

## 4.2 Lao Perspective

By 2000 it was estimated that 50% of the population had access to either piped water or water from a protected well. This was an increase from 39% in 1990. Over recent years the sewerage system in Vientiane has been improved by large infrastructure works, mostly in connection with the improvement of the road network in the capital. In terms of piped potable water supply, existing infrastructure covered around 456,000 people or about 54 percent of the urban population by the year 2000. Through the ongoing ADB-funded Water Supply and Sanitation Sector Project, (Phase 1), another 53,000 people will be given piped water access by 2010. Phase 2 of the project is expected to add another 70,000-80,000 people by 2015 with 14-15 towns to be covered. Most of the water sources for the towns will be rivers (including the Mekong) and reservoirs as to date only two of the finished schemes rely on groundwater resources.

In addition to the ADB, a number of international agencies and funding organisations are engaged in development of the water and sanitation sector in the country. These include the Swedish Development Agency (SIDA), the French Development Agency (ADF) and all of the agencies and organisations that are engaged in integrated rural development projects where improved water supply is one of the components.

## 4.3 Local Perspective

Under the ADB Water Supply and Sanitation Sector Project there are plans to build two water supply schemes in Bolikhamxai and Khammouane. One is in Nongbok District, which is situated in the lower Xe Bangfai basin, and thus falls within the direct impact zone of the NT2 Project. The other is Lak Xao to the north of the NT2 Project area. At Nongbok, the Xe Bangfai will be used as the source for the planned water supply scheme, and by 2010 an average consumption of 17 litres per second is expected.

For Lak Xao the feasibility study is yet to be done and it has thus not been decided whether river water or ground water will be used. However, given current preferences for technical solutions among the government agencies responsible for water supply, it is most probable that surface water from a nearby river, possibly the Nam Phao, will be chosen.

# 5 URBANISATION

## 5.1 Regional Perspective

### 5.1.1 Population

Population pressure in the Mekong River Basin is not very high when compared to other large river basins in Asia. It is, however, at the moment growing relatively rapidly. Over the decade between 1990 and 2000 population growth rates were 4.1% for Cambodia, 3.1% for Laos, 1.2% for Thailand and 1.8 for Vietnam (UNFPA website, 2004) The high rate for Cambodia reflects the return of more than 300,000 refugees in the early 1990's. Present growth rates in Lower Mekong Basin are more moderate and expected to decline further in the future as economic growth, urbanisation and family planning programmes start to influence fertility and birth rates.

Population development is largely determined by 2 factors, death and birth rates. As death rates starts to fall due to improved medical services and water supply and sanitation they are not immediately followed by a decline in the birth rates. Normally birth rates remains high at least a decade and usually longer before they start to drop and approach the level of the death rates. This time lag is normally referred to as the demographic transition. The countries in the LMB are at different stages of the demographic transition period with Vietnam and Thailand nearing or reaching the end and Laos and Cambodia still in the middle of it. The strongest population growth is thus expected in these two countries with present growth rates of 2.6 for Cambodia and 2.8 for Laos (ADB website, 2004). UN projections for all of the MRC member countries are shown in Table 9.

*Table 9: Mid Level Population Projections, MRC Member Countries*

Year/Period	Cambodia	Lao PDR	Thailand	Vietnam
2010	16612	6,592	66,946	89,128
2020	20,197	7,967	71,913	100,079
2030	23,555	9,282	75,424	108,374
2040	26,748	10,477	77,153	114,253
2050	29,567	11,448	77,079	117,693

Source: UN Population Division website,

Concerning population in the Lower Mekong Basin itself estimates done by the Mekong River Commission shows that it was around 55 million by the year 2000 (MRCS 2002). Growth rates for the future population in the respective countries have also been predicted by the Commission (MRC, 2003). These reflect the different demographic transition stages of the countries in the LMB with Cambodia and Lao PDR retaining high growth rates well into the next decades. It should be noted, though, that present population growth estimates varies from one statistical source to another. In the case of Lao PDR, for instance, the World Bank puts the annual growth rate in 2002 to 2.4, which accords with UNFPA's figure of 2.38, while the Asian Development Bank estimates it to be 2.8. MRC's estimated figure bases itself on last decades (1990-2000) rate of 3.1% and thus accords more with ADB's estimate.

By using MRC's figures and estimates plus assigning an average growth rate slightly lower than today's rates, country-wise predictions on the size of the populations in the Lower Mekong Basin for 2025 can be made. It should be noted that the figures shown in Table 10 at best only can be rough estimates as the actual growth rates will change dynamically as time passes, possibly deviating significantly from the average rates which underlies the estimates.

*Table 10 Population Increase in the Lower Mekong Basin*

Country	Population <sup>1</sup>	Predicted growth rate <sup>2</sup>	Population in 2025	Increase
Cambodia (1998)	9,800,000	2,3	17,303,000	77%
Lao PDR (2000)	4,905,000	2,6	9,318,000	89%
Thailand (2000)	23,130,000	1,0	29,663,000	28%
Vietnam ("2000)	16,920,000	1,4	23,952,000	41%
<i>Total</i>	<i>54,744,000</i>		<i>80,235,000</i>	<i>47%</i>

1. Source: MRC-BDP Regional Sector Overview: Domestic Water & Sanitation; Industrial Water Use, 2002

2. Source: MRC, State of the Basin Report 2003

### 5.1.2 Urbanisation

Urbanisation is linked to economic growth and may contribute positively to poverty reduction in a country. However, uncontrolled urbanisation and economic growth often create a poor underclass of people who migrate to urban areas in search of jobs and a better life.

Urban areas in the basin will continue to be at the centre of economic growth. Those areas with large productivity advantages will continue to expand in population and area. Less productive cities and towns will grow at a slower pace.

The present urban population in the Lower Mekong Countries are as shown in Table 11.

*Table 11: Urban Population in the Lower Mekong Basin Countries*

	Cambodia	Lao PDR	Thailand	Vietnam
% of total	16	20	20	24.8

Source: ADB website - key indicators

## 5.2 Lao Perspective

### 5.2.1 Population

Lao PDR presently has a total population of approximately 5.4 million with an annual population growth of 2.8% (ADB key indicators). The country has a predominantly young population with 54 percent being under 20 years and as much as 70 percent under 30 years. With an area of 236,800 km<sup>2</sup>, Lao PDR has the lowest average population density among the lower Mekong basin countries with 24 people per km<sup>2</sup>.

### 5.2.2 Urbanisation

In Lao PDR urban areas are defined in different ways as the National Statistics Centre (NCA) uses one set of criteria while the Department of Housing and Urban Planning is applies another definition. This leads to different results in identifying what constitutes and urban area as well as the size of the urban population.

The definition of an urban area used by the National Statistics Centre is based on the five following criteria:

- The village / town has a permanent market
- The village /town has a road access suitable for motor vehicles
- The village / town must have or be located in the vicinity the district or provincial administrations
- Most of the households in the village / towns are electrified
- The majority of the households have installed piped water or access to piped water nearby the house

Using these criteria, the population census of 1995 found that 17% of the population were living in urban areas. The Department of Housing and Urban Planning, using their own criteria, estimated it to be 19% for the same year.

A third definition has been introduced by the Small Towns Development Project (ADB, 2003) representing the most recent approach to identification and classification of urban areas in the country. The local notion of an urban area, 'Thetsaban' was used as a basis for defining urban areas, even if this would sometimes include peripheral villages that were not included in any present infrastructure improvement plans but that in the future were anticipated to be an area of growth. Using the Thetsaban criteria combined with the requirement that the population should be above 5000 (with two exceptions being within 1% below this limit) the country was found to have 57 urban centres with a total population of approximately 989,178.

According to the 1995 census Vientiane Municipality was the most urbanised area of the country with 63 percent of its population classified as urban dwellers followed by Vientiane Province with 17.5 percent. The least urbanised provinces Bokeo in the north-west and Attapeu in the south, both with an urban population of 5.2 percent.

The urban areas that are growing most rapidly are the major towns, including Vientiane, Savannakhet, Luang Prabang and Pakse. The urban population in the largest towns are shown in Table 12.

*Table 12: Population in the Largest Towns in Lao PDR*

Town / Urban Area	Urban Population 2003	No. of Households	Household size
Vientiane Municipality	300,804	55,503	5.4
Luang Prabang	40,797	7,443	5.5
Pakse	48,218	8,202	5.9
Savannakhet	63,634	10,466	6.1

Source: Lao Urban Databook/Small Towns Development Project

## 5.3 Local Perspective

### 5.3.1 Population

Of the 3 provinces surrounding the project area Savannakhet is the largest with a population of 789,600 in 2001, representing 14.6% of the total population (NSC,

2002) of the country. Khammouane is less than half the size with 320,200 people (5.9%) while Borikhamsay has a population of only 192,300 (3.6%).

The number and percentage of urban dwellers in Borikhamsay, Khammouane and Savannakhet were as shown in Table 13. The 1995 census gives the highest figures for urban population while the Lao Urban Data Book, developed under the ADB Small Towns Development Project give lower figures even though they refer to 2003, 8 years after the NSC. The reason for this is obviously the stricter definition of urban area applied in the Lao Urban Data Book.

*Table 13: Urban Population in the 3 Project Area Provinces*

Province	Census 1995		Lao Urban Data Book 2003
	No. of People	%	No. of People
Savannakhet	100,278	14.9	91,450
Khammouane	36,605	13.4	38,939
Boikkhamsay	10,218	6.2	38,746

### 5.3.2 Urbanisation

The important urban areas to consider in the cumulative impact analysis are Thakhek, Gnommalath and Mahaxai in Khammouane, and Lak Xao in Bolikhamxai. Gnommalath district does, in a strict sense, not have any urban area, only a number of villages along or nearby Route 8B from where it crosses Nam and northwards. These villages include Gnaommalat, the administrative centre, Gnommalat Tay, Ban Hua Khua, Somsanok, Ban Nong Saeng and Keovilay. According to the 1995 census this cluster of villages had a population of around 1700 –2000 people.

Of all the districts surrounding the NT2 project area Mahaxay has had the largest growth in population with an average 3.6% per year. Growth has been more moderate in neighboring Gnommalath with only 2.3 % over the last years. As for the population growth in the district centres it may be assumed that it has grown at a higher rate than districts because of in-migration.

Thakhek, the provincial capital and largest urban area in the Khammouan has experienced an average annual population growth of 3.5 % over the last 8 years. A considerable part of it can be attributed to in-migration as the natural population growth for in the area can be assumed to have been around or below 3%.

Nakai District has seen an annual growth of around 3% from 1995 to 2003 while Odoumsouk or Nakai Town has grown at rate of 6%, a phenomenon most probably linked to the establishment of Nakai as a separate district and the vigorous logging activities that took place on the Plateau in this period.

Lak Xao, the administrative centre town in Khamkheut District is the only town in the area north of the NT2 Project area. It is a fairly large district town in the Lao context and its growth over the last years has been estimated to 2.7% annually (Norconsult, 2003)

*Table 14 Urban and Rural Population in NT2 Influence Area*

Area/Town	Population		Annual Increase - %
	1995	2003	
Thakhek Town (urban area)	25,768 <sup>1</sup>	33,017 <sup>2</sup>	3.5
Nakai District	15,635 <sup>1</sup>	18,812 <sup>4</sup>	2.5
Odomsouk (Nakai Town)	1,530 <sup>3a</sup>	1,900 <sup>3b</sup>	4.8
Mahaxai District	22,982 <sup>1</sup>	29,587	3.6
Gnommalath District	21,607 <sup>1</sup>	25,612 <sup>4</sup>	2.3
LakXao (urban area)		12,774 <sup>2</sup>	2.7

Sources: <sup>1</sup> NSC Census, <sup>2</sup> Lao Urban Data Book, <sup>3a</sup> SDP (figure for 1998),

<sup>3b</sup> SDP, estimate based on no. of HH, <sup>4</sup> Data obtained at district level 2004

Thakek will continue to be a focal point for urbanization in the province in the future. The economy of Thakhek has to a large extent been fuelled by the timber industry that currently is experiencing a recession. However, because of its size and with the economic momentum of larger growth in other sectors like trade, service and tourism, Thakek will most likely continue to experience a relatively rapid population growth and associated urban expansion. One of the factors that in the short-term perspective will contribute to maintain the rapid growth and counteract the economic slump caused by the decline of timber industry, is the effect of the NT2 Project. A reasonable assumption will therefore be that Thakek both in the short and long perspective at least maintains a growth of 3.5%.

The economic perspective of Lak Xao is linked to the forestry industry and the cross-border trade with Vietnam. The forestry related activities are declining in Khamkheut but trade and traffic associated with the upgrading of Route 8 will most likely increase. Since there are no other towns in the area it is expected that urbanization in the eastern area of Bolikhamxay will focus on Lak Xao. In addition come the effects created by trade and traffic in connection with the construction of the Nakai Dam. Lak Xao will therefore continue to experience a high growth rate, probably slightly higher than in the past. A reasonable estimate would therefore be that future growth in population will be around 3% on an annual basis.

The future growth of Oudomsouk will be dominated and governed by the NT2 Project activities in the short-term perspective. As long as there are considerable construction activities on the Plateau this will uphold the rapid growth seen in the past. One workers camp with possibly as many as 800 workers will be located near the town. It must be expected that the associated influx of camp followers, employment seekers and small-scale business people will be as least as high. In addition comes the establishment of all the administrative offices with their staff and families. A rough guess would therefore be that the population of Oudomsouk would be around 3000 people by 2010 if construction activities still are ongoing. If the workers have left the population would possibly number 2000 to 2500 people.

Mahaxai District Centre will have its own dynamic in addition to the effect of the NT2 because of the planned cement factory and its location on Route 12. The number of workers that will be employed at the factory will possibly reach 300. Assuming that the population in Mahaxai is presently around 2000 the influx of workers and followers as well as associated service activities will possibly more

than double the population by 2010. From there on it may be assumed that the growth will remain high, possibly around 3%.

Gnommalat and the villages along Route 8 up to the regulating dam will experience a considerable population influx and increased urbanization pressure during the implementation of the NT2 Project. Although the 4 planned workers camps with up to 2,200 workers will be located in a forested area at some distance from Gnommalat, one can expect a rise in the population in the villages along the road leading to an amalgamation into a more contiguous urban area. The majority of these will be job seekers, traders and small-scale business people trying to capitalize on the increased economic activity in the area. A conservative guess would be that the inhabitants in the area along the road could reach 2,500-3,000 at the end of the construction period, discounting construction workers. After the construction period an operators village for possibly as many as 150 employees service facilities will be established in the area. Assuming that each employee has a family with 5 household members this will lead to a population increase of 750 after 2010. Afterwards, towards 2025 urbanisation would continue with a growth similar to that of Mahaxai.

*Table 15: Estimated Population Increase in NT2 affected Urban Areas*

Urban area	Estimated Growth Rate		Basis Population	2010	2025
	Up to 2010	2010- 25			
Thakhek	3.5	3.5	33,017 <sup>1</sup>	48,200	80,750
Odomsouk	-	3.0	1,900 <sup>2</sup>	3,500	5,400
Mahaxai	-	3.0	2000 <sup>3</sup>	4,000	6,200
Gnommalath	-	3.0	2000 <sup>3</sup>	4,000	6,200
LakXao <sup>1</sup>	3.0	3.0	12,774 <sup>1</sup>	17,600	27,500

<sup>1</sup> Lao Urban Data Book (2003), <sup>2</sup> Estimate based on SDP/RAP HH figures 2003, <sup>3</sup> Estimated present population

## 6 FORESTRY

### 6.1 Regional Perspective

The remaining forest areas in the lower Mekong is mainly found in Lao PDR and Cambodia. There is however, also some forest left in the Vietnam and Northeast Thailand. The following figures for forest cover have been calculated on the basis of the Mekong River Commission's GIS database.

*Table 16: Forest Cover in the Mekong Basin (MRC 1997)*

Country	Total area (km <sup>2</sup> )	Forest area (km <sup>2</sup> )	Forest cover
Cambodia	181,547	97,748	53.8%
Lao PDR	229,786	88,012	38.3%
Thailand	188,280	29,597	15.7%
Vietnam	67,456	14,127	20.9%
<i>Total</i>	<i>667,069</i>	<i>229,484</i>	<i>34.4%</i>