

NATIONAL REPORT

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Sciences, Technology and Environment National Organization,
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The Preparatory Committee

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PART A: INTRODUCTION

It was not possible for the National Committee which prepared this National Report to follow the process of preparatory activities exactly as had been recommended by the Preparatory Committee of the Habitat II Conference in its meeting in Geneva in 1994. Consequently, this National Report is not based on a direct consultative process. It has been formulated on the basis of a range of existing plans with different time horizons issued and adopted by the Government of the Lao PDR, on the basis of studies, agreements and project documents produced by or on behalf of the Government of the Lao PDR and on the basis of interviews with officials from various government organizations. In many cases, preparatory studies for public investment programmes in the urban sector included household opinion and needs assessment surveys and consultation with officials at all levels of the government. It can therefore be stated with confidence that the National Report represents and includes the views of a wide range of stakeholders in urban development.

PART B: ASSESSMENT AND PRIORITIES

1. The broader setting

1.1 Introduction

The Lao People's Democratic Republic has a surface area of 236 800 sq.km. It extends 1700 km. from North to South and has a width of 400 km. Laos has no direct access to the sea but it has many inland waterways including the Mekong river which is 1865 km. long - most of which is navigable.

The country has many assets which are potentially beneficial to its development, but there are also constraints which must be confronted such as:

- the geographic isolation of some of the regions;
- a lack of infrastructure and in particular means of communication;
- a lack of physical, economic and social data;
- a low national income and consequently a dependence on foreign assistance to finance its public investment programme;
- a shortage of adequately skilled workers and the administrative capacity to facilitate economic growth;
- high transport costs, especially for the export of goods, due to a lack of direct access to the sea.

At the end of the 1980's, the Government of the Lao PDR adopted a set of socio-economic reforms which have already yielded visible positive results. However, there is still much to be done in the area of health, education and the standard of living. Disparities between social groups and an uneven spatial distribution of infrastructure and services still exist, although the socio-economic trends show an improvement and are encouraged by strong Government commitment and international assistance.

1.2 Macro-Economic and Institutional Context

The New Economic Mechanism

In 1986, the 4th Party Congress adopted a set of reforms, the New Economic Mechanism (NEM) with the purpose of transforming the economy from a centrally planned to a market-oriented system characterized by decentralization of economic decision-making and a more active role for the private sector. The NEM was adopted during the 5th Party Congress in 1991 and was made an integral part of the National Constitution.

The principal characteristics of the NEM are:

- market orientation and pricing including;
- flexibility of the exchange rate on a market-responsive basis;
- improvement of the financial system with the development of an independent commercial banking system.

Institutional framework

The President is the Head of State; the main organ of the Government is the Prime Minister's Office headed by the Prime Minister. The Government is composed of eighteen members including the heads of the Ministries, of the State Bank and the Committee for Planning and Cooperation (CPC). The President of CPC is concurrently the Deputy-Prime Minister. The Lao People's Revolutionary Party is the only political party. Its leading role in the political system is explicitly recognized in the Constitution. The Party is governed by a Central Committee and headed by an Executive Committee. The Party organization extends downward to the provincial, district and village levels, in parallel with the administrative structure of the Government.

The Lao PDR is divided in 16 provinces and one Prefecture: Vientiane. The provinces and the Prefecture are divided into districts. The districts are divided into villages which are the lowest level administrative units. Each village has a village committee, each district has an administrative committee, and each committee has its bureaus representing the ministries. At present, urban settlements in the Lao PDR are administered as part of the provinces in which they are located; there are no separate municipal organizations.

The Government administration in Laos can be termed as deconcentrated rather than decentralized. Each province has a Governor who is appointed by the central Government upon nomination or on advice of the People's Assembly of the province. The People's Assembly is elected by the population from a list of candidates established by the party; the assembly has a consultative function. Each province has an Administrative Committee which consists of seven members who are also members of the Assembly and often include the heads of provincial departments. Laos was initially very centralized but since 1986, trends towards decentralization have become visible. This was largely the result of the power of governors of the provinces to retain the taxes they had collected in their area for use to develop their province rather than to send the taxes to the central Government.

The Prefecture of Vientiane covers both urban and rural areas. The Prefecture is headed by a Governor and its highest decision-making body is the Administrative Committee which is chaired by the Governor. The Prefecture is divided into districts and the districts into villages each with their own administrative committees. The Governor of Vientiane receives advice and assistance from 14 departments which are in fact local branches of national ministries. For urban planning and

management, the most important department is the Department of Communication, Transport and Construction.

The personnel of the departments is employed by the respective ministries and the budget of the departments is part of the ministerial budgets. The Prefecture is therefore in principal dependent on the ministries for all its activities. The Prefecture has no authority to collect its own taxes: it collects taxes on behalf of the central Government and has to transfer all proceeds to the Ministry of Finance.

Recently, the Government created a ten-member Vientiane Urban Development and Management Committee. The importance of the Committee is two-fold: a) it brings together representatives of agencies responsible for the development and management of Vientiane and thereby facilitates coordination; b) its jurisdiction covers the urban areas of Vientiane rather than the entire Prefecture, thereby giving the urban areas a special status for the first time.

1.3 Socio-Economic Trends

Demography

In 1995, the population of the Lao PDR was estimated at 4.58 million. The population consists of 685,230 households; that is to say an average of 6.7 persons per household living in 11,935 villages (ban - the smallest administrative unit), and an average of 5.8 persons per household in the urban areas of Vientiane (re: Urban Indicators Review). Projections foresee an population increase of 2.6 per cent per year (Source: Development Co-operation, UNDP, 1993 Report). This average is above the growth rate average for developing countries. With this rate of growth, the population of the Lao PDR will reach 5.6 million by the year 2000 and double by 2014.

The rapid growth of the country's population is due to high fertility rate (6.7 per cent) and a high percentage of women in the reproductive age group. Women represent 51 per cent of the population. The age pyramid shows the high predominance of young people: 55 per cent of Lao population is less than 20 years old, 21.4 per cent is between 20 and 34 years, and only 17.4 per cent is between 35 and 59 years old.

At 19 persons per sq.km., the population density of the Lao PDR is one of the lowest on the Asian continent. The most populated provinces are Savannakhet (692 000) and Champassak (490 000) in the South and Luang Prabang (365 000) in the North. The Vientiane Prefecture has a population of 503 000. The population density in Vientiane in 1993 was 125 persons per sq.km. Besides Vientiane (165 000), the main urban centres are Savannakhet, Pakse and Luang Prabang. More than 80 per cent of the population lives in the rural areas. However, the Lao PDR faces a rapid urbanization, particularly in the Vientiane Prefecture. Currently, 19 per cent of the Lao population lives in urban areas, but the urban population is expected to increase

at an annual rate of 5.9 per cent between now and the year 2000, when the urban population will represent 25 per cent of the total population of the Lao PDR.

Economic conditions

The economy has grown at a yearly average of 7.5 per cent since 1988, but in 1993 the growth rate dropped to 5.9 per cent. In 1993, the median per capita income was estimated at US\$295 (not including the value of non-commercial production such as subsistence agricultural activities). Inflation slowed down from 10 per cent in 1992 to 6.3 per cent in 1993, but increased again to 22 per cent in 1995.

Economic development is mainly due to a sustained growth of the industrial and services sector. The agricultural sector has been less important for the general economic growth during the last few years. The development of the Gross Domestic Product indicates the emergence of the private sector in the industrial and service sectors, which have great potential for further development. The expansion of these sectors has altered the nature of the economic activities in the country:

growth of agricultural sector from 1992 to 1993:	+ 2.7 per cent
growth of industrial sector from 1992 to 1993:	+10.3 per cent
growth of services sector from 1992 to 1993:	+ 7.7 per cent

Under the New Economic Mechanism adopted in 1986, the industrial sector underwent rapid development, particularly in manufacturing, while the contribution of agriculture in the Gross National Product declined. Nevertheless, the main economic activity in the country is still agriculture. It involves about 80 per cent of the work force in different activities such as cattle breeding, fishing and forestry.

It is estimated that about 649 000 hectares are cultivated, but only 3.7 per cent is irrigated. Some 35 per cent of the rice production comes from mountainous areas where 60 per cent of the population is unable to meet their food subsistence requirements and are short of rice for about three months during the year.

For 1994, the unemployment rate was estimated at 3 per cent for the country as a whole and about 6.7 per cent for Vientiane. In the five main urban zones¹, work force participation in the informal sector is estimated at 40.8 per cent. Between 1992 and 1995, employment opportunities increased by 8.3 per cent, which means an annual growth of nearly 3 per cent.

Social conditions

In 1992, the Lao PDR had a gross birthrate of 41.6 per 1000 per inhabitants. In 1993, the life expectancy was estimated at 51 years against 43 years in 1979; while this is a significant improvement, it is still below the average of the developing countries. In

¹ Vientiane, Luang Prabang, Pakse, Takhek, Savannakhet (Urban Labour Force Survey)

1993, the annual mortality rate for the country was 45 per 1000, while infant mortality varied from region to region and ranged from 104 to 135 per 1000 inhabitants in 1993. The mortality rate among children under the age of 5 was 156 per 1000 children born alive. The total fertility rate in 1993 was 6.6 (6.2 in urban area and 6.9 in rural area). The maternal mortality rate is 555 per 100 000 births, but in the mountainous region of the Northeast, this rate is twice the national average and is one of the highest in the world. In 1993, only 28 per cent of the population had access to safe drinking water and only 67 per cent had access to medical services. Half of all children under the age of five suffer from malnutrition.

There are big disparities in access to education between the different regions of the Lao PDR and consequently the literacy rate varies from province to province. The literacy rate for adult males is estimated at 50 per cent and for adult females at 35 per cent. Significant efforts have been made since 1975 to increase the enrolment in primary education. The student enrolment has increased, especially for primary education, but the quality of the education has not improved. While 69 per cent of the children attend primary school, 60 per cent of them drop out before completion. In some rural areas, it is estimated that only 25 per cent of the children attend primary school. Secondary school attracts 26 per cent of the children in the secondary-schooling age and only 1 per cent of the youth attends post-secondary education.

1.4 Socio-economic policies

In the 1970's, industrial development was only just beginning with the processing of agro-industrial products, forest products and a few consumer goods. The country was lacking infrastructure. Between 1976 and 1985, the Lao PDR prepared five-year plans in order to reach its socio-economic development goals. The main goals were food self-sufficiency, reconstruction of damaged road infrastructure, the development of industry using agricultural resources and training and education of the population at all levels.

The formulation of the Five-Year Plans required the centralization of budget allocations and planning mechanisms. The results of this approach were generally satisfactory, but not very effective. In 1985, reforms were introduced which have gradually covered all sectors of the economy. The Second Five-Year Plan (1986-1990) extended the major thrusts of the National Restructuring Plan (1978-1980) and the First Five-Year Plan (1981-1985). The period of the Third Five Year Plan (1991-1995) has just been completed and the Fourth Five-Year Plan (1996-2000) is presently being formulated.

The National Strategy for Socio-Economic Development up to the year 2000 has as its main objectives:

- food production
- stabilization/reduction of shifting cultivation
- commercial production
- infrastructure development
- improved foreign economic relations
- rural development
- human resources development
- services development

The strategies adopted to achieve these objectives are:

1 - Continue to promote manufactures economy in accordance with market mechanism under the State supervision in order to encourage national strengths to take part in the expansion of production and services with the aim of turning the natural economy into market-oriented economy, improve and develop the state economic units to become the mainstays of national economy, encourage state capitalism with focus points, promote people's collective ownership according to the demand of production and of services, encourage family ownership in line with the State's Directions.

2 - Continue to form up the structure of agro-forestry economy, with the development of agro-forestry to serve as basis for the development of processing industry, with the electric industry as immediate focus points to create industrial zone for export for Vientiane suburbs, northern region. At the same time the tertiary sector should be strongly promoted thus making conditions for strengthening the geographical location of the country in this sub-region. Readjust the economic structure to make it more proportional gradually by continuing to apply the 7 priority action plans that were in principle accepted. The 8th action plan must urgently be made out: action plan to promote the tertiary sector, for instance, tourism trading, finance-banking services.

3 - Continue to build up economic components in various regions basing on capacity and existing potentials with the aim of developing each region proportionately and supporting each other. To achieve that the 1996-2000 socio-economic development plan of each region must be made and implemented.

4 The year 2000 must see the self-sufficiency in foodstuff of the northern region, at the same time its communication network should be improved and unhindered. Each Province must do research and firmly grasp her potentials in each area in order to make out her socio-economic plan accordingly.

5 - Means must be concentrated on rural development with the aim of narrowing the gap between the city dwellers and rural dwellers income gradually, to wipe out the rural poverty basically, to reinforce the inter-tribal unity, social equality and justice must be enhanced, village administrative bodies must be improved and strengthened so that they can achieve their security-guarding and peace-keeping job, at the grassroots level and also built up new rural area switching from nature-dependent economy to merchandises economy.

6 - Care must be paid to human resources development. Strategies to reform the education and direction on culture, ideology must be carries out, intellectuals and technicians must be trained to meet the demand of the country's development needs, in this regard the importance id given to the training of ethnic minorities intellectuals and women.

7 - Broaden the cooperation with foreign countries, in line with foreign policies that have been set out, national efficiency and interests must be assured. Broaden the relationship with friendly countries and various international organizations to make the industry linked to the economy of the region and international gradually. The immediate conditions must be made in all areas to adhere to the ASEAN organization and the Regional Trade Organizations. Concurrently to promote foreign investment by giving more facilities and attraction, to materialize the contracts that have already been signed.

2. Current settlement conditions

The development of the towns in Laos is the result of their primary role as administrative centers for the surrounding rural areas; the most populated towns are the provincial capitals. In the Lao PDR, 80 per cent of the active population is employed in the rural sector. In the towns, the number of civil servants is substantial and one out of every ten persons has a second job and 40.8 per cent of the country's urban population is working in the informal sector. The unemployment rate in urbanized areas remains rather low: approximately 6.7 per cent in Vientiane and 5.6 per cent in all urban areas of the country.

Due to the institutional reforms which aim at the development of a market economy, the country's economy is constantly changing and society has to carry the burden of these changes which explains the appearance, to a limited degree, of delinquency and drug use.

Poverty in the urbanized areas is lower than the national average: 24 per cent of the urban population lives below the poverty line as opposed to 46 per cent for the country as a whole. In fact, the poverty is not very visible. Some aspects of health and education (such as infant mortality, life expectancy at birth, school enrollment) are critical but are increasingly improving. All the towns offer health services and access to education.

Housing and Urban Indicators

The production of the Housing Indicators is dependent on the availability of precise data from very focused studies. However, the Lao PDR faces a general lack of quantitative and qualitative information about the conditions of housing in the country, and the National Statistical Office has not yet started studies to collect data in this sector. This explains the absence of specific figures. Even in order to make estimates, it would have been necessary to conduct in-depth field surveys for which neither the time nor the financial means were available during the preparatory work for this National Report.

Furthermore, the Local-Government Module of the Urban Indicators could not be completed, because the indicators do not correspond with the country's administrative system. There are no local governments as such; the local administrations are merely decentralized services of the central government; its activities, its staff and its finances depend on the supervising ministry. As a result, sections such as "Local finance", "Productivity and private sector involvement", "Local participation", "Local Government regulatory audit" are not relevant in the context of the Lao PDR.

The information provided below comes from two sources. The information about Vientiane is based on the Urban Indicators for the capital city (the urban area of the Vientiane Prefecture) as far as these could be collected. Since the beginning of 1996, a team of consultants is making a study of the conditions in three secondary towns (Luang Prabang, Savannakhet and Pakse) of the Lao PDR, in preparation for a loan from the Asian Development Bank for the Secondary Towns Integrated Development Project. The information about these three towns is derived from the Mid-Term Report of the consultants.

2.1 Vientiane

Land use

Vientiane has the particular advantage of having complementary and multi-purpose land uses. The city population is involved not only in secondary and tertiary economic activities, but also in primary ones due to the presence of agricultural land in the urban areas. In Vientiane, residential land use forms the largest category with 38.7 per cent. Most of the residential areas have developed fairly recently and are located on the outskirts of the city. There are some older residential areas in the city center. Densities vary greatly from one neighbourhood of Vientiane to another; the average density is 54.6 persons per hectare, but the density ranges from 9 persons per hectare to 217 persons per hectare depending on the neighbourhood.

In 1993, 19.5 per cent of the land area in Vientiane had an agricultural use. Urbanization is resulting in a rapid decrease of these areas and is completely surrounding some farm lands and wetlands. The presence of agricultural land in the

urban periphery has a number of advantages. Farm products are available for the urban poor at a lower cost than the products imported from rural areas since the transport costs from the producer to the consumer are low. The wetlands in Vientiane supply fodder for the cattle and fish for the low-income populations throughout the year.

Moreover, this mixed land use makes the city less vulnerable to economic downturns and permits a blending of social classes from various economic sectors. The agricultural areas have a social and ecological value: they provide fresh air, maintain a diversity of ecosystems, ensure the presence of a natural drainage system.

Population

Vientiane's population growth rate is 3.22 per cent (estimated national growth rate is 2.4 per cent). The birth rate of 23.5 births per 1000 inhabitants in Vientiane is much lower than the national birth rate of 43 per 1000. Yet, an increase in the level of urbanization from 19 per cent to 25 per cent of the total population is expected by the year 2000. Only a considerable net immigration to Vientiane and a rapid population increase in the other urban centers (indicator not available) can explain this growth of the urban population in the coming years.

In Vientiane, the number of men is higher than the number of women (80,326 men and 75,544 women). The average household size in Vientiane is 5.8 persons whereas the national average is 6.2 persons; 9.4 per cent of the households are headed by a woman. There is no information about the types of households, but it can be assumed that a household composed of one person is practically non-existent and that the majority of the households fall in the category "more than one adult and one or more children". There is no detailed information about household incomes in Vientiane, but the average household income in Vientiane is US\$ 200 per month. The largest part of the household budget (45.4 per cent) is spent on food; 8.1 per cent is spent on transport and 3.5 per cent on housing.

Housing

The population generally knows how to build a house and so they can acquire housing at a relatively low cost; the quality of construction is, however, not necessarily guaranteed. A large majority of the households in Vientiane (82.5 per cent) are owner-occupants of their housing; this was made possible by governmental measures to promote home ownership. Rental housing forms only 6.7 per cent of the housing stock and social housing forms 6.5 per cent. Free housing and sub-leasing makes up 7.7 per cent of the stock which means that some families are housed temporarily. House construction is in full expansion especially for high-income groups.

Infrastructure

Vientiane is generally well serviced with infrastructure.

In Vientiane, 94.7 per cent of the households have water supply, but 11.4 per cent of the households have made illegal connections to the water supply system. The price of water does not vary with the seasons and is the same throughout the country. Piped water supply is affordable for the population since the cost of water represents only 1.3 per cent of the household budget. However, the quality of the piped water varies from one neighborhood to the other. Generally speaking, the water requires one last treatment before consumption by bringing to a boil. The water supply network is cut off about 3 days per year for maintenance, but brief cuts are rather frequent. Access to drinking water decreases as one goes farther away from the town centre. On the outskirts of Vientiane, only 32.6 per cent of the population has access to the water supply network. There is thus spatial inequality as far as access to the water supply network is concerned.

In Vientiane, water consumption is relatively low at an average of 150 liters per person per day. The volume of water loss in the network is estimated at 28.84 per cent. Only 38.98 per cent of the costs of operations and maintenance of the water supply system is recovered from the consumers; the remaining costs are paid from external sources; in other words, the water supply service is heavily subsidized. The share of personnel costs in the operations and maintenance budget is relatively high at 28.61 per cent.

The main infrastructure shortcoming in Vientiane is the absence of a waste water treatment and drainage network. Parts of the city are regularly flooded during the rainy season, because drains are either lacking or are blocked by solid waste, as a result of an inadequate solid waste collection and disposal system. The water in the drains is also polluted by faecal material due to the overflow of septic tanks. There is no collective sewer system in Vientiane; 97.8 per cent of the households have an on-site sanitation system, including 63.2 per cent which use a septic tanks. However, many of the septic tanks are not well constructed or not regularly maintained. The number of public latrines is insufficient at 1.9 per 1000 inhabitants.

In 1994, 99 per cent of the households had electricity, but 5.8 per cent had made illegal electricity connections. Expenditures on electricity represent only 1.9 per cent of the household budget. Telephone connections are expensive and only 21 per cent of the households have telephone. Calls are of good quality and are not interrupted, but the extension of the network is not easy and requests for subscriptions are not always met due to technical limitations.

Transportation

Generally speaking, the roads are in poor condition or are quickly damaged by long-haul trucks, in particular during the rainy season, because of the poor drainage system. The secondary roads are rarely black-topped. The average annual investment in road construction in the Vientiane Prefecture amounts to US\$790,000 which makes average of US\$1.60 per person per year.

As far as modes of transport are concerned, bicycles are predominant at 42 per cent for the active population going to work; next are motorcycles at 34 per cent and cars at 7 per cent. There is no public transport system and buses therefore are used for only 3 per cent of the trips and this includes trips in minibuses or group taxis. The average household spends 8.1 per cent of its household budget on transport; for the low-income population this is 3.1 per cent. Transport remains affordable as long as the trip can be made by bicycle.

The number of car owners is 47 out of 1000 for the entire population of the Vientiane Prefecture. In 1993, the number of vehicles in the Vientiane Prefecture was 24,444, an increase by 139 per cent since 1977. This also explains the low level of fuel consumption in the Vientiane Prefecture, estimated at 228 liters per person per year. The number of private vehicles is on the rise, because of the low tax on petrol products (at \$0.3 per liter of regular petrol and \$0.27 per liter of diesel fuel), the economic development and increase in the standard of living, and the adoption of a Western style of living. Many of the cars in Vientiane are highly polluting old vehicles with poorly regulated engines and new large-cylinder, gas-guzzling vehicles.

Traffic in the city is generally easy and fast, but deaths caused by traffic accidents are numerous (0.22 per 1000 in Vientiane Prefecture) due to the large number of 2-wheelers, the lack of a law to make the use of motorcycle helmets compulsory, the speed of the traffic which does not observe speed limits, the mixture of different types of traffic, the poor condition of the roads and the absence of road signs. Some intersections are jammed during rush hours which occur twice a day. The heavy traffic lasts for about one hour in the morning and one hours in the evening. While traffic is still flowing rather smoothly, it is rapidly becoming heavier. There is a growing noise pollution and an increase in air pollution which is bothersome for cyclists, motorcyclists and pedestrians.

Environment

Vientiane's urban environment is overall rather satisfactory. This town is green even if some of the vacant land is quickly disappearing. Some arteries would require decorative trees. This town is not designed for pedestrians whose safety is not guaranteed; moreover, the sidewalks are disappearing due to the encroachment of shops onto the street. There is no substantial air pollution in Vientiane as yet. This situation could however change if traffic continues to increase at the same or even faster rate. The current air problem is dust which is present during the dry season,

and waste combustion smoke which sometimes contains chemical particles when plastic or other wastes are burnt.

The waste collection and disposal system is effective, but covers only part of the city and as a result the portion of solid waste collected is still very low. The generation of solid waste averages 0.321 tons per person per year. This figure is probably going to increase very rapidly as the standard of living is increasing. Collection could be more substantial, if some households would not try to avoid paying for the service. The recycling industry is complex, but effective: metals, paper, glass and plastics are all recycled. Although legislation is being studied to control the storage of dangerous waste, there is still the risk of hazardous waste being imported from neighbouring countries.

The use of renewable sources of energy is substantial because of the use of charcoal estimated at 355,000 m per year. There is a trend towards reforestation by the wood industry.

There are no laws to protect the environment. The single law which is in effect deals with water pollution by the industrial sector, but enforcement of the standards is difficult due to a lack of control instruments. The other regulations concerning the environment and public hygiene ban the disposal of waste in sewers and public places, on unofficial dump sites and outside of containers designated for the use by hotels and restaurants. However, illegal disposal of waste is inevitable due to the inadequate collection and absence of any means of enforcement. Exhaust gas emission standards for vehicles are lacking and a large number of private vehicles and trucks pollute the air excessively. There are also no standards for emissions by industry. A law requiring environmental impact assessment studies before the implementation of any project will be soon be submitted to the National Assembly and will perhaps enable the authorities to protect certain parts of the urbanized areas which are of ecological interest.

2.2 Secondary towns

Institutional arrangements for the operation and maintenance of urban infrastructure in secondary towns of the Lao PDR are diverse and inconsistent and this has a negative effect in particular on the condition of the drainage network and the efficiency of the solid waste collection and disposal system.

None of the towns in the Lao PDR has a central or partial sewerage system. All disposal of human waste is on-site. Sullage generally ends up in the open road side drains or infiltrates in the subsoil in the low-density areas. Modern properties have septic tanks, with septic tank effluent often draining into road side drains. Maintenance of septic tanks is carried out by small private companies using a vacuum desludging vehicle, but very little use is made of this service. Older and lower-income houses use pit-latrines of various improvised types. In some of the traditional villages, households might not have any form of latrine.

The most pressing need for infrastructure improvement within the three secondary towns of Luang Prabang, Savannakhet and Pakse is that of storm water drainage and the prevention of flooding during the rainy season, because the water from in the drainage system is invariably contaminated presenting direct health risk.

The three towns illustrate a broad range of possible arrangements in the collection and disposal of solid waste. From different historical background and administrative arrangements, situations have now arisen with varying degrees of involvement of the private sector in waste collection. Final disposal of collected waste is invariably at an uncontrolled dump site. In its present form, the solid waste collection is financially not sustainable. Solutions will have to be sought in providing a reliable but low-cost service which deserves the confidence of the population.

Roads in all three towns consists of surfaced roads (albeit often in bad condition) for the main thoroughfares, whilst neighbourhood roads are generally gravel or earth roads. The capacity of the roads is not yet an issue, as vehicle use and ownership are still very low. However, there is an explosive growth in the ownership of small motorcycles. The capacity of all main routes and junctions in the three towns can be increased significantly with simple traffic management measures and improved road discipline. At the moment there are no lane markings or other traffic guidance measures.

All three towns suffer to some extent from erosion of the Mekong River bank and need extensive river bank protection works. In the three towns, one of the major constraints to planned development is the problem of perennial flooding. To a grater or lesser extent, areas of the towns are flooded each year and remain under water or are subject to water logging for periods of several weeks or months. In Savannakhet, as much as 130 ha is flooded by a one-in-ten year flood of the Mekong River, and in Pakse similar areas are flooded almost every year.

Luang Prabang is undergoing important change and developments, requiring careful planning and guidance. As an ancient capital and a historic centre, Luang Prabang has greater national significance than its current size and population suggests. As a cultural centre for the north of the country, the developments in the centre of Luang Prabang are now subject to tighter planning control than in any other urban area in the Lao PDR. Luang Prabang has been accepted by UNESCO as a World Heritage Site.

Water supply in Pakse is being improved under the Southern Towns Water Supply Project financed by the Asian Development Bank. Works include a new intake and pumping station, a treatment plant, elevated storage tanks and a rehabilitation of part of the distribution network. Improvement was required as the town had been suffering from low water pressure, low quality of water and intermittent supplies. House connections are estimated between 4,500 and 5,000 but there are many illegal connections.

The need for coordinated and comprehensive planning in the three towns is clear. Several locally and nationally generated proposals for major infrastructure development are being considered, but this is being done without the benefit of clear strategies for growth in the towns and their sub-regions. But flooding decreases the effectiveness of any improvements that are made in the drainage infrastructure, unless measures are simultaneously taken to improve the flood protection.

3. The past 20 years

3.1 The development of urban planning in the Lao PDR

In 1960, the first Vientiane Town Plan was completed; it was entitled "Plan de Développement de Vientiane" (Vientiane Development Plan) and covered the period from 1960 to 1968. It allowed the authorities to define the land use in the city. In 1965, a "Plan de détail" (detailed plan) for Vientiane was drafted for a population of 120 000 and covering the period from 1965 to 1970. The objectives of the plan were to improve the road and drainage networks.

In 1975, town planning became a sub-component of territorial management and was incorporated in macro-economic management. Attention focused on the reconstruction of the provincial capitals which had been totally or partially destroyed during the war. As a result, towns in the provinces of Oudomxai, Luang Namtha, Samneua, Xiangkhouang, Phongsali, Saravane and Attapeu benefited from the Renovation Plan. Central Government had to meet the urgent needs of the population in certain provinces with regard to infrastructure, housing and construction materials. For this purpose, the Department of Housing and Town Planning offered assistance to the provincial authorities. The programme, considerable in the country's domestic policies, lasted from 1975 to 1988.

In 1975, a large number of technicians had left the country which resulted in a need to request technical assistance from the Soviet Union for qualified personnel. Due to the lack of professionals, the School of Architecture was created in 1979, which included five fields of study: architecture, construction, water supply, irrigation and roads and bridges. In 1982, four Ministries were created: for construction, transport, post and infrastructure. In 1990, these four ministries were merged into one ministry called the Ministry of Communication, Transport, Post and Construction which was to be in charge of housing, roads and irrigation works.

During this period, new towns such as Laksao and Sekong were created for both political and economic reasons. After the completion of the Renovation Plan in 1988, the attention given to the secondary towns continued and materialized through the Government's commitment to provide each of the provincial capitals with a town plan aimed at controlling its development.

After 1975, Vientiane saw the construction of a large number of new public buildings such as hospitals, schools, dispensaries, day-care centers, administrative offices, canteens and houses, and the creation of squares and public parks. Improvement of the road network and various infrastructure works such as river ports, an airport and warehouses were also carried out.

In 1983, Vientiane was officially chosen as the national capital and in 1985, studies started for the Vientiane Master Plan. The long interval between the 1960 Vientiane Town Plan and the Vientiane Master Plan can be explained by the drop in the Vientiane population between 1975 to 1980 which reduced the problems linked to urban development. From 150,000 inhabitants in 1975, the population decreased to nearly 100,000 in 1980. The population level of 1975 was only reached again in 1990.

From 1985 onwards, the Government reformulated its development goals and tried to stop a phase of unregulated urban development which was about to begin. The Government opted for a forward-looking approach in order to improve the living and housing conditions of the population, in particular those of the most underprivileged. These goals found the support from the United Nations Development Programme.

In 1985, the goals of the Government were urban planning, infrastructures and management of the towns. Therefore the MCTPC had this responsibility and appointed the ITSUP to be in charge of town planning for the whole country. The project of the first Urban Development Program of Vientiane Prefecture (Lao/85/003) provided ITSUP staff experiences on urban planning. The ITSUP has improved the capacity of work. Since 1985 up till now, the ITSUP made land use plans and regulations for more than 40 towns in the country, including the development plan of Luang Prabang's world heritage Town.

The high birth rate in the capital (3.22 per 1000 between 1985 and 1995), the migration towards the regional towns and particularly towards the capital, have made decision-makers more aware of the need to formulate plans at the local level. The growth of the urban population resulted in an urgent need for land either for the central or the local governments to locate collective facilities or for citizens to construct their housing. In the absence of any urban development plan (Master Plan or other), town planning regulations, a land registration system and appropriate institutional arrangements, the urban growth was uncontrolled and led to unfavourable living conditions, especially for the poorest sections of the population.

Aware of these problems and in order to meet the goals concerning urbanization and the development of human settlements included in the 2nd and 3rd Five-Year Plan for economic and social development (1986-1995), the Government decided to establish an effective urban development and planning structure. The Ministry of Communication, Transport, Post and Construction was designated as the Ministry in charge of the establishment of this structure throughout the country. A request for assistance from the United Nations Development Programme resulted in Urban Development Programme of the Vientiane Prefecture (LAO/85/003).

3.2 The Urban Development Programme for the Vientiane Prefecture (LAO/85/003)

The Urban Development Programme for the Vientiane Prefecture matched the development goals of the Government:

- to strengthen the capacity of the Government to plan and manage the economy on the basis of reliable data obtained through socio-economic surveys and studies;
- to have the existing research structure conduct all the town planning and housing studies on a national scale and carry out the implementation of the plans and their follow-up;
- to promote a mode of urban development which takes into account the limited resources of the Government by relying on the popular participation;
- to strengthen the tools for coherent programming of public-sector investments in accordance with the 3rd and 4th Five-Year Plans (1990-2000).

The project LAO/85/003 which started in January 1986 covered five areas: planning, housing, construction materials, training and information and documentation. Since the experiences of this programme were to be used for the further planning of the capital and of the country's secondary towns, the Government established the Institute of Technical Studies and Urban Planning (ITSUP) at the initial phase of the Programme to provide technical, financial and administrative support for the first two years of its implementation. The task of the Institute was to carry out research in the fields of urban planning, housing and construction materials. Given that urban planning can not be done without reliable statistics, it was also the Institute's role to develop such a data base.

The overall goal of the project was to strengthen the Government's management and planning capacity in the field of human establishments through technical support to the existing research institution so that the latter would be able carry out town planning and housing studies on a national scale and implement plans and carry out their operational follow-up when local authorities so requested. The immediate goals were the planning of the capital's development for the next ten years with the possibility of replicating the work methods in the secondary urban centers. The immediate goals were closely linked to the five areas of activity of the project:

Planning:

The goal was the formulation of a Master Plan for Vientiane, together with regulatory, zoning and administrative instruments for its implementation and the identification of financial mechanisms required for development operations. The approach developed in this way would be adapted for application in the secondary urban centers of the country.

Housing:

The goal was to conduct feasibility studies for two priority operations of urban development in Vientiane as identified in the Master Plan with the low-income population as the target group, and the programming of social housing on a larger scale. The work plan envisaged the development of a site for 55 houses which would serve as a pilot project for replicable social housing.

Construction materials:

The goal was to conduct feasibility studies that could lead to the creation of a local building materials industry to replace imported materials so as to enhance the country's self-reliance in the field of building and construction.

Training:

The goal was to train professionals and technicians required for the implementation of the urban development programmes, to carry out operational planning for the towns as well as the implementation of the plans through urban management and regulatory controls.

The main goal of the project was achieved when the Vientiane Master Plan was handed over to the authorities and was approved by the Council of Ministers on March 16, 1991. The Master Plan fixed the locations for infrastructure to meet immediate and future needs. The project also produced preliminary studies of a 50-hectare zone (Sihom) in Vientiane and proposals for its rehabilitation and development. A housing policy for the Vientiane Prefecture and for the country as a whole with special attention for the most underprivileged groups remained to be formulated.

The long-term results of the project were:

- operational and functional staff was trained to support urban planning and management activities;
- projects were formulated in priority areas;
- local teams were trained in planning techniques to replicate the experiences of Vientiane in secondary urban centers in the country.

Based on the methodology developed for the preparation of the Vientiane Master Plan, the project recommended:

- to develop a methodology adapted to the circumstances of secondary urban centers so that the local authorities could draw up structure plans in accordance with the list of priorities defined by the Government.
- to prepare detailed development plans for the priority areas identified in the Vientiane Master Plan for restructuring.
- to reactivate the National Committee created by the presidency of the Council of Ministers at the occasion of World Habitat Day in October 1986 which brought together representatives from the MCTPC and sub-committees established at the level of technical departments in the Vientiane Prefecture and those in the provinces where the housing needs of the population require concerted actions, in order to formulate the main points of a housing policy, the institutions required

for its financing and means to encourage the use of locally made construction materials.

- to continue the planning and the follow-up work identified in the Master Plan such as the improvement of the storm water drainage, the construction and/or reconstruction of the main roads, the establishment of a solid waste collection system, the strengthening of the public transport system with a fleet of buses, the drainage and treatment of waste water through a system of lagoons.
- prepare an urban development strategy in harmony with the rate of economic growth.
- to establish a property registration system in the Vientiane urban perimeter using small-format aerial photography and the land registration system.

3.3 Strengthening institutions in charge of urban development (LAO/89/002)

Based on the recommendations of Project LAO/85/003, Project LAO/89/002 "Strengthening of institutions in charge of urban development in Lao PDR" was established. It aimed at reinforcing the various institutions in charge of urban development so as to ensure the viability of the integrated urban development process which the previous project had launched.

The development goal of the Government was to control the accelerated and disorderly development that was taking place in the urban centers. The priorities were as follows:

- to improve the living and housing conditions of the urban population;
- to enable the most underprivileged to have access to decent housing and basic urban services, in the town's most underprivileged neighborhoods;
- to ensure the supply of serviced land corresponding to the demand of as many people as possible and at an adjusted prices;
- to develop harmonious relations between urban and rural areas;
- to strengthen the institutional capacities of communities for the development of human settlements.

As far as the town of Vientiane was concerned, its challenge was the improvement of the most underprivileged neighborhoods by sustainable and replicable rehabilitation projects. However, the development of vacant or recoverable land was also needed to accommodate new immigrants to the city (estimated at 60,000). Faced with these two challenges, the solutions were to densify and rehabilitate the underprivileged neighborhoods.

The project strategy consisted of making three types of improvements:

- in Vientiane, the rehabilitation of underprivileged neighborhoods (the Sihom area) and the creation of new residential areas;
- in the Vientiane plain, the construction of socio-economic facilities in the relay-centers around Vientiane
- in these sites, the promotion of production centers for local materials.

The Institute for Technical Studies and Urban Planning had learned to prepare large-scale plans providing the Government with a guide and reference document for any urban intervention including zoning. However, the Institute lacked aerial photographs which could provide basic information on current land use. The Government therefore needed a low-cost and quick means to become self-sufficient in the production of aerial photographs required for urban planning. For this purpose, it developed the capacity of the ITSUP to produce small-format aerial photographs which could be used to produce base maps.

In 1995, the urban plan of Luang Prabang was completed and a dozen other plans were being drafted. The drafting of the plan was accompanied by training seminars over a two-year period, including seminars on its implementation. The urban plan included zoning and a series of regulations related to its use. The classification of Luang Prabang as a UNESCO World Heritage Site showed that the urban plan and the protection zones included in it are being enforced. The experience in planning Luang Prabang served as a model in the formulation of urban plans for other secondary towns.

3.4 Detailed planning: the rehabilitation of Sihom (LAO/89/C01)

The Master Plan of Vientiane identified a number of projects which required priority attention from the Government in order to improve the living conditions of the population of the town. One of the priorities identified in the Master Plan was the improvement of the Sihom area which is one of the neighborhoods located in the central part of Vientiane. The project to improve the Sihom area was called the "Rehabilitation of Sihom". It was implemented by the Vientiane Prefecture with financial assistance from the United Nations Capital Development Fund and technical assistance from the United Nations Centre for Human Settlements (Habitat).

The project area covers 47 hectares and had approximately 8 200 inhabitants or 174 inhabitants per hectare which is high compared with the average density in urban Vientiane of 54 inhabitants per hectare. There are 1,350 households living in seven villages with an average household size of 6.1 persons. There are approximately 700 buildings in the area of which 10-15 per cent have a non-residential use. Most dwellings are wooden houses in the traditional Lao style, occupied by a single household. It is therefore assumed that many other households rent apartments in residential and non-residential buildings.

Access to the project area is relatively easy, because Sihom is situated in the heart of Vientiane and some major roads of Vientiane pass through the area. But activities sometimes bring dust and noise to the population and the internal road network of Sihom is inadequate, because roads are often narrow. There has been a largely unplanned urbanization of the area with many houses constructed in a haphazard manner. The area is connected to the city's water supply network. The capacity of

the water distribution network is too low for the growing population. Moreover, the quality is insufficient due to the poor connections and the many leakage.

The Nam Pasak which crosses the project area is one of the major natural storm water drains of Vientiane. Water flows in the northern direction, away from the Mekong river, at a slope of 1:2500. Because of the sandy soil and the slow slope, the Nam Pasak meanders through Sihom over a length of 4,300 m from the Mekong river, while the distance is only 3,300 m in a straight line.

The canal is in a bad condition. After 1960, the population in this area began to increase rapidly. New inhabitants constructed their provisional housing on the public land bordering the Nam Pasak without any official authorization. This development affected the functioning of the Nam Pasak as a major natural drain since 1970.

The overall objective of the project is the improvement of the living conditions of the population. The core activity is the realignment of the Nam Pasak. In addition, the project envisages the improvement of the infrastructure in the area (roads, drains, sewerage, electricity, water supply) and selected shelter regularization and upgrading operations. The realignment of the Nam Pasak may facilitate irrigation of agricultural land to the north of Sihom.

The experiences of the project will contribute towards the development of appropriate technical solutions for the provision of urban infrastructure.

In the project, cost recovery as a development financing strategy will be tested. Specific mechanisms suggested are the sale of land rights for the land parcels created by the realignment of the canal, infrastructure maintenance fees. Revolving funds for housing credit will help the population.

4. Agenda 21 and the Global Strategy for Shelter

The Government of the Lao PDR has taken account of Agenda 21 and its guidelines in the formulation of its policies. The Government's determination to deal with the issues raised in the United Nations Conference on Environment and Development in Rio de Janeiro resulted in the national Environmental Action Plan which was drafted in 1993 by the Sciences, Technology and Environmental Organization in the Office of the Prime Minister.

The Environment Action Plan has three themes. The first theme of the Plan is that the development of an institutional and policy framework to support the conservation of the country's natural resources while maximizing revenue generation and maintaining the livelihood of the rural population is a primary development task for the whole society. The second theme is that the scope and priority actions of the Environmental Action Plan are consistent with the Socio-Economic Development Plan to the Year 2000 which was adopted by the

Government of the Lao PDR. The third theme is that the Government and society while recognizing the importance of environmental concerns and sustainable development do not yet have a set of processes to incorporate environmental planning and management into wider social and economic development.

Chapter 7 of Agenda 21 deals with the development of sustainable human settlements. It states that the overall objective for human settlements development is the improvement of the social, economic and environmental quality of human settlements and the living and working environment of all people. The chapter mentions in particular: the provision of adequate shelter for all, the improvement of human settlements management, the promotion of sustainable land use planning and management, the promotion of an integrated provision of environmental infrastructure: water, sanitation, drainage and solid waste management.

The provision of adequate shelter for all

The provision of housing was not on the list of priorities of the Government until the 1980's. Indeed, the decrease in urban population recorded in the 1970's as a result of the departure of 400,000 persons out of a population of 4 million, especially from the capital of Vientiane, reduced the pressure on housing and the urban infrastructures. Moreover, civil servants were already benefiting from government housing.

The population growth rate, currently estimated at 2.4% per cent for the country as a whole and 3.22 per cent for Vientiane, as well as the increased migration to the urban areas led to the prognosis that the urban population of the Lao PDR will increase from 19 per cent at present to 25 per cent in the year 2000. Unplanned housing is now developing in the capital even though slums are not yet visible.

The Government is therefore determined adopt a social housing policy in order:

- to meet the needs of the most underprivileged groups in society;
- to avoid the development of informal housing without basic infrastructure;
- to seek the support of private developers; and
- to make the adjustments to the National Regulations on Town Planning to allow the involvement of the private sector alongside the public sector in programmes for housing development;
- to adjust the municipal budget in order to meet the needs for funds to cover public expenditures on housing and the servicing of land.

The Department of Housing and Town Planning has already formulated guidelines for a National Housing Strategy from now until the year 2000.

Studies started at ITSUP to determine a model of collective architectures plans are now being designed at ITSUP for a model of social housing using local construction materials and in accordance with the characteristics of the Lao society and household

Improvement of human settlements management

There is a trend within the central Government to give more autonomy to the local authorities represented by ministerial units in the main provincial towns and villages. Professionals in the provinces receive training to enable the provincial administrations to manage the provincial interests more independently, to involve the population more and to meet their needs better. Development plans for the main provincial towns are drafted in cooperation with local professionals and implemented by the latter.

In the absence of a urban local government for the city of Vientiane, the management of the town is in the hands of the Vientiane Prefecture which also manages the rural areas of the Prefecture. The Vientiane Urban Development Project financed by a loan from the Asian Development Bank includes the establishment of a municipal administration in charge of the urban management of Vientiane. This has led to the establishment of the Vientiane Urban Development Management Committee (VUDMC) which should initially manage the Vientiane Urban Development Project. This administrative organization will make it possible to meet the population's needs better and to serve the residential areas with infrastructure in a more homogeneous and coherent way.

The promotion of sustainable land-use planning and management

In order to carry out the planning of the secondary urban centers, a mapping system for the centers had to be created. The equipment used by the National Geographic Department is highly technical and was not compatible with immediate needs of the ITSUP for the planning of the secondary towns. It could not provide the base maps in the quantities required. Another suitable technology was therefore introduced: small-format aerial photography, a technique already adopted in some other countries for the planning of urban centers. The establishment of a digital urban mapping section at ITSUP facilitated the supply of base maps for the planning of the secondary towns.

Although the Vientiane Master Plan had been approved in 1991, an urban planning methodology remained to be developed for the planning of the secondary towns. Luang Prabang is the first provincial town for which an urban plan was produced. This experience made it possible to develop a planning methodology and to train local professionals in this methodology. The formulation of urban plans for all provincial capitals is now well underway and several plans have already been completed or are being drafted. The drafting of an urban plan relies on the collection of data about the town which makes it possible to discern the urban components and to integrate the development of the town in the regional context so as to maximize its development potentials while taking into account social, economic and ecological conditions.

The promotion of an integrated provision of environmental infrastructures: water, sanitation, drainage and solid waste management

The Vientiane Urban Development Project and the Secondary Towns Integrated Urban Development Project both deal with the integrated improvement of environmental infrastructure in urban areas. In Vientiane, the programme deals with road reconstruction, reinforcement, widening, surface improvement, the improvement and extension of storm water drainage, the improvement and extension of the collection and disposal of domestic solid waste, the construction of septic tanks and the installation of sewers for some areas. The Secondary Towns Integrated Urban Development Project will involve the improvement of environmental infrastructure in the provincial capitals, but the priorities for this project have not yet been set.

The promotion of sustainable energy and transport systems in human settlements

Given the level of economic development in the Lao PDR and even in the urban areas of the country, sustainable energy use and the introduction of public transport systems does not yet have a high priority for the Government. However, in Vientiane in particular, the ownership and use of private vehicles is rapidly increasing resulting in an increase in petrol consumption, air and noise pollution and longer commuting times. Soon, the Government will therefore have to develop policies for energy conservation and public transport system.

The promotion of a sustainable construction industry

In 1987, a construction materials research unit was established at the ITSUP to promote the production and use of local building materials so as to enhance the use of the country's national resources and to replace imported construction materials. This goal was also included in the National Housing Strategy. Wood consumption is still high, but efforts are being made to avoid deforestation by reforestation operations and the use of soft wood and common species for construction purposes.

The promotion of human resource development and capacity-building for human settlement development

The Lao PDR with its small population and its low levels of education has a serious shortage of professionals in all fields including that of urban planning and management. The Government is well aware of the problems resulting from a shortage of qualified manpower. All most past and current projects and programmes dealing with urban development planning and management had or have a training and education component to provide on-the-job or external training and education. Staff from the Ministry of Communication, Transport, Post and Construction, and in particular of the Institute for Technical Studies and Urban Planning, has received training outside the Lao PDR, while staff of the provincial towns has been trained in Vientiane.

5. Best Practices

5.1 Partnership for urban heritage conservation, natural urban environment protection and development planning in Luang Prabang

Identification tag

- Key Organizations

- * Ministry of Communication, Transport, Post and Construction (MCTPC)
Mr Seune Phetsanghane, Vice-Minister
- * Institute of Technical Studies and Urban Planning (ITSUP)
Mr Keophilavanh Aphaylat, Adjoint Director
- * Luang Prabang Province
- * Luang Prabang Municipality/District
- * United Nations Centre for Human Settlements (Habitat)
- * United Nations Development Programme-Vientiane
- * Embassy of France in Vientiane

- Key Dates

- * February 1992: Demolition of the old Luang Prabang Post Office dating from the turn of the century, followed by an outcry by concerned citizens.
- * November 1992: High level response by President Kaysone Phomvihane pressing for conservation action.
- * December 1992: First contact between MCTPC/ITSUP and Luang Prabang local authorities.
- * October 1993: World Habitat Day and first workshop on the conservation of Luang Prabang.
- * January 1993 to July 1994: Planning Studies
- * 30 August 1994: Approval of development control legislation by local authorities.
- * February 1994: Submission of Luang Prabang as a UNESCO World Heritage site.
- * 7 December 1995: Classification of Luang Prabang as a World Heritage Site by UNESCO

- Short Description

Lao PDR is a landlocked country of 4.5 million people. Recent development has put tremendous pressure on natural resources, land and heritage sites, but as of 1991, only the capital, Vientiane (pop. 165 000) had urban development legislation. Planning and development regulations were non-existent in the rest of the country and Luang Prabang, a beautiful northern city was threatened by this swift and unregulated growth. Former capital of the Lan Xang Kingdom from 1349 to 1560, and the Luang Prabang Kingdom from 1698 to 1893, the city is set in a small

mountain encircled plain at the confluence of the Mekong and Nam Khan rivers. 24 per cent of its area is forested or cultivable and population density is only 63 persons/ha. Considered the best preserved ancient city in SE Asia (UNESCO World Heritage Letter n.5, June 94), Luang Prabang is outstanding for its sixteenth century temples, traditional Lao houses and colonial buildings. The Ministry of culture has classified 33 temples and 111 other structures. A rapid and cost-effective base mapping process contributed to the planning approach. This process is described in the supplementary best practice document submitted by Lao PDR.

Isolation and historical events have left the city intact. After some historical buildings were destroyed, the Government requested planning studies emphasizing heritage conservation. There were two major difficulties: establishing the heritage perimeter and enacting protective regulations. A partnership of the central government, local authorities and local organizations designed a heritage protection zone (HPZ) to preserve the quality of life while expanding the city's tourist potential and providing a framework for developing services.

Impact Assessment

- Conservation of the quality of the urban environment

The existing urban environment and lifestyle of the population is preserved by: allowing small business, cottage industries and handicraft production to co-exist with living areas, by limiting the height of new buildings to the height of surrounding buildings and by forbidding noisy and polluting activities in the city. The constructable area is kept at 26 per cent (200 ha) of the HPZ and urban perimeter maintaining a population density of 63 persons/ha, which may be densified by using vacant constructable land.

- Nature environment protection

Of the 780 ha. comprising HPZ and urban perimeter, more than 47 per cent (364 ha.) are preserved as green spaces, hilly areas (including Phu Si Hill in the urban area), wetlands and cultivable areas, and an additional 27 per cent (216 ha) is consist of the Mekong and Nam Khane Rivers. Within private property, cutting large trees without permission is forbidden by the new legislation.

- Urban Heritage conservation

34 wats (pagodas), out of 43 have been classified as historical monuments, including two from the years 1377 and 1560. 111 other buildings have been classified, including typical Lao wooden houses, typical Chinese style shop houses, Lao colonial buildings and administrative buildings. Those have been carefully recorded by major drawings and photographs. Every building whether classified as an historical monument or not, now requires both a demolition permit and a building permit for construction and/or any alteration. Strict regulations control the

appearance of all new public buildings, such as hotels and guest houses, including demolition and construction permits (for any alteration), the shape of the roof, roofing materials and exterior colors.

- Development planning

Zoning maps and urban regulations allow, under specific rules, development area outside HPZ to promote also economic development in a long term approach.

Sustainability and potential for broader application

- Raising awareness

Through actions like the 1st Workshop on the Conservation of Luang Prabang in October 1993, and a series of local seminars with mass organizations, awareness was created at all levels on quality of the living environment, conservation of the natural urban environment and protection of the urban heritage. This may be seen by changes in behaviour patterns and planning decisions including better maintenance of privately owned buildings, an increase in the number of "old" buildings being renovated, creation of at least two new public parks, proposals for a pedestrian street, relocation of two markets and barring noisy speedboats (long tails) from cruising in the heritage zone by relocating their wharf outside of city limits.

- Methodology

The partnership set up to apply a simple methodology involving central and local levels resulted in a structure plan, a land use plan and development control legislation approval, thereby making it easy to replicate the same partnership and methodology in other secondary towns in the country. The methodology that was designated for the preparation of the urban plans relies on the participation of existing national professionals and staff.

- Involvement of local authorities at all stages of the planning process

Because human resources are scarce, a creative technical partnership was effected between the central urban planning agency and the local planning department in which the counterpart local planning team participates. Limited technical assistance has been made available in short separate missions for assisting in designing the work plan, giving punctual guidance and follow up on the progress. The planning work was therefore not done by consultants but every step involved the local team which had responsibility for many of them. Throughout the main phases: work diagnosis, development scenarios, identification of key projects, the feedback and participation of local authorities was sought and obtained. The team of five local staff of ITSUP has been trained and is able to undertake complementary urban studies and proceed with revisions to development control legislation as appropriate and to perform all activities necessary to produce the base maps in any location within Lao PDR for urban development and other purposes.

Narrative summary

The methods used in the implementation of the urban plan took two years and can be divided as follows:

- Analysis: data collection, field survey, data processing
- Diagnosis of the city's positive and negative characteristics for balanced development
- Debate of different opportunities of development of the city
- Selection of one development scenario
- Realization of the urban regulation and zoning maps
- Presentation and debates with local authorities for approval
- Modification of the urban regulation and zoning maps as requested by the local authorities
- Approval of the regulation and zoning maps
- Implementation of the regulation by local authorities through construction authorization

This process is a comprehensive, multi-disciplinary and long term approach which improves the integration between social, architectural and environmental issues. However, this approach also promotes social acceptance and consensus and partnerships.

- Social acceptance and consensus

Social acceptance and consensus have been the guiding principles behind consultations on the urban plan of Luang Prabang, especially during the identification of development objectives (proposals for development alternatives) and the establishing of urban regulations. Round table meetings have brought together representatives from various organizations and administrations such as:

- * the Provincial Council
- * Provincial members of the National Assembly
- * Provincial representatives of Ministries
- * the Women's Union
- * the Trade Union Organization
- * the Buddhist Federation
- * the Council of Elders

These round table discussions have enabled the inclusion of participants' recommendations regarding possible development scenarios and the final urban plan.

- Partnerships

The development of the plan has been carried out with close collaboration between the various organizations involved. Now that the plan is completed, this partnership will be maintained as ITSUP continues to train architects and other professionals involved in urban issues and town administration promoting consistent quality in town planning.

- Proven in practice

The zoning and urban regulation plans were approved at provincial council level by the Governor of Luang Prabang in March 1995. Though the urban regulation plan is still awaiting approval from the Council of Ministers, (as per decree 09/CCM, 1/02/91), it is already being put into action. Building permits are being issued locally in accordance with the urban plan.

The methodology employed can be used to develop urban plans for other towns even when they are different in nature from Luang Prabang. Two more urban plans are under development at the ITSUP. The team responsible for this mainly consists of professionals who worked on the Luang Prabang project. In the long term, other urban plans have been proposed.

- Confronting the major issues of Habitat II

Major issues confronted are: urban environment and health, governance. Specifically this best practice addresses: city core revival and rehabilitation, effective use of and access to open space, recreation and the greening of the city, public administration and management, community co-operation and generation of civic spirit.

5.2 Small Format Aerial Photography (SFAP): a fast, reliable and affordable base mapping technology for urban planning and management in the Lao PDR

Identification tag

- Names of key Organizations

- * Ministry of Communication, Transport, Post and Construction (MCTPC)
- * Mr. Seune Phetsanghane, Vice-Minister
- * Institute for Technical Studies and Urban Planning (ITSUP)
- * Mr. Keophilavanh Aphaylat, Adjoint-Director
- * Province of Luang Prabang
- * Municipality/District of Luang Prabang
- * Australian Institute of Spatial Information Sciences and Technology (AISIST),
- * Land Information Centre (LIC), Australia
- * United Nations Centre for Human Settlements (Habitat)
- * United Nations Development Programme-Vientiane

- Key dates

- * Lao authorities obtain basic information on SFAP: April 1988.
- * Government decision to include SFAP in UNDP/HABITAT technical assistance project LAO/89/002: September 1989.
- * Project LAO/89/002 approved: August 1991.
- * AISIST/LIC (Australia) selected as sub-contractor: May 1992.
- * Inception visit by subcontractor AISIST/LIC: July 1992.
- * Equipment delivered and commissioned at ITSUP: November 1992.
- * Formal classroom training: November 1992 to June 1993.
- * 1st stage practical training, demonstration by subcontractor, Sihom area in Vientiane, maps production: Dec. 92.
- * 2nd stage practical training, guided hands-on experience, Luang Prabang and Houayxai, maps production: Jan. 93.
- * 3rd stage practical training, central area Vientiane: December 1993.
- * TCDC Regional SFAP Workshop: 2 to 6 May 1994

- Short description

The Lao PDR is a small landlocked country in the middle of the Indo-Chinese peninsula with a population of 4.5 million. With rapid opening up in recent years, safeguarded natural resources, national heritage sites and buildings and urban land came under tremendous pressure from developers in various towns of the country. As of 1991, only the capital city, Vientiane (pop. 165 000), had an urban development plan and development control legislation. To face the urgent need for base maps of other towns as a basis for preparing urban development plans and legislation to guide urban management on the one hand, and given the unaffordable

cost of producing reliable maps through classical means on the other hand, the Lao Government opted for self-reliance in base map production by using a computer assisted production technology using small format aerial photography.

By utilizing a small format metric camera (Rollei 6006), a light aircraft, a 56 mm analytical stereo plotter and a micro-computer, a local team of architects, engineers and photogrammetrists from ITSUP are now able to produce base maps of any of the country's urban areas. SFAP has been used for Luang Prabang (best practice) base maps and zonings.

Impact Assessment and potential for broader application

By mastering the use of small format aerial photography (SFAP) technology, the Lao PDR, listed by the UN as one of the Least Developed Countries (LDCs), has become completely independent of outside assistance to produce accurate base maps for urban planning, urban rehabilitation and urban management purposes.

The first town maps produced by the Lao Institute for Technical Studies and Town Planning (ITSUP-Vientiane) using SFAP showed a map accuracy of 25 cm. per 1,000 m. on the printed map, which is more than adequate for all town map purposes.

The ITSUP is currently one of the only governmental urban planning office in the region which is completely self-reliant in expertise and equipment to produce quickly upon request base maps of any urban site in the country.

In just over twelve months (November 1992 to December 1993), a group of five (5) professionals, architects, engineers and one photogrammetrist, with no previous experience of SFAP technology, were trained to produce base maps for urban planning and management at scales ranging from 1:500 to 1:20,000.

The cost of producing base maps using SFAP technology is about 6 to 10 times less expensive than using a conventional 23 cm x 23 cm camera and sophisticated analytical stereo plotters. In an actual comparison, using the mapping of 51 ha. in the Sihom area in Vientiane, conventional ground geodetic survey method at cadastral accuracy took 84 work days at a cost of US\$17,513. For the same area using SFAP technology, it took ITSUP 18 work days at a cost of US\$2,975.

Since SFAP technology uses a stereoscopic instrument (ADAM MPS-2), three dimensional maps or contoured maps with X, Y and Z coordinates may be produced. The technology is valid for large scale mapping of approximately 100 sq.km., i.e. 10km. by 10km., because of the time required to establish the geometrically accurate "stereo models".

The total cost of equipment purchase, transport and commissioning, and local staff training was US\$240,000.

Sustainability

The trained Lao professionals of ITSUP have a demonstrated capacity to produce base maps using small format aerial photography. Up to February 1995 they have undertaken photography and mapping missions in two different sites without external consultant assistance or supervision. The process is completely sustainable within the Lao PDR.

Since the complete exercise has been undertaken in a country of the region with one of the smallest population and limited qualified human resources, the SFAP technology can be replicated in other countries possessing a similar or better resources base without difficulty.

It has been demonstrated that the cost of producing small format aerial photographs and base maps by micro-computer technology is low and would prove affordable by countries of the region, the only exception being countries where specialist labour rates would be high given the time required to establish geometrically accurate "stereo models".

Sponsored by a special UNDP Fund for Technical Cooperation between Developing Countries (TCDC), an international workshop gathering 16 countries was held in May 1994 to disseminate the small format air photo technology for base maps production in other countries of the region. In the final words of the Philippines representative at the Workshop : "Indeed SFAP coupled with digital mapping appears to be not only a fast but also an affordable system of producing large scale planning maps with good accuracy. Our visit to ITSUP showed us what this technology can produce. We shall return to our respective countries very much inspired by what we have experienced. The team of young professionals have demonstrated to us how it can be done and how it should be done. We hope that in the very near future we can proudly announce that we have done it too".

Narrative summary

The SFAP technology process may be summarized as follows:

- * the area to be photographed and mapped is determined;
- * control points are marked on the ground within the area and are surveyed by ground methods;
- * a flight plan is prepared;
- * air photos of the area are taken (60 per cent forward overlap, 20 per cent side overlap) using a small format camera and a locally available flying platform (small aircraft or helicopter);
- * films are processed, and photos and slides are printed;
- * air photos are digitized using a micro-computer, a three dimensional digitizer (ADAM MPS-2 Micro Photogrammetric System) and mapping and triangulation software;
- * base maps are printed using a pen or ink-jet plotter at required scale

Although the SFAP process has been selected as the most appropriate, some difficulties remain. SFAP technology is cheaper than conventional technology using a 23 x 23 camera and stereo plotters, but it is relatively new to Laos so to exploit it to its fullest potential, increased professional awareness is necessary. Also, the map making process is dependent on climate and availability of helicopters.

6. Priority issues

6.1 Public Investment Programme (1994-2000)

In 1994, the Government of the Lao PDR prepared the Public Investment Programme (PIP) for the period 1994-2000. The purpose of the Public Investment Programme is to assign priorities and to control public sector capital investment as well as to coordinate the aid received from donors in order to carry out a coherent investment programme which reflects the needs of the people of the Lao PDR and the priorities determined by their Government.

According to the Public Investment Programme (1994-2000) Outline, the first priority in the Public Investment Programme is the development of social services - health and education, with particular emphasis on the development of these services in rural areas which to date have not fully shared in the benefits of economic reform. The rapid development of these services is important not only to improve the social conditions of the Lao people, but increasingly to develop the necessary human capital to sustain long-term development.

The development of infrastructure is another high priority, with the greatest emphasis placed on the development of the road system. Since the introduction of the New Economic Mechanism, a relatively high growth rate has been achieved. Much of the growth has come from the more efficient allocation of existing resources, made possible by the opening of markets. This opening of markets has been achieved by a mixture of policy reform and infrastructure development to physically create access to markets. This process is however far from complete.

Policy reform to improve the efficiency of markets is continuing and will complement the expenditures proposed under the Public Investment Programme to improve infrastructure, primarily to improve the accessibility of markets. The Public Investment Programme places an increasing emphasis on extending all types of distribution networks into the rural areas, including feeder roads, rural electrification and rural telephone systems. These infrastructure developments will not only improve market access, but will also improve the delivery of social services into rural areas and will contribute directly to an improvement of the socio-economic conditions in these areas.

The provision of safe drinking water in rural areas is of concern. Currently less than 20 per cent of the rural dwellers have safe drinking water supplies. Education of

Existing urban water supply system in the urban areas are generally in poor conditions, due to the virtual absence of maintenance and inadequate investments during the past two decades, resulting in significant water leakages and contamination of reservoir supplies. Lack of maintenance results from a combination of inadequate funding and limited technical skills of water supply operators and supply technicians. The Government's objective is to improve the existing water supply systems and increase urban water supply coverage and to provide piped water supply to all 17 provincial capitals by the end of the decade.

Ground water contamination as a result of inadequate waste water treatment is an increasingly serious issue in Vientiane and other towns. The urban sanitation system is rudimentary: waste disposal relies on individual systems (septic tanks and dry pit latrines) which are well adapted to local conditions as long as population densities are low and septic tanks are regularly desludged. However, there is a lack of adequate regulations and enforcement systems. Effluent invariably overflows into ponds in adjacent areas resulting in serious contamination of surface and ground water.

Storm water drainage is also a serious issue in Vientiane and some secondary towns. The present system suffers from inadequate design and serious lack of maintenance. Most drains are clogged with garbage as a result of the absence of an organized system for solid waste disposal. Rehabilitation of the storm water drainage system requires significant investments which are not warranted unless an organized system of solid waste disposal is introduced simultaneously.

The planning and management of these developments will require strong institutional support which is currently not available in Vientiane and the other urban centres. Institutional restructuring is therefore another priority. It will be essential to establish municipal governments for the urban centres in the Lao PDR to plan and control the development of the urban centres and to manage the urban services which will have to be financed primarily out of its revenue base so as to match responsibility with capacity. Capacity-building for urban planning and management will need to include training programmes for staff currently employed to upgrade skills consistent with the current job requirements and in line with the tasks such staff will be required to undertake in a new municipal administration.

PART C: THE NATIONAL PLAN OF ACTION

1. Strategies and policies

At this moment, there is no long-term urban infrastructure development strategy. The planning process depends mainly on the availability of funds for the execution of specific projects. The allocations are made through the yearly budgets. There is no obligation on the part of the local administration for the recovery of capital costs or maintenance costs. The Government of the Lao PDR is, however, undertaking the development of a policy framework and comprehensive planning guidelines to promote the orderly and efficient development of urban areas and devise solutions to growing environmental problems.

In view of the serious shortage of urban planning and management professionals in the country and the lack of experience with managing urban areas in a market economy, the Government and the donor agencies have generally followed a strategy of pilot and demonstration projects, primarily in Vientiane. Through these projects, government staff is trained in new skills and gains experience in the planning, implementation and management of urban services and the Government can test solutions to the problems it is facing in the urban areas. Once experience and skills have been gained and solutions have been devised, they are expected to be transferred and applied in other areas, i.e. other parts of Vientiane or other towns in the country.

In this way, the formulation of the Master Plan for Vientiane in the late 1980s and the Integrated Urban Development Plan for Vientiane in the middle of the 1990s, the establishment of the Institute for Technical Studies and Urban Planning as a resource centre for urban development in the Lao PDR, the use of small-format aerial photography for urban planning and management, the urban heritage conservation as part of the urban planning for Luang Prabang, the rehabilitation of the unplanned and underserviced neighbourhood of Sihom in Vientiane and the establishment of the Vientiane Urban Development and Management Committee as a proto-municipal administration can all be seen as such pilot and demonstration projects and programmes. The challenge for the Government of the Lao PDR is now to disseminate, apply and institutionalize these experiences in other parts of the country and the city of Vientiane.

On the basis of these experiences, a series of new policies is being designed to improve the conditions in the urban centres of the country. Municipal administrations are planned to be established with the responsibility for urban development, communities will be involved in planning and implementation and private-sector investments in land development and community infrastructure will be encouraged. Through its proposed Department of Municipal Affairs, the Government will provide guidance to municipal bodies in community participation, local resources mobilization, urban planning and administration and environmental management.

It is the policy of the Government of the Lao PDR to provide piped water supply and on-site sanitation in all urban areas and to provide a sewerage system in Vientiane, if affordable. There is no specific strategy so far for solid waste management, but a study is being undertaken with support from the United Nations Development Programme. The Government has decided to make urban services (i.e. water supply, sanitation and solid waste management) pay for themselves with the respective urban local governments being responsible for cost recovery. With this basic aim, municipal administrations are proposed for the urban areas of Vientiane, Savannakhet, Pakse and Thakek, while a municipal administration is already operational in Luang Prabang.

2. Objectives

The objectives for a longer-term development programme for Vientiane as formulated in the Vientiane Integrated Urban Development Project are:

- * to improve the physical well-being and health of the population of Vientiane through investments in critical urban infrastructure and sanitation and in environmental improvements;
- * to institutionalize urban planning and strengthen the development control system through the implementation of a comprehensive land use policy and plan;
- * to establish an institution dedicated to the management of Vientiane's urban infrastructure and municipal services together with upgrading staff skills and the development of effective operations and maintenance regimes;
- * to increase the capacity of the sector agencies to mobilize financial resources to ensure the sustainability of urban investments.

Such a longer-term development programme has not yet been formulated for the secondary towns of the Lao PDR such as Luang Prabang, Savannakhet and Pakse. However, consultants are currently assisting the Government of the Lao PDR to apply the experiences of Vientiane and Luang Prabang to formulate an integrated urban development programme for these three towns. The above objective for the longer-term development of the secondary towns will therefore most likely be the same as those for Vientiane, although some of the planning and management tools developed for Vientiane may have to be adapted for application in the secondary towns.

3. Activities

The activities to be undertaken to achieve the above objectives for Vientiane and the secondary towns fall into two categories: a) investments in urban infrastructure and b) institutional strengthening for urban planning and management.

Investments in urban infrastructure

In preparation for the Vientiane Integrated Urban Development Project, a study was made to review and revise the 1989 Master Plan for Vientiane. Based on the surveys of the area and study of secondary data and in view of the objectives of the Integrated Urban Development Plan for Vientiane, the study produced an Integrated Urban Development Plan for Vientiane which sets out a mutually compatible land use pattern, enhances and conserves the quality of the city's historic heritage and natural resources, distributes social amenities and facilities among all areas of the city, provide transport and environmental infrastructure which is both efficient and safe and provides a system for the management and control of urban development. This plan serves as the basis for investments in urban infrastructure in Vientiane.

On the basis of this Integrated Urban Development Plan an Infrastructure Improvement Programme for Vientiane for the next ten years was formulated. The following are the components of this infrastructure improvement programme:

- * The improvement of the drainage system by re-sectioning the main storm water drainage channels with concrete lining and appropriate longitudinal slope to maintain a self-cleaning velocity, the construction of three retarding basins and the repair and renovation of the existing cross drainage works. The results of these improvements would be a reduction in the damage caused by flooding in the high-value, central part of the urban area and a alleviation of water logging in low-income, high-density areas.
- * The development of an efficient system of collection of all solid waste generated from domestic and non-domestic sources and its disposal by sanitary landfill through suitable landfill site management practices. The results of these investments would be an extension of the coverage of the solid waste collection system to the entire urban population and an improvement in the final disposal at the landfill site
- * The promotion of the proper construction and operation of on-site sanitation systems (in particular septic tanks and soak pits), because of the high costs of and unsuitable conditions for a conventional sewerage system (small-bore sewers may be introduced in the central areas of Vientiane beyond the year 2000). As a result of these improvements, the living environment in residential and commercial areas would be improved and the occurrence of pollution of open surface water by faecal matter would be reduced.

* An improvement in the system for desludging of septic tanks and the disposal of sludge in sanitary land fill sites and the construction of stabilization ponds for the treatment of the contents of holding tanks and the effluent of small-bore sewers. As a result, the environmental conditions in the city would improve.

* The construction, widening, reconstruction and improvement of roads and footpaths and the introduction of traffic management. These measures will maintain and strengthen the integrity of the main arterial road network, improve the flow of traffic through the network, improve circulation and safety and provide more all-weather access to urban villages and sub-centres.

* The development of areas with degraded and sub-optimal land use through the construction of new roads and the application of land pooling and land readjustment for sale to private developers for development in accordance with the designated land use. This programme component will be an efficient and affordable means for a controlled expansion of the city and an increased supply of serviced land for urban development.

As mentioned above, such a longer-term infrastructure development programme has not yet been formulated for the secondary towns of the Lao PDR. However, on the basis of preliminary reports from the preparatory phase of the Secondary Towns Integrated Urban Development Project, the following activities are likely to be undertaken:

* The rehabilitation, improvement and extension of the water supply system. In selected secondary towns, water supply projects have been completed or are ongoing; In other towns, such projects are being planned. The extension or improvement of the water supply network into selected areas as part of neighbourhood upgrading schemes may be necessary.

* The improvement of the drainage system through the development of a complete network of inter-connected drains leading to a final point of discharge and the improvement of the design of channel types. Such improvements will reduce the damage by flooding during the rainy season, prolong the investment in road improvements and improve on the disposal of feacally contaminated sullage water.

* The introduction of an effective, efficient and sustainable system for the collection and disposal of solid waste. This will require the purchase of waste collection vehicles, the improvement of the landfill sites, regulatory and organizational measures to improve revenue collection, the design of a suitable operating system and fee structure, environmental education and community participation in solid waste collection.

* The expansion of the septic-tank desludging system, a community programme for the improvement of existing latrines and septic tanks and the introduction and enforcement of building regulations which require new houses to be fitted with adequate septic tanks and soak-aways.

* The gradual improvement of the roads with the increase in motorized vehicles and the introduction of some forms of traffic management and enforcement of traffic regulations. The first measure will reduce the pollution of the air with dust, while the second will increase traffic safety.

Institutional strengthening and capacity building

The Integrated Urban Development Programme for Vientiane includes several components related to institutional development towards stronger and self-sustaining urban institutions and municipal administrations. This will ensure the adequate management, operation and maintenance of the urban infrastructure, local resource mobilization, project sustainability, cost recovery, beneficiary consultation and community participation, not only in Vientiane, but also in the secondary towns of the Lao PDR:

* The establishment of the Vientiane Urban Development and Management Committee as a dedicated body to manage the city's urban infrastructure and services efficiently and effectively and ensure the planned and regular maintenance of the urban infrastructure.

* The establishment of a municipal administration for Vientiane with full responsibility for maintaining urban infrastructure, planning and controlling land use and the delivery of urban services, on the basis of the experiences of the Committee. For the municipal administration a framework needs to be prepared including its charter, role, responsibilities, staffing structure, administrative, financial and technical procedures and regulations.

* The establishment of municipal administrations in the secondary towns of the Lao PDR following the pattern of the municipal administration of Vientiane and supported by a central level organization, the Department of Municipal Affairs. The development of basic planning tools for the municipal administrations to manage and guide urban growth and the development of a local government finance system.

* The creation of a Department of Municipal Affairs in the central Government to plan, guide and monitor the establishment and functioning of municipal bodies in secondary towns country-wide in a planned and coordinated manner in terms of duties and standards, community participation and by-laws. The Department will also serve as the interface point for municipalities in matters requiring technical guidance from central ministries and departments.

* The identification of staff requirements and skill deficiencies, and the subsequent upgrading of the skills of staff of the Vientiane Urban Development and Management Committee, the staff of the Department of Municipal Affairs and the staff of the secondary towns involved in urban planning and management. The development of the skills of the staff is critical for undertaking sector expansion, typically through the Secondary Towns Integrated Urban Development Programme.

This will include the strengthening of the capacity of the Institute of Technical Studies and Urban Planning and subsequently of the municipal administrations to prepare and update land use maps by installing a geographical information system and train operating staff to maintain land use maps.

* The development of social action programme for a public awareness creation and community participation to educate the community and involve it in the planning and implementation, operation and maintenance of urban infrastructure. The expected results of the social action programme are a high degree of community involvement in urban management, the incorporation of a social bias in the operations of the Vientiane Urban Development and Management Committee, enhanced benefits realized by the community and a more sustainable urban infrastructure development and urban service delivery.

* The privatization of the delivery of certain basic services in line with both national and international trends. While the private sector can deliver urban services in a cost-effective way, there is a need to develop and enforce a regulatory framework that will protect the governments social and environmental targets.

4. Monitoring

Most public investment and institutional strengthening programmes in the Lao PDR receive financial support and technical assistance from external sources and are therefore subject to strict progress monitoring and evaluations. Since many of the public investment programmes deal with urban infrastructure and environmental management, monitoring indicators used will relate to access to urban infrastructure and services and the quality of the urban environment. The agreements between the Government of the Lao PDR and the donor country or agency (such as the Asian Development Bank) usually include specific monitoring mechanisms and indicators.

Many of the urban and housing indicators developed by the United Nations Centre for Human Settlements (Habitat) can be used for this purpose: life expectancy at birth, infant mortality and infectious diseases mortality; household connections to water, electricity and telephone; access to, consumption of and the median price of potable water; type of latrine facility; travel time, transport fatalities and transport fuel consumption; roads in poor conditions and expenditures on road infrastructure; percentage, cost and effectiveness of waste water treatment; regularity of collection and disposal method for solid waste; level of urban services provision; major sources of local government income; and control over local government by higher levels of government.

PART D: INTERNATIONAL COOPERATION AND ASSISTANCE

It is clear from the National Plan of Action that the highest priority programmes and activities in the urban sector are related to the improvement of the urban environmental infrastructure (water supply, sewerage, drainage and solid waste), the establishment of appropriate institutional arrangements to plan and manage urban development in general and infrastructure improvement in particular, and the education and training of the staff of these institutions to perform its tasks. However, rather than preparing a wish list of specific urban sector projects for which the Government of the Lao PDR is seeking funding, it was felt more appropriate to list of types of support needed to undertake the activities mentioned above and to meet the set objectives. The support needed falls into three categories:

- financial support for public investments in urban infrastructure;
- technical assistance to develop institutional arrangements for the planning and management of the urban sector;
- training and education to staff the institution responsible for the planning and management of the urban sector with professionals and technicians with appropriate qualifications.

For some of the activities mentioned in the National Plan of Action, financial support, technical assistance or training and educational inputs have already been secured. However, as stated in the introduction to the National Plan of Action, the activities often serve as pilot projects which need to be adapted and replicated in other parts of the country or the city. Given the magnitude of the infrastructure and manpower deficiencies and the absence of institutional arrangements for the development of the urban sector, additional funding, technical assistance and education and training are still required. One of the constraints for a more rapid investment in urban infrastructure and training and education of human resources is the absorption capacity of the country which makes it necessary to limit the external financial and technical assistance to a level where it can be efficiently utilized for the development of the country. This means that in spite of the urgent needs the external cooperation and assistance has to be extended over a longer period of time.

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