

CHAPTER VI

RURAL-BASED DEVELOPMENT PLAN

The development initiatives proposed in Chapter V are objective-oriented and they will cover both the rural and urban areas. On the other hand, the sector studies presented in Part 2 propose the development projects/programs sector-wise. For development of the rural area and reduction of rural poverty, however, it will be effective that the objective-oriented initiatives and sector-wise programs proposed for rural development are planned for implementation area-wise. This Chapter VI compiles the programs/sub-programs proposed under the development initiatives and the sector-wise programs to be implemented in the rural area.

6.1 Position of SKR Rural Area

86% of the SKR population live in the rural area. Today, the majority of households, including a significant number of the next generations subsist on the land and natural resources of the region in a traditional manner. In the light of the current situation, the functional position of rural SKR is summarized as follows:

1) Abundant but Sensitive Natural Resources

Forests cover nearly 3.2 million hectares or about 83% of the total land of SKR. Around 50% of the total land is classified as high forest. The high forest is rich in fauna and flora, and it is a priceless local, national and international asset and should be conserved. About one million hectares are designated as NBCAs and another quarter of one million hectares are officially protected. Thus, over one-third of SKR is under some form of legal protection.

Unfortunately, there has been forest degradation in recent years partly caused by logging and partly by various activities of villagers (including shifting cultivation). Approximately 190,000 hectares in NBCAs are now unstocked (degraded). It is

expected that the villagers will re-stock these areas and manage the remainder for the protection of bio-diversity, water, non-timber forest products and tourism. The production and degraded forests will be sustainably managed to produce a whole range of products and to enhance their stocking capacity.

SKR has five major, two medium and several minor water catchment areas all of which feed into the Mekong river. Water from these river systems is used for irrigation and hydropower generation. Also, the rivers are important sources of animal protein. The water resources in SKR are not only a regional asset, but also a vital asset for the riparian countries downstream.

2) Limited Production and Consumption

The main agricultural activities in SKR are rice cultivation and animal raising. Though the value added of rice is relatively low, production represents a significant share in GPP. Rice produced in SKR contributes not only to regional demands, but also the national demand. It is estimated that about 55,000 tons and 38,000 tons of milled rice produced in Savannakhet and Khammouan province respectively are exported to other regions. Livestock is a main income earner for rural households and a protein source for urban dwellers. SKR has at present about 270,000 head of cattle, 170,000 head of pigs, and 1.8 million head of poultry. Livestock in SKR has a considerable potential for domestic and international markets. Although SKR will continue to serve as the “granary” for the country, the scale of production will remain relatively limited.

The local processing industry is still in its infancy, with weaving, rice milling and some agro-processing, though SKR has a considerable potential to expand industry by making use of the local resources. Such local industries will be promoted in villages and rural centers mitigating industrial concentration in the urban area.

Although SKR accounts for one-fourth of the national population, most rural people are subsistence farmers. Their demand for products is still relatively small, but it will gradually expand into the market economy as integration proceeds and income generation is elevated. And this will become a major force in developing the national and SKR economies.

3) “Backbone” of SKR Development

The rural area is expected to play an important role in enhancing and ensuring overall SKR development through production, processing and consumption. Without sound and healthy development in the rural areas, SKR development will not be achieved. This is particularly true for future generations, since a majority of them will grow up in these areas.

6.2 Potentials and Constraints

6.2.1 Potentials of SKR Rural Area

SKR is endowed with land and water resources, and it offers large potentials for development. Major resources and potentials are as follows:

Forestry Resources

Currently, the most immediate forest products contributing to the regional economy are logs from the high forests (particularly mixed deciduous forests) and production forest areas. The standing stock and estimated yield of the SKR forests are preliminarily estimated as tabulated below. (Potentials of the SKR forests are discussed in detail in Sector Report, Chapter III.2.)

Table 6-1 Aboveground Volume and Yield of Forests

(Units: million m³)

	Area million ha.	Standing stock			Estimated yield			Total volume (all species)	
		Com. species	Non-C. Species	Total	Com. species	Non-C. species	Total	Stock	Yield
Protection areas	1230	154.15	110.65	264.80	3.86	2.76	6.62	478.85	14.78
Production areas	978	79.74	39.42	119.16	1.98	0.98	2.96	212.12	7.69
Potential forest areas	727	23.24	8.24	31.48	0.57	0.20	0.77	57.68	4.08
Sub-total forest areas	2935	257.13	158.31	415.44	6.41	3.94	10.35	748.65	26.55
Other land areas	718	1.97	1.27	3.24	0.05	0.03	0.08	9.27	1.69
Total all land area	3653	259.10	159.58	418.68	6.46	3.97	10.43	757.92	28.24

Note: Rock area 72,000 ha. Swamp and water 83,000 ha. Total area 3,808,000 ha.

Com. = commercial. Non-C. = Non-commercial. The yield of small diameter wood was estimated assuming shorter nominal rotations for non-high forest species ranging from 10 to 20 years.

Source: JICA Study Team estimates.

If properly managed, production forest will be able to supply high quality log in a sustainable manner. As a general policy, the degraded forest (i.e., unstocked or

poorly stocked area, bamboo area and shifting cultivation areas, totaling about 33% of the SKR land) should be restored the high forests, preferably through improved management and reforestation efforts (particularly degraded area in NBCAs). Some of these areas will be converted to arable and pastoral farming. This should be done according to the characteristics of the land. Based on the GIS survey, the existing land use of the degraded forest in SKR is mapped out as shown below.

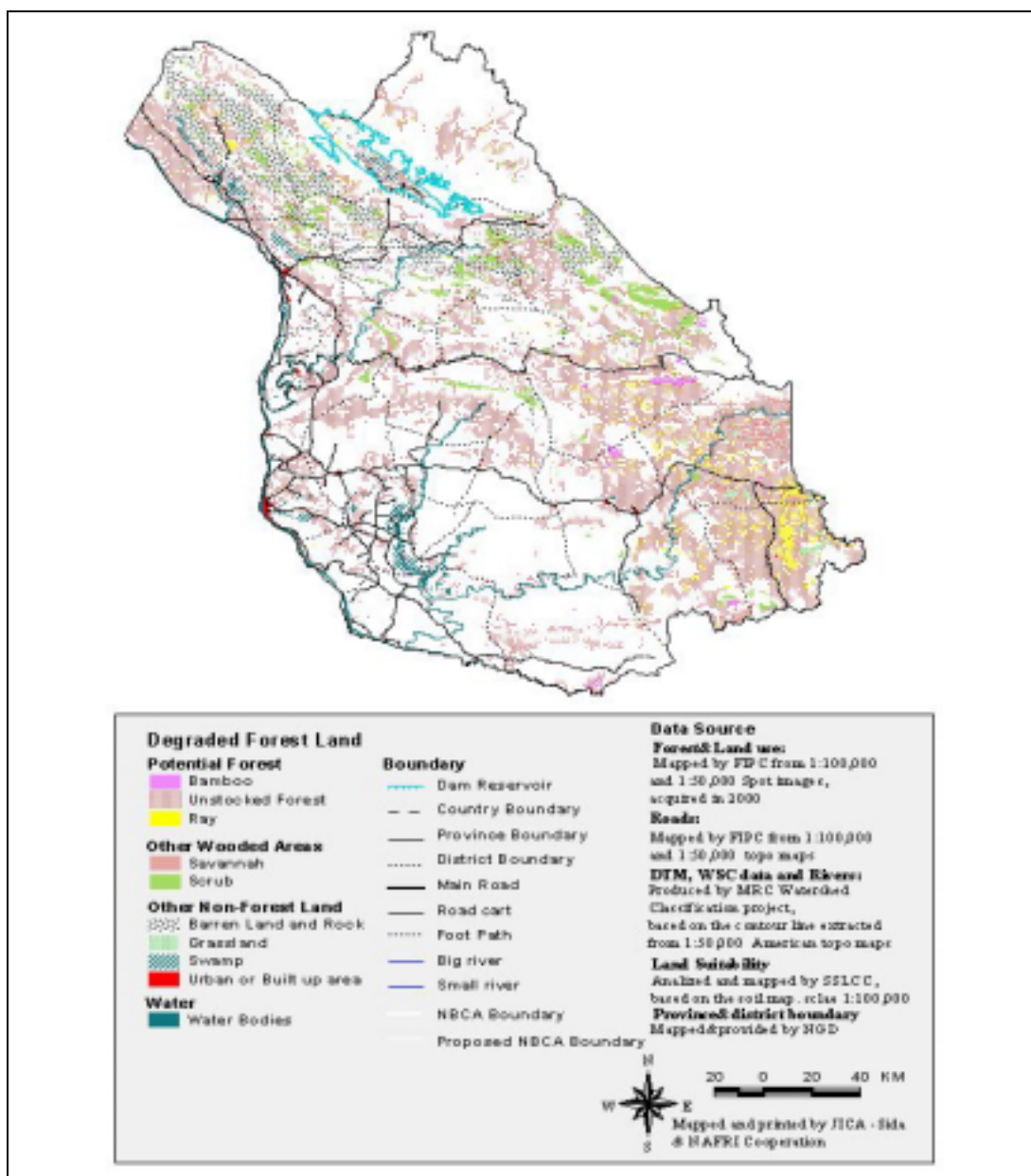


Figure 6-1 Land Use of Degraded Forest

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Judging from the estimated volume and yield of the SKR forests, there is a surplus of small diameter wood for use as raw materials for local industry and as natural biomass fuel resource (e.g., fire wood for household consumption and processing energy of local industry). They may also have a potential for export of charcoal related products (e.g., liquid distillates and activated charcoal).

Water Resources

Water available in the SKR river systems can be utilized for irrigation, fisheries and hydropower generation. Endowed with abundant water resources, the additionally irrigable areas are more than 329,000 hectares or much larger than the total existing farmlands (though all farmlands are not always irrigable) as shown below.

Table 6-2 Potential Irrigation Area in SKR

Province / Region	Nos. of districts (no.)	Nos. of schemes (no.)	Potential Irrigable Area		Existing irrigated ('000 ha)	Additionally Irrigable ('000 ha)
			Wet S. ('000 ha)	irrigated ('000 ha)		
Khammouan						
-Lowland (Mekong)	3	28	60	56	19	41
- Central	3	67	101	68	19	82
- Eastern	3	74	34	21	4	30
(sub-total)	(9)	(169)	(195)	(145)	(42)	(153)
Savannakhet						
-Lowland (Mekong)	5	74	90	63	45	45
- Central	6	159	87	28	21	66
- Eastern	4	145	71	31	6	65
(sub-total)	(15)	(378)	(248)	(122)	(72)	(176)

Source: Updated by JICA Study Team based on the List of Potential Irrigation Schemes, March 1996 by DOI, MAF.

Potential for hydropower generation has been identified in the upstream of the Nam Theun, Xe Bangfay and Xe Bang Heing rivers. The upstream reaches of the Nam Theun river runs through the northern part of Khammouan, and the proposed Nam Theun II hydropower station (995 MW) is in the final stage of an environmental impact assessment. In the upper Xe Bang Heing, the Xepon hydropower project (75 MW) has been identified as a potential power source.

Water is used for aquaculture in SKR. Official estimate shows that there are around 10,000 fishponds (8,000 ponds in Savannakhet and 2,000 ponds in Khammouan). Fish capture was estimated to be 6,900 tons (1996). Judging from the current per-capita consumption from fish catch (about 6.7 kg/capita/year in Savannakhet), the current regional demand for fish is about 7,200 tons. Water

resources of the region can be used for further enhancement of aquaculture development.

Agriculture and Livestock

SKR is endowed with flatlands, and therefore has a considerable area suitable for agriculture. According to the estimates based on the land suitability map, nearly one million hectares or 25% of the total land area is categorized as potentially cultivable. Although there are some limitations from the viewpoint of forestry conservation, there are still about 710,000 hectares suitable for paddy field and field crop cultivation. Besides, the potential land use map shows 430,000 hectares, or 11% of total land area is categorized as suitable for livestock. The land suitability map of SKR is shown on the following page.

Table 6-3 Potential Land Use for Agriculture in SKR

(Unit: '000 ha)

Category	Khammouan	Savannakhet	SKR
Paddy field	133	281	414
Field crops (other agricultural land)	123	173	296
Fruit tree/ Tree crops plantation	85	164	249
Pasture (grazing land)	142	287	429

Source: JICA Study Team based on GIS database

Production of field crops should have stable local demand and export demand. Among various crops, it appears that the following cash crops have potential for development in SKR: (Agricultural potentials are discussed in detail in Sector Report, Chapter IV.3.)

Field Crops: peanut, soybean, maize, green bean, sesame, chili, garlic

Fruit Tree: tamarind, longan, litchi, cashew nut, pineapple

Tree Crops: coffee, mulberry, kapok, bamboo and rattan

Livestock: cattle, pig, native chickens (there exist a lot of local varieties having local demand and demand in the neighboring countries)

The sloping land in SKR needs specifically designed farming. "Sloping agricultural land technology" (SALT) promoted by the government envisages (i) a contour line cultivation mixed with annual and perennial crops, (ii) mulching, (iii) compost, and (iv) fencing. If the SALT recommendations are followed, particularly in the central and eastern mountainous zone, agricultural potential could be increased substantially.

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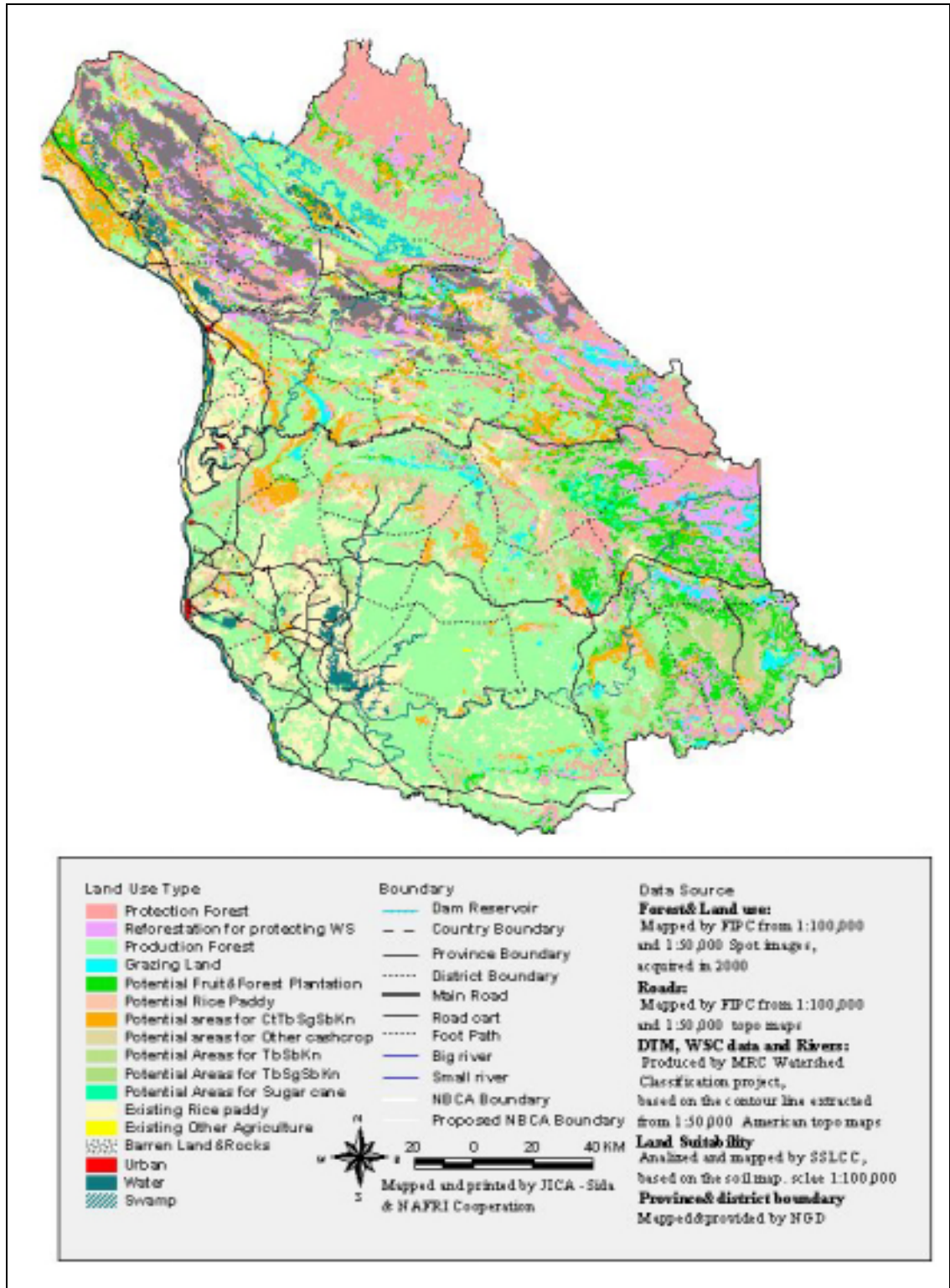


Figure 6-2 Land Suitability in SKR

As the majority of farmers are engaged in the traditional pattern of cultivation, they apply little fertilizer or chemical inputs. Their products therefore have a good marketability. Since safe food is an international concern, more and more people are showing interest in chemical-free foods. By increasing productivity, diversifying crops, and improving the quality of products, SKR has a strong possibility to expand as an excellent producer of organically grown foods (eco-product).

Local Industry

The handicraft products and textiles are mainly produced in rural villages and are still used in daily life of people both in rural and urban area throughout the country. The major cottage industries in SKR are also traditional using high quality raw materials. These products have considerable potential in specialized high-class markets.

In the course of this study, a hundred of local products have been identified through discussions with villagers, as well as district and provincial officers. They are mostly of local products using available natural resources, unused materials or by-products. (Potentials of local industry are discussed in detail in Sector Report, Chapter V.2.)

Among the potential local industries, the following products have been selected as promising for promotion in SKR at the initial stage of development:

Table 6-4 Promising Local Industry Products

	Bio-diversity	Forestry	Textile	Agriculture	Fishery	Livestock	Mining
1	Bio-diversity	Handicraft	Sericulture	Mushroom	Processing	Processing	Ceramic
2	Insect cultivation	Wood processing	Cotton/natural dyes	Bee-Culture	By-product use	By-product use	Brick and tile
3	Non wood pulp	Bamboo processing	Kapok fiber	Milling factory			Pottery
4	Non-wood products	Charcoal					Lime burning
5	Natural Dye Material	Wood-chip					
6	Medical Herbal	Eucalyptus processing					
7		Poles					

Source: JICA Study Team

Others

As villagers live on their traditional heritage with a symbiotic pattern of relationship with the surrounding natural resources, they attract international tourists. Further, the forest areas endowed with rich fauna and flora are magnets for eco-tourism. Besides, as most of the tourist attractions in SKR are located in the rural areas, village people can be major players for promoting tourism in SKR. (The potentials of tourism industry are discussed in detail in Sector Report, Chapter V.4.)

6.2.2 Development Constraints

To date, various development efforts have been made in SKR provinces. For economic development, such activities as rice cultivation, cash crop production, semi-intensive raising of livestock, inland fish cultivation had been expanded. On the other hand, for social development, construction of schools, introduction of village health posts and the Drug Revolving Fund have been implemented. These efforts, however, have not had significant impacts or brought about a rapid expansion in both the economic and social fields. The reason appears to be attributable to the following difficulties:

Difficulties in service providers

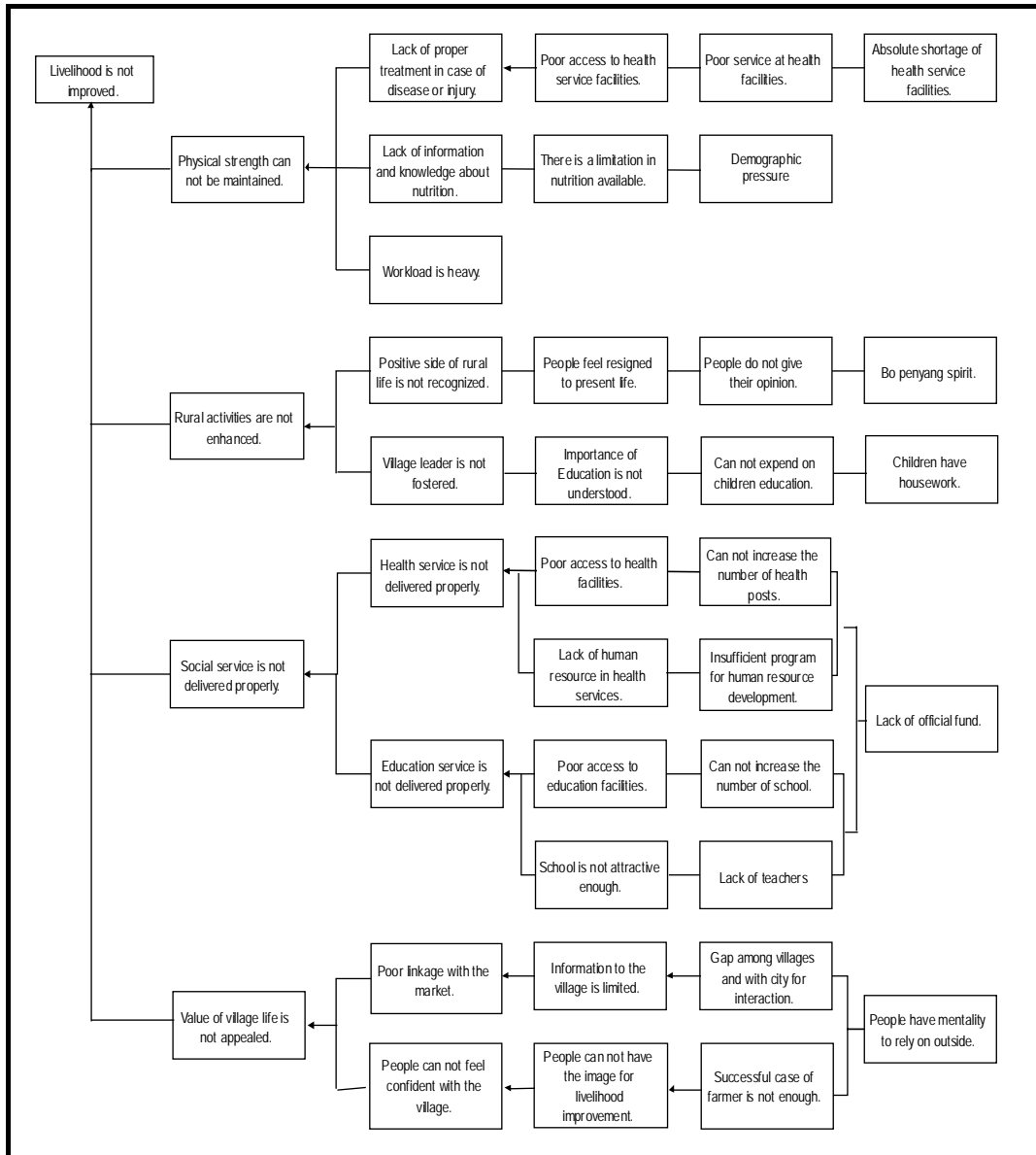
- Lack of human resource.
- Lack of accessibility to the rural villages and a capability for marketing.
- Lack of fund for massive and continuous services.

Difficulties in service receivers

- Lack of motivation.
- Lack of room for risk taking.
- Lack of opportunities to see successful cases or other type of practices.

As a result, the service provider has not the flexibility to adjust to the immediate needs of the receivers, and therefore, cannot achieve the level of independent

action needed for sustained rural area development. The figure below illustrates a problem structure for rural area development in SKR.



Source: JICA Study Team

Figure 6-3 Problem Structure for Rural-Based Development

It is noted that the most critical issue to be addressed for rural area development is capacity building for both the service providers and the service receivers. This issue should be taken into account in formulating the rural area development plan for SKR.

6.3 Rural-Based Development Plan

6.3.1 Zones for Planning

SKR has a large surface area, with a variety of natural and social features. For instance, there is a considerable difference in the nature of mountainous areas between Savannakhet and Khammouan. The composition of ethnic groups also varies by area. In promoting rural development, these factors should be taken into consideration. In the rural-based development plan, the whole area of SKR is classified into three zones based on geographical features, accessibility to markets, and composition of ethnic groups, as proposed in Chapter 4.2.

Table 6-5 Characteristics by Zone

Name	Location	Access	Production Resource	Ethnic Group
Lowland (Mekong) Region	Western part	Access to urban area is assured.	There are plenty of lands suitable for agriculture production.	Majority is Lao Loum.
Central Region	Central part	Access to urban area is relatively poor.	There are plenty of lands suitable for agriculture production.	There is a mixture of Lao Loum and Lao Theung.
Eastern Mountainous Region	Eastern part	Access to urban area is absolutely poor.	Endowed with forest resources.	The Lao Theung outnumbers Lao Loum.

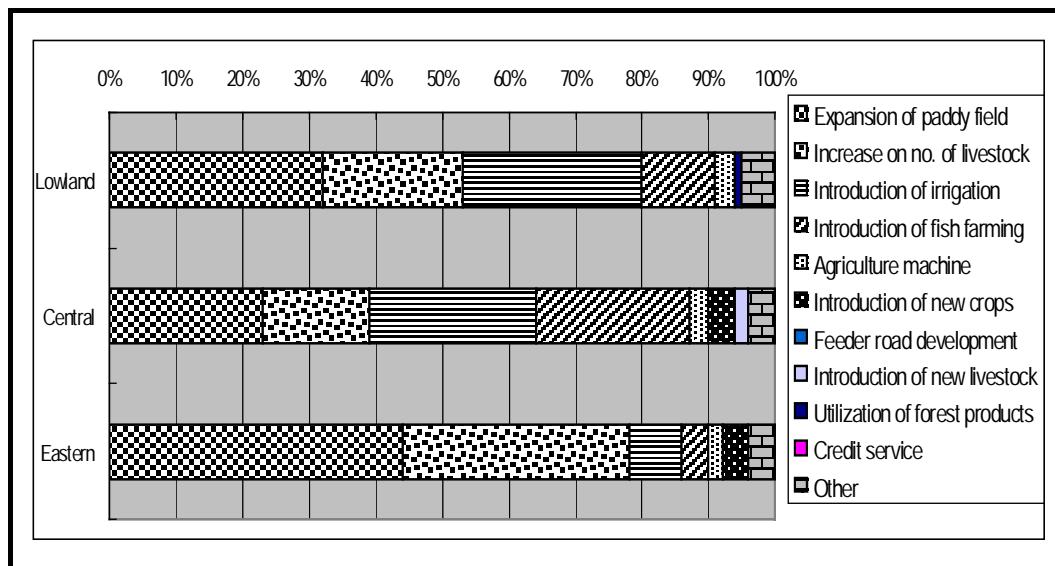
Source: JICA Study Team

Table 6-6 Population and Households by Zone

Region	Population	No. of District	No. of Village	No. of Household	Persons/HH
Savannakhet					
1. Lowland	353,776	5	558	59,794	5.9
2. Central	245,148	6	528	39,960	6.1
3. Eastern	127,966	4	457	20,798	6.2
Khammouan					
1. Lowland	137,158	3	260	24,314	5.6
2. Central	95,729	3	320	18,096	5.3
3. Eastern	61,944	3	220	11,252	5.5
Total					
1. Lowland	490,934	8	818	84,108	5.8
2. Central	340,877	9	848	58,056	5.9
3. Eastern	189,910	7	677	32,050	5.9

Source: Basic Statistics about the Socio-Economic Development in the Savannakhet Province 1998 and that in the Khammouan Province 1998.

Through interview surveys in each zone, it is clear that people are willing to enhance their standard of living through various means as shown below.



Source: JICA Study Team

Figure 6-4 Intended Means for Income Increase by Zone

6.3.2 Agriculture Development Plan

1) Plan to Double Agricultural Household Income

The proposed agriculture development plan is challenging. It envisages to double agricultural household income within 10 years by means of an integrated farming enhancement program. This program is one of the major component of the New Village Initiative (NVI) planned and proposed in Chapter 5.1.

The integrated farming enhancement program is planned through diversification. Diversification does not mean only “crop diversification” but also intensive farm management, integrated and rotational farming, organic farming, and other ideas on how to add value to the resources which have not been used effectively before. (Refer to Sector Report, Chapter IV.3 for detail.)

(i) Intensive Farm Management

In general, current extensive farming is not so productive. In order to improve productivity, there are many measures that can be taken without a large-scale investment. These measures include better management of irrigated paddy fields with more accurate leveling, and more effective field management such as weeding and cleaning. Likewise, there are measures to improving current cattle grazing systems by enclosing pastures in order to control livestock disease, and making it easier to collect manure.

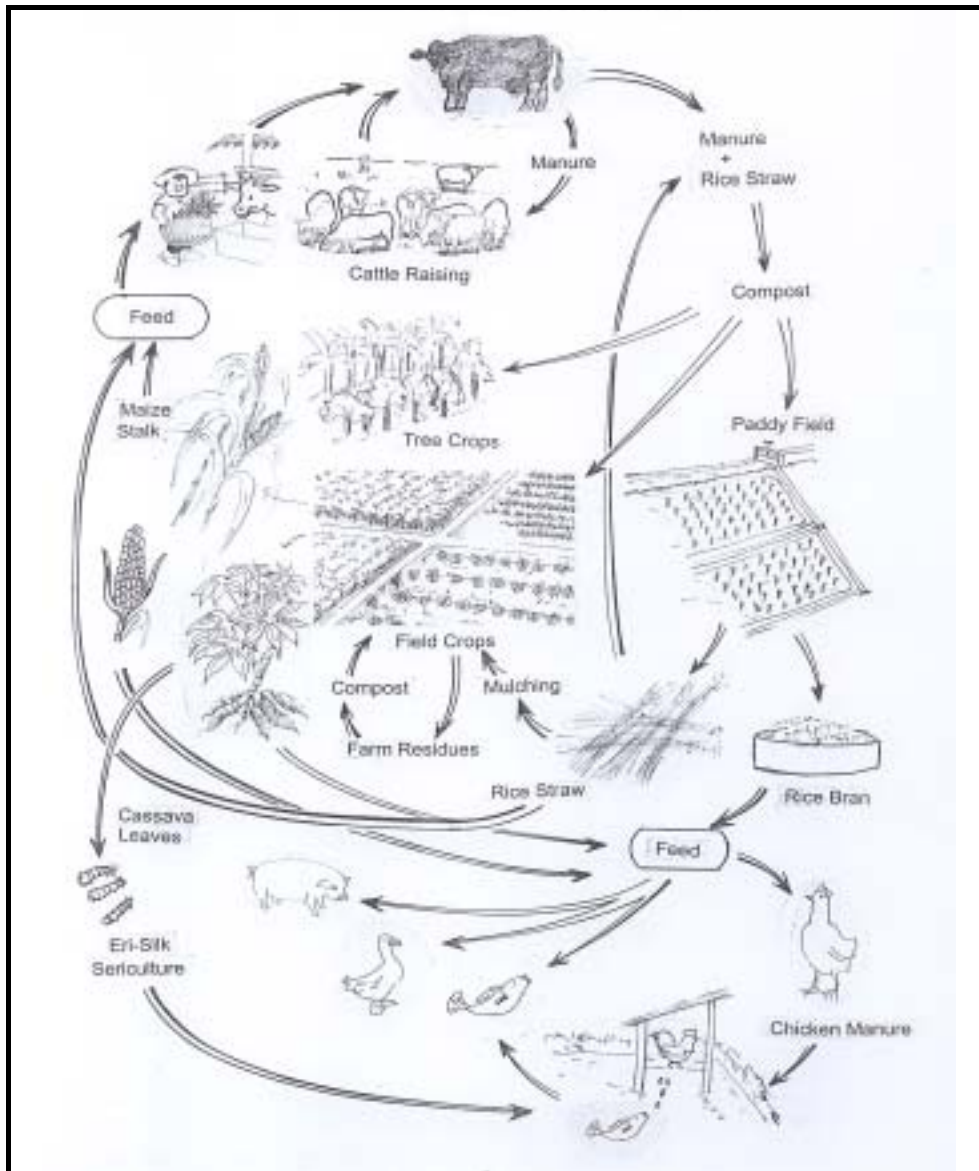
(ii) Integrated and Rotational Farming

In order to mitigate seasonal price changes, it is planned to expand integrated farming, compounded with recycling of existing resources in farm households. If mixed with rice straw, cattle manure will become compost that can be utilized as a fertilizer. Crops should be cultivated by rotating cassava, maize, and peanuts, in order to preserve balanced soil structure.

(iii) Organic Farming

Chemical fertilizers are costly and not always available to farmers. The government is also encouraging the use of bio-fertilizer instead of chemical fertilizers. In combination with recycled use of cattle manure and crop residues, organic fertilizer will be used to the maximum extent in order to secure sustainable farming systems and to target international markets that prefer chemical-free foods or ecology-friendly products (“eco-products”).

The proposed rotational/recycled farming system with farm by-products and farm residues is illustrated on the following page.



Source: JICA Study Team

Figure 6-5 Rotational Farming with Farm By-products and Residues

2) Area-based Development Plan

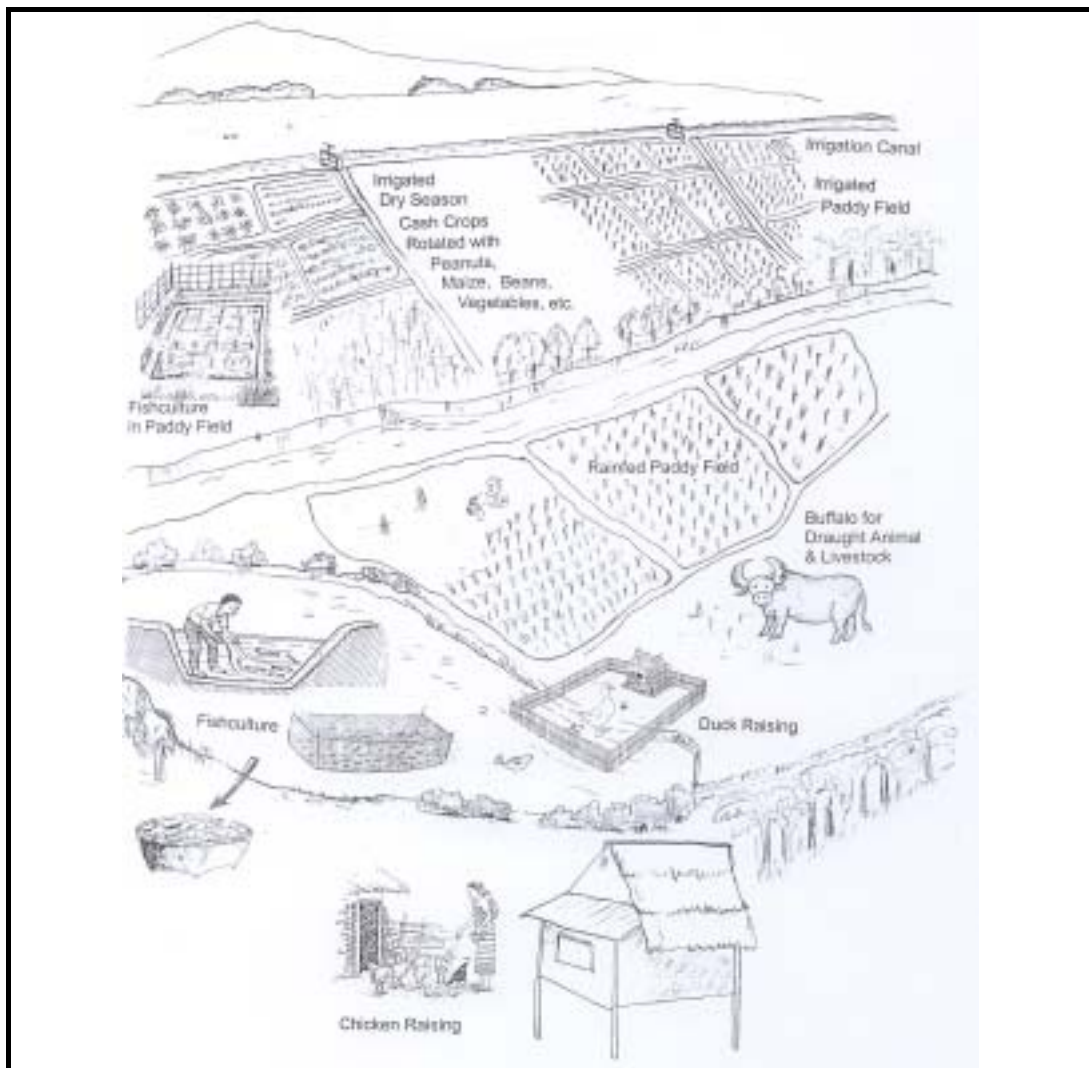
Agricultural development in each zone is strategically planned as summarized below.

Lowland (Mekong) Zone

In the plains extending along the Mekong river and in the watersheds of Xe Bangfai, Xe Champhon, Xe Banghieng and their tributaries, rice cultivation is a

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dominant farming system. However, in reality, even these rice farmers earn about half of their income from livestock, and animal raising is a key factor in their farm economy. Thus, it is planned that animal raising will be increased substantially. In view of the limited forests for pasture expansion in the lowlands, more focus will be put on pigs and poultry. Cattle raising will be increased as far as the land for pasture is available. Likewise, by making use of topographic conditions, fish culture will be promoted widely. In view of the regional characteristics, the “**integrated farming system with rice + small animal + fishery**” is recommended for agriculture development in the Mekong coastal zone.



Source: JICA Study Team

Figure 6-6 Integrated Farming in Lowland Zone

With the proposed farming system, it is envisaged that the average household income in the lowland zone will increase from 2.8 million Kip in 2000 to around 5.6 million Kip in 2010.

Table 6-7 Average Household Income (Lowland Zone)

Land Use	2000			2010		
	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)
1) Rice (wet season)	1,522	0.9	1,294	1,902	0.9	1,617
2) Rice (dry, irrigated)	1,682	0.2	252	2,062	0.15	309
3) Cash crop (dry, irrigated)	1,800	0.0	0	2,370	0.15	356
4) Field crop (mixed)	1,096	0.1	56	1,402	0.25	350
5) Pasture (cattle grazing)	-352	0.0	0	-352	1.0	-352
6) Fruit/tree crops	0	0.0	0	1,900	0.1	199
7) Fishpond	2,100	0.0	0	2,494	0.3	748
	(,000 kip/head)	(head)	(,000 kip)	(,000 kip/head)	(head)	(,000 kip)
a) Cattle/buffalo	204	3.5	714	242	5.7	1,381
b) Pig	222	1.4	311	264	2.3	602
c) Poultry	16	12.0	191	19	19.5	371
Total Income per Household			2,818			5,582

Source: JICA Study Team estimate (Refer to Sector Report, Chapter IV-4.2 for detail)

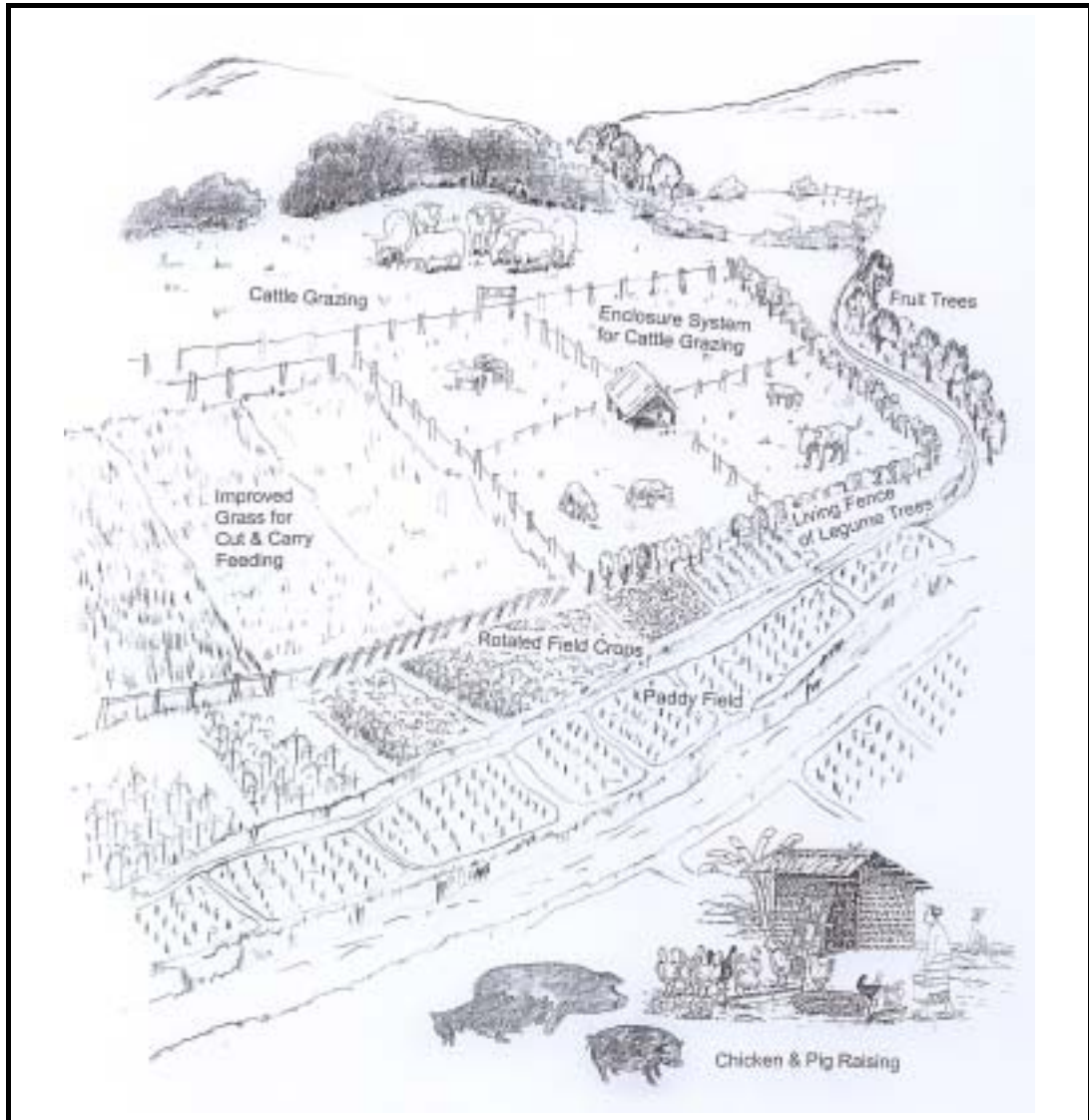
To attain such a household income, training of the extension workers and village leaders will be indispensable. The Agricultural Collage proposed under the Human Resource Development Initiative (see Section 5.2) will serve for enhancement of technical capability of the extension workers and village leaders.

Central Zone

The central zone is a transitional zone. From a farming point of view, the farming system is similar to that of the eastern mountainous zone, and farmers depend on large animal raising in combination with limited paddy production. Since the landforms of this zone are gentle rolling hills with broader forest area in general, they are better equipped to raise large animals. The average paddy fields are larger than the eastern zone, even though the average farm size is smaller than the lowland zone. Under such conditions, it is expected that market-oriented farming will be extended from this region step by step. Since cattle raising is one of the most promising components, the **“integrated farming system with large**

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animal (cattle) + rice” is recommended for agricultural development in the central zone.



Source: JICA Study Team

Figure 6-7 Integrated Farming in Central Zone

The average household income in the central zone is estimated to increase from 2.3 million Kip in 2000 to around 4.9 million Kip in 2010, as shown in the following table:

Table 6-8 Average Household Income (Central Zone)

Land Use	2000			2010		
	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)
1) Rice (wet season)	1,522	0.7	989	1,845	0.7	1,199
2) Rice (dry, irrigated)	1,682	0.0	0	2,001	0.06	100
3) Cash crop (dry, irrigated)	1,800	0.0	0	2,297	0.06	115
4) Field crop (mixed)	1,096	0.1	55	1,369	0.2	272
5) Pasture (cattle grazing)	-352	0.0	0	-352	1.0	-352
6) Fruit/tree crops	0	0.0	0	1,889	0.3	567
7) Fishpond	1,996	0.0	0	2,369	0.2	474
	(,000 kip/head)	(head)	(,000 kip)	(,000 kip/head)	(head)	(,000 kip)
a) Cattle/buffalo	194	4.6	891	230	7.5	1,724
b) Pig	211	1.3	275	251	2.1	531
c) Poultry	16	9.0	137	18	14.7	265
Total Income per Household			2,347			4,895

Source: JICA Study Team estimate (Refer to Sector Report, Chapter IV-4.2 for detail)

Eastern Mountainous Zone

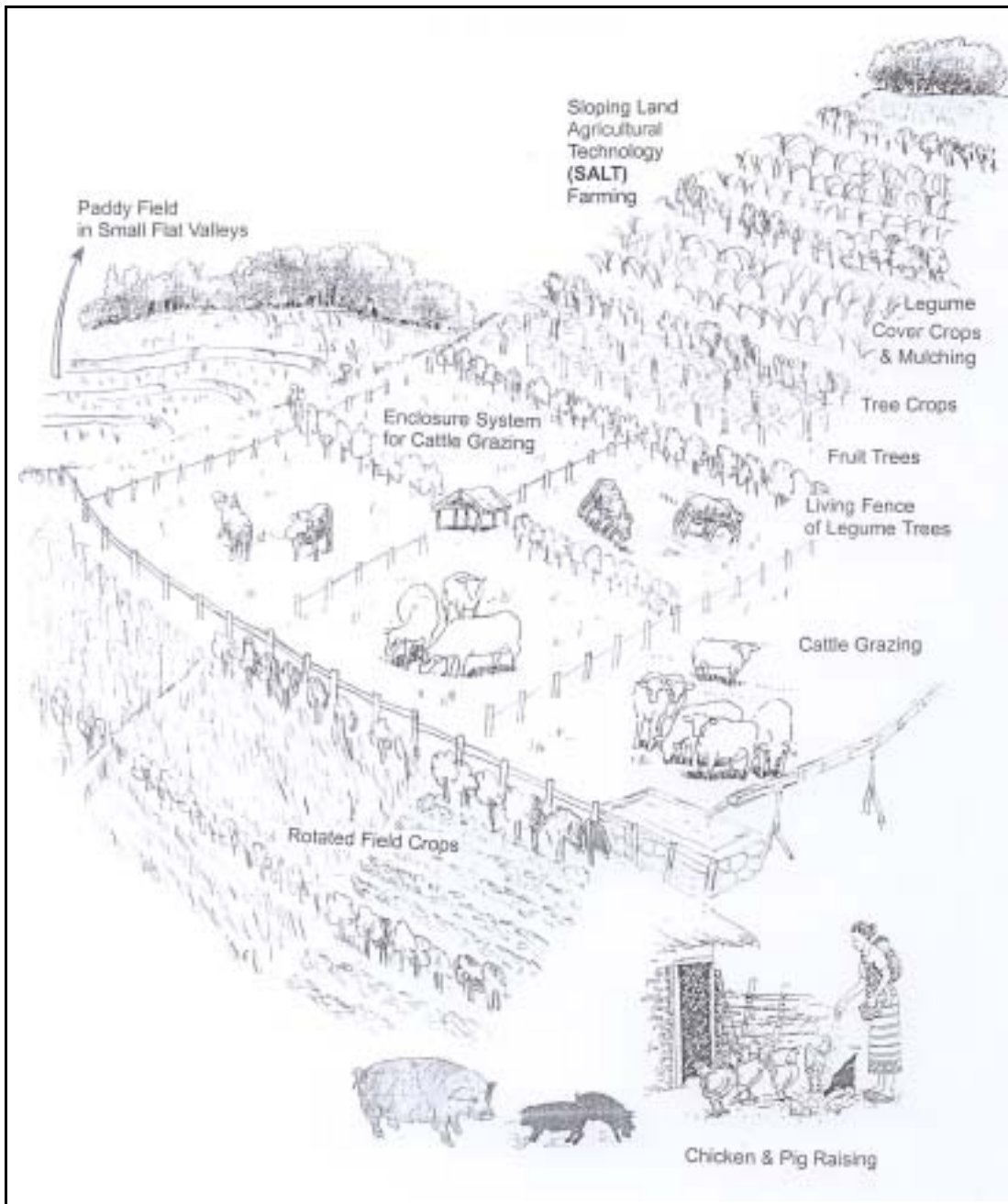
Even in the eastern highland areas, farmers grow wetland rice in small flat valleys for self-consumption. On the other hand, the forest area extends more widely, enabling more cattleraising. A semi-intensive raising system, with improved pasture and dry season feed, will be introduced together with a community-based management system. As shown in Figure 6-4, villagers in this zone have strong desires to promote livestock. Aiming at (i) avoiding farm management risks, (ii) promoting diversification, and (iii) maximizing the use of natural resources, it is recommended that the agricultural development pattern of the “**integrated farming system with rice + large animal + fruit tree**” be adopted in the eastern mountainous zone.

Table 6-9 Average Household Income (Eastern Mountainous Zone)

Land Use	2000			2010		
	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)	Unit Income (,000 kip/ha)	Area (ha)	Income (,000 kip)
1) Rice (wet season)	1,522	0.4	609	1,788	0.4	715
2) Rice (dry, irrigated)	1,682	0.0	0	1,940	0.0	0
3) Cash crop (dry, irrigated)	1,800	0.0	0	2,223	0.0	0
4) Field crop (mixed)	1,096	0.1	110	1,316	0.3	395
5) Pasture (cattle grazing)	-352	0.0	0	-352	1.0	-352
6) Fruit/tree crops	0	0.0	0	1,789	0.5	895
7) Fishpond	1,890	0.0	0	2,244	0.06	135
	(,000 kip/head)	(head)	(,000 kip)	(,000 kip/head)	(head)	(,000 kip)
a) Cattle/buffalo	184	3.8	699	218	7.5	1,635
b) Pig	200	2.0	400	236	3.3	774
c) Poultry	14	9.5	135	17	15.5	265
Total Income per Household			1,953			4,461

Source: JICA Study Team estimate (Refer to Sector Report, Chapter IV-4.2 for detail)

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Source: JICA Study Team

Figure 6-8 Integrated Farming in Eastern Maintainous Zone

In each zone, farmers-driven development should be promoted in order to enhance the village capacity. At the initial stage, the government extension staff may present a menu for diversification for their choice, but farmers themselves are responsible for their selected programs. On the other hand, the extension workers are to be trained for their capacity building at the Agricultural College

proposed for establishment in Savannakhet. Further, in the event that the Regional Development Fund and/or microfinance is set up, villagers will have access to financial support to diversify their farming and to promote the integrated farming enhancement program to double the household income within 10 years. (Refer to Sector Report, Chapter IV.4 for detail.)

6.3.3 Local Industry Development Plan

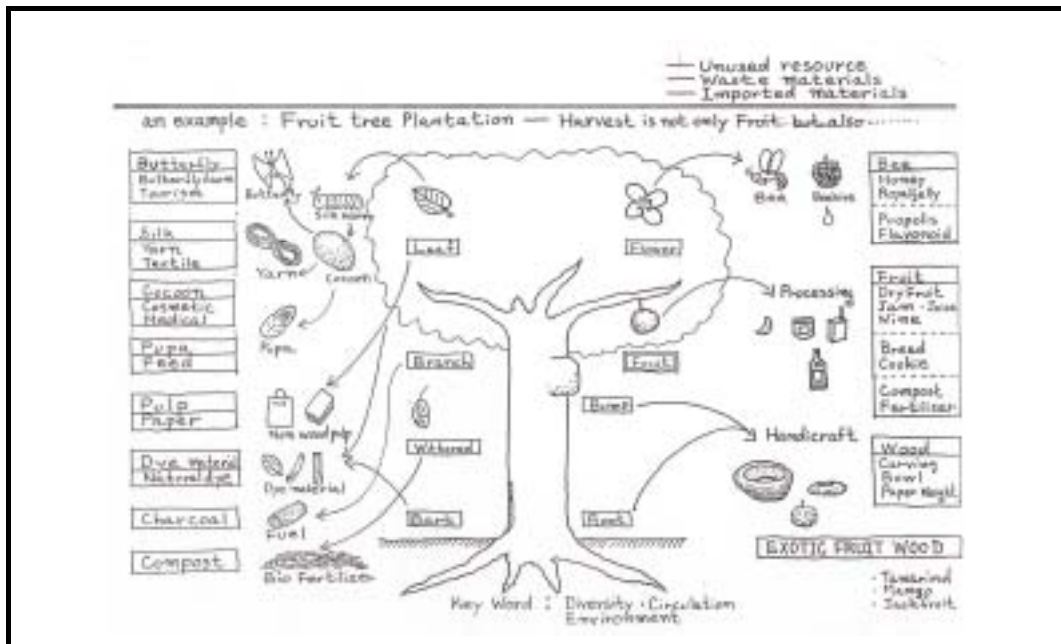
1) Directions for Development

Local industry will be fostered starting from traditional production methods, by way of a gradual improvement in the processing technology in order to make it possible to produce high value added products. Notably, the resources available or produced in the forest areas are utilized to the maximum extent in the rural areas. Through promotion of local industry, farmers' household income will be increased and at the same time, the inter-relation of people and forest will be strengthened and the circulation of regional resource will be enhanced.

Development of local industry is one of the major component of the New Village Initiative (NVI) proposed in Chapter 5.1. In prompting local industry in the rural area, the following points will be taken into account:

(i) Identification of under-used and unused materials

Among the unused resources, by-products, or waste materials, potential products for local industry can be identified. An example of local industry promotion is illustrated in Figure 6-9.



Source: JICA Study Team

Figure 6-9 Potential for Local Industry Promotion

(ii) Selection of suitable products

Each village or district has a comparative advantage such as quality and availability of raw materials, and accumulated traditional techniques. For those targeting high-class markets, images from the unique character of the local society may be identified and promoted together with the products.

(iii) Renovation of production technology

Since the existing local industry is targeted for supply of daily necessities in domestic markets, the products naturally are irregular in size and low in quality. In order to be appreciated by wider markets, it is necessary to improve quality through production and management process. Much can be learned from the voice of customers. It will be further enhanced by opportunities to share the experiences and knowledge accumulated from successful cases. For the promotion of high-class products, a key factor is the direct intervention of buyers.

2) Promising Local Products

Out of 100 local products identified through the field surveys, a dozen products have been selected as promising local products by zone as shown in the following. (Refer to Sector Report, Chapter V.2 for detail.)

Table 6-10 Promising Local Products by Zone

Category	Product Item	Savannakhet			Khammouan		
		Lowland	Central	Eastern	Lowland	Central	Eastern
Bio Diversity	Bio Compost						
	Non wood products						
	Natural dye material						
	Medical herbs						
	Bee culture						
Forestry	Charcoal						
	Bamboo						
	Wood handicraft						
Textile	Sericulture						
	Cotton						
	Natural fibers						

Source: JICA Study Team

Bio-Compost is the collection and use of agricultural/animal waste for organic farming. For instance, waste of organically grown fruit and vegetables will be used as bio-compost, in addition to bio-fertilizer to be produced at the factories planned by the government.

Non-wood pulp is to utilize forestry waste (e.g., wood chip, branches), naturally grown plants (e.g., bamboo, grasses) and agricultural wastes (e.g., rice straw, corn, banana leaf) as raw materials for production of paper for wrapping of local products.

Non-wood products include plant oils, resins, rosins, dyes, flowers, fodder, fruit, edible fungi, medicine, nuts, rattan, tannin, etc. These products can be harvested in the forest areas and marketed.

Natural dye materials have been traditionally used to dye textile and naturally dyed materials are promising for exports as demand for natural dyestuff is increasing to substitute chemical dyestuff.



Source: JICA Study Team

Picture 6-1 Natural Dye Materials and Dyed Yarn in SKR

Medical herbs have also been traditionally used in the country and basic knowledge has been accumulated, including materials made of fruit, leaf, stalk, branch, and root. Some Thai enterprises are interested in their marketing.

Bee culture or *apiculture* has potential in SKR and certain kinds of wild honey are highly prized. Eucalyptus honey is competitive with Chinese milk vetch honey because of high contents of calcium, potassium and magnesium.

Charcoal is the locally traded fuel. Raw materials (branch, lumber waste and bamboo) are abundantly available, particularly small-sized branches left in the harvested forests. Activated charcoal can be used for smell extinguishing, water purification, air purification, and by-products are used as liquid distillates.

Bamboo grown area decreased in SKR but it is still abundantly available. It is processed for food containers, handicrafts, paper and charcoal production. Bamboo tar liquid is used for sterilization properties, and bamboo activated charcoal can be used to de-putrefy meat, purify water and remove poisonous chemicals.

Wood handicrafts can utilize materials left in the harvested forests and use “non-commercial” species. For instance, roots and boles can be used for production of high-value craft goods.

Sericulture and weaving have been developed as a home industry in the country. Sericulture is particularly effective for promoting women in development. In SKR,

wild silkworms are available. Regional yellow cocoon silkworm and Eri silkworm can be promoted.



Picture 6-2 Local Yellow Cocoon



Picture 6-3 Yarn of Local Silk
(Left: Yarned in Laos, Right: Yarned in Japan)

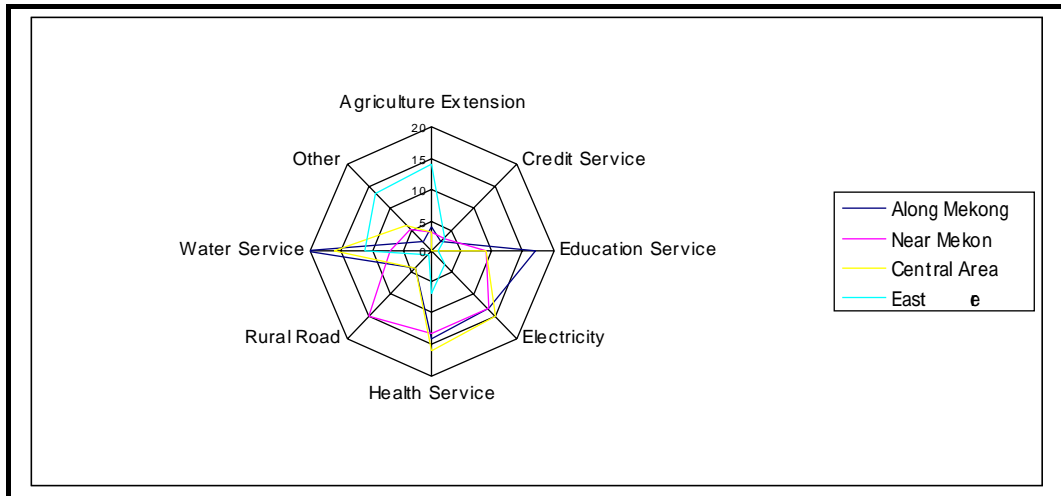
Cotton is cultivated by upland farmers, and weaving is done by village women. Traditional cotton combined with natural dye will create additional value for exports.

Natural fiber is represented by kapok fiber. If material supply is ensured, it can be used as stuffing, and its husk is used as dye materials.

It the event that local industries are promoted through NVI, farmers' household income will be further enhanced.

6.3.4 Social Infrastructure Development Plan

For rural area development, social services have to be improved in SKR combined with the income generation plans proposed above. According to the social survey, villagers expect that public services will be extended with priority accorded as shown in the following. For rural area development in SKR, emphasis will be placed on public health improvement and basic education improvement.



Source: JICA Study Team

Figure 6-10 Public Services Expected by Village People

1) **Public Health Improvement**

As briefly reviewed in Chapter 2.3.3, health services in the rural area are in poor condition. The major constraints on health services in these areas are (i) poor access particularly in the rainy season, (ii) lack of incentives for health staff working in the rural area, and (iii) obsolete health facilities and equipment. Some strategic approaches need to be taken for their improvement, including training and incentives for frontline health staff, as well as community participation or empowerment at the village level. (Refer to Sector Report, Chapter 1.2 for detail.)

The proposed SKR development plan focuses on (i) improvement of the district health systems, (ii) improvement of reproductive health, and (iii) improvement of child health.

District Health System Strengthening Program is proposed as a core health system for protecting and promoting health not only for people in the rural town centers but for people in rural villages. To ensure the quality of services under this system, it is proposed that various programs be executed in the short and long terms as shown in the following:

Table 6-11 Proposed Program for District Health System Strengthening

Core Areas: *Quality Assurance, *Capacity Building, *Outreach Activities, *Ensuring Logistics, *Participation of People, *Infrastructure Development, *Referral System, *Environment Sanitation		
	Short Term	Long Term
Main Project	Conducting training of staff in management and technical areas, with emphasis on training of frontier health workers.	Conducting training of staff in management and technical areas. Strengthening management of district and "inter-district hospitals" designated to provide higher level of services.
	Increasing outreach activities with emphasis on high priorities areas.	
	100% of positions are reviewed for their necessary qualification and current personnel assignment and human resource plan is made. Number of personnel or qualifications for positions are implemented in areas having urgent needs.	100% of human resource plan of revisions is implemented.
	Providing incentives for health staff working in remote/mountainous/isolated areas.	Introducing hardship allowance for health staff working in remote/mountainous/isolated areas.
	Ensuring logistics by participation of people (DRF), cost-recovery measures	Introducing clear and transparent cost-recovery mechanism being reflected to specific situations of the area
	Conducting training of village health volunteers, and educational workshops for village leaders including those of existing women's group	
	Increasing IEC activities for the people about protecting and promoting their health.	
	Promoting participation of the people in planning and implementations of health programs and activities	Promoting participation of the people in planning and implementations of health programs and activities
	Infrastructure development and provision of medical equipment according to specific needs of the area	Strengthening operation and management of infrastructure and equipment. Strengthening management of district and "inter-district hospitals" designated to provide higher level of services
	Establishing referral systems	Assuring referral system. Strengthening management of district and "inter-district hospitals" designated to provide higher level of services.
		Creating scholarship for ethnic minority students to become a doctor or nurse to work at their villages.
	Strengthening capacity of basic health data collection.	Operating and managing MIS
	Increasing people's access to clean water and sanitation facilities.	Ensuring healthy environmental sanitation.

Source: JICA Study Team

Through analysis of the existing system, it is proposed that priority be accorded to such vulnerable districts as Phine, Thapangthong, and Xonebouly in Savannakhet province and Xaybouathong district in Khammouan province.

Reproductive Health Improvement Program is proposed in view of the fact that maternal mortality rate (MMR) in SKR has one of the world's worst rates (550/100,000). Enhanced training/retraining is required for health post staff, to carry out IEC for pregnant women, their spouses and community leaders, and to

Rural-Based Development Plan

ensure provision of clinical family planning services. More specifically, it is proposed to promote the following programs in the rural area:

Table 6-12 Proposed Program for Rural Reproductive Health Improvement

Core Areas: *Safe Motherhood, *Family Planning, *Education of reproduction Health including HIV/AIDS, *STI Care	
Sort Term	Long Term
Training of TBAs and health staff of health centers	Strengthening of capacity of health staff of health centers for obstetric care.
IEC activities for pregnant women and their spouses about pregnancy and delivery. Awareness raising of community leaders about safe motherhood	
Conducting outreach activities by health staff for antenatal care family planning with support from volunteer village health workers	Providing consultation about family planning with assuring supply of contraceptives
Sex education and IEC on HIV/AIDS for the adolescents and young adults.	
Strengthening STI care	

Source: JICA Study Team

Child Health Improvement Program is proposed in view of the fact that the infant mortality rate (IMR) remains high in the rural area (70/1,000 in 2000). Training of frontier health workers responsible for diagnosis, care and referral to the upper level health facilities is of great importance. More specifically, the short-term and long-term programs are proposed as follows:

Table 6-13 Proposed Program for Rural Child Health Improvement

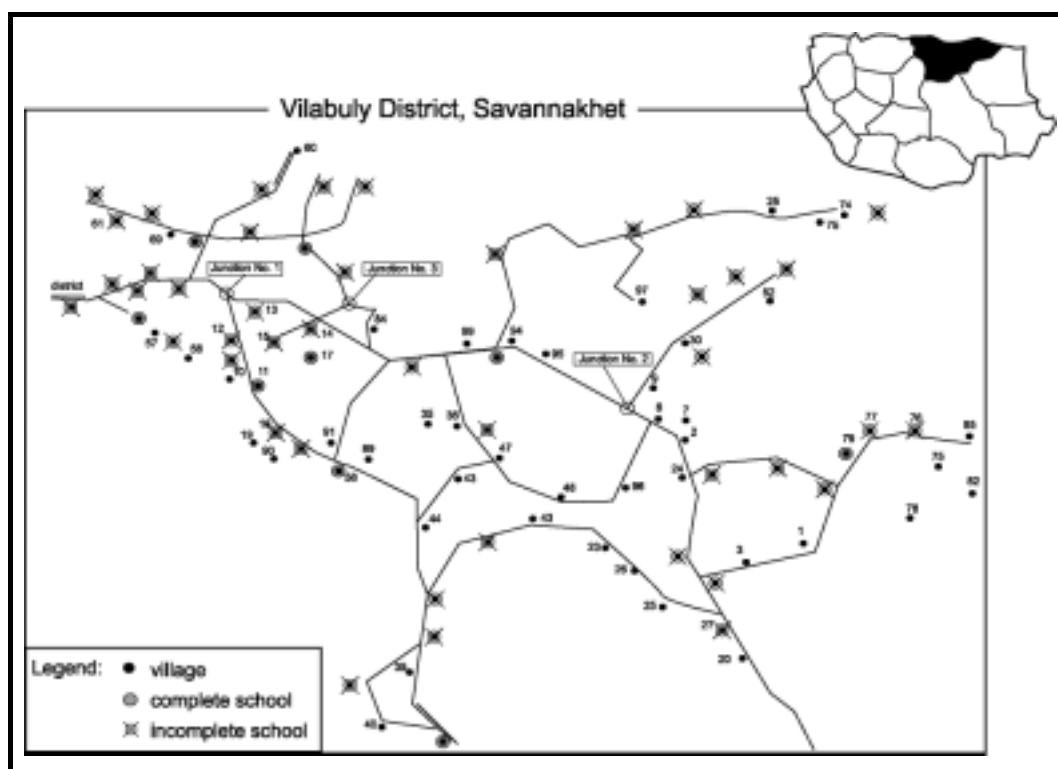
Core Areas: *Immunization, *IMCI, *nutrition	
Sort Term	Long Term
Accelerating expansion of immunization	Strengthening regular collective immunization program at fixed places, having outreach immunization facilities where people's access to health facilities is difficult.
Strengthening the capacity of immunization, particularly vaccine delivery and storage.	Trained health center staff are retrained on IMCI.
Capacity building of health staff for IMCI, particularly those working at health centers.	
Growth monitoring is conducted.	Growth monitoring is conducted.
Increasing IEC to families and community on protection of child health. Conducting training caretakers for adapting family care methods such as ORT.	Increasing IEC to families and community on protection of child health. Conducting training caretakers for adapting family care methods such as ORT.

Source: JICA Study Team

For the proposed improvement of reproductive health and child health, it might be effective to introduce a mobile clinic in respective provinces as far as external assistance is made available for medical staff and facilities.

2) Basic Education Improvement

Improvement of basic education in the rural area is of paramount importance for long term development of SKR. The facts are that a large number of villages in SKR have no primary schools or have incomplete schools and that most existing schools have financial constraints and are unable to have adequate materials for learning. Dropout rate and repeaters rate are quite high in SKR. An example of primary school locations in Vilabuly district is shown below. (Refer to Sector Report, Chapter I.3 for detail.)

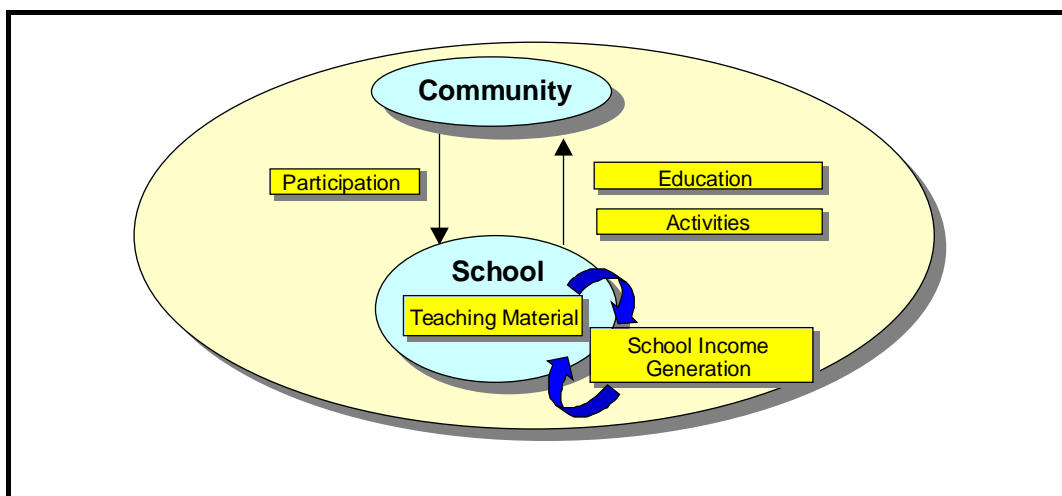


Source: JICA Study Team

Figure 6-11 Map of Schools (An Example in Vilabuly)

Program for Construction of 100 Primary Schools in SKR is proposed in the short-term (50 schools in Savannakhet province and 50 schools in Khammouan province), as one of the key component of the Human Resource Development Initiative (HRDI) proposed in Chapter 5.2. School buildings and facilities are to be constructed with participation of villagers. In addition, materials are provided for construction of school livestock raising farm, school orchard, school forest or other income generating facilities. Village farmers will assist pupils in taking care

of these facilities. Income generated through their operation would be used for procurement of teaching materials, school lunch program or even an allowance to subsidize wages of teachers in the remote area. Education to promote entrepreneurship and environmental education is initiated at these primary schools. It is also envisaged that these primary schools will serve for informal education, as well as for a village center to enhance various activities at the community level. Water supply (deep well) will be installed at schools.



Source: JICA Study Team

Figure 6-12 Concept for Basic Education Improvement

6.3.5 Other Rural Infrastructure Improvement Plan

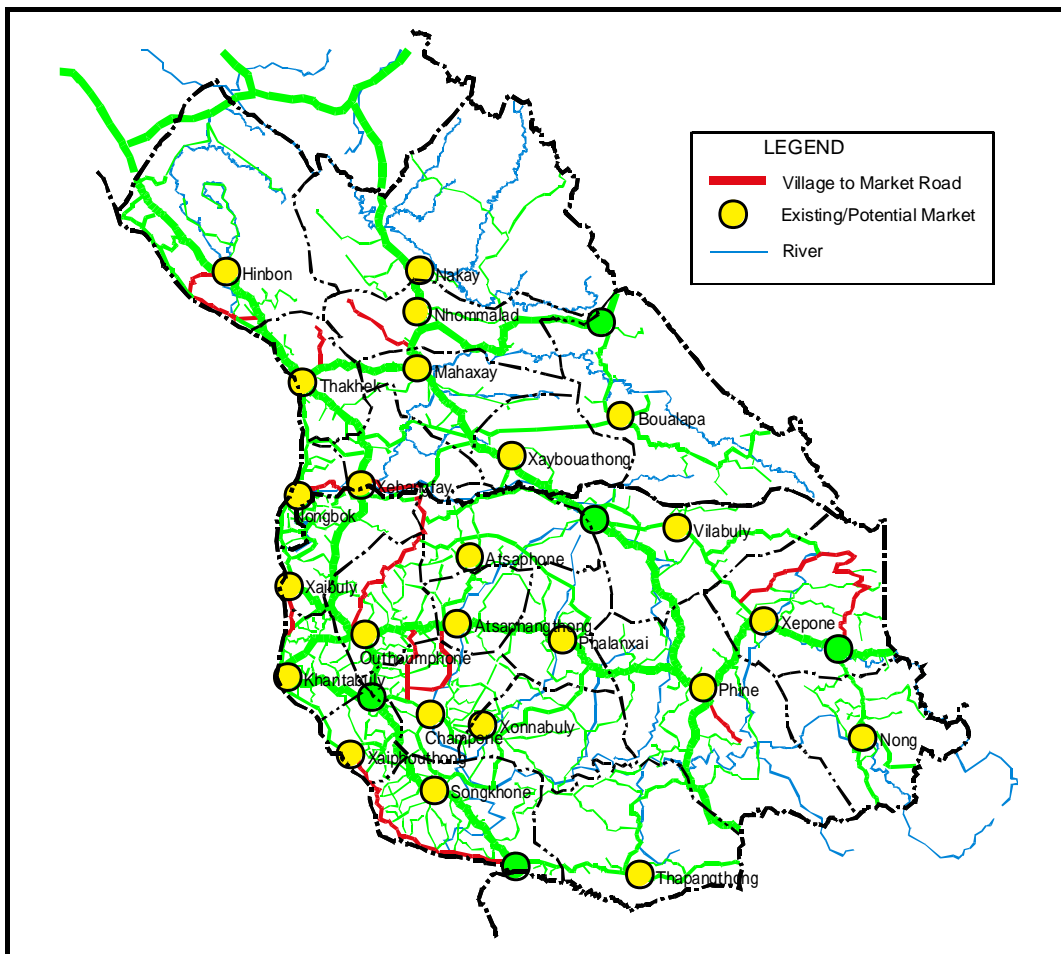
As pointed out in the foregoing section, other infrastructure should also be improved. Among the various requirements, specific attention will be paid to rural road improvement and rural electrification.

1) Rural Road Improvement

Among the transport sector improvement plan for SKR, improvement of the rural road systems is accorded high priority. It includes (i) improvement of village-to-market roads and (ii) improvement of rural accessibility. (Refer to Sector Report, Chapter VI.1 for detail.)

Village-to-Market Road Improvement Program is proposed to improve provincial and district roads to be all-weather links between villages and a market

center in the districts. The improvement programs will include roads to be networked into NR13S, NR9, and NR12. When the district roads are linked to the improved national routes, marketability of rural products will be enormously enhanced. The following figure illustrates the links contemplated for improvement:



Source: JICA Study Team

Figure 6-13 Village-to-Market Road Improvement Plan

Rural Accessibility Improvement Program is to support the on-going IRAP road improvement initiative. Provisionally it is planned that the road construction and improvement programmed under IRAP Extension-1 will be followed in 2006-2010, Extension-2 in 2011-2015, and Extension-3 in 2016-2020. The proposed program might be executed much earlier if and when the financial arrangements are made by MCTPC with assistance from the World Bank.

2) Rural Electrification

Although electrification in the rural area has been promoted over the past five years, the electrification ratio is still low in SKR (36% in Savannakhet and 43% in Khammouan). It is recalled that the government policy envisages that 90% of people are to be electrified by 2020. (Refer to Sector Report, Chapter VI.3 for detail.)

Rural Electrification Improvement Program planned by EdL for electrification in the region, as shown below, should be implemented as scheduled. When the gold/copper mine is developed in Villabury district, transmission and distribution along NR9 should be improved with priority. Additionally, in medium term, 115 KV transmission line should be extended from Pakxan to Savannakhet via Thakhek. Likewise, power generation for local use from the Nam Theun II power station (75 MW) should be linked to the 115 KV line at Savannakhet.



Source: JICA Study Team

Figure 6-14 Existing and Planned Distribution System in SKR

6.4 Community Development Plan

The proposed rural-based development plan should be implemented together with community development in the respective villages. The settings for community development and a proposed community development plan are outlined as follows:

6.4.1 Setting for Community Development

Villages and communities in SKR are not uniform in their development stages. Although the rural-based development plan classified SKR into three zones, the community development plan is unable to use a similar area-wise classification. Instead, the status of community development may be categorized by the stage of development as follows:

Stage A : Villages/Communities that are under chronic poverty and unable to change their modality of life.

Stage B : Villages/Communities that are not sufficiently motivated for changes, though food and basic needs are satisfied.

Stage C : Villages/Communities that are unable to find the means to realize the new type of life and production, though they are motivated for it.

The major constraints at each stage of community development can be summarized as tabulated in the following table:

Table 6-14 Major Constraints on Community Development

Factors inhibiting development	Stage A	Stage B	Stage C
1. Lack of commercial market tradition			
2. Lack of technology relating to land use options			
3. Un-friendly policy and public administration for foreign and domestic investment			
4. Lack of technology relating to enterprise management			
5. Small domestic market and unreliable export market			
6. Low quality of health services			
7. Low quality of education services			
8. Limited access to markets			
9. High Infrastructure development cost			
10. Unbalanced support (bias towards capital investment)			
11. Lack of appropriate coordination among agencies, NGOs and other entities			

Note: ; highly related, ; has not yet reached to this stage
Source: JICA Study Team

In general, rural community development has lagged, partly because villagers have been rather passive in creating what they need and are waiting for the authorities to provide them, and partly because communities have a bitter experience in the cooperative cultivation system under the centrally controlled economy. In view of this historical background and insufficient motivation of villagers and their community at the moment, community development in SKR will be planned in combination with the rural-based development programs as proposed in the foregoing section.

6.4.2 Community Development Plan

It is planned and proposed that community development in SKR will be promoted by incorporating the following programs:

Training of Community Leaders at Agricultural Collage:

Under the Human Resource Development Initiative (HRDI) proposed in Chapter 5.2, it is planned to set up an Agricultural College in SKR. It is envisaged that village and community leaders will be invited to take a full course at the College or a short-term training course. The College is designed to have “community development course”. Besides, the College will offer a variety of courses, from crop cultivation to livestock raising, fisheries, agro-forestry and the environment, and community leaders will be able to take any course pertinent to their village communities. Graduates from the collage will return to their home villages and apply their learned practices. This system will enhance the motivation of villagers, facilitate a shift to the proposed farming practices, and promote the formation of associations at the village level. This program may be applicable to any village/community, either in Stage A, B or C noted above.

Formation of Associations by New Village Activity:

Under the New Village Initiative (NVI) proposed in Chapter 5.1, it is planned to promote diversification of farming and local industries at the village level. The formation of associations for community development will be delineated in line with the promotion of NVI. Namely, associations will be formed by each crop or agricultural activity, as well as by local products to be industrialized by villagers.

More practically, farmers will be guided to select their interested crops for diversification or local products for manufacturing out of the menu prepared by the NVI Development Center at the provincial level, and they will be guided to form associations by crop or local product. For instance, farmers interested in cattle raising will form an association for cattle raising in the village, while farmers interested in a sericulture production will form an association of sericulture. These associations will facilitate dissemination of information on each product and its marketing. This program may be initiated from the villages/communities in Stage A and then expanded to Stage B and C.

Formation of Primary School-based Community Centers:

Under the Human Resource Development Initiative (HRDI), it is also planned to implement 100 primary schools in SKR. The community development plan will be promoted in combination with this primary school improvement program.

The school facilities themselves will serve as community centers. The centers will be used for non-formal education and other activities in the community. At the same time, a water supply system installed at the primary school and a first-aid medical kit placed in the school will be managed by the community or association formed in the village. These facilities may be installed when the community or association is committed to their maintenance.

Likewise, the operation and maintenance of the school related income generation facilities (e.g., school garden for livestock raising and crop cultivation, school orchards, school forests and school fishponds) will be the community's responsibility. Before implementing these facilities, a memorandum of understanding will be concluded between the community and the provincial authority concerned. This program may be applied to the villages in Stages A, B and C noted above.

Tours to Advanced Communities:

The proposed NVI Development Center set up in each province or the Rural Development Committee (RDC) organized in the provinces will periodically evaluate the activities at the community level and give recognition to well advanced community activities. Further, the NVI Center or RDC will organize an inspection tour to such villages, inviting village/community leaders from the districts. Students at the Agricultural Collage may also be invited. This recognition and the tours will motivate and encourage other communities and students to introduce advanced systems to their communities. This program may be applied to all the villages in Stages A, B and C noted above, but it may be more practical that tours would be organized for communities in the respective stages of development.

Dissemination of Market Information:

Dissemination of market information and exchange of information between the villages and district is important particularly for the villages at Stage C. It is

planned that dissemination and exchange of information will be promoted through the channel of the NVI and the proposed Regional Development Fund, as well as through teachers in the primary schools constructed under HRDI. (A plan for dissemination of market information in the agriculture sector will be formulated under the JICA sponsored Master Plan for Agricultural Development.)

Collaboration with NGOs:

In SKR, a number of NGOs are providing their assistance for social and economic development. Among them, five NGOs in Savannakhet province (i.e., ANS, CIDSE, CONCERN, NRC, and Oxfam Belgium) and four NGOs in Khammouan province (i.e., CONCERN, JVC, NRC, and SCF) are specifically focusing on community development. Consequently, it is recommended that collaboration be promoted with these NGOs to promote community development plans as proposed above.