to animal health and good management practices.

IV. Hydropower

IV.1. With 87% of its land area considered as hilly and mountainous, Lao People's Democratic Republic is endowed with more than 60 "promising" sites for hydropower generation that have been identified on the tributaries of the Mekong River. It has been estimated that the country has a generating potential of 12,000 MW, of which only 930 MW has been developed so far.

IV.2. Steady progression of electricity supplied to the population is noticeable. From 33 MW produced in 1975, the figure reaches 627 MW in 2000. Families benefiting of the use of electricity expand from 5,000 to 293,495 during the same period of time, meaning that 35.8% of the population have access to electricity.

IV.3. While projection for future use of energy is expected to expand, it is obvious that the use of energy per capita and per year which is around 124.23 KW/h/per capita/per year remains the lowest one among ASEAN countries.

IV.4. The bulk of energy originates from hydropower (98%), and only the remaining 2% from other sources such as petrol or solar energy. The State is however not the main producer.

IV.5. Regarding the hydropower sector, the Government's aims are:

- To focus on the production of electricity for internal use, and to reduce imported fuel.
- To support rural development, and to reduce regional power imbalance within the country.
- To encourage private investment in hydropower investment.
- To earn foreign currency for socio-economic development.

- To minimize environmental impacts.
- To develop watershed management.

V. Navigation, transport and river works

V.1. The Mekong River forms the natural artery of Laos and flowing through more Lao territory than other countries in the region, it was a convenient communication facility for peoples living on its shores using traditional means characterized by small volume of merchandises and limited passenger number.

V.2. However, the Mekong River in its Lao section is plagued with dangerous rocks, obstructed with shoals in parts, in most cases barely identified, if not with poor aids to navigation. The solution requires trans-boundary cooperation to pool efforts to harness and exploit the potentialities of the Mekong River for the socio-economic development of the region.

V.3. With the achievement of the Phase 1 in the improvement of the navigational channel and in the setting-up of navigation aids from China's border to the Golden Triangle, the northern reach is increasingly busy. Environmental problems are expanding with the rapid increase of the traffic on the Mekong River, but they are still under control. This northern section will be increasingly used as Road no. 13 is far from the Mekong River, thus the competition between land transport and river transport will not be detrimental to the navigation as it is for the southern reach between Vientiane and Savannakhet.

V.4. While contributing in the past to the economic development of the country, river transport reveals to be a relatively low-cost infrastructure investment, energy saving with minor pollution, and to decrease heavy land traffic, the Government's strategy regarding navigation is mainly focusing on:

- To maintain current transport capability by river.
- To improve navigation aids and information for travel safety.
- To encourage use of river transport in the wet season instead of poor roads.
- To protect the riverbanks from erosion.

V.5. Efforts have been concentrated for 2002 to 2005 to create new facilities or improve existing ports along the length of the Mekong River. Aids to navigation had been installed from Vientiane up to Paklay.

V.6. Particular trans-boundary setbacks regarding river works are to be noticed. The river bank protection made on the Thai side along the Mekong River creates severe erosion on the Lao shore, particularly in the provinces of Bokeo, Vientiane, Bolikhamsay, Khammouan, and Vientiane Capital. Construction of ports on Thai shore as well as of road to exploit sand have deep effects by changing the flow direction.

V.7. For the next twenty years, efforts will focus on:

- *Using local materials in the protection of the river banks.
- *Constructing or improving ports and services according to international standards.
- *Using navigation aids agreed upon by all parties.

VI. TOURISM AND RECREATION

VI.1. There has been a very strong growth in the Lao tourism sector since 1990, from only 14,400 international arrivals in 1990 to 735,662 arrivals in 2002. Tourism is now a major contributor to national income (7 to 9 per cent of GDP) and employment.

VI.2. The Lao People's Democratic Republic's tourism strategy favors pro-poor, community-based tourism development, the enhancement of specific tourism-related infrastructure improvements, and sub-regional tourism cooperation. Current activities include: awareness initiatives focusing on tourism benefits and environmental and cultural conservation and enhancement; awareness programmes on prevention of HIV/AIDS, sexual exploitation and trafficking of women, and information on successful regional experiences.

VI.3. Sub-regional co-operation for sustainable tourism is an important aspect of the Government's tourism strategy.

VII. Water supply and sanitation

VII.1. Domestic water and sanitation are essentials for the life, health and productivity of the population.

VII.2. The national production of the existing 36 water treatment plants is 188,380 m³/per day. But the average production is only 157,340 m³/per day supplying water to 525,395 people or 37.67% of the urban population. This means that only 300 liter/per day/per person is provided by these plants. Water supplying people in urban towns and cities originates mostly – about 85% - from the Mekong River and its tributaries, and represents only 0.04% of the annual discharge of the Mekong River.

VII.3. The thrust of the Government's development policy is to increase amenity of life in urban areas by providing affordable, reliable and quality services in commercial water supply and in sanitation.

VII.4. With regard to water supply in rural areas, it is estimated that in 2002, about 60% of the population in rural areas has drinkable water from a public tap, or hand pump or spring. The goal is to reach the figure of 90% by the year 2020, as the Government's development policy is:

- To improve water supply and environmental health in rural areas;
- To focus on inaccessible, poverty-ridden areas; and,
- To encourage private supply and sanitation ventures in easy-to-reach areas.

VII.5. The percentage (41%) of people having access to sanitation is relatively low in 2002. The goal set for 2020 is to significantly improve the situation and raise the figure up to 80%.

VII.6. Waste water is mainly from domestic usage, as only 2.5% of the piped water is used in industrial activities. The average of the dilution of rain and waste water into the Mekong, in Vientiane, is estimated to be 1000:1. The figure of dilution would be 800:1 during the dry season.

VIII. Flood control and management

VIII.1. Most of cities and towns of the Lao People's Democratic Republic lies along the Mekong River and its tributaries, thus prone to flooding during the rainy season.

VIII.2. About 80 percent of the rural flooding and 20 percent of the urban flooding is caused by tributaries. The four major flood prone areas are situated along the mainstream near large tributaries: Vientiane Plain, Thakhek, Savannakhet and Pakse.

VIII.3. Since 1990, the Government has provided data to the Mekong River Commission, and cooperated about flood warning.

VIII.4. The network to monitor the hydrological situation was strengthened in two phases, in 1998, and in 1998-2000, with the repairing and establishment of staff gauges.

VIII.5. Dykes to protect against floods, water gates, and diversion canals had been built by the Government's budget, loans and foreign assistance in major cities and towns (Vientiane Capital, Bolikhamsay, Khammouan, Savannakhet, and Champassak) located along the Mekong River.

VIII.6. Development plans for the next twenty years have the following components: (1) Complete the construction and the restructuring of hydro-meteorological stations along the Mekong River and its tributaries. (2) Achieve the automatic collecting and dispatching of data at the 13 existing stations.(3) Complete the forecast of flooding through GSM mobile phone at Luang Prabang and Pakse. (4) Ensure a nation-wide system of flood warning. (5) Compile the hydrological and meteorological databases. (6) Water drainage construction plan in Vientiane Capital (2003-2005).

CONCLUSION.

With the headquarters of the Mekong River Commission to be relocated in Vientiane from June 2004 onward, the Lao People's Democratic Republic is strongly supporting national and international efforts to contribute to make the vision for the Mekong River Basin come true as an economically prosperous, socially just and environmentally sound Mekong River Basin.

PART II. SUB-AREA BASELINE STUDY

II.1. Development objectives, plans and policies

II.1.A. Development objectives, plans and policies for sub-area 7L

II.1.A.a. Development objectives

The Development objectives to be implemented in sub-area 7L aims at:

-To improve the living conditions of the population, to meet the basic needs of the population, particularly in the remote ethnic areas, close to the border, according to the rural development principle.

- To strive to create a sustainable economic structure where the development of agriculture and forestry is linked to industry and handicraft as well as service, commodity production expanding in accordance to the general policy of establishing the province as a strategic unit, the district as a planning and finance unit, and the village as implementation unit.

-To increase revenues for sustained self-sufficiency of the concerned provinces.

-To actively develop human resources to meet requirements in the short term, and in the future.

II.1.A.b. Struggling targets

Within the context of the above policy, the struggling targets are to strive to foster economic growth at a fast pace around 6.9 to 7.2 % per year. In order to achieve such a goal, internal capital has to be mobilized to reach 25 to 30% of the GDP, with the Public Investment Program to continue to be 15 to 20% of the GDP.

Economic growth objectives:

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GDP structure up to the year 2005:

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The annual revenue per capita up to the year 2005 is to reach US\$ 500.

II.1.A.c. Long term objectives

To develop the strategic plan of the Mekong River Commission and of the Lao National Mekong Committee in the implementation process of the social and economic development to free the country from poverty and to gradually improve the living of the population, to foster the local ownership spirit, and to further the participatory implementation by the population of the strategic plan of the Mekong River Commission.

To enforce the regulations on water use, including the management of river banks erosion in sub-area 7L.

To strengthen the efficiency of sectors and works in the development of watersheds.

To control environmental, socio-economic and trans-boundary issues.

To train officials and to improve the planning for a better work, including the coordination in the exchange of data.

II.1.A.d. Short term objectives

The 2001-2005 Plan aims at ensuring a continuing orderly society and a political stability for a sustained economic growth. By the year 2005, it is expected to reach the goal of stopping the slash and burn cultivation up to 66.7% as well as to create stable jobs for the population practicing previously swidden culture; to reduce up to 52% the number of poorest families; to reach the production of an amount of rice needed and which is 35,592 tonnes; to reform the activities of the State enterprises and the private sector to progressively expand; to train officials to secure the development in the future.

- To present projects for funding.
- To cooperate in the implementation of projects already funded.
- To strive to continue to create the economic structure of various sectors to link the economic development to the development of the ethnic areas in the remote region, and to better settle the poverty issue in the rural areas.
- To reach a GDP growth of 7%, including 8% in the agricultural and forestry sector, 4% in the industrial sector, and 12% in the service sector. Revenues collected for the budget have to be 13 to 15% of the GDP in the year 2005, and with the projection of the population growth in sub-area 7L to reach 109,753 people in the year 2005, the revenue per capita should be US\$ 242.
- To eradicate poverty within 57.6% of the poorest families.
- To eradicate the slash and burn cultivation by the year 2005.

II.1.A.e. Vision

A wealthy and strong economy, and a fair society.

Healthy environment in the Mekong Basin regarding sub-area 7L.

Cooperation with National Mekong Committees, and promotion of the coordination regarding, and management of sustainable water resources in the Mekong Basin within the Lao People's Democratic Republic.

II.1.A.f. Policy

The Government has carried out its decentralization policy in order to strengthen the local administration by relying on the sustainable exploitation of the natural resources as well as the protection of the environment and water resources.

Legal documents have already adopted to help achieve this policy such as the Forestry Law, Water and Water Resources Law, Law on Agriculture, Electricity Law, Environmental Protection Law, Decision on the Decentralization, Decree on the Management of the Economic and Social Plan (2002).

II.1.B. Development objectives, plans and policies for each of the two provinces of sub-area 7L

II.1.B.a. Attapeu Province

With its 13 ethnic minorities to eek their livelihood out from overwhelming subsistence economy, while the province itself shares border with

Vietnamese province of Kongtum (70 km), and 170 km of border with Cambodia, Attapeu Province has forests, forest products, minerals, and many rivers favorable for eventual hydropower plants and river navigation, while a national road is under construction to link with neighboring countries.

II.1.B.b. Sekong Province

Sekong Province is natural resources rich with forests, and land apt for agricultural production and a basis for the industrial expansion in the future.

The struggling targets for the next five years are to ensure a sustainable economic growth, to eradicate the slash and burn cultivation, and to create stable jobs up to 66% for resettled population who up to now are practicing swidden culture; to reduce poverty within 52% of the poor families in the province, to produce 35,000 tonnes of rice from a cultivated area of 9,000 hectares. The macro-economic goals up to the year 2005 are:

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- Augmentation of service: 10.2% per year.

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- Revenue to reach 10.160 million kip in 2004-2005 or 0.6% of GDP, with a deficit of 321.64 billion kip or 17.42% of GDP.
- With an expected population of 86,946 persons in 2005, the aimed revenue per capita is US\$ 223.
- Strong economic growth and fair social development.
- Environment in the Mekong Basin in the area of Sekong to be improved.

- Coordination with the Lao National Mekong Committee and to promote the coordination about the use of water, the management of sustainable water resources in the international Mekong Basin as well as within the Lao People's Democratic Republic.

II.2. Institutional capacity

II.2.A. Historical context of State administration

Over three decades, local governments in Laos have seen their traditional status of being fairly independent entities first restricted by the attempts of the new political regime to install a centrally planned economy in 1975. They were then encouraged to achieve provincial self-sufficiency in food supplies (late 1970s) and to evolve, after 1986, towards a situation of administrative and financial autonomy at the provincial level. The Constitution of 1991 promulgated a drastic reform of central-local relationships in which the principle of a unified de-concentrated state organization was enshrined.

The Constitution of 1991 abolished the Tasseng (commune) level of administration, thus bringing villages under the direct authority of districts. This created the current three tier local administration: villages, districts and the provinces. The rationale was to improve direct public service delivery by removing the intermediary tier.

Recent policies (March 2000) aim for a selective and progressive transfer of responsibilities back to the local administrations. These policies establish the provinces as the strategic development units, the districts as the main planning and budgeting units, and the villages as the main implementation units for the government's policies.

The government intends to use these decentralization policies to make the best use of available resources to further strengthen its participatory approach to poverty alleviation. Building the provinces into strategic units means that these units have to formulate their own socio-economic Five Year and annual plans as well as devise and implement their corresponding budgets. The provinces also have been granted indirect control over those projects which are under the direct supervision of the central government,

but which are executed at the provincial level. Districts now have to define their five-year and annual socio-economic development plans, within the scope of their responsibilities as defined by the State. Villages are to become the implementation units; they need to formulate their own development and revenue collection plans, based on the individual plans of each family.

This recent decentralization policy aims to put more emphasis on the bottom-up process, through increased focus on the village and district levels. The purpose is to strengthen capacities to improve local development planning in order to ensure that government action and local projects are in line with local needs.

II.2.B. Assessment of local administration

Sub-area 7L is made up of 9 districts, 473 villages, and 29,642 households, with a total population of 172,600 persons. The population density is about 9.5 people/km², one of the lowest density in the country which is one of the least densely populated in the country, except Saysomboun Special Zone in sub-area 4L.

However, in light of both the history of state administration and serious shortages of resources, the public administration capacities at both the central and local levels continue to be weak with greater demands being placed on them.

Coordination does barely exist between the various parts of sub-area 7L as well as with other sub-areas regarding planning and sharing vision. Generally, the capacities of human resources are low. Planning and coordination are weak, due to a lack of appropriate and quality information for decision-making. Lack of experience and skills is obvious in the balanced use of natural resources with the protection of water resources and environment, macro-economic management. Lack of budget and adequate method is noticeable in the development of irrigated agriculture, tourism services, industry, etc. While receiving assistance from the Government budget as well as from foreign aids for the implementation of plans and projects, but it appears that the skills in coordination need to be upgraded. Lack of professionals, managers of projects can be remedied by an in-country training.

But, sub-area 7L would appear to be quite remote with poor communication infrastructure while efforts are made to expand it, and to connect sub-area 7L with the neighboring provinces and countries.

II.3. Socio-economic description and information on resource users

II.3.A. Human geography

Sub-area 7L reflects the ethnic richness with the highest percentage of minority within the country.

When considering the detailed breakdown the view would be as follows as there are four major ethno-linguistic families in the country, namely, Tai-Kadai, Mon-Khmer (Austroasiatic), Hmong-Mien, and Tibeto-Burmese. If non Tai-Kadai people are defined as “ethnic minority”, its share in population by province is shown in the table below:

ETHNIC MINORITY PERCENTAGES BY PROVINCES

| Province | Population (1997) (000) | Minority (%) |
|----------------|----------------------------|--------------|
| Attapeu | 92.4 | 63.1 |
| Sekong | 531.1 | 91.4 |
| Sub-total | 623.5 | 77.25 |
| COUNTRY | 4905.9 | 61.21 |

Source: Japan International Development Agency and Ministry of Agriculture and Forestry 2001, vol. III, p. AP15-3

Ethnic diversity is highly accentuated than in sub-area 1L for instance. However agriculture production system and food security are influenced more by natural resource bases than by ethnicity. But, when it comes to specific project activities that are designed through village-based planning, the special needs and activities of different ethnic group will arise during bottom-up process.

II.3.B. Poverty.

In sub-area 7L, 18,167 families are considered as poor, or 62.5% of the total households in the sub-area 7L, in 4 poorest districts over a total of 47 poorest districts in the country, or 19.3%.

Nearly most of the population of sub-area 7L is making a living in agricultural sector while agricultural production is evolving from subsistence farming to a burgeoning commodity production. The base of the national economy which has been expanded, but is not strong enough, capitalization is still low, the development of market while taking form is not wide enough, the efficiency of social work is still low, market economy is taking place in majors towns and cities, as well as in areas linked by infrastructure. Science and technology, the educational system, as well as health are still dragging behind and slowing evolving; the multi-ethnic people, for some part are still following practices that are adverse to modernization.

Development gap between towns and rural areas is still large, as well as between remote areas and provinces, and among various social strata.

Business activities, economic development and environmental protection are still in infancy.

II.3.C. Users

II.3.C.a. Water users

- The figure of those having access to clean water is one of the lowest in the region, and in the country, while the production capacity of water treatment plants are stretched to the limit.
- Industrial use of water is still limited with the low development of the country. However, mining activities is increasing and will impact on the water use, as well as environment.
- One hydropower plant is operating in sub-area 7L.
- Association and groups of irrigation users have been set up, but management capacity, maintenance skills are still in need. Water User's Association (54 in sub-area 7L over a national total of 1,676) is a formal farmer organization and a communal organization, governed by a steering committee representing the village in the irrigation scheme and operates the irrigation scheme. Water User's Groups (non-existent in sub-area 7L while the national total numbered 30) are established under the directive of Department of Irrigation for the operation and maintenance of the irrigation scheme; it is a village driven organization chaired by the chief or the deputy chief of the village.

- Fishery is still in infancy, cage culture is initiated in sub-area 7L only one year ago, and water used for this purpose is not unbearable.
- Associations of river navigation are inexistent in sub-area 7L.

II.3.C.b. Land users:

In order to improve the livelihoods as well as to protect the environment, those practicing slash and burn cultivation have to resettle in the allocated land and forest areas according to the general plan as follows for sub-area 7L:

Plan for the reduction of shifting cultivation area 2000-2010

| Province | Area remaining by year-hectares | | | | | | |
|----------------------------|---------------------------------|--------|--------|--------|--------|--------|------|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2010 |
| Attapeu | 2,200 | 1,800 | 1,200 | 800 | 500 | 0 | 0 |
| Sekong | 2,200 | 1,800 | 1,200 | 800 | 500 | 0 | 0 |
| Sub-total | 4,400 | 3,600 | 2,400 | 1,600 | 1,000 | 0 | 0 |
| Country | 118,900 | 93,900 | 74,000 | 60,100 | 42,600 | 29,400 | 0 |
| Country's annual reduction | | 25,000 | 19,900 | 13,900 | 17,500 | 13,200 | 0 |

Source: Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. III, p. AP8-4

In Sekong Province, at least 66,77% of the families practicing slash and burn cultivation have to be relocated, resettled and helped out with permanent jobs. Of these 3.385 families,

- 14 families are from Muang Tha Teng
- 1,562 families from Muang Laman
- 1,317 families from Muang Dakcheung
- 806 families from Muang Kaleum

However, as a study states that in the past upland cropping was mostly in a long (15-20 year) swidden/bush fallow rotation with areas regenerated fully of secondary forest before the next cropping phase. "Whilst the majority of upland families now have been allocated land, they have been unable to adapt their farming systems as rapidly as their access to land has decreased. As a result they have not maintained productivity and living standards under

the shortened fallow regimes. It is evident that many upland farmers are now caught in this vicious circle of decreasing production and increasing poverty. Therefore many families are forced to continue swidden rotations on un-recorded greater areas than they are allocated” (Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. III, p. AP8-4).

II.3.C.c. Hydropower users

Electricity users are factories in sub-area 7L numbering 14 of medium scale factories and 619 of small scale. These factories constitute the base for the socio-economic development.

Other users are private, and two districts and 26 villages, or 11.11% of families having access to electricity in Attapeu Province in sub-area 7L.

Neighboring country is the main beneficiary of energy produced by Huay Ho hydropower plant as 95% of electricity is exported.

II.4. Inventory of physical features and water resources

II.4.A. Land.

Land in general is apt for agriculture, particularly in Attapeu Province, to grow rice, livestock, and in the short-term or long-term for production commodity. Many high-graded minerals are conveniently exploitable such as gold exploited in Sekong Province.

LAND USE PROFILE, 1997-1998

| | Percentage of households | | | | | |
|---------------|---------------------------------|-----------------------|-------------------------------------|---------------------------------|-----------------------------|-----------------------|
| | Owning land | Access to land | Owned land size Ha/household | Access to irrigated land | Owning cow buffaloes | Owning tractor |
| Attapeu | 91 | 92 | 1.3 | 1 | 78 | 0 |
| Sekong | 90 | 96 | 1.7 | 21 | 56 | 1 |
| Whole country | 65 | 86 | 1.6 | 25 | 61 | 7 |

Source: United Nations Development Program 2001, p. 168

AGRICULTURAL SECTOR PROFILE, 1998-1999

| | No. of agricultural holdings (,000 ha) | Area of holdings (,000 ha) | Average area of holdings (ha) | Arable land (,000 ha) | Area of temporary crops (,000 ha) | Cultivation intensity (%) |
|---------------|--|----------------------------|-------------------------------|-----------------------|-----------------------------------|---------------------------|
| Attapeu | 14.8 | 18.8 | 1.27 | 17.2 | 16.3 | 95 |
| Sekong | 9.7 | 18.2 | 1.88 | 11.8 | 10.9 | 92 |
| Whole country | 668.0 | 1,048 | 1.57 | 877.0 | 803.0 | 91 |

Source: United Nations Development Program 2001, p. 169

While agriculture is still a low productivity subsistence economy as shown in the above tables, climate itself is not evenly favorable for its modernization. For instance in Sekong Province, in mountainous areas of Dakcheung and parts of Muang Kaleum, as well as on the plateau of Muang Thateng, the average temperature is relatively cold, while in the plains of Muang Laman and part of Muang Kaleum, climate is warmer, with the rain reaching 2.500 millimetres/per year during the rainy season. Potentialities are large to make of Sekong Province the basis for growing commodity production such as coffee, benzoin, fruit trees, etc.

Many kind of minerals exist in abundance in Attapeu and Sekong Provinces, capable to support the operation of cement plants for instance, as well as for other lucrative investments.

II.4.B. Forests.

With 85% of the area that is mountainous, forests cover 1,131,290 hectares or 62.15% of the total area of sub-area 7L sheltering two National Biodiversity Conservation Areas of 333,500 hectares: Dong Ampham (Attapeu Province) with its 200,000 hectares, and Se Sab (Sekong Province) of 133,500 hectares. Sekong Province still filled with high-valued precious wood such as Santal. Forests are one of the assets of Attapeu Province as forests cover 735,000 hectares, or 71.22% of the surface of the province. The development strategy and the protection of the environmental system of

the province take into account the presence of the still large forest cover filled with precious woods favorable for industrial purpose.

To preserve the forest covers, and to end the slash and burn cultivation, the Government has resettled families by allocating land and forest to them.

LAND AND FOREST ALLOCATION, 1999-2001

| Province | No. of families | | | No. of villages | | | Areas (hectares) | | |
|-----------------------------|-----------------|--------|--------|-----------------|------|------|------------------|---------|---------|
| | 1999 | 2000 | 2001 | 1999 | 2000 | 2001 | 1999 | 2000 | 2001 |
| Attapeu | 3,510 | 1,134 | | 57 | 38 | | 402,772 | 102,331 | |
| Sekong | 459 | 506 | 446 | 10 | 17 | 14 | 15,417 | 16,514 | 26,499 |
| Sub-total sub-area 7L | 3,969 | 1,640 | 446 | 67 | 55 | 14 | 418,189 | 116,845 | 26,499 |
| Country | 42,400 | 21,789 | 29,361 | 587 | 555 | 508 | 906,720 | 820,545 | 935,545 |

Source: National Agriculture and Forestry Extension Service, Department of Forestry, Ministry of agriculture and Forestry, 2001

Forest re-plantation by the year 2005 has to reach 3,000 hectares in Attapeu Province, and 350 hectares in Sekong Province, while efforts have to be made regarding the management of forests, protected forests, production forests, water sources, and to efficiently allocate exploitation and wood production.

In Attapeu Province, besides the two National Biodiversity Conservation Areas, the province still has differentiated types of forests for environmental and industrial purpose as shown the following table.

TYPE OF MANAGED FORESTS IN ATTAPEU PROVINCE

Unit: hectare

| | |
|--|--------|
| I. National protected forest | |
| 1. Se Sab | 87,112 |
| 2. Ampham | 8,400 |
| II. Province's protected forest | |
| 1. Keng Luang, Muang Laman | 1,030 |
| 2. Tad Heuy, Muang Laman | 564 |
| 3. Tad Faed, Muang Laman | 755 |

| | |
|--|--------|
| 4. Phou Theung, Muang Laman | 7,000 |
| III. Forests to protect water resources | |
| 1. Phou Sed, Muang Thateng | 5,200 |
| 2. Say Phou Luang | 14,410 |
| IV. Production forests already registered as such | |
| 1. Huay Pen, Muang Kaleum | 22,331 |
| 2. Ban Kor Huay Phou, Muang Thateng | 18,000 |
| 3. Ban Songkhone, Muang Lamam | 800 |
| 4. Si Mou Ban, Muang Thateng | 11,800 |
| 5. Ban Dak Morg Kang, Muang Dakcheung | 5,260 |

II.4.C. Water resources

Many important tributaries of the Mekong River have their sources in the mountains of or run through sub-area 7L.

II.4.C.1. Attapeu Province

a. Mekong River's tributaries.

a.1. Sekong River. Tributary of Mekong River, Sekong River's source is located in Vietnam and flows through this country (36 km), dwindles through Sekong Province and Attapeu Province, from north to south, for 344 km, and crosses for 135 km Cambodia before joining the Mekong River there.

a.2. Other rivers. Many streams exist in Attapeu Province. However, the particularity of the water resources in Attapeu Province is that water dried up in the hot season, and besides Sekong River, only Huay Samorn, Huay Somlong can be used for irrigated agriculture.

II.4.C.2. Sekong Province

a. Sekong River. With its 320 km length through the province that draws its name from the river, Sekong River is used for navigation between Kaleum, to Sekong Province, and then to Attapeu Province. Sekong River is also

favorable for capture fishery. Feasibility studies have been conducted to build hydropower plants such as the project Sekong 4, and Sekong 5. Sekong River is still convenient for irrigated agriculture.

b. Other rivers. Other small streams, some are Sekong River's tributaries, exist in Sekong Province such as: Se Khaman, Se Nam Noy, Huay Lamphan, Huay Thon, Huay Meun, etc.

II.5. Economic sectors

II.5.A. Irrigated agriculture

Presently, irrigated agriculture is restricted by the climate, and the water resources. Particularly in Attapeu Province only a few rivers still have their water running during the hot season. Irrigation is not as extensive as in others sub-areas.

IRRIGATED SURFACE 2002-2003

| Provinces | Irrigated surface (hectares) | | Irrigated surface (hectares) | |
|----------------------------------|---------------------------------|--------------|---------------------------------|--------------|
| | 2002 | | 2003 | |
| | Wet season | Dry season | Wet season | Dry season |
| I. | Sub-area 1L | | | |
| Sub-total sub-area 1L | 57,778 | 29,333 | 60,193 | 29,402 |
| II. | Sub-area 4L | | | |
| Sub-total sub-area 4L | 186,842 | 99,724 | 187,644 | 135,479 |
| III. | Sub-area 6L | | | |
| Sub-total sub-area 6L | 56,020 | 46,160 | 56,025 | 46,165 |
| IV. | Sub-area 7L | | | |
| Sub-total sub-area 7L | 6,458 | 3,789 | 6,308 | 4,786 |
| Sekong | 2,668 | 1,491 | 2,538 | 1,493 |
| Attapeu | 3,790 | 2,298 | 3,770 | 2,293 |

| | | | | |
|-----------------------------|----------------|----------------|----------------|----------------|
| NATON-WIDE TOTAL | 307,097 | 214,625 | 310,171 | 214,832 |
|-----------------------------|----------------|----------------|----------------|----------------|

Source: Department of Irrigation, Ministry of agriculture and Forestry

II.5.B. Irrigation features

In Attapeu Province, raw water is pumped by pumps installed on pontoons along the rivers of Sekong, Se Kaman, Se Pian, and Se Sou. In total, 19 irrigation schemes have been established servicing 2,060 hectares with a volume of water of about 42,000,000 m³/per year with the following breakdown:

Pumps using electricity: 9 schemes servicing 1,350 hectares

Pumps using gasoline: 5 schemes servicing 310 hectares

Dams, water gates, dams made with gabion: 5 schemes servicing 400 hectares.

In Sekong Province, 383 irrigation schemes exist as follows:

Dams: 13 schemes

Water gates: 4 schemes

Reservoirs: 5 schemes

Traditional weirs: 361 schemes

II.5.C. Role of Attapeu's plains in the future of the expansion of irrigated agriculture, and of sub-area 7L in general.

As the Government sets the target to produce 2.5 millions tonnes in 2005, 3.5 millions tonnes of rice in 2010 and 5.2 millions in 2020, priority in expanding irrigation and surface irrigated is significant. Furthermore, irrigation is needed to help decreasing the slash and burn cultivation which has to be ended by 2010, and to make central and southern Laos a base for commodity production.

As one of the seven major plains along the Mekong River and its tributaries, Attapeu, in sub-area 7L, is a cluster of plains located at Muang Saysettha, Muang Samakhisay, and Muang Sanamsay; it has potentialities for agricultural expansion purpose of about 117,285 hectares. Two other districts, Muang Sanesay and Muang Phouvong present favorable natural environment for commodity production and the growing of fruit trees.

Attapeu Province aims by the year 2005 at producing rice amounting 58,618 tonnes from 18,560 hectares, with an expected irrigated agriculture of 1,510 hectares, and by spreading the use of newly improved seeds within at least 75% of the cultivated surface in the plains.

CULTIVATED AREAS ALONG THE MEKONG RIVER AND ITS TRIBUTARIES FOR SUB-AREA 7L (2005-2010)

| Plains along the Mekong River and its tributaries | Year 2005 (ha) | | Year 2010 (ha) | |
|---|-------------------|---------------------|-------------------|---------------------|
| | Attapeu | Irrigated ricefield | 14,500 | Irrigated ricefield |
| | Regular ricefield | 29,000 | Regular ricefield | 43,000 |
| | Non-rice crops | 4,000 | Non-rice crops | 6,500 |

Source: Department of Irrigation, Ministry of Agriculture and Forestry

In Sekong Province, rice production is targeted by the year 2005 to reach 35,592 tonnes by cultivating 9,484 hectares with a yield of 3.7 tonnes/hectare with rice production of 18,260 tonnes from 4,565 hectares in the rainy season with a yield of 4 tonne/hectare, and rice production during the hot season of 12,000 tonnes from 2,500 hectares with a yield of 4.8 tonne/hectare, and rice production of 5,332 tonnes on 2,419 hectares of sloping land with a yield of 2.2 tonne/hectare.

In order to reach such a result in Sekong Province, construction of irrigation works, especially medium scale, has to be continued according to available budget, and their efficient use has to be promoted. New irrigation schemes have to be worked out for favorable sites while their efficient use would be beneficial. Small scale irrigation schemes to be initiated by the local population have to be encouraged. It is expected that by the year 2005, irrigated surface would be 4,000 hectares, and about 3,000 hectares during the dry season with 2,500 hectares for the irrigated agriculture.

In the meantime, the Government has to promote and to support small-scale irrigation projects initiated or practiced by families or communities, to foster the participation of farmers and private sector in the irrigation development,

and to secure the socio-economic development as well as the protection of the environment.

II.5.B. Fisheries

In 2001, fish production nationally amounts to 73,100 tonnes and contributes as 7 to 8 % of GDP. The trend is progressing over the years as from 1996 to 2001 capture fisheries as well as aquaculture increased 152% with the production of fish from aquaculture totaling 18,000 tonnes in 1996 up to 43,100 in 2001. Inland fisheries and its production come from the Mekong River and its tributaries, reservoirs, shallow irrigation, swamps and wetlands for capture fisheries. Aquaculture is practiced in fish ponds, fish production cum rice in rice-fields, rain-fed rice fields and irrigated rice fields, small natural pool oxbows, and irrigation weirs. Cage culture is introduced only one year ago in sub-area 7L.

TOTAL AREAS FOR FISH PRODUCTION, 2002

Unit: hectare

| Provinces | Mekong and tributaries | Reservoirs | Irrigation canals | Swamps and wetlands | Rain-fed rice-fields | Fish production cum rice culture | Fish ponds | Dykes | Cage | Total |
|--------------------------|------------------------|------------|-------------------|---------------------|----------------------|----------------------------------|------------|-------|------|--------|
| Sub-area 1L | | | | | | | | | | |
| | x | 2000 | 1887 | 21280 | 71896 | 1257 | 4016 | 970 | 0 | 104200 |
| Sub-area 4L | | | | | | | | | | |
| | x | 68505 | 9739 | 47526 | 303625 | 2135 | 8503 | 9921 | 4990 | 454944 |
| Sub-area 6L | | | | | | | | | | |
| | x- | 7463 | 1641 | 12810 | 91155 | 90 | 2661 | 1500 | 110 | 117394 |
| Sub-area 7L | | | | | | | | | | |
| | - | 0 | 200 | 14070 | 10500 | 18 | 120 | 543 | 0 | 25451 |
| Attapeu | - | 0 | 100 | 9600 | 5000 | 8 | 70 | 150 | 0 | 14928 |
| Sekong | - | 0 | 100 | 4470 | 5500 | 10 | 50 | 393 | 0 | 10523 |
| NATION-WIDE TOTAL | 254150 | | | | | | | | | 254150 |
| | 254150 | 78018 | 13476 | 95686 | 477176 | 3500 | 15300 | 12934 | 5100 | 955331 |

Total demand in Attapeu Province is 13,220 tonnes, while presently the capture fishery amounts 10,200 tonnes. In Sekong Province, the demand is 12 tonnes.

Fish breeding is not enough to meet demands while State stations for fingerling production have been established.

STATUS OF STATIONS FOR FINGERLING PRODUCTION (2001)

| | | Stations for fingerling production | | Fingerling production (millions) | Remarks |
|----------------|---------|------------------------------------|-----------|----------------------------------|-------------|
| | | State | Private | | |
| 1 | Sekong | 1. Huay Khieo | | 3.2 | Operating |
| 2 | Attapeu | 1.Nong Lom | | | On proposal |
| COUNTRY | | 32 | 13 | 185.02 | |

Up till recently, policy and information relating to fisheries were sketchy, and limited to directives sent to administrative authorities to protect natural fauna, to disseminate to the population information on setbacks resulting from the use of dangerous and illegal devices to catch fishes. It was only in 1989 that a decree no. 118, dated 5/10/1989, regarding the Management, and Protection of Fauna was passed.

II.5.D. Hydropower

Electricity users are factories in sub-area 7L numbering 633 with 14 of medium scale factories and 619 of small scale factories. These factories constitute the base for the socio-economic development. Other users are private in two districts and 26 villages, or 11.11% of families having access to electricity in Attapeu Province in sub-area 7L.

Neighboring country is the main beneficiary of energy produced by Huay Ho hydropower plant as 95% of electricity is exported.

NUMBER OF FACTORIES IN SUB-AREA 7L, 2001

| Provinces | Large scale factory >99 workers | Medium scale factory with 10 to 99 workers | Small scale factory <10 workers |
|----------------|---------------------------------|--|---------------------------------|
| Attapeu | | 5 | 239 |
| Sekong | | 9 | 380 |
| Country | 116 | 542 | 23651 |

Before 1998-1999, the town of Attapeu used electricity produced by a diesel plant producing 250 KW, and since then energy in use is produced by Huay

Ho hydropower plant with an installed capacity of 150 MW, and an average energy of 617 GWh; however, a very minor portion is absorbed by the local market, and 95% has been exported to Thailand.

Among the seven schemes included in the national hydropower plan for 2004-2010, one is located in sub-area 7L at Huay Lamphan Gnai, commissioning for 2008-2010, with an installed capacity of 60 MW, and an average energy/year of 354 (GW/h).

By the year 2005, in Sekong Province, the power production has to reach 750,000 KW/h to sustain that at least 51 villages, or 5.1%, and about 40% of the families in Sekong Province can have access to electricity. For this purpose, the local authorities will have to convince the central Government to carry out hydropower projects Sekong 5, Sekong 4, and Se Kaman 3, as well as the project of mining coal at Muang Kaleum.

In Attapeu Province, the goal is that by the year 2005, at least four districts and 30% of villages can have access to electricity. Electricity grid has to be established connecting the four districts.

A number of hydropower schemes have been planned with various results for the sub-area, but internal consumption is limited.

STATUS OF HYDROPOWER PROJECTS IN SUB-AREA 7L

| Provinces | Projects | Energy to be produced (MW) | Year of signature of MOU | Status |
|----------------|---------------------------|----------------------------|--------------------------|---------------------------|
| Sekong | Sekong 4 | 450 | 1994 | Cancelled |
| Sekong | Sekong 5 | 253 | | Commissioning 2014 |
| Attapeu | Houay Ho | 150 | 1993 | In operation |
| Attapeu | Se Kaman 1 | 460 | 1994 | Postponed |
| Attapeu | Se Kaman 3 | 218 | | Commissioning 2012 |
| Attapeu | Se Pien-Se Nam Noy | 339 | 1994 | Postponed |

Ten over twelve projects in the country, including four in sub-area 7L, have been designed before the Asian financial crisis of 1997, and have been delayed or cancelled due to this crisis. Only one of the four in sub-area 7L

has been carried out and is in operation. Two new projects, Se Kaman 3, and Sekong 5, are under construction. The situation picks up again in 2002 with private companies as investors, Independent Power Producer.

In its strategy for year 2020, the Ministry of Industry and Handicrafts plans to construct 15 dams for hydropower plants on the tributaries of the Mekong River. It is set 6,000MW as the targeted amount of electrical power to be generated by 2020. Surveys concluded that Laos has the capacity to produce electrical power totaling 23,000 MW, of which 13,000MW would come from tributaries of the Mekong River itself and 2,000 from other sources such as lignite and dams on rivers that were not branches of the Mekong. Electricity plants on the Mekong River will be the last option.

II.5.E. Navigation

As in other sub-areas, the navigation on the Mekong River's tributaries in sub-area 7L is inconvenient. Small volume can be transported within the fifty kilometers from the junction with the Mekong River. Sekong River, with its 320 km length through the province which draws its name from the river, is used for navigation between Sekong Province and Attapeu Province. Only 0.5 tonnes can be transported during the dry season, and a maximum of 30 tonnes during the rainy season. One port is planned to be built at Muang Sanamsay (Attapeu Province).

While land transportation takes over river transportation in sub-area 7L, Sekong Province is expected to increase the number of persons and freight transported by road and by river up to 7 to 8% each year from now on to the year 2005, with 3,320,000 of cargo and 4,000,000 passengers transported within five years up to the year 2005.

The Government's strategy regarding navigation is mainly focusing on maintaining and improving current transport capability by river and by encouraging the use of river transport in the wet season instead of poor roads.

II.5.F. Tourism and Recreation

There has been very strong growth in the Lao tourism sector, from only 14,400 international arrivals in 1990 to 735,662 arrivals in 2002. Tourism is

now a major contributor to national income (7 to 9 per cent of GDP) and employment.

REVENUES FROM TOURISM AND MAJOR EXPORTS (1997-2002)

Unit: \$ million

| Product | 2002 | 2000 | 1999 | 1998 | 1997 |
|-----------------------|-------|-------|-------|------|------|
| Tourism | 113.4 | 113.8 | 97.3 | 79.9 | 73.3 |
| Garments | 99.9 | 100.1 | 94.4 | 76.5 | 72.6 |
| Electricity | 92.7 | 91.3 | 107.0 | 49.6 | 20 |
| Wood products | 77.8 | 80.2 | 71.3 | 41.2 | 79.3 |
| Coffee | 9.8 | 15.3 | 29.0 | 19.3 | 26.2 |
| Agricultural products | 25.6 | 5.7 | 5.0 | NA | 16.5 |
| Minerals | 3.9 | 4.9 | 6.0 | 29.4 | NA |
| Handicrafts | 2.7 | 3.8 | 5.1 | 3.0 | 1.6 |
| Other industries | 19.9 | NA | NA | 14.4 | 83.2 |

However, not all provinces are to evenly benefit from tourism. Sub-area 7L is receiving only 0.75% of the 997,927 visitors in Laos in the year 2002.

VISITORS BY PROVINCE (1997-2002)

| Province | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|----------|------|------|------|------|------|-------|
| Attapeu | NA | NA | NA | NA | NA | 6,831 |
| Sekong | NA | NA | NA | NA | NA | 574 |

Tourism is a labor intensive industry and contributes directly to poverty reduction. Since the opening of the country, this service sector has expanding tremendously as shows the following table:

NUMBER OF ACCOMMODATION ESTABLISHMENTS, AND ROOMS (1997-2002)

| Provinces | Number of establishments | | | | | | Number of rooms | | | | | |
|----------------|--------------------------|------------|------------|------------|------------|------------|-----------------|-------------|-------------|-------------|-------------|-------------|
| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Attapeu | 4 | 3 | 3 | 4 | 4 | 4 | 43 | 37 | 41 | 94 | 74 | 74 |
| Sekong | 1 | 1 | 1 | 1 | 1 | 1 | 16 | 15 | 15 | 15 | 16 | 15 |
| Country | 233 | 307 | 335 | 468 | 571 | 560 | 4108 | 5019 | 5544 | 7333 | 8797 | 8625 |

There is considerable potential for greatly expanding the sector, drawing on visitors to the region and highlighting their interest in Laos' natural environment, its history, cultural heritage and rich ethnic diversity.

However, water is not used for tourism purpose up to now, except for navigation.

While apparently, visitors are recorded only from the year 2002, Sekong Province is planning to attract from now on up to 2005, at least 5,000 visitors, while Attapeu Province aims at augmenting each year 60% the number of visitors.

II.5.G.WATER SUPPLIES AND SANITATION

Domestic water and sanitation are essentials for the life, health and productivity of the population.

II.5.G.a. Water supply in cities and towns

Water supplying people in towns and cities originates mostly – about 85% - from the Mekong River and its tributaries, with the remaining from ground water, springs, and small streams.

The national capacity of the existing 36 water treatment plants to produce drinkable water is 188,380 m³/per day. But the average production is only 157,340 m³/per day supplying water to 525,395 people or 37.67% of the urban population. This means that only 300 liters/per day/per person is provided by these plants.

However, water resources from the Mekong River is hardly exhausted as the production of tap water is only 0.04% of the 140,000 million m³/per year of the Mekong River discharges.

At most, the installed capacity can meet the wants of only 629,000 people, while more than 765,800 city dwellers are outside the network of water supply in 2002. In sub-area 7L, in Attapeu Province, piped water is servicing the three main towns of the province, Muang Laman, Muang Kaleum, and Muang Dakcheung; the volume of water supplied is 600,000 m³/per year. Two companies annually produce 7,000 m³ of drinkable water. About 40%

of families in the four towns of Attapeu Province have access to clean water in the urban and rural areas.

CLEAN WATER PRODUCED IN SUB-AREA 7L, YEAR 2004

| Province | No. systems | Raw water source | | | Production capacity m3/day | | |
|-----------|-------------|------------------|--------------|---------------|----------------------------|--------------|---------------|
| | | Spring | Ground water | River /stream | Spring | Ground water | River/ stream |
| Sekong | 3 | | | 3 | | | 2,150 |
| Attapeu | 1 | | | 1 | | | 900 |
| Sub-total | 4 | | | 4 | | | 3,050 |
| Country | 36 | 2 | 4 | 31 | 9,000 | 7,650 | 169,650 |

Source: Water Supply Authority, Ministry of Communications, Transport, Post and Construction, Lao People's Democratic Republic

The thrust of the Government's development policy is to increase amenity of life in urban areas by providing affordable, reliable and quality services in commercial water supply and in sanitation.

II.5.G.b. Water supply in rural areas

It is estimated that in 2002, about 60% of the population in rural areas has access to drinkable water from a public tap, or hand pump or spring; no houses have been connected by piped water. The goal is to reach the figure of 90% by 2020. The average need would be 35 liters/per person/per day and the total need of water in rural area would be 204,900 m3/per day; this is based on an estimated increase of 2.5% of the rural population totaling 6,505,500 persons in the year 2020.

The Government's development policy is:

- To improve water supply and environmental health in rural areas;
- To focus on inaccessible, poverty-ridden areas; and
- To encourage private supply and sanitation ventures in easy-to-reach areas.

II.5.G.c. Sanitation

Meeting needs for adequate domestic water and sanitation services for each province is a great challenge as they are related problems as shown in the following table:

ACCESS TO CLEAN WATER AND SANITATION IN EACH PROVINCE (2002)

| Provinces | Clean water (% of population served) | Sanitation coverage (%) |
|------------------|---|--------------------------------|
| Attapeu | 59.89 | 28.29 |
| Sekong | 48.09 | 18.89 |
| COUNTRY | 58.09 | 41.56 |

Presently, the percentage of population having access to sanitation is relatively low. With the targets set to bring piped water to the population in the whole country by 20% in 2005, and 50% in 2020, the access to sanitation in 2020 will significantly improve as follows:

ACCESS TO CLEAN WATER AND SANITATION, 1999-2020

| Programmes | (% total population) | | | | | | |
|-----------------------------|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 1999-2000 | 2001 | 2002 | 2005 | 2010 | 2015 | 2020 |
| Clean water | 52 | 55.1 | 58 | 66 | 75 | 82 | 90 |
| Domestic sanitation | 37.6 | 39.7 | 41 | 45 | 60 | 69 | 80 |
| Sanitation in school | 6.7 | 8.3 | 11 | 21 | 35 | 50 | 60 |

II.5.G.d. Waste water

Waste water is an issue as the drainage of urban waste water to discharging upstream of water supply pumping stations raw water. Erosion and flooding in the rainy season by raising the level of water at the pumping stations caused water pollution, and required more chemicals to clean the raw water, thus increasing financial cost.

Waste water is mainly from domestic usage, as only 2.5% of the piped water is used in industrial activities. This is consistent with the limited number of factories as well as the water volume allocated to them.

II.5.H. FLOOD CONTROL AND MANAGEMENT

Most of cities and towns of the Lao People's Democratic Republic lies along the Mekong River and its tributaries, thus prone to flooding during the rainy season. Floods may, as in 2000, result in loss of life and property, and disrupt the social and economic life of the people.

II.5.H.a. OCCURRENCE OF SEVERE FLOODS

It is noticed that flooding is very much influenced by tributary flows. The combined effects of large runoff in the tributaries and the mainstream of the Mekong River cause serious damage, including flash floods on tributaries and bank overflow in lowland area. About 80 percent of the rural flooding and 20 percent of the urban flooding is caused by tributaries.

During the rainy season, the water level rises rapidly, specially between July and September causing severe flood such as in 1966, 1968, 1970, 1971, 1974, 1978, 1990, 1991, 1995, 1996, 1998, 2000, and 2002 with loss of live and property as shown the following available figures:

DAMAGES CAUSED BY FLOODS, 1996-2002

| Year | Damages (in \$ millions) | Areas damaged |
|------|--------------------------|---|
| 1966 | 13.80 | Central Laos |
| 1978 | 5.70 | Central and South Laos |
| 1993 | 21.00 | Central and South Laos |
| 1994 | 21.15 | Central and South Laos |
| 1995 | 35.50 | Vientiane Plain, Central and South Laos |
| 1996 | 21 | Central and South Laos |
| 1998 | 3.50 | Central and South Laos |
| 2000 | 5 | Central and South Laos |
| 2002 | 3.50 | Central, South Laos |

Sub-areas of central and southern Laos along the Mekong River are flooded more often than northern Laos as shown the previous table and the following table.

DAMAGES CAUSED BY FLOODS IN EACH PROVINCE, 1999-2002

| Provinces | Areas inundated (hectares) | | | |
|----------------|----------------------------|---------------|---------------|---------------|
| | 1999 | 2000 | 2001 | 2002 |
| Sub-area 1L | 0 | 20 | 240 | 1,810 |
| Sub-area 4L | 4,965 | 8,350 | 20,193 | 24,151 |
| Sub-areas 6L | 2,570 | 3,460 | 1,790 | 7,654 |
| Sub-area 7L | 1,365 | 1,070 | | 449 |
| Attapeu | 1,365 | 1,070 | | 449 |
| Sekong | | | | |
| COUNTRY | 8,900 | 12,900 | 22,223 | 34,064 |

The flood occurring in 2000 was severe and encompassed many provinces.

Damages caused by flood in the year 2000

| Provinces | Persons affected | Ricefield inundated (hectares) | Ricefield damaged (hectares) |
|-------------|------------------|--------------------------------|------------------------------|
| Sub-area 1L | 670 | 30 | 20 |
| Sub-area 4L | 251,570 | 55,600 | 29,890 |
| Sub-area 6L | 134,440 | 27,470 | 13,460 |
| Sub-area 7L | 12,080 | 1,930 | 1,070 |

Severe river banks erosion, particularly resulting from sand exploitation, flooding, is noticed in Attapeu along the Sekong River and Se Kaman River. Within the municipality of Attapeu, at least 8 km are subjected to severe erosion, and 4 km in Muang Saysettha, and 3 km in Muang Sanansay.

The Five Year Plan as well as the Ten Year Plan include and enforce measures to curb sand exploitation, and to gather information in order to prevent further erosion of the river banks.

II.6. Environmental issues

II.6.A. Deforestation

Logging, slash and burn cultivation, fire are the main causes.

The Government is issuing drastic measures to punish illegal logging as well as to forbid the felling of new trees.

In the same time, it needs to raise awareness among the population about the disastrous consequence of deforestation.

The most drastic measure is to end the slash and burn. However, policy is differing among provinces in sub-area 7L, the year the slash and burn cultivation has to end, and the population to be settled in permanent places depending on local conditions.

II.6.B. Floods

The causes are:

- Climate change,
- Deforestation,
- Land degradation,
- Lack of timely and appropriate warning
- Poor organization,
- Lack of responsibility for water level observation,
- Lack of equipments,
- Lack of mobilization and of money.

For these multiple causes, and especially logging and slash and burn cultivation, floods, especially flash floods are frequent and severe in Laos.

Measures have been taken in 2002, and this will continue up to 2005. But, with the constant erosion of the shores at some places, floods will occur in the future.

II.6.C. Problems resulting from irrigation works.

Land degradation, and lack of maintenance create numerous problems to the land as well as to the water. Non-efficient management of irrigation schemes is translated by the following figure in sub-area 7L: of 6,348 hectares that

are capable to be cultivated during the dry season, as a matter only 990 hectares have been used for production in 2002.

II.6.D. Problems related to hydropower plants

Specifically, the water used by hydropower plant is polluted, and it is difficult to treat it for the use of the population.

In general, with the change of the climate, the water ebbing, some dam cannot operate properly.

II.6.E. Navigation

Pollution causing by navigation in sub-area 7L is nearly non-existent.

II.6.E. Erosion of river banks

Severe river bank erosion, particularly resulting from sand exploitation, flooding, is noticed in Attapeu along Sekong River and Se Kaman River. Within the municipality of Attapeu, at least 8 km are subjected to severe erosion, 4 km in Muang Saysettha, and 3 km in Muang Sanansay.

II.6.F. Waste water

While waste water is not an issue yet, however, the absence of efficient measures in this regard does bode well for the future with the fast urbanization of sub-area 7L.

PART III. Analysis

III.1. Development opportunities, needs and constraints

III.1.A. Development opportunities

III.1.A.a. Potentialities.

Sub-area 7L presents many potentialities for development with Sekong River as its artery. It is favorable for agriculture, fishery, husbandry, and forestry with many rare essence, mining. Sekong tributaries are convenient

for hydropower and irrigation schemes, and shelter numerous tourism sites. Sub-area 7L being located at the crossroad of three countries, economic and social development, trade and tourism are to be fostered.

III.2.A.b. Secure.

The country is safe and secure, which creates a climate convenient for investments as well as for entrepreneurial people.

III.2.A.c. Location.

The location of sub-area 7L is such that it communicates with Cambodia and Vietnam, and neighboring provinces. In Attapeu Province, to improve and build the national road 18a, 18B, and 1I, and by the year 2005 to have roads that can be used during all seasons to connect the provincial capital to the centers of its districts, and 70% of remote villages located in the plains are connected by roads, and 10% of remote villages in mountainous areas. In the near future, in Sekong Province, to focus on the design and construction of roads heading to two mountainous districts, Kaleum and Dakcheung to the border of Vietnam, and to build bridge over the Se Kaman River as well as to locate the site for the construction of an airport.

III.1.B. Development needs

The Lao People's Democratic Republic development strategy for 2020, 2010, and 2001-2005, outlines the main national objectives as poverty reduction, economic growth at the most appropriate rate and improvement of the living conditions of the population.

III.1.C. Development constraints

III.1.C.a. Core problems.

In general, the various difficulties the Government has to face in implementing the development plan are as follows:

- (1) "Relatively low-level socio-economic development during the 25 years compared to the potential and comparative advantages of the country.
- (2) Unsatisfactory level accomplishment of programs and projects under the Government's policy resulted in failure to achieve macro economy targets as directed in the Fourth Socio-economic Development Plan.

- (3) Development of economic structure rather focusing on the service sector than agriculture and industry.
- (4) Poor, inconsistent and flimsy performance of macro policy with lack of accountability of central and local authorities for implementing a plan.
- (5) Slow and unsatisfactory translation of eight priority programs into specific projects.
- (6) Government's weakness in promoting and mobilizing the people's capability for boosting the economy in both the public and private sectors.
- (7) Poor state's management to follow principles and rules and to correct mechanism to abide by existing laws.
- (8) Insufficient progress of human resources development both in quantity and quality. (Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. III, p. AP2-3)

However, four particular points needed emphasis, besides the general statement made above.

III.1.C.b. Capital

Most of Public Investment Program comes from foreign assistance. The issue is that since 2003, European Union is switching its own assistance policy from grants to trade.

FOREIGN COMPONENT OF PUBLIC INVESTMENT EXPENDITURES (% of total)

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Agri- culture /Fores- try | 84 | 76 | 83 | 78 | 73 | 70 | 37 | 29 | 44 | 74 |
| Industry | 96 | 92 | 93 | 84 | 94 | 94 | 89 | 90 | 53 | 72 |
| Commerce Transport | 85 | 89 | 83 | 78 | 80 | 77 | 80 | 89 | 91 | 94 |
| Education | 31 | 62 | 66 | 70 | 64 | 70 | 72 | 88 | 73 | 77 |
| Health | 57 | 67 | 64 | 69 | 79 | 81 | 61 | 90 | 73 | 88 |
| Culture | 0 | 82 | 89 | 36 | 3 | 14 | 30 | 44 | 48 | 79 |
| Social welfare | 46 | 0 | 0 | 0 | 66 | 0 | 81 | 91 | 78 | 82 |

| | | | | | | | | | | |
|-------------------|----|---|---|---|----|----|----|----|----|----|
| Offices housing | 20 | 0 | 0 | 8 | 0 | 0 | 7 | 14 | 36 | 64 |
| Rural Development | 0 | 0 | 0 | 0 | 85 | 67 | 54 | 87 | 83 | 63 |

Source: Lao People's Democratic Republic 31 August 2000, p. 48

For instance, construction of new water treatment plants as well as the expansion of the existing ones are required to meet the needs of those who are left-out of this basic amenity. Based on the figure of 158 liters/per day/per person, approximately 195,480 m³/per day has to be produced to meet the needs of 80% of city dwellers. In 2020, the demand will require a production of 383,860 m³/per day.

To attain such a goal, the Government has sought a wide range of finance including loans and financial assistance. It has also encouraged private sector to contribute to the development in this field in order to insure that water is supplied in adequate volume and quality to all those in need of it.

This explains that in many fields, such as navigation, irrigation, hydropower, for instance, the Government is following the policy to promote the private sector and foreign investors.

III.1.C.c. Human resources

Human resources development is needed in all fields. It is an urgent and vital issue in the short and long term in order to insure the implementation of the targets set by the Government. Education is the core of the issue. In sub-area 7L, the human resources development has been carried out for all generations, both sex, and all minorities, for leadership, for managerial position as well as professional through training and education in the country or overseas. In the same time, among civil servants, promotions, salaries, and posting have to be suitable to their qualification. The first pilot project about strengthening local governance and public administration is starting to be initiated only in one province, Luang Prabang, in sub-area 1L (Lao People's Democratic Republic and United Nations Development Programme 2002-2003).

Human resources development related to all sectors is necessary as there is an acute shortage of appropriately trained people. It includes language training as well as training in all matters related to development. Training activities will be decentralized to some provinces.

III.1.C.d.Time

Development is a holistic process, and it is not a social engineering to try out solutions or pieces and bits taken from a different context. It needs time for all needed factors to mature. Time is needed for instance for the formation of a critical mass, that means a significant number and at an appropriate level, of educated people filling in all sectors is necessary to foster the sustainable development and equitable growth.

III.1.C.e. Case of rice and commodity production

Constraints to rice and commodity production which constitutes the core of the success to lift the country off the under-development by the year 2020 may serve to illustrate the above statements. A study made by Japan International Development Agency and the Ministry of Agriculture and Forestry (2001, III, AP6-13-AP6-14) shows that:

“Lowland area

- The number of farmers using improved variety seeds of rice is limited.
- Lack of knowledge of improved technology including crop maintenance, pests control, irrigation water management, this is because the extension service is the process of developing.
- Food and inundation damage during wet season in low land areas.
- Lack of access to credit for new investment and to purchase farm inputs.
- Predominance of labor intensive farm operation in which return per unit of labor is quite small.

Upland and mountain area

- Insufficient distribution of credit and fertilizer, especially in the remote areas.
- Poor access road for purchasing inputs and selling produce.
- Low soil fertility in terms of physical and chemical aspects.
- Lack of technology for cultivation of upland rice or alternative crops including land preparation, crop maintenance, pests, and weed control; this is because the extension service is the process of developing or is underdeveloped.
- Limited development of adaptive research for upland and mountain areas.

- Lower productivity of upland rice under shifting cultivation leading to deterioration of the forest environment.
- Declining soil fertility and increasing water runoff, soil erosion under shifting cultivation.
- Large labor inputs due to manual practice in shifting cultivation.

Major constraints on commercial crop production

- Insufficient quality control and lack of grading and classification system for commercial crop production.
- Non-availability of improved varieties/hybrid seeds and plant materials.
- Lack of knowledge of improved technology...
- Limited development of adaptive research for integrated agriculture related to horticulture, livestock and fishery.
- Lack of access to credit and to new investment.
- Reluctance of farmers to use fertilizer and agro-chemicals due to high cost compared to crop income.
- Limited market channels and market information.
- Decreasing price incentive for commercial crop cultivation due to oversupply in the domestic market and low international prices.
- Limited or insufficient post harvest and agro-processing facilities for commercial crops.
- Limited availability of manpower or agriculture machinery in intensive agriculture.
- Limited information on suitable crops to be introduced based on area-specific natural conditions.”

III.2. Potential social, environmental and economic impacts of development

III.2.A. Potential social impacts of development

III.2.A.a. Population growth

It is generally estimated that the population growth in the country will be strong. The National Statistical Center offers three population projections as follows:

ASSESSMENT OF POPULATION GROWTH

Unit: Million

| | 2000 | 2005 | 2010 | 2015 | 2020 |
|--|------|------|------|------|------|
| | | | | | |

| | | | | | |
|------------|-------|-------|-------|-------|-------|
| Scenario 1 | 5.200 | 5.900 | 6.800 | 7.700 | 8.700 |
| Scenario 2 | 5.100 | 5.800 | 6.400 | 7.100 | 7.700 |
| Scenario 3 | 5.234 | 5.921 | 6.651 | 7.415 | 8.207 |

Source: National Statistical Center

Scenario 1 assumes a continuation of present fertility and mortality levels. Scenario 2 supposes a moderate decline in fertility and some improvement in mortality, and the decline in population growth is rapid. The last scenario is between Scenario 1 and Scenario 2, and assumes a decline in the rate of population from the current 2.60% down to 2.35% by 2010 and 2.05% by 2020.

III.2.A.b. Younger population

The majority of the population is young. This required schooling, acculturation, professional training, job creation, and expansion of the University, which the Government has already made by creating in 2002 a branch in south Laos, at Pakse, in sub-area 6L, and another branch in 2004 in Luang Prabang, in sub-area 1L. As the local market will not be sufficient for the job creation to absorb all the manpower, the migration of work force to neighboring countries would be more than to trickle down through the long border, as this phenomenon starts already.

III.2.A.c. Gradual shift in population mix

Current estimates are for the urban population growth rate to move ahead of the country's rate of population growth due to a migration from rural areas to cities. Basing on Scenario 3 above, and with a figure of 3.0% urban growth to 2010 and 3.2% growth from 2011 to 2020, it is expected that the projection will be as follows:

PROJECTION OF RELATIVE SHARE OF URBAN-RURAL POPULATION

| | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
|-------|-------|-------|-------|-------|-------|-------|
| Rural | 83.1 | 83.0 | 82.6 | 82.0 | 81.1 | 80.0 |
| Urban | 16.9 | 17.0 | 17.4 | 18.0 | 18.9 | 20.0 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. 1, p. 5-4.

III.2.A.d. Law and order.

This will be an increasing necessity as urbanization expands and the population grows. Actually, this is already stretching to the limits. In the near future, the problem of law and order will be one of the fundamental one especially with the opening of the border, and a third bridge to be constructed over the Mekong River.

III.2.A.e. Better integration of Laos into the world.

The country is mainstreaming itself, this already by being an active member of ASEAN, and will be hosting the ASEAN Summit in 2004, and now applying to become member of World Trade Organization. All these are the push in the right direction to help Laos to adapt to the international environment and the 21st century era.

III.2.B. Potential environmental impact of development

III.2.B.a. Better awareness.

Obviously, a more educated population at all level will raise the awareness about the environment protection as well as the sense of ownership as in the south of Laos, people spontaneously constitute groups to protect capture fisheries.

III.2.B.b. Rule of law.

Use of chemicals will be restricted with the raising of the rule of law. More budget shares may be reserved for the treatment of waste water, and sanitation.

III.2.B.c. Difficulty to completely implement the environment protection.

In the meantime, accelerated depletion of forest covers will be difficult to avoid. While in the Integrated Watershed Management areas, the population has been allocated land and forest to make a living while protecting the forests. But, exports of logs, illegal poaching and logging, slash and burn cultivation continue in the remote areas. All these factors contribute to dry up water sources, to erode the top soil, and to provoke drought, and during the wet season, the flash floods.

III.2.B.d. Floods.

Frequent flooding occurs in Laos as a result of the previous issue will worsen as it was already frequent in the past.

III.2.B.e. Droughts.

With the scarcity of water in mountainous area, and the expensive price of gas that make not cost-effective to pump water from the Mekong River or its tributaries, droughts which are perennial would become worse.

III.2.B.f. Irrigation issue.

Irrigation has been developed in sub-area 7L, but it is not yet cost-benefit, and not fully efficient, and above all, insufficient. This is shown in the surface irrigated while irrigation schemes have been carried out. Generally, rice cultivation occurs only during the rainy season. The maintenance and protection of irrigation schemes are not satisfactory. The sense of ownership is still let to be desired, the rice cultivation during the dry and the wet seasons is much scattered to meet the wants of the society.

Furthermore, people are using less and less pumps to bring water from the Mekong River and its tributaries with the increasing price of gas which does not make the operation cost-benefit; while finding a market for the products hampers the efforts of the rural people.

III.2.B.g. Waster water.

Waste water is not treated and discharged directly in the rivers. The absence of treatment of waste water is overwhelmed, and this will become a serious issue in the coming years with the population growth, urbanization, industrialization, and development, as well a growing tourism industry.

III.2.C. Potential economic impacts of development

III.2.C.a. Achieve the goal set by 2020.

Economic growth and development will enable the Government to reach its targets to free the country of the less developed country status by the year 2020. However, special attention has to be given to sub-area 7L to create the necessary conditions conducive to attract foreign investment to exploit the high potentialities within the sub-area.

III.2.C.b. Increasing inequality.

However, in the same time inequality between regions, especially between sub-area 7L and others sub-areas, that the Government tries to correct as well as among social strata will increase, while not so dramatically as in some Southeast Asian countries.

The Gini index of nominal per capita consumption increased at an annual rate of 2.5% whereas that of real per capita consumption increased at 2.7 %, which implies that changes in relative prices between 1992-1993 and 1997-1998 had an effect of increasing inequality, favoring the rich more than the poor.

GROWTH RATE OF PER CAPITA REAL CONSUMPTION BY QUINTILES

| Quintille | 1992-1993 | 1997-1998 | Growth rate |
|----------------|-----------|-----------|-------------|
| First | 2,356 | 2,325 | -0.3 |
| Second | 3,296 | 3,466 | 1.0 |
| Third | 4,125 | 4,486 | 1.7 |
| Fourth | 5,489 | 5,982 | 1.7 |
| Fifth | 10,228 | 12,623 | 4.2 |
| All quintilles | 25,494 | 28,886 | 2.5 |

Source: National Statistical Center 2002, p. 13

III.2.c. Raising living costs.

Living costs will increase as State Enterprises will be restructured and the price of their service will reflect the costs of such service: water, electricity. Furthermore, with the importation of foods and commodities to meet tourism's requirement, it appears that domestic price will raise, as this is already noticed in sub-area 1L, in Luang Prabang, the first Lao city to be listed as a World Heritage.

III.2.C.d. Country-wide market

As the country will go through the development of tertiary industry and urbanization, and the development of agro-processing industry which will accelerate the formation of production area, such changes will promote mass consumption and distribution of commodities in both domestic and overseas markets responding to such phenomena.

III.2.C.e. A land ridge.

Infrastructure will be expanded with the consequence that domestic tourism as well as international tourism will become prominent. Furthermore, circulation of goods, and production of commodities for market will

intensify as in sub-area 7L efforts are made to operate a communication breakthrough between Laos with Cambodia and Vietnam. However, measures have to be taken from now on to open window of opportunities, and not let Laos to be only the land ridge for trucks with containers to run across it only.

III.3. Potential trans-boundary cross-regional issues and impacts

III.3.A. Potential trans-boundary cross-regional issues and impacts:

Construction of roads to exploit sand in Sekong River has deep effects by changing the pattern of the water flow, and erodes the river banks at Attapeu while creating sand bars and obstacles to an already problematic navigation.

III.3.B. Potential trans-boundary cross-regional issues and impacts: water treatment and waste water.

The use of chemicals for the treatment of raw water impacts on the environment as well as the discharge of waste water in Sekong River and its tributaries. These issues are not yet effecting significantly the population, as well as animals, but it is a growing one with time passing.

The Lao authorities are aiming at mitigating these issues by:

- Disseminating laws and regulations regarding environment for people of all walks of life to be aware of.
- Restricting chemicals especially on vegetables as well as on animals.
- Promoting the health care among the population.

III.3.C. Potential trans-boundary cross-regional issues and impacts: Illegal movements of goods and persons.

Bordering by Cambodia and Vietnam, sub-area 7L is at a cross-road of ever increasing move of people and goods while border, is difficult to monitor especially on prevention of HIV/AIDS, sexual exploitation and trafficking of women. This is an issue that Governments are trying to solve.

Conclusion

Sub-area 7L, bordering two foreign countries, and sheltering many potentialities should overcome rapidly the widespread poverty of its population. In the same time, it will be encountering many challenges and constraints which need special efforts from the central as well as local authorities in order to help sub-area 7L to overcome them.

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