. MASTER PLAN

CHAPTER 2 SOCIO-ECONOMIC FRAMEWORK & IMPACTS

2.6 Evaluation Result on Social Aspect of the Region

2.6.1 Rice Product per Person (Criterion 5)

(1) Evaluation of Districts and Road Links with Rice Production

Paddy fields are cultivated twice a year: sticky (glutinous) rice in rainy season for farmer's own consumption, and non-glutinous rice in dry season with irrigation for cash income. Rice irrigation is one of the priority national policies of the Lao government. On the other hand, slash and burn rice cultivation still persists in hilly areas, causing severe damage to the rich forest resources of the nation. Ethnic minorities in remote areas take care of livestock, catch fish, or collect non-timber forest products to compensate for the rice shortage.

Roads may give a better chance for agricultural sector to increase rice production by contributing to improvement of mass transport, extension of know-how of better rice cultivation, new varieties, fertilizer, small scale irrigation, and so on. Roads may assist formers to have another income resource. Increasing goods circulation may stimulate the service sector, and more workforce join service sector and enhance their household income. Good accessibility to the urban area means good chance to find a job, other than subsistence agriculture. Since roads help to increase the income of the local people, poorer districts have more social requirement to have a good road system. Table 2.6.1 shows the rice production (Kg/person/year) by district, scoring has been conducted with the following classification.

+ + +	less than 99 kg/person rice product in 1999
+ +	100-199 kg/person rice production in 1999
+	200-299 kg/person rice production in 1999
0	More than 300 kg /person rice production in 1999

Annual rice consumption per person is about 200kg. Since the yield is not stable, level of 200-299kg/person is not secure enough when drought or inundation disturbs the regular rice production.

(2) Forecast of rice product in 2007 and 2020

Table 2.6.1 and Figure 2.6.1 show the forecast of the rice production per person in each district. The figures have been used to estimate GDP/capita in previous chapter. The methodology and assumptions to conduct this forecast were as follows;

Ministry of Agriculture and Forestry conducted a detailed survey in 1998/99. Lists of major farming products in each administrative district are available with harvesting area (ha). Growth rate of each farming item at provincial level is also available in *Agricultural Statistics 25 Years 1975-2000*.

Code	Savannakhet	1999	2007	2020	Evaluation
1301	Khanthabouly	89	119	186	(+ + +)
1302	Outhoomphone	184	244	382	++
1303	Atsaphangthong	215	286	448	+
1304	Phine	165	220	344	++
1305	Sepone	201	268	419	+
1306	Nong	141	187	292	++
1307	Thapangthong	209	278	435	+
1308	Songkhone	363	482	755	0
1309	Champhone	338	449	703	0
1310	Xonbuly	299	397	621	+
1311	Xaybuly	285	378	592	+
1312	Vilabuly	196	260	407	+ +
1313	Atsaphone	141	187	293	++
1314	Xayphoothong	312	415	649	0
1315	Thaphalanxay	258	343	537	+
Code	Saravane	1999	2007	2020	Evaluation
1401	Salavane	345	425	587	0
1402	Ta oi	136	167	230	+ +
1403	Toomlarn	195	240	331	+
1404	Lakhonepheng	329	404	558	0
1405	Vapy	448	551	761	0
1406	Khongxedone	278	341	471	+
1407	Lao ngarm	232	285	394	+
1408	Samuoi	259	318	440	+
Code	Sekong	1999	2007	2020	Evaluation
1501	lamarm	168	204	274	+ +
1502	Kaleum	83	101	136	+ + +
1503	Dakcheung	118	143	193	+ +
1504	Thateng	253	306	412	+
Code	Champasack	1999	2007	2020	Evaluation
1601	Pakse	59	62	67	(+ + +)
1602	Sanasamboon	288	302	324	+
1603	Bachiangchaleunsook	185	195	208	++
1604	Pakxong	28	29	31	(+ + +)
1605	Pathoomphone	223	234	251	+
1606	Phonthong	459	483	517	0
1607	Champasack	375	395	423	0
1608	Sukhuma	348	366	392	0
1609	Moonlapamok	302	318	340	0
1610	Khong	288	303	324	+
Code	Attapeu	1999	2007	2020	Evaluation
1701	Xavsetha	199	237	312	++
1702	Samakhixay	216	257	338	+
1702	Sanayay	222	237	364	- ·
1704	Sanyay	200	211	242	
1704	Dhauwang	200	238	313	+
1/05	Phouvong	128	153	200	++
Source: Ce	ensus 1995. Ministry of Ir	ndustry and Ha	andicraft Mi	nistry of Lab	or and Social

Table 2.6.1 Rice Production (kg/person) by District

Ministry of Agriculture, Note: Districts with (+ + +) mark have enough cash income to compensate rice insufficie

- Harvested area increases at the average growth rate of the last 10 years in each province
- Population of each district increases at the central rate mentioned in the previous chapter
- Rice consumption per person does not change⁵
- Milled rice is 50% of husked rice by weight
- Rice yield per area increases by 1.5% per year

⁵ Daily rice intake in grams per persons by province and regions in 1997/98 (Table14)





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2.6.2 Literacy and Education (Criterion 6)

A long term national plan "Socio-Economic Development Strategy for 2020" mentions the issue as one of the development directions;

"Development should also be balanced between the economic and social sectors, among various parts in each sector, province to province, between urban and rural areas, through the promoting of country's comparative advantage and people's production capacity. Simultaneously, the government should also utilize natural and **human development** efficiency and ensure reasonable and fair income distribution."

(1) Literacy Rate (Criterion 6-1)

Literacy rate at district level is available in the Provincial Volumes of Census 1995. Definition of the literacy rate is percentage of persons over 15 years old who can read and write. Samuoi district in Saravan province has the lowest literacy rate of 13.6%. Pakse enjoys the highest rate of 84.1%. Scoring of literacy rate has been conducted with the following classification.

+ + +	Literacy rate less than 49 %
+ +	Literacy rate 50-59%
+	Literacy rate 60-69%
0	Literacy rate more than 70%

(2) Student Ratio (Criterion 6-2)

Student ratio is another criterion for situation of education. A child can attend primary school at the age of six. However, because of school access and other reasons, many children enroll primary school at age seven, eight, nine, or even after ten. Population data of each age is not available at the district level. Therefore the Study Team used a simplified method to estimate school enrollment ratio. Student ratio is defined as follows;

[Student Ratio] = [Number of Primary and Secondary School Children] / [Total Population]

According to the census 1995, population pyramid that shows the ratio of every 5 year cohort has very similar structure in all five provinces in the study area. This infers ratio of children at school age is very even in the study area. Information on total student numbers is available at the Planning Division of the Ministry of Education. Student ratio calculated in the above definition indicates the rate of children who attend schools. Literacy rate shows the educational achievement of districts, while, student ratio forecasts intellectual level of

districts.

District with the lowest student ratio is Ta Oi district in Saravan province, with 3.6% of students in the total population. Comparing some district that exceed 25%, 3.6% is extremely low. This figure tells that vast majority of the school age children do not go to school in Ta Oi district. This district suffers from one of the worst literacy rates, and can hardly improve the literacy rate with this low school enrollment.

Scoring of student ratio has been conducted with the following classification.

+ + +	Student Ratio less than 9.9 %
+ +	Student Ratio between 10 - 14.9 %
+	Student Ratio between 15 - 19.9 %
0	Student Ratio more than 20.0 %

(3) Evaluation of Road Links with Education

Scoring has been conducted with the total score of Table 2.6.2. Every road link has relevant district(s). The results of the scoring have revealed that districts along the Vietnamese border need much improvement in education. Low population density, poverty, big presence of ethnic minorities; triple constraint persist in these districts. This table shows that education should be strongly required in the capital districts of the remote provinces (Saravan, Sekong, and Attapeu).

(4) Area Disparities in Education

Lao PDR has a large ethnic minority population, many of whom cannot understand the national language. This makes literacy rate of the mountainous area, where main population is ethnic minorities, very low. Figure 2.6.2 illustrates the literacy rate of the study area by district. The source is Census 1995. This map intimates all the districts along Mekong River enjoy at least 60% literacy. In contrast, all the districts along Vietnamese border record less than 40% literacy.

Figure 2.6.3 shows student (primary and secondary) ratio. This map does not demonstrate the significant disparity of Figure 2.6.2, however, it still suggests that fewer children of mountainous districts along the Vietnamese border go to school. Three districts, the capital of Champasack, Sekong, and Attapeu provinces, have bigger student groups.

Figure 2.6.4 illustrates the ratio of female students in primary and secondary schools. When a household cannot afford education for all the children, parents often give educational priority to boys. Since Lao PDR is suffering from a shortage of human resources, every economic sector needs women's extensive participation. If women are discriminated and do not get enough chance to develop themselves, it may disturb the social and economic development of

the area and the nation. In this perspective, higher female student ratio ensures future success of the area.

Figure 2.6.5 shows the ratio of secondary school students to the total population. Secondary school is higher tool of human resource development, and necessary to develop industrial and service sector. Therefore districts with higher secondary student ratio are more ready to shift to a post-agricultural society.

One direct strategy is to develop human resources of education sector and build as many schools as possible. Another strategy is to improve the accessibility of schools from population through road improvements.

Code	Savannakhet	Literacy Rate	Score	Population	Student	Student Ratio	Score	Total Score
1301	Khanthabouly	76.6%	0	143 237	27,751	19.4%	+	0
1302	Outhoomphone	58.1%	+ +	77,769	14.321	18.4%	+	+
1303	Atsaphangthong	46.2%	+++	54,918	7.080	12.9%	+ +	+ +
1304	Phine	39.1%	+++	46,187	5,587	12.1%	+ +	++
1305	Sepone	27.9%	+ + +	40.258	3.766	9.4%	+++	+ + +
1306	Nong	15.6%	+ + +	18,842	1,891	10.0%	+ +	+ + +
1307	Thapangthong	43.0%	+ + +	27,053	4,197	15.5%	+	+ +
1308	Songkhone	71.7%	0	92,235	23,058	25.0%	0	0
1309	Champhone	57.0%	+ +	97,515	20,735	21.3%	0	+
1310	Xonbuly	43.1%	+ + +	38,986	8,741	22.4%	0	+
1311	Xaybuly	63.3%	+	48,375	10,921	22.6%	0	0
1312	Vilabuly	38.9%	+ + +	27,671	4,154	15.0%	+	+ +
1313	Atsaphone	47.0%	+ + +	72,230	13,411	18.6%	+	+ +
Codo	Sarayana	Literacy	Sooro	Population	Student	Student	Cooro	Total
Code	Salavalle	Rate	Score	2001	2001	Ratio	Scole	Score
1401	Salavane	53.2%	+ +	78,409	14,680	18.7%	+	+
1402	Ta oi	21.3%	+ + +	23,031	818	3.6%	+ + +	+ + +
1403	Toomlarn	23.9%	+ + +	18,916	1,977	10.5%	+ +	+ + +
1404	Lakhonepheng	64.2%	+	35,455	6,476	18.3%	+	+
1405	Vapy	64.3%	+	31,122	6,055	19.5%	+	+
1406	Khongxedone	60.7%	+	53,802	11,330	21.1%	0	+
1407	Lao ngarm	41.7%	+ + +	49,947	6,514	13.0%	+ +	+ +
1408	Samuoi	13.6%	+ + +	8,898	989	11.1%	+ +	+ + +
		1.4 0.00 0.1						
Code	Sekong	Rate	Score	2001	2001	Ratio	Score	l otal Score
Code 1501	Sekong lamarm	Rate 61.4%	Score +	2001 21,633	2001 5,408	Ratio 25.0%	Score 0	l otal <u>Score</u> 0
Code 1501 1502	Sekong lamarm Kaleum	Rate 61.4% 23.6%	Score + +++	2001 21,633 15,977	2001 5,408 973	Student Ratio 25.0% 6.1%	Score 0 +++	1 otal <u>Score</u> 0 + + +
Code 1501 1502 1503	Sekong lamarm Kaleum Dakcheung	Rate 61.4% 23.6% 28.3%	Score + +++ +++	2001 21,633 15,977 19,700	5tudent 2001 5,408 973 2,440	Student Ratio 25.0% 6.1% 12.4%	Score 0 +++ ++	I otal Score 0 + + + + + +
Code 1501 1502 1503 1504	Sekong lamarm Kaleum Dakcheung Thateng	Enteracy Rate 61.4% 23.6% 28.3% 39.8%	Score + +++ +++ +++	Population 2001 21,633 15,977 19,700 17,711	Student 2001 5,408 973 2,440 3,621	Student Ratio 25.0% 6.1% 12.4% 20.4%	Score 0 +++ ++ 0	I otal Score 0 + + + + + + + + +
Code 1501 1502 1503 1504 Code	Sekong lamarm Kaleum Dakcheung Thateng Champassak	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate	Score +++ +++ +++ Score	Population 2001 21,633 15,977 19,700 17,711 Population 2001	Student 2001 5,408 973 2,440 3,621 Student 2001	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio	Score 0 +++ 0 Score	I otal Score 0 + + + + + + + Total Score
Code 1501 1502 1503 1504 Code 1601	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1%	Score + +++ +++ Score 0	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7%	Score 0 +++ + 0 Score 0	I otal Score 0 +++ +++ + Total Score 0
Code 1501 1502 1503 1504 Code 1601 1602	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1%	Score + +++ +++ Score 0 +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4%	Score 0 +++ 0 Score 0 0	Iotal Score 0 + + + + + Total Score 0 0 0
Code 1501 1502 1503 1504 Code 1601 1602 1603	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4%	Score + +++ +++ Score 0 + +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5%	Score 0 +++ 0 Score 0 0 +	Iotal Score 0 + + + + Total Score 0 0 +
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3%	Score + + + + + + + + + + Score 0 + + + +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5%	Score 0 +++ 0 Score 0 0 + 0 0 + 0	Iotal Score 0 +++ + + Total Score 0 0 + 0 0 0 + 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4%	Score + + + + + + + + + + Score 0 + + + + + +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8%	Score 0 +++ 0 Score 0 0 + + 0 + 0 +	Total Score 0 +++ +++ + Total Score 0 ++ 0 ++ 0 ++ 0 ++ 0 ++
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8%	Score + + + + + + + + + + Score 0 + + + + + 0	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2%	Score 0 +++ + 0 Score 0 0 + 0 + 0 + 0 + 0 0 + 0 0 - 0 - 0 - 0 - 0 - 0 - - - - - - - - - - - - -	I otal Score 0 +++ + + Total Score 0 0 + 0 + 0 + 0 + 0 + 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9%	Score + + + + + + + + Score 0 + + + + + 0 0 0	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4%	Score 0 +++ + 0 Score 0 0 + 0 + 0 + 0 + 0 + + + + + + + + + + + + +	I otal Score 0 +++ + + Total Score 0 + 0 + 0 0 0 0 0 0 0 0 0 0 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 80.8% 80.8% 61.6%	Score + + + + + + + Score 0 + + + + 0 0 0 +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 777,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0%	Score 0 +++ 0 Score 0 0 + - 0 + - 0 + - 0 + - - - - - - - - - - - - -	I otal Score 0 +++ + + Total Score 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 +
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3%	Score + +++ +++ Score 0 + + + + 0 0 0 + + + + 0 0 0 + + + +	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8%	Score 0 +++ ++ 0 Score 0 + + 0 0 + 0 + 0 + + 0 0 + + 0 0 - - - - - - - - - - - - -	I otal Score 0 +++ + + Total Score 0 0 + 0 + 0 + 0 + 0 + 0 0 + 0 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3% 72.2%	Score + +++ +++ Score 0 + + + + 0 0 0 + + + 0 0 0 + + 0	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 19,968 11,166 7,525 7,820 13,929	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8% 18.3%	Score 0 +++ 0 Score 0 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + + + + - - - - - - - - - - - - -	Total Score 0 +++ + + Total Score 0 0 + 0 + 0 + 0 + 0 0 0 0 0 0 0 0 0 0 0 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 Code	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3% 72.2%	Score + ++++ Score 0 + + + + + 0 0 0 0 + + + + 0 0 0 0 Score	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073 Population	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8% 18.3% Student	Score 0 +++ 0 Score 0 0 + 0 + 0 + 0 + 0 + 0 + 0 + 5 Core 0 0 + + 0 - - - - - - - - - - - - -	Total Score 0 +++ + + Total Score 0 0 + 0 + 0 + 0 + 0 0 + 0 0 - 0 - 0 0 - 0 0 0 0 0 0 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1606 1607 1608 1609 1610 Code 1701 1602 1603 1604 1605 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1606 1607 1609 1609 1609 1610 1609 1610 1609 1610 1609 1610 1609 1607 1606 1607 1606 1607 1609 1607 1607 1607 1607 1609 1607	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3% 72.2% Literacy Rate	Score + ++++ Score 0 + + + + 0 0 0 + + + 0 0 0 5 core	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073 Population 2001 20027	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student 2001	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8% 18.3% Student Ratio	Score 0 +++ 0 Score 0 0 + 0 + 0 + 0 + 0 + 0 + 0 + 5 Core 0 0 + - - - - - - - - - - - - -	I otal Score 0 +++ + Total Score 0 + 0 + 0 + 0 + 0 0 Total Score
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1606 1607 1608 1609 1610 Code 1701 Code	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu Xaysetha Campatabiang	Biteracy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3% 72.2% Literacy Rate 57.9% 72.2%	Score + + + + + + + Score 0 + + + + 0 0 0 + + + 0 0 0 + + + 0 0 0 Score	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073 Population 2001 29,879	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student 2001 4,183 4,183	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 23.2% 19.4% 17.0% 20.8% 18.3% Student Ratio	Score 0 +++ 0 Score 0 0 + + 0 0 + + 0 + + Score + + Score + + 0 0 - - - - - - - - - - - - -	I otal Score 0 +++ + Total Score 0 + 0 + 0 + 0 + 0 + 0 0 Total Score + + 0 Total Score + + 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 Code 1701 1702 1702	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu Xaysetha Samakhixay	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 67.4% 67.4% 63.3% 73.9% 61.6% 63.3% 72.2% Literacy Rate 57.9% 72.3%	Score + +++ Score 0 + + + + 0 0 0 + + + 0 0 0 + + + 0 0 0 Score	Population 2001 21,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073 Population Population 2001 29,879 22,907	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student 2001 4,183 5,727 2,2502	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8% 18.3% Student Ratio 14.0% 25.0%	Score 0 +++ 0 Score 0 0 + + 0 + 0 + + 0 + Score + + 0 - - - - - - - - - - - - -	Iotal Score 0 +++ + Total Score 0 + 0 + 0
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 Code 1701 1702 1704	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu Xaysetha Samakhixay Sanaxay Sanaxay	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 66.1% 67.4% 67.4% 67.4% 63.3% 73.9% 61.6% 63.3% 72.2% Literacy Literacy 84.6% 73.9% 61.6% 63.3% 72.2% Literacy 64.6% 72.3% 72.2% Literacy 64.6% 63.3% 72.2% Literacy 64.6% 72.2% Literacy 64.6% 72.2% Literacy 64.6% 72.2% Literacy 64.6% 72.2% 20.6% 72.2% 20.6% 72.2% 20.6% 72.2% 72.2% 20.6% 72.2% 72	Score + +++ +++ Score 0 + + + + 0 0 0 + + + 0 Score 0 + + + 0 Score	Population 2001 201,633 15,977 19,700 17,711 Population 2001 77,365 64,995 40,075 51,932 50,327 85,979 57,443 44,388 37,595 76,073 Population 2001 29,879 22,907 22,826 44,240	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student 2001 4,183 5,727 3,592 1,000	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 19.5% 22.5% 19.4% 17.0% 20.8% 18.3% Student Ratio 14.0% 25.0% 15.7%	Score 0 +++ 0 Score 0 0 + 0 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 - 0 - 0 - 0 - - - - - - - - - - - - -	I otal Score 0 +++ + Total Score 0 + 0 + 0 0 + 0 + +
Code 1501 1502 1503 1504 Code 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 Code 1701 1702 1703 1704	Sekong lamarm Kaleum Dakcheung Thateng Champassak Pakse Sanasamboon Bachiangchaleunsook Pakxong Pathoomphone Phonthong Champasack Sukhuma Moonlapamok Khong Attapeu Xaysetha Samakhixay Sanaxay Sanaxay Phone Phone Phone Samakhixay Sanaxay S	Literacy Rate 61.4% 23.6% 28.3% 39.8% Literacy Rate 84.1% 66.1% 61.4% 66.1% 61.4% 62.3% 67.4% 80.8% 73.9% 61.6% 63.3% 72.2% Literacy Rate 57.9% 72.3% 46.9% 39.6%	Score + +++ Score 0 + + + + 0 0 + + 0 Score + + 0 Score ++ 0 +++ 0 +++	Population 2001 201,633 15,977 19,700 17,711 Population 2001 777,365 64,995 40,075 51,932 50,327 55,943 44,388 37,595 76,073 Population 2001 29,879 22,907 22,826 14,249	Student 2001 5,408 973 2,440 3,621 Student 2001 19,099 13,283 7,806 11,683 9,456 19,968 11,166 7,525 7,820 13,929 Student 2001 4,183 5,727 3,592 1,909	Student Ratio 25.0% 6.1% 12.4% 20.4% Student Ratio 24.7% 20.4% 19.5% 22.5% 18.8% 23.2% 19.4% 17.0% 20.8% 18.3% Student Ratio 14.0% 25.0% 15.7% 13.4% 25.0%	Score 0 +++ 0 Score 0 0 + 0 + 0 + 0 + + 0 + + Score + + 0 + + + 0 - - - - - - - - - - - - -	I otal Score 0 +++ + Total Score 0 0 + 0 + 0 + 0 0 + 0 0 Total Score 0 0 Total Score ++ 0 ++ 0 +++ 0 +++ 0 +++

Table 2.6.2 Literacy Rate and Student Rate

Source: Census 1995, Ministry of Education

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2.6.3 Ethnic Minorities (Criterion 7)

Ethnic minority is one of the most important social issues in the region. Census 1995 reported there are 48 ethnic groups in Lao PDR, and "Lao" claims 55 % of the national population. The other 47 groups are called minorities in this report. Being an ethnic minority often means to live shorter, have lower literacy, less fertile land, smaller production, and income. An detailed comparison between ethnic Lao and other groups has not been found, however, Census 1995 provides the population of each ethnic group in every village.

(1) Road Link Evaluation with Ethnic Minorities

Table 2.6.3 shows the population of ethnic minorities within 5 km range of each road link. Figures in the table have been computed using GIS software. Evaluation has been conducted with the following classification.

+ + +	10,000 or more ethnic minorities
+ +	5,000 - 9,999
+	2,000 - 4,999
0	less than 1,999

Road Link	Villages	Households	Population	Minorities	Score
1G	95	4,500	32,510	21,257	+ + +
north	20	1,247	8,175	6,784	+ +
center	62	2,278	17,498	13,897	+ + +
south	26	1,697	11,804	4,507	+
1H south	20	1,018	6,384	5,408	+ +
1J	14	2,493	14,488	4,851	+
14A	129	11,946	72,000	4,322	+
14A-1	68	6,144	38,130	2,075	+
14B	27	2,261	12,565	4,129	+
14C	11	1,042	6,194	4,349	+
14C1	16	1,836	10,756	2,504	+
14C2	8	670	3,765	454	0
15-1	121	9,511	58,851	6,580	+ +
15 east	86	4,164	27,116	17,757	+ + +
16A	35	2,265	13,663	10,371	+ + +
16 east	50	2,125	16,253	12,675	+ + +
18A	76	7,425	43,545	16,751	+ + +
west	28	2,239	13,364	452	0
center	11	550	3,179	1,889	0
east	43	4,981	29,028	15,154	+ + +
18B	28	4,756	27,937	8,346	+ +

 Table 2.6.3
 Evaluation of Road Links with Ethnic Minority Population

Source: 1995 Census, UXO Lao

(2) Spatial Distribution of Ethnic Minorities

Figure 2.6.6 and Figure 2.6.7 illustrate the spatial distribution of ethnic minorities and ethnic Lao respectively. Colored spots indicate village location and sizes corresponding to populations. These two groups (majority and minorities) seem to settle separately. Ethnic Lao take places for rice cultivation and minorities take rest of the area where they can survive with subsistence agriculture and collection of food from forests and rivers. Since ethnic minorities have few motor vehicles, there is no correlation observed between major roads and villages of ethnic minorities. People in this area rather tend to locate their village along rivers and brooks. River supplies them with fish, transport by boat and water.

Figure 2.6.8 illustrates ethnic minority ratio by village. Each dot represents a village and color shows the minority ratio. A dark green dot is a village with less than 20% minority population. On the other hand, a red dot symbolizes a village with more than 80% minority population. Most of the green villages are in the eastern side of the map, and most of the red villages are in the eastern side. This indicates that ethnic Lao occupies flat land and ethnic minorities are living in the hilly part of the study area. Villages with the other colors (pink, yellow, and pale green) do not appear often in the map. This infers strong separation between ethnic Lao and ethnic minorities.



Figure 2.6.6 Spatial Distribution of Ethnic Minorities



Figure 2.6.7 Spatial Distribution of Ethnic Lao



Figure 2.6.8 Ratio of Ethnic Minorities in Villages

2.6.4 Accessibility (Criterion 8)

(1) Evaluation of Load Links with Accessibility

Accessibility is a big concern for every communities in the region. One of the important programs to improve local accessibility is "Integrated Rural Accessibility Planning (IRAP)." This project covers some provinces (including Savannakhet and Sekong) and tries to improve accessibility at the village level with community participation.

The Study Team employed two criteria to evaluate road links from the accessibility aspect. Table 2.6.4 is a summary of this evaluation. The detailed clarification of "road length insufficiency" and "road function insufficiency" is given below.

Road link	Road Length Insufficiency	Road Function Insufficiency	Accessibility Insufficiency
1G	+	+ +	+ +
north	+	0	0
middle	+	+++	+ +
south	0	0	0
1H	+ +	0	+
1J	+ + +	+ + +	+++
14A	+ +	+ +	+ +
14A1	+	0	0
14B	+ +	+ +	+ +
14C	+ +	+	+
14C1	+	0	0
14C2	+ +	0	+
15-1	+ + +	0	+
15east	++	+ + +	+++
16A	0	0	0
16east	++	+ + +	+++
18A	+	+ +	+ +
west	0	0	0
middle	+	+++	+ +
east	+	0	+
18B	+ +	+++	+++

 Table 2.6.4
 Evaluation of Road Links with Insufficient Accessibility

(2) Area Road Insufficiency (Criterion 8-1)

Area road insufficiency is defined be "how much road requirement of a district is satisfied with 12 months passable roads."

[Area Road Insufficiency] = [Existing 12 months Road (km)] / [Road Requirement (km)]

Total length of existing 12 months passable road in a district can be computed from Roads Statistic Year 2000 - 2001, MCTPC.

The Study Team computed total distance from each village to the district center by district to identify the length of "Road requirement". District center has government office, hospital, secondary school, market place and some other facilities. To enjoy public services, it is important to secure access to district centers. For example, there are three villages A, B, C in a district. A is the district center itself. Direct distances between village A and B is 5km, and between A and C is 10km. In this case, road requirement of the district is defined as 15km. This figure should have some correlation with total necessary road length of the district.

Table 2.6.5 "Evaluation of District with Road Sufficiency" is the result of these computations with rating score. Rating was conducted based on the following classification.

+ + +	0 - 1.9% of road sufficiency
+ +	2-4.9% of road sufficiency
+	5.0 - 9.9% of road sufficiency
0	10.0% or more road sufficiency

Districts with poor road investment have higher score (more +). In other words, districts with higher score need more public investment in road infrastructure.

(3) Road Function Insufficiency (Criterion 8-2)

Some national roads in the region, like Route 15 and Route 1H, are in better condition than others. On the contrary, some parts of Route 14A and Route 1J are missing links, in other words, there is no road existing. The extent of possible improvement is different from route to route. Improvement of "missing link" to "all weather road" has much more social impact than improvement of "all weather gravel" road to "all weather paved road."

Table 2.6.6 summarizes the condition of each road link and evaluates their insufficiency. "Road Function Insufficiency" means "how much a road link can get better." Therefore, worse roads obtain higher a score (more +). To make the judgment as fair as possible, the Study Team examined the rating based on site visits and road inventory. Rating was conducted based on the following classification;

+ + +	Road condition is very bad, or with missing link. Can be
	significantly improved.
+ +	Road conditions is bad, or with partial missing link. Can be
	improved.
+	Some parts are not passable during rainy season. Can be improved
	to some extent.
0	Road condition is fair or good. All part is passable for 12 months.

Code	Savannakhet	Road Requirement (km)	12months Road (Km)	Sufficiency	Evaluation
1301	Khanthabouly	2,111	189.9	9.0%	+
1302	Outhoomphone	1,364	88.0	6.5%	+
1303	Atsaphangthong	4,271	35.0	0.8%	+ + +
1304	Phine	2,329	117.0	5.0%	+
1305	Sepone	2,308	76.3	3.3%	+ +
1306	Nong	1,267	0.0	0.0%	+ + +
1307	Thapangthong	1,771	0.0	0.0%	+ + +
1308	Songkhone	2,389	154.8	6.5%	+
1309	Champhone	1,964	116.9	6.0%	+
1310	Xonbuly	1,757	0.0	0.0%	+ + +
1311	Xaybuly	1,644	54.0	3.3%	+ +
1312	Vilabuly	2,025	0.0	0.0%	+ + +
1313	Atsaphone	1,517	37.0	2.4%	+ +
Code	Saravane	Road Requirement (km)	12months Road (Km)	Sufficiency	Evaluation
1401	Salavane	2,684	105.5	3.9%	+ +
1402	Ta oi	1,239	118.2	9.5%	+
1403	Toomlarn	619	96.7	15.6%	0
1404	Lakhonepheng	2,473	75.7	3.1%	+ +
1405	Vapy	897	2.8	0.3%	+++
1406	Khongxedone	1,045	2.0	0.2%	+++
1407	Lao ngarm	1,112	1.9	0.2%	+ + +
1408	Samuoi	659	2.0	0.3%	+ + +
Code	Sekong	Road Requirement (km)	12months Road (Km)	Sufficiency	Evaluation
1501	lamarm	957	43.3	4.5%	+ +
1502	Kaleum	2,862	157.7	5.5%	+
1503	Dakcheung	2,047	3.2	0.2%	+ + +
1504	Thateng	499	2.4	0.5%	+ + +
Code	Champasack	Road Requirement (km)	12months Road (Km)	Sufficiency	Evaluation
1601	Pakse	260	115.8	44.5%	0
1602	Sanasamboon	1,119	66.9	6.0%	+
1603	Bachiangchaleunsook	1,168	145.1	12.4%	0
1604	Pakxong	2,030	289.8	14.3%	0
1605	Pathoomphone	1,475	216.8	14.7%	0
1606	Phonthong	1,304	86.1	6.6%	+
1607	Champasack	1,282	75.3	5.9%	+
1608	Sukhuma	625	28.4	4.6%	+ +
1609	Moonlapamok	1,161	40.3	3.5%	+ +
1610	Khong	1,774	162.3	9.2%	+
Code	Attapeu	Road Requirement (km)	12months Road (Km)	Sufficiency	Evaluation
1701	Xaysetha	1,110	99.9	9.0%	+
1702	Samakhixay	121	88.7	73.2%	0
1703	Sanaxay	811	50.8	6.3%	+
1704	Sanxay	793	0.0	0.0%	+ + +
1705	Phouwong	633	26	0.4%	<u>ттт</u>

 Table 2.6.5
 Evaluation of District with Road Sufficiency

Source: Digital Data from Census 1995 and UXO Lao processed by Study Team

Road link	Observation and Inventory Information	Score
1G	Xe Bnag Hieng river and Xe Dong river is not passable	++
north	Good earth road	0
middle	Earth road with bad condition	+ + +
south	Good or earth road	0
1H-2	Good and fair earth road	0
1J	65km out of 81km is missing link	+ + +
14A	Missing links at north and south,	+ +
14A-1	Earth road under renovation (Feb 2002)	0
14B	Southern part (41km in length) is missing link	+ +
14C	Some rivers are not passable during rainy season	+
14C1	Good earth road	0
14C2	Good earth road	0
15-1	Good earth road. Huay Sphad river is not passable with heaviest rain	0
15east	Eastern part (86km to Vietnam border) is not passable in rainy season	+ + +
16A	Gravel or earth road with good condition	0
16east	Bad earth road with many rivers impassable in rainy season	+++
18A	Xe Kham Pho river and Xe Piane river is passable only a few months	++
west	Gravel road with fair condition	0
middle	Earth road with bad condition	+ + +
east	Gravel road with fair condition	0
18B	Eastern part (86.1km to Vietnam border) is not passable in rainy season	+ + +

 Table 2.6.6
 Insufficiency of Road Function

Source: Roads Statistic year 2000 - 2001, MCTPC,

Road and bridge inventory in the Progress report, the Study Team

2.7 Overall Socio-Economic Evaluation Results

2.7.1 Districts and Road Links

Among the eight criteria for the socio-economic evaluation, some of them directly evaluate road links, while others evaluate district (a level of public administration unit). For example, population of ethnic minority is directory available with each road link. Therefore, straight rating and direct comparison can be conducted. On the other hand, literacy rate data is available with each district base only. Then, in order to evaluate a road link, scores of relevant districts are referred to compute the score of the road link.

Figure 2.7.1 illustrates the spatial relation between national road links in the scope of this study and relevant districts.

2.7.2 Evaluation Results of Road Links with Socio-Economic Criteria

Table 2.7.1 shows overall evaluation results of road links with socio-economic criteria. The methodology of data processing and scoring is mentioned in the following sections.

Road links that obtained a high score are Route18A, Route1G, Route 1J, and Route 14A.

For the economic aspect, Route 14A, Route 14A1 attained high evaluation. This is because districts along the Mekong River have strong economic potential. Route 18A also achieved the same score (five). Route 18A has a strategic location in terms of international and inter-provincial connectivity. This link, as an alternative to Route 16A, would have an important role connecting Pakse to the emerging southern Vietnam, besides providing an inter-provincial all-weather connection to Attapeu province.

In the social aspect of the evaluation, national road links that serve eastern part of the study area, such as Route 1G, Route 15(east), Route 16(east), Route 18B, and Route 1J, achieved a high score. Poverty prevails in these areas.



Figure 2.7.1 Road Links and Relevant Districts

* Among the road links numbered in the above map, Route 15(east), 16(east), and Route18B are already committed for renovation; consequently they are out of the scope of this study for national road master plan.

Road Link		Economic Aspects					Social Aspects					Total
		1	2	3	4		5	6	7	8		
Major Road Link	Breakdown	Economic Effeciency	Tourism Potential	Network Conectivity	Unexploded Ordnance (LIXO)	Score for Economic Aspects	Rice Product per person	Literacy & Education	Ethnic Minorities	Accessibility	Score for Social Aspects	Economic + Social Aspect
1G		+	0	+		0	++	+++	+++	+ +	10	10
	1G North	+	0	0	0	1	+ +	+ +	+ +	0	6	7
	1G Center	+	0	0	-	0	+ +	+ +	+ + +	+ +	9	9
	1G South	+	0	0	0	1	+ +	+++	+	0	6	7
1H		+	0	0	0	1	0	+ +	+ +	+	5	6
1J		0	0	0	0	0	+ +	+++	+	+ + +	9	9
14A		+ +	+ +	+	0	5	0	0	+	+ +	3	8
14A1		+ + +	+ +	0	0	5	0	0	+	0	1	6
14B		+	0	0	-	0	0	+	+	++	4	4
14C		+	0	0	0	1	0	+	+	+	3	4
14C1		++	0	0	0	2	0	0	+	0	1	3
14C2		++	0	0	0	2	0	0	0	+	1	3
15		++	0	0	-	1	0	+	+ +	+	4	5
15 east		0	0	+ +		0	+ +	+++	+ + +	+++	11	11
16A		0	+	++	0	3	+	+	+++	0	5	8
16-east		0	0	+ +	-	1	+ +	+ +	+ + +	+++	10	11
18A		+	+	+++	-	4	+	+ +	+++	+ +	8	12
	18A West	+ +	+	+ + +	0	6	+	+	0	0	2	8
	18A Center	0	0	+ + +	0	3	+	+ + +	0	+ +	6	9
	18A East	+	0	+ + +	-	3	+	+ +	+ + +	+	7	10
18B		0	0	+ +	-	1	+ +	+ +	+ +	+ + +	9	10

Table 2.7.1 Overall Evaluation Results of Road Links with Socio-Economic Criteria