

**LAO NATIONAL MEKONG COMMITTEE**

**REPORT  
ON THE OUTCOMES OF  
STUDIES AND  
ANALYSIS CARRIED  
OUT IN SUB-AREA 6L**

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 6L, regarding mainly water related issues. It is based 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 Sector Review 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 6L**

## **EXECUTIVE SUMMARY**

**I.** Sub-area 6 L is made up of Champassak Province and Saravane Province. The total area is 26,106 km<sup>2</sup>. The forest cover is 1,517,629 hectares or 57.5 % of the surface of the sub-area. While four major plains along the Mekong River are in sub-area 4L, a fifth large plain of the country is located in sub-area 6L, Se Dong Plain (42,500 hectares), however, the peculiarity of the sub-area 6L is that the stretch of the Mekong River running through sub-area 6L cannot be used for navigation during the dry season.

**II.** Development programme of sub-area 6L is determined by the National Development Strategy towards 2020 with its objectives and goals which include poverty reduction, economic growth at the most appropriate rate, a progressive and strong production expansion in agriculture, industry and the service sectors in order to improve the living standard in term of both physical and mental well-being, this, step by step; expanding the education and health service throughout the country; providing social welfare; fostering the human resource development; protecting an orderly society and the political stability; broadly opening up to international cooperation and integration into the world's changing environment.

**III.** Besides specific policies of each component of sub-area 6L, the short term objectives for the development sub-area 6L are:

1. Development and protection of environment and water resources.
2. Improve the livelihood of the multi-ethnic population.
3. Development of human resources.
4. To solve poverty among at least half of the poor families.
5. Basically to stop the slash and burn cultivation.
6. Food security, and commodity production.
7. Agriculture is to be developed as the dominant economic sector.
8. Economic growth has to be promoted by linking agriculture with manufacturing industry and services.
9. Economic development and social development have to be promoted alongside.
10. Rehabilitation of reservoirs and treatment of waste water in cities.
11. To strengthen existing facilities for tourism.

#### IV. Long term objectives are as follows:

- 1.To develop projects with no impacts on the level of water.
2. Hydropower production for exportation.
- 3.To solve poverty.
- 4.To protect and manage water resources and environment.
- 5.To develop high-level human resources.
- 6.To transform sub-area 6L into a modern agricultural and industrial sector.
- 7.To establish an integrated tourism sector.

#### V. 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).

#### VI. Action plan

This action plan is aiming at:

To promote food production and crops that are valued commodities. To exploit all existing potentialities to produce commodities for exportation such as: rice, maize, soybean, peanut, coffee, tobacco, etc.

To expand tourism by rehabilitating and developing tourism sites as well as to solve relevant issues to insure a smooth, efficient, and reasonable expansion of this sector.

To continue to carry out important projects such as to construct paved road within the precinct of the municipality of Pakse, to link Salakhieo to Dong Chong with a paved road, to build a gravel road from Pak Song to Pak Bong, strategic roads 14 C1, 14 C2, and to insure the maintenance of the national road and the 53 bridges along this artery.

In accordance to Order no. 10/PM, to design a work-plan to eradicate poverty, especially in the targeted areas. The goal is to struggle to reduce the number of poor families of about 4,464 in sub-area 6L by the year 2004.

## VII. Development Plan

From the general context as well as the real situation in sub-area 6L, the development plan of sub-area 6L has prioritized sectors as well as to spell out the features of this development.

1. Priority sectors are:

- Irrigated agriculture
- Hydropower
- Fishery
- Watershed management
- Tourism
- Supply water for industrial purpose and domestic use
- Flood management
- River works and navigation.

2. Development of sub-area 6L has to be efficient and sustained, securing the harmony between economic development and social cultural development and the durable protection of the environment.

3. The development has to be balanced between economic sector and the social sector, between various sectors sub-area 6L, between the two provinces of the sub-area 6L, between urban and rural areas by giving strong impetus to various economic sectors and the production of the population. The purpose is to efficiently use the natural resources, water resources, and human resources, to insure the distribution of revenues on an equitable basis and reasonable way.

4. The economic and social development has to be promoted along with the strengthening of the institutions, the increase of solidarity and the national unity, to resolutely expand the People's Democracy under the united leadership of the Party.

5. A better coordination between the use of assets of sub-area 6L along and an intelligent exploitation of the opportunities of the era with the aim to

make of sub-area 6L a partner in relations and regional cooperation with the Mekong River Commission.

6. The economic and social development has to be linked to the protection of water resources and environment.

**VIII.** Regarding the use of the Mekong River, sub-area 6L is beset with several obstacles: the stretch Savannakhet-Pakse that cannot be used for navigation during the dry season, and the section between Pakse and Voeunkham allowing only 30 tonne capacity boats to navigate during the same season. Other plagues are that Pakse itself is prone to floods and that the Mekong River's tributaries are drying up during the hot season.

**IX.** Besides the above issue concerning the navigability of the Mekong River, other constraints are, especially, the lack of human resources, and insufficient infrastructure. Furthermore, Saravane Province may be is one of the provinces that have received less foreign assistance than other provinces.

**X.** However, sub-area has promising opportunities for rapid growth with existing natural resources, and with the listing of the Vat Phou as the second World Heritage site in Lao People's Democratic Republic, and the setting up of the Emerald Economic Triangle between Cambodia, Laos, and Thailand.

## **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 m<sup>3</sup>/s equivalent to 35% of the whole river runoff. The 202,000 km<sup>2</sup> 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 6<sup>th</sup> 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 7<sup>th</sup> 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 in the sub-area 6L.

### **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 on the most southern tip of the country, sub-area 6L as defined by the Mekong River Commission is formed by two provinces, Champassak (15,415 km<sup>2</sup>) and Saravane (10,691 km<sup>2</sup>). With its 26,106 km<sup>2</sup>, the north of sub-area 6L touches the province of Savannakhet, while at the east, its limits run along the border with Vietnam, on the southeast, it adjuncts Sekong Province, and is bordering Thailand in the west, and Cambodia in the south.

#### **PROVINCES AND SUB-AREAS ACCORDING TO THE MEKONG REGIONAL COMMISSION**

<b>Sub-area</b>	<b>Province</b>	<b>Area (km<sup>2</sup>)</b>	<b>% of province in sub-area</b>	<b>% of sub-area comprised by province</b>
<b>6L</b>	Champassak	10552	68%	53%
<b>8L</b>	Champassak	4419	31%	6%
<b>6L</b>	Saravane	6951	68%	35%
<b>4L</b>	Saravane	2454	25%	3%
<b>8L</b>	Saravane	665	7%	1%

While four major plains are in sub-area 4L, a fifth large plain of the country is located in sub-area 6L, Se Dong Plain (42,500 hectares).

#### **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 m<sup>3</sup>/per day. But the average production is only 157,340 m<sup>3</sup>/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 restructuration 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 6L**

##### **II.1.A.a. Short term objectives**

Besides specific policies of each component of sub-area 6L, the short term objectives for the development sub-area 6L are:

1. Development and protection of environment and water resources.
2. Improve the livelihood of the multi-ethnic population.
3. Development of human resources.
4. To solve poverty among at least half of the poor families.
5. Basically to stop the slash and burn cultivation.
6. Food security, and commodity production.
7. Agriculture is to be developed as the dominant economic sector.
8. Economic growth has to be promoted by linking agriculture with manufacturing industry and services.
9. Economic development and social development have to be promoted alongside.
10. Rehabilitation of reservoirs and treatment of waste water in cities.
11. To strengthen existing facilities for tourism.

### **II.1.A.b. Long-term objectives**

Long term objectives are as follows:

- 1.To develop projects with no impacts on the level of water.
2. Hydropower production for exportation.
- 3.To solve poverty.
- 4.To protect and manage water resources and environment.
- 5.To develop high-level human resources.
- 6.To transform sub-area 6L into a modern agricultural and industrial sector.
- 7.To establish an integrated tourism sector.

### **II.1.A.c. 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 been adopted to contribute to 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.A.d. Action Plan**

#### **V. 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).

## VI. Action plan

This action plan is aiming at:

To promote food production and crops that are valued commodities. To exploit all existing potentialities to produce commodities for exportation such as: rice, maize, soybean, peanut, coffee, tobacco, etc.

To expand tourism by rehabilitating and developing tourism sites as well as to solve relevant issues to insure a smooth, efficient, and reasonable expansion of this sector.

To continue to carry out important projects such as to construct paved road within the precinct of the municipality of Pakse, to link Salakhieo to Dong Chong with a paved road, to build a gravel road from Pak Song to Pak Bong, strategic roads 14 C1, 14 C2, and to insure the maintenance of the national road and the 53 bridges along this artery.

To design a work-plan to eradicate poverty in accordance to Order no. 10/PM, especially in the targeted areas. The goal is to struggle to reduce the number of poor families of about 4,464 by the year 2004.

### **II.1.A.e. Development Plan**

From the general context as well as the real situation in sub-area 6L, the development plan of sub-area 6L has prioritized sectors as well as to spell out the features of this development.

1. Priority sectors are:

- Irrigated agriculture
- Hydropower
- Fishery
- Watershed management
- Tourism
- Supply water for industrial purpose and domestic use
- Flood management
- River works and navigation.

2. Development of sub-area 6L has to be efficient and sustained, securing the harmony between economic development and social cultural development and the durable protection of the environment.

3.The development has to be balanced between economic sector and the social sector, between various sectors sub-area 6L, between the two provinces of the sub-area 6L, between urban and rural areas by giving strong impetus to various economic sectors and the production of the population. The purpose is to efficiently use the natural resources, water resources, and human resources, to insure the distribution of revenues on an equitable basis and reasonable way.

4.The economic and social development has to be promoted along with the strengthening of the institutions, the increase of solidarity and the national unity, to resolutely expand the People's Democracy under the united leadership of the Party.

5. A better coordination between the use of assets of sub-area 6L along and an intelligent exploitation of the opportunities of the era with the aim to make of sub-area 6L a partner in relations and regional cooperation with the Mekong River Commission.

6.The economic and social development has to be linked to the protection of water resources and environment.

## **II.1.B. Development objectives, plans and policies for each of the two constituencies of sub-area 6L**

### **II.1.B.a. Champassak Province**

Based on the fact that the province has bounty land, water resources, relatively convenient communications, and is the transiting center for southern provinces in Laos as well as for neighboring countries, the objectives set in the Five Year Plan for Champassak Province are:

- Economic growth of 9 to 10% per year
- Rice production of 510,592 tonnes for a cultivated area of 131,907 hectares, and irrigated areas have to reach 49,028 hectares
- Eradication of poverty of 14,275 families
- To stop the slash and burn cultivation by resettling the population practicing swidden cultivation, and by creating employment for them at their new resettlement.

### **II.1.B.b. Saravane Province**

Endowed with many natural resources apt for agriculture, livestock raising, and commodity production, while the province constitutes a land bridge between Thailand and Vietnam, the struggling targets of the Five Year Plan for the province are:

- Growth of 9% per year
- Basically to stop the slash and burn, and to eradicate poverty by 50%
- To complete the construction of a number of economic projects
- To invest in large projects
- To concentrate capital on the promotion of the substitution industry
- Rice production to reach 272,500 tonnes from a cultivated area of 67,000 hectares
- 80% of children of age for compulsory education have to be schooled
- Basic alphabetization of children of 14 to 15 year old.

## **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 6L is made up of 18 districts with ten in Champassak Province, 924 villages, and 147,392 families, with a total population of 578,613 people, including 297,062 female. The population density is about 33.2 people/km<sup>2</sup>.

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 6L 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.

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

#### **II.3.A. Human geography**

When considering the detailed breakdown the view would be 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 (%)
Champassak	68.0	15.2
Saravane	271.4	40.0
Sub-total	339.4	27.6
<b>NATIONAL TOTAL</b>	<b>4905.9</b>	<b>61.21</b>

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

Ethnic diversity is less accentuated than in sub-area 1L, or even comparing to the national feature 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.**

Among them, 35,370 families are considered as poor in 4 poorest districts in sub-district 6L over a total of 47 poorest districts in the country, or 24.5%.



While the poverty growth rate is decreasing nation-wide and in Champassak for sub-area 6L, it augments in Saravane as shows the following table:

### PERCENTAGE OF POOR IN SUB-AREA 6L

	1992/93	1997/98	Poverty growth rate
Northern Laos	58.4	52.5	-2.1
Vientiane Capital	24.4	12,2	-13.9
Central Laos (not including Vientiane Capital)	39.5	34.9	-2.5
Southern Laos (sub-areas 6L and 7L)	45.9	38.4	-3.6
Champassak	43.6	35.6	-4.1
Saravane	36.7	39.6	1.5
LAO PDR	45.0	38.6	-3.1

Source: United Nations Development Program 2001, p. 28

Nearly 80% of the population of sub-area 6L is mostly making 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 expanded, but is not strong enough, capital formation is still low, the development of market while taking form is not wide enough, the efficiency of social work is still low, market economy has taking place in majors towns and cities, as well as in areas linked by infrastructure. Science and technology, the educational system, health network are still dragging behind and is slowly evolving; the multi-ethnic people, for some part are still following practices that are adverse to modernization.

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

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

However, sub-area 6L is endowed with essential facilities and large potentialities starting with abundant natural resources such as land favorable for agriculture, livestock raising, forests with many precious species, and water resources.

### **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 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.
- Hydropower plants - two in total - in sub-area 6L that do not produce enough to cater the population are having problems with water drying up in the hot season.
- Association and groups of irrigation users have been set up, but management capacity, maintenance skills are still in need. Water User's Association (298 in sub-area 6L 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 (0 in sub-area 6L over a national total of 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, and the volume of water used for this purpose is not unbearable.
- Only one associations of river navigation does exist in sub-area 6L, reflecting the poor state of the stretch of the Mekong River in the sub-area.

#### **II.3.C.b. Land users:**

In order to improve the livelihoods as well as to sustain 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 6L:

### Plan for the reduction of shifting cultivation area 2000-2010

Province	Area remaining by year-hectares						
	2000	2001	2002	2003	2004	2005	2010
Champassak	0	0	0	0	0	0	0
Saravane	2,200	1,800	1,200	800	500	0	0
Sub-total	2,200	1,800	1,200	800	500	0	0
Nation-wide total	118,900	93,900	74,000	60,100	42,600	29,400	0
Nation-wide 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

The inexistence of shifting cultivation is noticed in Champassak is noticeable. The same observation can be made for Vientiane Capital in sub-area 4L and Sayabouly in sub-area 1L.

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 unrecorded greater areas than they are allocated” (Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. III, p. AP8-4). In Saravane, shifting cultivation is encroaching in the National Biodiversity Conservation Area.

Contrarily to the northern areas that is recipient of substantial contributions from a range of foreign funded projects with strong components for assisting the development of sustainable farming systems and alternative income generating activities; however, in the southern provinces such as in sub-area

6L with Saravane, and in sub-area 7L (Sekong and Attapeu), apparently no such a programme does exist to stabilize the shifting cultivation, and there are no current or planned programs to assist communities to stabilize farming scheduled land allocation. (Japan International Cooperation Agency and Ministry of Agriculture and Forestry, 2001, vol. II, p. SC-1).

### II.3.C.c. Hydropower users

Electricity users are factories in sub-area 6L numbering 4026 with 13 large factories, 63 of medium scale and 3950 of small scale. These factories constitute the base for the socio-economic development. Other users are private, and villages having access to electricity in sub-area 6L numbers 457 over 1639 villages or 27.70% of the total villages of sub-area 6L.

### II.4. Inventory of physical features and water resources

#### II.4.A. Land.

Land in general is apt for agriculture, especially to grow rice, livestock, and short-term or long-term production commodity while the present situation is characterized by low level of production as shown in the two following tables when considering technology. Many high-graded minerals are conveniently exploitable such as iron ore, gold, silver, lignite.

#### 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
Champassak	76	84	2.0	7	59	3
Saravane	83	91	2.0	5	65	2
Whole country	65	86	1.6	25	61	7

Source: United Nations Development Program 2001, p. 168

#### AGRICULTURAL SECTOR PROFILE, 1998-1999

	No. of	Area of	Average	Arable	Area of	Cultivation
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	agricultural holdings (,000)	holdings (,000 ha)	area of holdings (ha)	land (,000 ha)	temporary crops (,000 ha)	intensity (%)
Champassak	70.2	146.7	2.09	102.1	96.7	95
Saravane	41.3	84.5	2.05	67.6	60.5	89
Whole country	668.0	1,048	1.57	877.0	803.0	91

Source: United Nations Development Program 2001, p. 169

#### II.4.B. Forests.

Sub-area 6L has 1,517,629 hectares of forest cover, or 57.50% of the surface of sub-area 6L. In general forests are perched on mountains which are also the source of many rivers and streams flowing to the Mekong River such as: Se Don, Huay Bang Lieng, Huay Toay, Huay Kha Huan, Huay Pha Ling, and Huay To Mo.

Four of the twenty National Biodiversity Conservation Area of the country are in the sub-area 6L:

#### **SUB-AREA 6L NATIONAL BIODIVERSITY CONSERVATION AREA**

	Name of National Diversity Conservation Area	Area (hectares)	Provinces
1	Se Pian	240,000	Champassak
2	Dong Hua Sao	110,000	Champassak
3	Phu Xieng Thong	120,000	Champassak
4	Se Bang Nuan	150,000	Saravane

Precious woods and pristine forests can be found in these conservation areas.

To preserve 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

Champas-sak	4,240	1,042	5,602	45	27	55	19,273	157,167	124,429
Saravane	724	1,109	6,742	12	18	67	68,054	20,376	43,154
Sub-total sub-area 6L	4,964	2,151	12,344	57	45	122	87,327	177,543	167,583
Country	42400	21,789	29,361	587	555	508	906,720	820,545	935,545

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

#### **II.4.C. Water resources**

Sub-area 6L is watered by at least 32 rivers and tributaries.

Mountains sheltered the source of many rivers and streams flowing to the Mekong River such as: Se Don, Huay Bang Lieng, Huay Toay, Huay Kha Huan, Huay Pha Ling, and Huay To Mo.

Other rivers are, beside the Mekong River itself, Se Xet, Se La Nong, Se Pon-Se Laman, Se Lam Ma Na, Se Nuan, Se Kathet, Huay Lam Fong, Huay Lad, Huay Nam Say, Huay Sung, Huay Sanod, Huay Thon, Huay Tapung-Sekong. Huay Soy, Huay La Ay, Huay Men, Huay Talieb, and Huay Kapheu, etc.

#### **II.5. Economic sectors**

##### **II.5.A. Irrigated agriculture**

Using water from Se Don, Se Xet, Huay Lad, Huay Tapung-Se kon, Huay soy, Huay Men, Huay Taliab, Huay Tampay, Huay Banglieng, Huay toy, Huay Khahuan, Huay Phaling, Huay To Mo, and the Mekong River, about 1,979 irrigation schemes are operating in sub-area 6L; they are funded from government's budget, private funds, foreign assistance, and loans from overseas.

Irrigation is of many categories, and in according to figure available for 2002, there are: 60 dams, 13 reservoirs, 1898 pumps, and 8 traditional weirs.

Cultivated area amounts 120,180 hectares, with 56,020 during the rainy season, and 46,160 in the dry season.

### IRRIGATED SURFACE , 2002-2003

Provinces	Irrigated surface (hectares)		Irrigated surface (hectares)	
	2002		2003	
	Wet season	Dry season	Wet season	Dry season
<b>I.</b>	<b>Sub-area 1L</b>			
<b>Sub-total sub-area 1L</b>	57,778	29,333	60,193	29,402
<b>II.</b>	<b>Sub-area 4L</b>			
<b>Sub-total sub-area 4L</b>	186,842	99,724	187,644	135,479
<b>III.</b>	<b>Sub-area 6L</b>			
<b>Sub-total sub-area 6L</b>	<b>56,020</b>	<b>46,160</b>	<b>56,025</b>	<b>46,165</b>
<b>Champassak</b>	37,854	34,795	37,857	34,798
<b>Saravane</b>	18,166	11,365	18,168	11,367
<b>IV.</b>	<b>Sub-area 7L</b>			
<b>Sub-total sub-area 7L</b>	6,458	3,789	6,308	4,786
<b>Whole country</b>	<b>307,097</b>	<b>214,625</b>	<b>310,171</b>	<b>214,832</b>

#### II.4. Features of irrigation schemes.

Compared to the previous Fifth Plan, irrigation works have progressed tremendously in sub-area 6L. However, some drawbacks do exist as some irrigation schemes have not been used to full capacity, or simply abandoned as they are operated with gasoline; as its price is dear, it reveals to be not cost-benefit way, and with the paddy's price falling down, the rural people cannot reimburse the debts contracted with banks. In the meantime, the rural people have to grow species that need less water such as soybean, cucumber, water-melon, etc. instead of rice

As the Government sets the target to produce 2.5 millions tonnes of rice in 2005, 3.5 millions tonnes 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 as base for commodity production.

### **CULTIVATED AREAS ALONG THE MEKONG RIVER AND ITS TRIBUTARIES IN SUB-AREA 6L (2005-2010)**

Plains along the Mekong River and its tributaries	Year 2005 (hectares)		Year 2010 (hectares)	
Saravane	Irrigated ricefield	8,900	Irrigated ricefield	15,000
	Regular ricefield	35,000	Regular ricefield	54,000
	Non-rice crops	6,500	Non-rice crops	10,500
Champassak	Irrigated ricefield	25,000	Irrigated ricefield	35,000
	Regular ricefield	50,000	Regular ricefield	75,000
	Non-rice crops	18,000	Non-rice crops	25,000

In the meantime, the Government has to promote and to support small-scale irrigation project 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 a progression 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 and small reservoirs, swamps and



wetlands for capture fisheries. Aquaculture is practiced in fish ponds, fish production cum rice in ricefields, rain-fed rice fields and irrigated rice fields, small natural pool oxbows, and irrigation weirs. Cage culture is only starting to be practiced in sub-area 6L along the Mekong River and Se Don River with the Government's encouragement.

Fish breeding is new in sub-area 6L as two to three years before, fish breeds had been imported from neighboring provinces or from Thailand. But since then, sub-area 6L is self-sufficient regarding this issue.

### STATUS OF STATIONS FOR FINGERLING PRODUCTION (2001)

	Provinces	Stations for fingerling production		Fingerling production (millions)	Remarks
		State	Private		
	Saravane	1.Ban Phao Km 12 2.Nong Deng		3.5	Operating  Under construction
	Champassak	1.Hua Sae Km 18 2.Ban Had	1.Km 4 2.Km 7 3.Km 11 Saphay	7.4  1.9 1.5 1.2	Operating  On proposal
<b>Sub-total sub-area 6L</b>		4	3	12	
<b>Whole country</b>		<b>32</b>	<b>13</b>	<b>185.02</b>	

Fish production is enough to meet the demands of the local market, and exportation is noticeable to neighboring market in Thailand.

### TOTAL AREAS (hectares) FOR FISH PRODUCTION, 2002

Provinces	Mekong and tributaries	Reservoirs	Irrigation canals	Swamps and wetlands	Rain-fed rice-fields	Fish production cum rice culture	Fish ponds	Dykes	Cage	Total
<b>Sub-area 1L</b>										
	x	2000	1887	21280	71896	1257	4016	970	0	104200
<b>Sub-area 4L</b>										
	x	68505	9739	47526	303625	2135	8503	9921	4990	454944

Sub-area 6L										
	x-	7463	1641	12810	91155	90	2661	1500	110	117394
Champassak	x	3763	841	11660	51155	40	2261	1000	110	70794
Saravane	-	3700	800	1150	40000	50	400	500	0	46600
Sub-area 7L										
	-	0	200	14070	10500	18	120	543	0	25451
NATION-WIDE	254150									254150
TOTAL	254150	78018	13476	95686	477176	3500	15300	12934	5100	955331

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 6L numbering 4026 with 13 large factories, 63 of medium scale and 3950 of small scale. These factories constitute the base for the socio-economic development. Other users are private, and villages having access to electricity in sub-area 6L numbers 457 over 1639 villages or 27.70% of the total villages of sub-area 6L.

Existing hydropower plants (Selabam, in Champassak Province, with an installed capacity of 5 MW; Se Xet 1, in Saravane Province with an installed capacity of 45 MW) do not produce enough electricity to meet internal demands and, during the dry season, with the water drying up, the operation of the hydropower plants comes to a standstill.

### HYDROPOWER DEVELOPMENT PLAN (2004-2010) IN SUB-AREA 6L

No.	Projects	Installed capacity (MW)	Average energy/year (GWh)	Commissioning
1	Se Xet 2 (Saravane)	76	309	2002-2004
2	Se Pon (Saravane)	75	338	2006
3	Se Xet 3 (Saravane)	20	85	2006-2008

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.

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 AND RIVER WORKS**

### **II.5.E.a. Navigation**

Technically, the Mekong River in Laos is divided from the upstream end to the downstream end into six reaches with the last of 170 kilometers (Pakse-Voeunkham) in sub-area 6L with only one important port at Pakse, Muang Village, Muang Khong, and Voenkham. However, only one association of river navigation exists in sub-area 6L.

The Savannakhet-Pakse section is unusable in the dry season as the shallow water averts any navigation. During the rainy season, the capacity to transport is the lowest comparing to others sections of the Mekong River. The Pakse-Khinak stretch can be navigated during the dry season by boat of a capacity of 30 tonnes while the Mekong River is only 1.2 meter deep, and a boat capacity of 100 tonnes during the rainy season. Rocks threaten navigation.

The navigation on the Mekong River's tributaries such as on Se Don is inconvenient. Small volume (0.5 during the dry season to 1.0 tonne during the rainy season) can be transported within the fifty kilometers from the junction with the Mekong River.

### **II.5.E.b. River works: trends during the past ten years**

The improvement of the road linking Vientiane to the Lao-Cambodian border, as well as the construction of bridges over the Mekong, brought to a standstill river works and the navigation on this section of the Mekong River.

## **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)**  
(\$ millions)

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 benefiting from tourism.

**VISITORS BY PROVINCE (1997-2002) in SUB-AREA 6L**

Province	1997	1998	1999	2000	2001	2002
Champasak	23,260	28,019	29,019	34,796	55,142	45,635
Saravane	1,266	NA	NA	NA	NA	4,823

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) IN SUB-AREA 6L**

Provinces	Number of establishments						Number of rooms					
	1997	1998	1999	2000	2001	2002	1997	1998	1999	2000	2001	2002
Champasak	14	18	18	56	65	65	246	306	374	759	889	925

<b>Saravane</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>8</b>	<b>11</b>	<b>11</b>	<b>23</b>	<b>33</b>	<b>45</b>	<b>66</b>	<b>96</b>	<b>96</b>
Whole 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, when the water level makes it possible. However, with Vat Phou listed as a World Heritage, the situation may rapidly changed as clean water, hydropower will be needed to be expanded.

## **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 m<sup>3</sup>/per day. But the average production is only 157,340 m<sup>3</sup>/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 m<sup>3</sup>/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 6L, 1266 villages over 1657 villages have access to drinkable water.

## **CLEAN WATER PRODUCED IN SUB-AREA 6L, YEAR 2004**

Province	No. systems	Raw water source			Production capacity m <sup>3</sup> /day		
		Spring	Ground water	River /stream	Spring	Ground water	River/ stream
Champassak	1			1			15,000
Saravane	2			2			1,800
Sub-total	3			3			16,800
National total	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 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 m<sup>3</sup>/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.

In sub-area 6L, using bamboo tubes or traditional method to drain water, access to clean water by this mean is possible for 25 places, and ground water is used in 1,100 places. Nearly 51% of the population can have access to clean water.

Expansion of access to clean water is progressing continuously, especially at Muang Saravane, Lao Ngam and Ta Oy.

### 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 SUB-AREA 6L (2002)

Provinces	Clean water (% of population served)	Sanitation coverage (%)
Champassak	77.67	32.27
Saravane	54.62	15.09
<b>Whole country</b>	<b>58.09</b>	<b>41.56</b>

Presently, the percentage of population having access to sanitation is 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
<b>Clean water</b>	52	55.1	58	66	75	82	90
<b>Domestic sanitation</b>	37.6	39.7	41	45	60	69	80
<b>Sanitation in school</b>	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 discharges upstream of water supply pumping stations raw water such as at Pakse and Saravane in sub-area 6L. In other towns, 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's 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. The four major flood prone areas are situated along the mainstream near large tributaries: Vientiane Plain, Thakhek, Savannakhet, and further down in sub-area 6L, Pakse.

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**

<b>Year</b>	<b>Damages (in \$ millions)</b>	<b>Areas damaged</b>
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



Plains 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**

<b>Provinces</b>	<b>Areas inundated (hectares)</b>			
	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>Sub-area 1L</b>	<b>0</b>	<b>20</b>	<b>240</b>	<b>1,810</b>
<b>Sub-area 4L</b>	<b>4,965</b>	<b>8,350</b>	<b>20,193</b>	<b>24,151</b>
<b>Sub-area 6L</b>	<b>2,570</b>	<b>3,460</b>	<b>1,790</b>	<b>7,654</b>
Saravane	1,575	1,400		222
Champassak	995	2,060	1,790	7,432
<b>Sub-area 7L</b>	<b>1,365</b>	<b>1,070</b>		<b>449</b>
<b>NATION-WIDE TOTAL</b>	<b>8,900</b>	<b>12,900</b>	<b>22,223</b>	<b>34,064</b>

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

### **DAMAGES CAUSED BY FLOOD IN THE YEAR 2000**

<b>Provinces</b>	<b>Persons affected</b>	<b>Ricefield inundated (hectares)</b>	<b>Ricefield damaged (hectares)</b>
<b>Sub-area 1L</b>	<b>670</b>	<b>30</b>	<b>20</b>
<b>Sub-area 4L</b>	<b>251,370</b>	<b>55,600</b>	<b>29,890</b>
<b>Sub-area 6L</b>	<b>134,440</b>	<b>27,470</b>	<b>13,460</b>
Saravane	16,500	4,740	1,400
Champassak	117,940	22,730	12,060
<b>Sub-area 7L</b>	<b>12,080</b>	<b>1,930</b>	<b>1,070</b>

#### **II.5.H.b. Data collection and dissemination**

Since 1990, the Government has provided data to the Mekong River Commission, and cooperated closely with the relevant international

organizations in providing information about the level of the Mekong River and its tributaries in order to forecast flooding. These data are dispatched regularly by the Department of Roads from its various observation stations with one located in sub-area 6L, at Pakse.

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 at the following stations with five in sub-area 4L and one in sub-area 6L, at Pakse.

### **II.5.H.c. Flood control construction works**

Based on the Prime Minister's Decree 204/PM, on 9 October 2001, dykes to protect against floods, water gates, and drainage canals had been built in major cities and towns located along the Mekong River.

Supported by the Government's budget, loans and foreign assistance, works carried out in sub-area 4L with four projects, and a fifth project in sub-area 6L (Champassak). Located just downstream of Se Don River, Pakse (Champassak Province) is subjected to frequent flooding from the Mekong River rise, particularly in 1975, 1978, and 2001. In 2003, with an Asian Development Bank's loan, a system against flood has been constructed with 2,500 meter length of dykes, three water gates, particularly on the tributaries of Se Don such as at Huay Saphad, and Huay Seua, canals to discharge flooding water and three pumping stations.

## **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 cultivation. However, in sub-area 6L, particularly in Saravane, apparently the only province with no donor assistance, and no project do exist to assist communities to set a

sustainable farming systems and alternative income generating activities (Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. II, p. SC-1). Furthermore, National biodiversity Conservation Areas are currently facing a significant threat from shifting cultivation such as Xe Bang Nouan, in Saravane, and Xe Sap, in Saravane-Sekong (Japan International Cooperation Agency and Ministry of Agriculture and Forestry 2001, vol. II, p. SC-10).

### **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 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, while the construction of dams in upper Mekong in China should regulate in some way the runoff of the Mekong River.

### **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.

### **II.6.D. Problems related to hydropower plants**

With the change of the climate, improper design, the water drying up during the hot season, and hydropower plants come to a standstill. Forests have been destructed, and environmental problems do exist.

### **II.6.E. Navigation**

Pollution causing by navigation on the stretch in sub-area 6L is decreasing with most of the transport taking away by road, and the navigation between Vientiane and Savannakhet is lowering comparing to the past.

### **II.6.F. Waste water**

While waste water is not yet an issue, however, the absence of efficient measures in this regard does bode well for the future with the fast urbanization of sub-area 6L.

## **PART III. Analysis**

### **III.1. Development opportunities, needs and constraints**

#### **III.1.A. Development opportunities**

##### **III.1.A.a. Impressive opportunities.**

Sub-area 6L presents impressive opportunities for development with its plain along the Mekong River which is favorable for agriculture, fishery, husbandry, and forestry with many rare essence. Investment opportunities abound regarding mining, hydropower and irrigation schemes, tourism, while sub-area 6L is located at the crossroad of mainland Southeast Asia, it may be in the future a growth center regarding economic, trade and tourism development.

##### **III.2.A.b. Secure and stable political environment.**

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

##### **III.2.A.c. Strategic location.**

The inclusion of sub-area 6L in the making of Emerald Economic Triangle will help to exploit large existing potentialities.

#### **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 analysis made by Japan International Cooperation Agency and the Ministry of Agriculture and Forestry (2001, vol. III, p. AP2-3) regarding the various difficulties the country has to face in implementing the development plan 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.”

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 m<sup>3</sup>/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 m<sup>3</sup>/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 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 6L, 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. However, 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. Human resources development 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, that 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 that 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 by the year 2020. 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, and another branch in 2004 in Luang Prabang. As the local market will not be sufficient for the job creation to absorb all the manpower, the migration of workforce 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 increasing a necessity as urbanization 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 occur 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 6L, but it is not yet cost-benefit, and not fully efficient while so numerous and large 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. Waste water.

Waste water is not treated and is discharged directly in the rivers or in the Mekong River. The absence of treatment of waste water is wide-spread, and this will become a serious issue in the coming year 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. Growth will be significant in sub-area 4L.

#### III.2.C.b. Increasing inequality.

However, in the same time inequality between regions 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

Quintile	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 quintiles	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 with the case of Luang Prabang, the first Lao city to be listed as a World Heritage. Where tourism is not noticeable, prices of farm and livestock products are mainly decided in regional cum self-supportive market. For instance, the highest farm gate price of paddy

was 1,005 kip/kg in Vientiane, while the minimum was 605 kip/kg or 66% of the highest in Saravane.

#### 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. However, measures have to be taken from now on to open a window of opportunities, and not let Laos to be only the land ridge for trucks with containers transiting through it only.

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

III.3.A. Potential trans-boundary cross-regional issues and impacts:  
Particular effects regarding river works are to be noticed.

Construction of dams in the region of upper Mekong creates many problems, and changing the flow pattern of the river.

For the coming years, efforts will focus on:

- \*Completing the construction work regarding the protection of the river banks at besides Houaysay, Luang Prabang, in sub-area 1L, and in sub-area 4L in Vientiane, Paksan, Thakhek, Savannakhet, and finally in sub-area 6L, Pakse.
- \*Constructing or improving landings and ports.
- \*Strengthening the management system of ports according to international standards.
- \*Completing the enhancing of skills of the human resources at professional and managerial level.
- \*Completing the construction of dykes against floods at major cities and towns prone to flooding.

\*Completing the construction of water gates to protect Pakse, in sub-area 6L.

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 the Mekong River and its tributaries. These issues are not yet significant for 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 Thailand and Cambodia, sub-area 6L is at a cross-road of an ever increasing move of people and goods while border, particularly the Mekong River, is difficult to monitor especially on prevention of HIV/AIDS, sexual exploitation and trafficking of women. This is an issue that both Governments are trying to solve, especially through Lao-Thai Border Security Cooperation Committee as well as other existing mechanisms.

## **Conclusion**

Sub-area 6L, with one of the large plain of the country, is a component of the Emerald Economic Triangle in the making, and sees many of its potentials starting to be exploited. In the same time, it will be encountering many challenges and constraints.

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