

2 Infrastructure in Savannakhet Province

(1) Transportation

1) Transportation in Savannakhet

The road network in Savannakhet province consists of:

- i) Route 13 of north-south direction along the Mekong river, Route 9 of east-west corridors, and Route 1 of north-south direction along eastern mountain ranges. Three national roads of Routes 13, 9, and 1 form the backbone of the road systems in Savannakhet province (Figure A.3.3).
- ii) Most of the provincial roads which connect district centers with other main villages are not paved yet. Most local roads are in poor condition and usable only during the dry season.

In line with the east-west corridors, the construction of the 2nd Mekong Bridge and Route 9 is ongoing and will open in 2003. In addition, the Pakse Bridge was opened on August 2000, and Route 13 is currently under construction. Savannakhet province is expected to be an important base for transportation among Thailand, Vietnam, and Lao RDR by constructing Route 9 and 13.

ADB aids for the road construction project in Khantabouly, and the project is one of the Secondary Town Development Project (STDP). The projects contains the construction of rain water drainage system, solid waste control system, water treatment plant, and parks in Khanthaburi. All programs will be completed around 2003. The Savannakht province established Urban Development Administration Authority (UDAA), and UDAA operates the project.

In addition to road transportation, water transportation on the Mekong river plays an important role in Laos. Khantabouly is connected to Mukdahan on the Thai side by a ferryboat. Savannakhet province has another river port in Kengabao which is recently out of order. After the completion of the above road and bridge projects, the importance of water transportation will be lowered. Currently, domestic air transport is still at a low level. Savannakhet airport with a 1,633 m long runway is undergoing improvements for its terminal building and other facilities. The airport is, however, not good enough to receive middle-range aircraft for regional service.

Four weekly flights are serviced between Savannakhet and Vientiane, and between Savannakhet and Pakse. In addition, Seno has a runway owned by the Army of Lao PDR. The possibility that the province can operate the

runway is very low.

2) 2nd Mekong International Bridge

The bridge crosses the Mekong river and includes connecting roads and approach roads. The connecting roads will connect Route 9 in the Lao PDR and Route No. 212 in Thailand. Moreover, it will contain an at-grade intersection with the Provincial Road A3 in Lao PDR and the traffic changeover in Thailand. This project includes the border control facilities (BCF) on both sides of Lao PDR and Thailand.

The connecting roads, were designed with 2 traffic lanes on the Lao PDR side and 4 traffic lanes with a 11 m wide central median on the Thailand side. Approach roads were designed with 2 traffic lanes with central median both in the Lao PDR and Thailand. These roads have shoulder of 2.5 m width and 80 km/h design speed is adopted.

The location of the Lao BCF is set up between 470 m and 1,070 m from the Mekong riverbank. The BCF are contained in an area of approximately 150,000 m² (600*250 m). The BCF consists of immigration office for passengers, inspection booth for vehicles, bus stop, public parking area, and accommodation for officers.

In the detailed design stage, the transfer type of transport is adapted as the mode of transport. In this type, the passenger crosses the border by a shuttle bus between the BCFs of Lao PDR side and Thailand side. The imported goods except transit goods to the third county are inspected at a warehouse. The Lao PDR, Thailand, and Vietnamese Governments have signed the cross-border transport agreement on 26 November 1999. Currently, the agenda in the agreement is being examined. If it is approved, the transit goods freely pass through Lao PDR to the third country, by combining separate border controls. As for reference, the detailed design predicted traffic volume as tabulated below.

Traffic Volume of Mekong Bridge

Year	Trucks		Shuttle Bus	Car	Total Vehicles
	Long Distance	Local			
2005	126-210	21-34	73-119	80-132	300-495
2010	175-385	28-63	101-222	112-247	416-917
2020	343-1,300	52-206	188-735	209-816	792-3,057

Source: SAPROF Report, 1998 JBIC

(2) Water Supply

Department of Urban Planning and Housing in MCTPC administers water supply works in Laos, but a public corporation under MCTPC carries on the actual business. In Savannakhet, NPS (Nam Papa Savannakhet) carries on business under DCTPC.

Well water, selling water, rain water, and so on covers water supply in Savannakhet province. A part of Khantabouly only enjoys water supply from a water treatment plant. The water treatment plant, with a capacity of 15,000 m³/day, was constructed in 1977. The water is taken in from the Mekong river, and the water is treated through with calcium hypochlorite. Total length of water distribution pipe is 79,276m as of 1993 (Figure A.3.5). The rate of unaccounted water is 20%. Water service population as of 1997 is 53,200 with a service rate of approximately 60%. Currently, JICA is conducting the basic design for the rehabilitation and expansion of the treatment plant. JICA is investigating the service area and treatment capacity.

In Xeno, the second largest city in Savannakhet province, a small part of the central area is served by a piped system. Untreated water from two boreholes is supplied through 63-100 mm diameter pipes with just over 300 metered connections. The army camp has its own independent supply from a borehole. Elsewhere in the town, residents rely on their own wells, or buy water from vendors who obtain it for a number of private wells with pumps and overhead storage tanks.

ADB is carrying out the Small Towns Water Supply and Sanitation Project (STWS). In the project, the feasibility study completed in 1999 and detailed design started in summer 2000. The project aims to supply 22,584 persons or 55.3 l/s in the central area of the Xeno city and 31,886 persons or 97.4 l/s in 2020. The main features of the project in 2010 are summarized below.

According to Questionnaire Survey by ADB, salt is contained in the ground water at deep wells with more than 50 m in depth. 16 km west of Xeno on the road Savannakhet at the village of Nateuy, the villagers make and sell salt. Shallow rock salt and other evaporates in the form of intrusions are found scattered across the ground formation area and cause much down-catchment groundwater to be saline. The usage of groundwater requires high precaution to the quality of water.

At present, 74 people are working in NPS. 24 workers out of them are engineers including workers for the treatment plant. 9 workers are allocated in branches.

Main Components of Water Supply Project in Xeno (ADB)

Component	Approx. Details
Deep wells	10 No. production wells, average yield 4 l/s + 1 No. standby, probable depth 50 m, each with chlorination unit
Collector main	Approx. 4,500 m length of 80 – 250 mm diameter pipe
Elevated reservoir	530m ³ capacity
Distribution pipelines	Pipe diameter: 250 mm Length: 1,130 m
	200 mm 1,150 m
	150 mm 1,940 m
	125 mm 1,360 m
	100 mm 3,920 m
	80 mm 3,200 m
	65 mm 3,530 m
	50 mm 39,050 m
Total	55,280 m

Source: Small Towns Water Supply and Sanitation Project, 1999, ADB

As for the financial balance, the expense is bigger than revenue. This is because the publicity of water supply works is considered and the service charge is set to the lower price which amounts to a few percent of average income in the province. The balance in 1999 fiscal year shows about 984 million kip revenue and 1,120 million kip expense. It comes out the excess of about 136 million kip expense. Water rates are shown in the table below.

Water Rates

Categories	Description	Water Use in range (per month)	Charge rate (kip/m ³ /month)
Category 1	Domestic Use	1-10 m ³	215
		11-20 m ³	325
		21-30 m ³	375
		More than 31 m ³	430
Category 2	Business Use (restaurant, hotel, shop, factory, etc.)	Flat rate	550
Category 3	Administration office use	1-10 m ³	215
		11-20 m ³	325
		21-30 m ³	375
		More than 31 m ³	430
Category 4	Business (raw material factory, production)	Flat rate	650

Source: Financial data for 1998-1999, NPS

(3) Drainage and Sewer

In Khantabouly (Figure A.3.6) and Xeno, a drainage channel was constructed. The capacity of the channel, however, is not sufficient, so

puddles are formed on and along roads in the rainy season. In rural areas, drainage facilities are not constructed.

In Khantabouly, ADB is constructing a drainage channel as a part of STDP project. This project contains the construction of river bank protection, and the construction will be completed within 2000.

Sewage system is not constructed in the province, so wasted water is discharged and penetrates the ground. STDP project includes a plan that aims for the construction of sanitary facilities for each house in Khantabouly. At present, the project installed public sanitary facilities at two secondary schools and Sayapan temle as the pilot project. However, it is under preparation how to set the charge and how to collect tariff.

In Xeno, just over half of all households have toilets, the majority of which are either lined latrines or toilets connected to septic tanks. More than one third of all households have some formal drainage, the others generally dispose of their non-toilet wastewater to land surrounding the house. STWS project (ADB) includes upgrading of on-site excreta disposal facilities, as below, to mitigate the adverse impact of increased wastewater pollution.

- i) Construction of new lined pit latrines 925
- ii) Construction of septic tanks 163
- iii) Construction of drainage for sludge water 1,125

(4) Electric Power

There is no interconnected transmission grid covering the country, and regional systems are operated with the support of power supply from neighboring countries. In Savannakhet province, Pakbo substation (2*10MVA) receives the power from Thailand and Densavan substation (5MVA) receives the power from Vietnam. 115kV power is transformed to 22kV at Pakabo substation, and the 22kV power is transmitted to Xeno along Route 9. The 22kV power transformed at Densavan substation is transmitted 97km west of the substation along Route 9. This power line joins another power line for small-scale water power plant (80MW) in the southern part of B. Dong village.

According to a power demand forecast by EdL (Electricite du Laos), the capacity of Pakbo substation will be lacking until 2005. EdL has a plan to develop a new hydroelectric dam of 1,000 MW. When Nam Theun 2 is implemented in 2006, the power supply system will be totally shifted to a domestic power supply.

Electric Power Demand Forecast by EdL

	1999	2005	2010
Peak Demand (MW)	13.4	54.5	67.0

296 people are working in the Savannakhet branch of EdL. 70 workers out of them are engineers. 170 are for Khantabouly, 11 are for Xaybouly and Xeno, and 9 are for Deansavanh.

As for reference, electricity rate is tabulated below. The rate grew 1.4 times in a year due to the fluctuation of the exchange rate.

Electricity Rate

Use		Rate (kip/KWH)	Use	Rate (kip/KWH)
Households	0-50	39	Commercial	316
	51-100	88	Business	395
	101-200	132	Government	265
	201-	287	Irrigation	110
International Project Office		0.0969	Industry	265

Source: EdL

(5) Telecommunication

As for the telecommunication system in Laos, 34Mbit/s microwave running north-south direction is the backbone of the transmission route. This route has a connection with Luangprabang, Vientiane, Thakhek, Khanthabuly, and Pakse, which have switching stations for connecting to outside of the city. Laos has only one Gateway located at Manphou telephone office in Vientiane, and the function of Gateway is expected to shared with Pakse.(Figure A3.8)

Number of subscribers reaches 47,035 as of August, 1999, so that the capacity of the microwave is already used up.

The network of telecommunication in Savannakhet covers only 7 areas out of entire 15 areas in the province.

A switching station (for 3,368 lines) for the connection to both inside and outside of the city is installed in Khantabouly. Remote terminal (for 512 lines) is installed in Xeno. The capacity of switching station in Khantabouly will be increased to 1,024 additional lines in December, 2000. Besides above facilities, rural station for high frequency radio is constructed in Atasphangthong.

As for International telecommunication, Laos is connected to Bangkok through an optical fiber route. Bangkok is connected to other countries

through an optical submarine cable in the Pacific Ocean. A plan for an optical fiber network with 2 Gbps to connect each GMS country, was formulated in 1995. (Figure A.3.14) The network consists of three routes: East Route, West Route, and North Route. Laos is a very important location where East Route and North Route overlap.

East Route : Bangkok – Vientiane – Vinh – Ho Chi Minh – Phnom Penh - Bangkok

West Route : Bangkok – Yangon – Meiktila – Keng Tung – Chiang Rai - Bangkok

North Route : Bangkok – Chiang Rai – Luang Namtha – Mengla – Jinghong – Kunming – Hanoi – Vinh – Vientiane - Bangkok

Currently, the East Route is opened, but other routes are not expected to open. For the establishment of SEZ, the optical fibers at North-South Route, additional international exchangers in Vientiane, or new international exchangers in Pakse are needed.

Workers in Savannakhet branch are 55, and 44 workers out of 55 are in Khantabouly. As for reference, the service rate for telephone in Savannakhet is 45kip per minute within city, and 300 kip per minute to Vientiane. Monthly service charge is 10,000kip.

(6) Solid Waste

UDAA also conducts Solid Waste Management Project in Khantabouly. UDAA completed a pilot project in June 1999, and carries out the garbage collection and landfilling. Service area covers 17 areas in Khantabouly, and 32 areas will be covered by 2002. UDAA allots one compactor and two dump trucks for the garbage collection in 17 areas, but UDAA has no prospects for allotting the additional vehicles in case of the extension of target area. Currently, the garbage in an area is collected twice a week, and filled up at the landfill located along Route 9. Recently, the capacity of the landfill is getting scarce, so new landfill will be constructed at Bangsok village in the southern part of Khantabouly. The design capacity for new landfill is ten years.

Financial condition has been in the black since February 2000, as a result of receiving the aids for administration cost from NORAD and UNDP.

(7) Land Use Plan

Land use plans for Khantabouly area (Figure A.3.10) and the city of Seno (Figure A.3.11) have been formulated by MCTCPC. 9 types of land use regulate the cities.

<u>Types of Land Use</u>	<u>Description</u>
Central area (Ua)	Commercial/economic/high density residential area
Area around central area (Ub)	Residential/trading area
Area around the city (Uc)	low density residential/small service area
Natural area (Na)	Reserved area for increasing population in the future
Agricultural area (Nca/Nc)	No construction, except special cases for agricultural and river activities
Green area in the city (Ncb/Ne)	No construction
Expansive natural area (A)	Areas developed into commercial/economic area in the future
Industrial area (I)	Area for industrial activities
Military area (Zc)	Area used for military service

Site A is currently involved in the industrial area (I) and agricultural area (Na), so it is necessary to modify the land use before SEZ is implemented.

(8) Environment

The Environmental Law was enacted in 1999. The law says that STEA (Science, Technology and Environmental Agency) formulates and enacts the environmental guideline. It also says that all development projects are subject to follow the EIA specified in the guideline. In addition, natural conservation area is specified in the law.

The Forestry Law was also enacted in 1996. Forestry resources are classified into five: reserved forest, production forest, recovery forest, destroyed forest.

Both natural conservation area and forestry law are not applied to the four SEZ candidate sites.