

## **Chapter I: Introduction**

### **1.1 Background of the Study**

Due to the adverse affect (impact) of the civil war, Rice production in Cambodia was not able to meet the domestic demand for a long time after the 1970s. Now, however, production has reached self-sufficiency and a certain amount of surplus has even been produced every year since 1995, albeit some fluctuations.

This change is attributable to the fact that the cultivated area has been fully recovered after the end of the civil war. Rice farmers have been willing to produce paddy following the liberalization of rice market that was controlled by the government, which enables more flexible transaction and distribution of paddy.

In contrast, while production has increased, issues concerning low quality and transaction/distribution of paddy/rice have presented themselves. Furthermore, considerable decline of paddy price after a good harvest resulted from superior weather causes a serious problem for farmers because the rice market has been almost limited to the domestic market.

Under these circumstances and in response to a request from the Royal Government of Cambodia, the Government of Japan has developed a Master Plan, “Study on the Improvement of the Marketing System and Post-harvest Quality Control of Rice (Jan. 2000).” This study, “The Feasibility Study on the Establishment of an Open Paddy Market,” was proposed in the Master Plan. It was a feasibility study (F/S) to examine the possibility of a project based on the Minutes of Meeting for the Scope of Work (M/M of S/W) dated March 24, 2003.

### **1.2 Objectives of the Study**

The objectives of the Study were to examine the conditions of rice production/distribution in thirteen provinces and to make plans for the development of an open paddy market and the execution of a pilot project concerning open paddy market development in three provinces (regions). An additional objective is to enhance the ability of the counterparts and staff of the open paddy market through the planning of an open paddy market development and the implementation of a pilot project.

The pilot project, which was a part of the study, was conducted in order to consider possible continuation to be a business enterprise (project).

### 1.3 Study Area (refer to the map on the frontispiece)

Among the 24 provinces, the following thirteen rice producing provinces are the target areas for the Study: Battambang, Banteay Mean Chey, Siem Reap, Kampong Chhnang, Kampong Speu, Prey Veng, Kampong Thom, Kampot, Kampong Cham, Kandal, and Svay Rieng.

Among the thirteen provinces, Battambang and Banteay Mean Chey, Battambang and Pursat, and Prey Veng were selected to be areas for the F/S. The pilot project has been implemented in two areas: Svay Antor and Kanhchriech district in Prey Veng Province, which is one of the three F/S areas.

### 1.4 Period of the Study

The figure 1-1 shows the period of the study ranging from the phase 1 to the phase 3 and from the 1<sup>st</sup> year to 4<sup>th</sup> year. The figure has a period of homework in Japan and a period of field study in Cambodia.

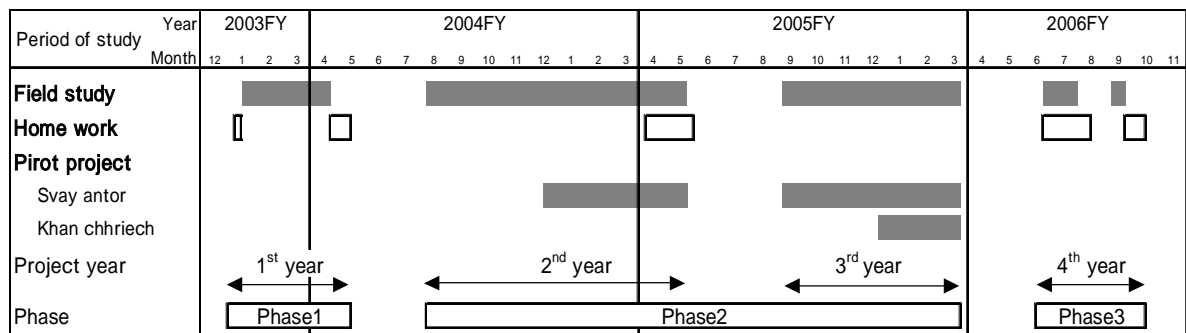


Figure 1-1: Period of Study

### 1.5 Implementing Agencies of the Study

The implementing agencies of this study are the Domestic Trade Department (DTD) of the Ministry of Commerce (MOC) and the Department of Planning, Statistics and International Co-operation (DPSIC, afterward, Department of Planning and Statistics [DPI]: MAFF, Sep 2006) of the Ministry of Agriculture, Forestry and Fisheries (MAFF) of the Royal Government of Cambodia.

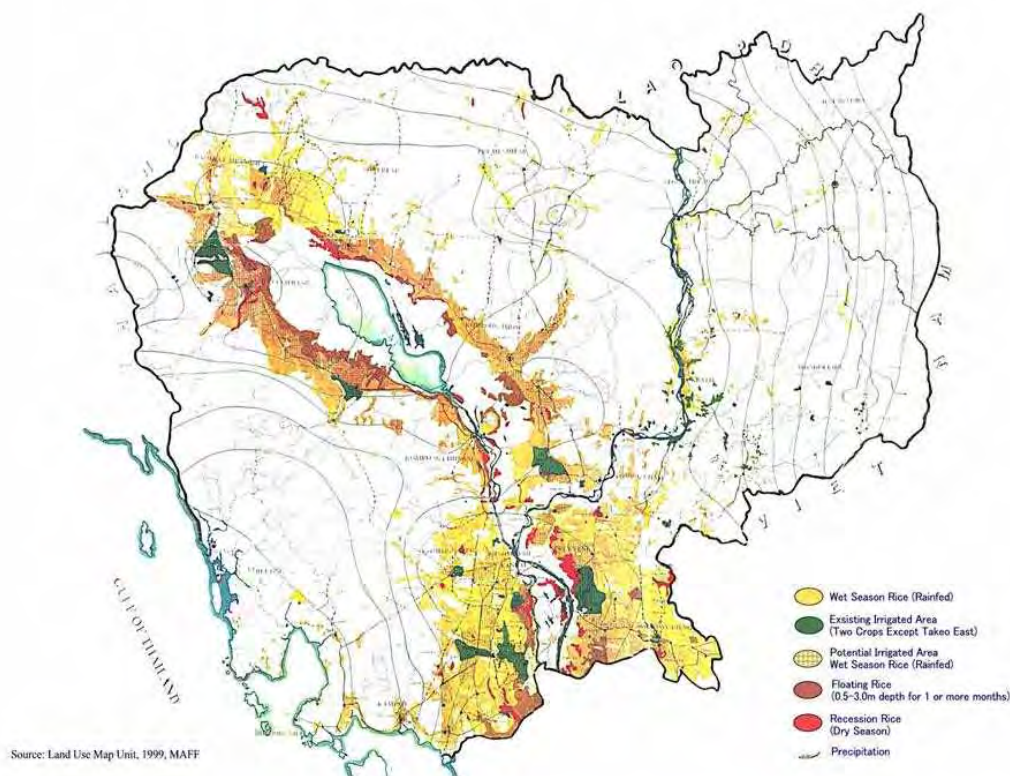
Both ministries have established a steering committee (eight members) with each co-chairperson of the Secretary of State from the two ministries as the decision-making body concerning the implementation of the study. Both assigned counterparts (24 members) from concerned departments as task force members.

The study was conducted by organizing special working groups formed mainly from task force members for major study items. The pilot project was implemented with participation from the Provincial Department of Commerce (hereinafter referred to as the “PDOC”) and the Provincial Department of Agriculture, Forestry and Fisheries (hereinafter referred to as the “PDAFF”, afterward, Department of Agriculture [PDA]: MAFF, Sep 2006) of Prey Veng Province.

## Chapter 2 General Condition of Rice Production

### 2.1 Rice Production

Paddy is cultivated almost nationwide in Cambodia. The main paddy-growing areas are the surrounding areas of Tonle Sap Lake and the Mekong Basin. Paddy growing areas are shown in the following figure and the (paddy) ecosystem is distinguished mainly by water availability.



**Fig2-1: Paddy Growing Zone**

Paddy is grown in the whole 24 provinces. This study, however, covers only 13 major paddy-growing provinces as shown in the map on the opening page. The production records of the last five years in these 13 provinces are shown in the table 2-2 and they account for 92.5% of the harvested area and 93.1% of production in the whole country. (Refer Table2-1)

**Table2-1: Paddy production in the whole country (2001/02-2005/06)**

	2001/02	2002/03	2003/04	2004/05	2005/06	Average
<b>Harvested area (ha)</b>	2,192,873	2,113,215	2,314,285	2,374,175	2,438,037	2,286,517
<b>Yield (ton/ha)</b>	2.07	1.92	2.10	2.00	2.48	2.00
<b>Production (ton)</b>	4,099,016	3,822,509	4,710,957	4,170,284	5,986,179	4,557,789

Source: Agricultural Statistic Year Book, MAFF

**Table2-2: Paddy production in the 13 target provinces (2001/02-2005/06)**

	2001/02	2002/03	2003/04	2004/05	2005/06	Average
<b>Harvested area (ha)</b>	2,065,006	1,960,424	2,134,498	2,181,850	2,235,033	2,115,362
<b>Yield (ton/ha)</b>	2.17	1.94	2.08	1.95	2.45	2.12
<b>Production (ton)</b>	3,866,901	3,562,879	4,343,935	3,902,743	5,532,570	4,241,806

Source: Agricultural Statistic Year Book, MAFF

Although the expansion of cultivated area has already reached the limit and it is expected that some cultivated land will be converted for other purposes in future, drastic change is not likely to happen for the time being as there is no promising crops to substitute paddy. On the other hand, the irrigated crop area is likely to increase by the introduction of double cropping as a result of the development of main irrigation canals and the use of water pump by farmers. The harvested area, which is a determinant of the final production, is increasing as a whole as shown in the above table, although it can be affected by damages caused by drought and other natural disasters.

The unit yield has become 2 tons/ha, which increase by about 20% in the past 10 years, yet there is a room for further increase, as the present yield is still low compared to that of the neighboring countries'. A substantial increase (a 43% increase over the preceding year) of the 2005/06-year production (5,986,179 tons) is attributable to a 26% increase over the preceding year of the unit yield due to the favorable weather rather than the increase of harvested area.

As a result of the yield increase, the production has increased about 1.7 times in the past 10 years. Moreover, a substantial increase in the 2005/06 production, though with good weather, suggests possible further increase in the future. It can be fully expected that the production will increase further as a result of the increased double cropping through the utilization of irrigation. The yield has increased following the promotion of superior seeds and the application of more fertilizers. However, the ongoing export to Vietnam and other countries is a prerequisite for maintaining the present selling price for the producers since the domestic demand of paddy has already been met.

Paddy cultivation in Cambodia is classified into rainy-season cropping and dry-season cropping. Furthermore, according to the ecosystem, the rainy-season cropping is categorized into the rain-fed-lowland rice, which accounts for 87% of the total planted area; the deep-water rice, the yield of which is low and its planted area is declining; and the rain-fed-upland rice. Although dry-season cropping occupies merely 13% of the total planted area, it accounts for about 25% of the total production as it contains many high-yielding varieties. The dry season-cropping is divided into the flood-recession with supplementary-irrigation rice and the irrigated-lowland rice.

There are a few major varieties for the rainy-season cropping. Many native varieties are traditionally cultivated in some areas. The dry-season cropping is basically planted by

non-photosensitive IR varieties. Also, IR varieties are increasingly planted in rainy season cropping as an early variety in recent years.

## **2.2 Supply and Demand of Rice**

As rice is the absolute center of Cambodian food, the self-sufficiency of rice is extremely important for the food security. The self-sufficiency of rice has been achieved and surplus has been produced for the whole country every year after 1995, although there are damages caused by natural disasters, limited access due to the poverty and shortage of suitable areas for rice cropping (mountainous area).

The supply side of rice consists of domestic production and imports. The production statistics of MAFF indicate planted area, damaged area, re-planted area, harvested area, unit yield and production. Although the customs statistics of imports are available, their accuracy is questionable as broken rice from Thailand common on the market is not included in exports due to its unofficial nature. Rice for use as aid has been sifted from being imported to domestic procurement in Cambodia in recent years, and it has no longer affected the supply-demand balance for the whole nation.

The demand side of rice consists of domestic consumption and exports. The consumption is calculated based on calorie intake from rice against the required minimum calorie intake, not based on the actual consumption of rice. The required consumption of rice at present is 143.0 kg/person/year. This clearly indicates that the Cambodian consumes much more rice than the Japanese does daily, and it is at the top level of consumption compared to other countries where rice is a staple food. However, the rice consumption per capita has already reached a peak and it is expected, as a result of possible diversification of eating habit, that rice consumption per capita will decline and that the whole consumption of rice will sift from the constant to the gradual decline despite a population increase.

In order to calculate the supply-demand balance of rice, data such as production, exports and imports, consumption, population census and the carry-over amount from every preceding year must be available. The supply-demand balance of rice calculated by MAFF does not count exports/ imports and the carry-over amount including stocks. However, considering the fact that a huge amount of paddy is being unofficially exported to Vietnam, it is clear that there is a considerable surplus of rice, regardless of the amount, and that the self-sufficiency has been achieved.

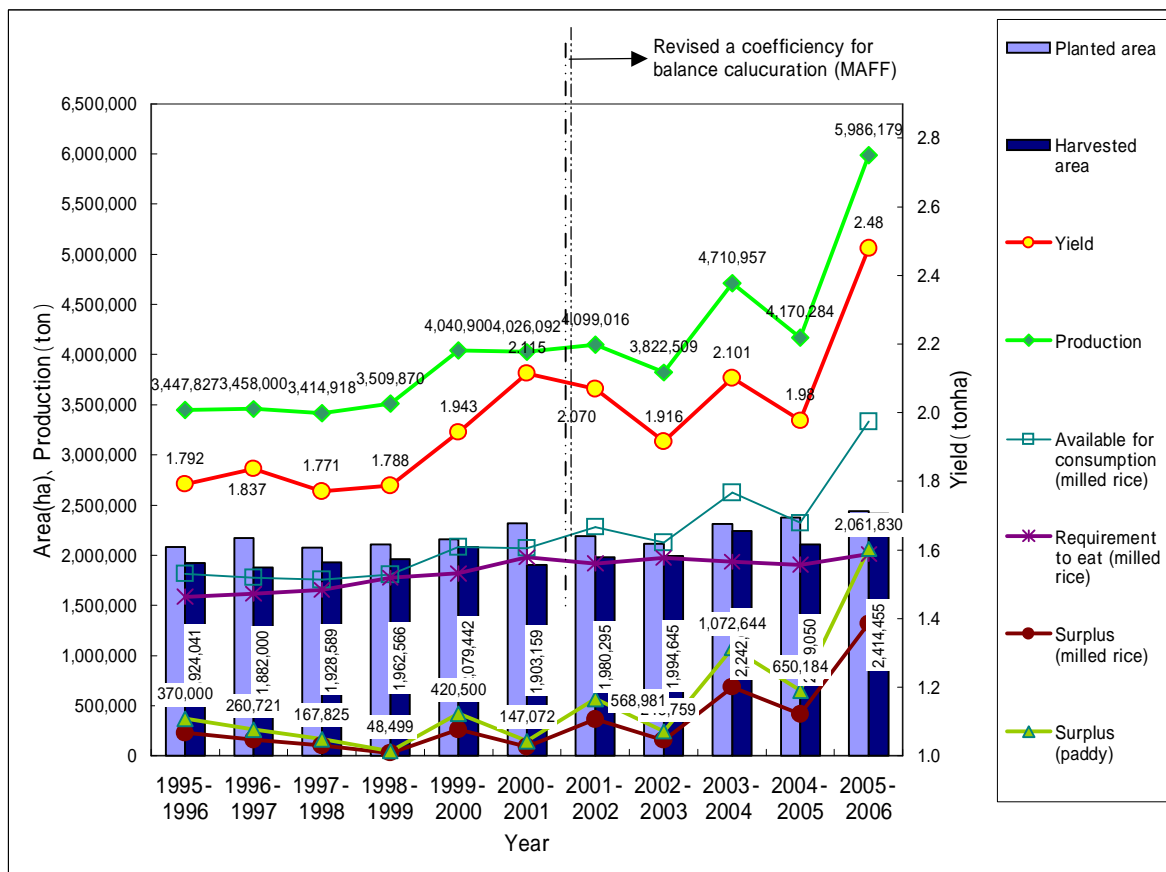
The supply-demand balances of rice for the whole country calculated by MAFF in the past 5 years are shown in the table 2-3/ Figure 2-2. There was an annual average surplus of 920 thousand tons

(paddy) for the whole period, which accounted for 20% of the production. The surplus of 2005/06, which had a bumper cropping, marked 34.4% of the production. As the surplus is generated every year in this manner, the domestic market cannot absorb it.

**Table 2-3/ Figure 2-2: Balances between supply and demand of Rice (2000/01- 2005/6)**

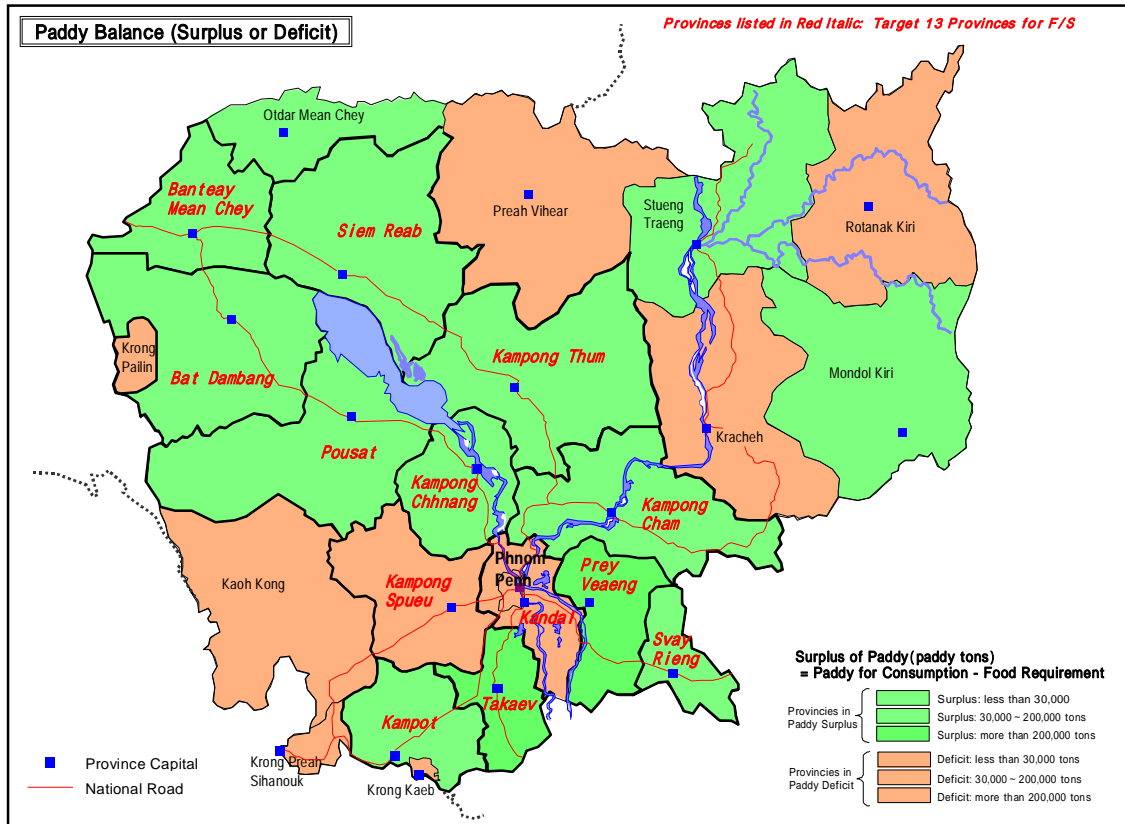
	2001/02	2002/03	2003/04	2004/05	2005/6)
Production (paddy/ton)	4,099,016	3,822,509	4,710,957	4,170,284	5,986,179
Seeding/ losses (13%)	532,872	496,926	612,424	542,137	778,203
Available for consumption (paddy/ton)	2,282,332	2,128,373	2,623,061	2,322,014	3,333,104
Available for consumption (milled rice, recovery: 64%)	3,566,144	3,325,583	4,098,533	3,628,147	5,207,976
Population	13,413,870	13,792,778	13,542,410	13,327,946	14,080,653
Requirement (143kg/capita)	1,918,184	1,972,367	1,936,565	1,905,896	2,013,533
Balance (milled rice/ton)	364,148	156,006	686,496	416,118	1,319,571
(paddy/ton)	568,981	243,759	1,072,644	650,184	2,061,830

Source: Agricultural Statistic Year Book, MAFF



The supply-demand balance of paddy of each of all the 24 provinces in the country is given in the Figure 2-3. There was shortage in the seaside and the mountainous zones, whereas there was surplus in the provinces around Tonle Sap Lake and in the Mekong Basin.

**Fig2-3: Supply-demand balance of paddy by provinces**



Source: Study team

The supply-demand balances of paddy for the 13 provinces subjected to this study are shown in the Table 2-4. Three provinces of Kompong Cham, Kandal and Kompong Thom have a roughly balanced supply-demand and Kompong Speu indicates yearly shortage. This is attributable to the fact that these provinces, with a large population, consume more rice although rice is planted there.

**Table 2-4: Supply-demand balances of paddy of the 13 target provinces for the Study, ton**

Province	2001/02	2002/03	2003/04	2004/05	2005/06
Battambang	84,970	35,177	169,403	181,181	297,625
Kandal	486	(26,823)	(8,777)	(43,936)	21,142
Kompong Cham	(26,158)	13,067	12,508	(17,497)	130,081
Pursat	50,064	41,378	23,855	22,309	74,817
Prey Veng	181,644	211,502	324,916	214,878	545,709
Banteay Meanchey	120,291	34,797	113,039	138,877	188,633
Kompong Thom	30,298	27,670	(2,416)	2,036	124,478
Seem Reap	108,345	21,089	35,441	55,673	85,261
Takeo	149,235	220,681	337,769	347,019	476,352
Kompong Chhnang	56,266	47,300	50,069	34,248	106,358
Kompong Speu	4,675	(73,589)	(1,923)	(95,869)	(2,394)
Svay Rieng	88,289	16,998	154,497	97,380	108,277
Kom Port	70,155	28,573	115,838	11,541	118,322

Source: Agricultural Statistic Book, MAFF, deficit in ( )



### **2.3 Social Condition of Rural Society**

Local administrative organization ranges from Province to District, Commune and Village. The Governors of Provinces and Districts are appointed by the Ministry of Interior, whereas Commune Leaders are elected by citizens. Many Communes have their own offices but most of Villages usually have no any office. Administrative functions of communes are carried by a Council composed of a few officials. Residents are required to carry the Family Book and the personal ID Card.

On the other hand, every Ministry has its own field office in each Province. The Ministry of Commerce (MOC) and the Ministry of Agriculture, Forestry and Fisheries (MAFF), which are related to the study, have the Provincial Department of Commerce (PDOC) and the Provincial Department of Agriculture, Forestry and Fisheries (PD AFF) respectively.

In a traditional rice-growing society, there used to be unpaid cooperative work. In the present village of Cambodia, however, work done cooperatively is paid in principle. The Agricultural Cooperative Law was enacted in 2001 and the organization of farmers led by the government and NGOs had started; yet there is still no any cooperative continuing to engage in full-fledged activities. Although cooperatives can be organized, they cannot in reality, leading to activities with a sense of ownership if there is no activity with actual merit to the members. It appears that the society is difficult to create a community having rather business like human relations.

For the present rice cultivation, it cannot be sustained without getting cash income from paddy sales for a living and purchase of agricultural materials in addition to the production for self-consumption. Farmers either take paddy to nearby rice mills or sell it to collectors. Collectors are often farmers of the village or the neighboring village owning second-hand trucks and some capital, or influential persons of the village; and they are familiar with village matters. There is information gap as farmers, who are sellers, have an access only to limited market information than buyers. Farmers simply remain in a weak position although they have a distrust of inaccurate weighing scales of buyers and complaints against delayed payment. In these circumstances, the motivation to improve quality of rice (paddy) is hardly kept as farmers are forced to accept the offered price of buyers.

It has been said that many farmers are in debt with high interest (micro finance). According to the baseline survey in the pilot project area, about 40% of farmers receive micro financing (from 50 to 100 dollars). Farmers often purchase fertilizer on credit. They borrow it from nearby fertilizer retailers and pay back in cash just after the harvest. Although a commercial interest rate has dropped in recent year with the development of financing and institutional credit by NGOs, a monthly interest rate is still more than 3.0% (for example, if you buy one bag of urea at 80,000 riel/50kg, you must pay back 92,000 riel after 5 months).

While middle aged and older people hardly received education due to the civil war, most of the younger generation today receives basic education. Private schools have also been established one after another and to earn the title of university graduate has become a social trend. Many attend management courses and a few students have come to the pilot project for training as an intern, but their learning motivation is not so strong.

With regards to the agricultural mechanization, small irrigation pump has become popular and cattle plowing has been shifted to tractor/ cultivator plowing, albeit some regional difference. For the post-harvest treatment, man/animal power threshing has become rare and mechanical threshing with a fee (village threshing) has become popular. Eventually, high moisture and/with impurities can be seen more as the threshing of un-dried rice has become possible. Also, the mixture of weed seeds into paddy has started with the popularization of reaper, which cuts paddy and weeds at the same time. Ironically, agricultural mechanization is causing quality degradation of paddy.

With regards to means of transporting/conveying, not only a bicycle but also a motorcycle has become quite popular and it is used to carry approximately 100 kg of paddy. For means of communication, a lot of villages have a communal wireless radio (I-COM) but some people have started to own cellular phone. The development of these means of transportation/communication has an impact on the transformation of rural society.

## **Chapter 3 Present condition and issues of post-harvest practices, quality and transaction/distribution of paddy**

### **3.1 Post-harvest practices by farmers and issues**

#### Reaping

Rice is usually reaped with sickles at around 20-30 cm above the ground depending on the height of its plants (stem length) in both transplanting and direct sowing fields. The reaped rice plants are bundled with rice straws (a part of reaped rice plants: stems with ears). Paddy grains may come off their panicles easily when bundles are made. It is also common that a group of day laborers does reaping work. Farmers with large scale of rice fields, although they are not many, have started to use a reaper (reaping machine) to harvest their crops. Rice plants and weeds are cut at the same time with the use of a reaper and a problem of weed seeds mixing with paddy has occurred during threshing. This problem might spread in the future.

#### Threshing

During the days when man/animal-power were used to do threshing work, the threshing took time and reaped rice plants were thus dried in the field in order not to deteriorate paddy quality with high moisture content. Field drying also increased shattering habit and made threshing easy. After the introduction of the mechanical threshing (a thresher of axial-flowing-in & throwing-in type), reaping is scheduled for the availability of a thresher in order to prevent the rice from being stolen from its field. Accordingly, this causes the reaping loss due to the missing of the optimum time for reaping. Usually, reaped rice plants are threshed at the same day or taken home. In the case of the former, the paddy grains will risk being damaged with fungus growing on them due to their high moisture content. In the case of the latter, there is also a similar risk as the un-threshed rice with high moisture is piled up under the eaves. Farmers are, however, not concerned with the quality of the paddy. In the case of the introduction of the reaper, while the threshing efficiency increases with the utilization of the machine, other issues of mechanization thus need to be tackled.

It is rare that every individual farmer owns a thresher. However, some farmers and paddy collectors do own threshers and they provide a paid threshing-service. In principle, the fee is paid in cash but sometimes it is paid in kind (paddy). So far, there seems to be no case of cooperative owning and use of threshers in groups of farmers.

#### Drying/Screening

As the rice stems at the time of threshing have high moisture, the screening (cleaning and grading) capacity of the thresher declines and paddy coming out of the thresher has high moisture and a lot of foreign matters/impurities such as rice straws. In case the moisture content of the paddy is above 18-19%, farmers usually have it dried by the heat of the sun in their yards; but they will not dry it less than 18-19% and they do no screening. In other words, farmers in general consider drying and

screening of paddy for selling to be not worthwhile, as they think these will reduce the weight although the quality is improved.

On the other hand, farmers do dry and screen the paddy they keep for self-consumption. This means that they know how to dry and screen and their significance. As for the paddy for selling, if traders value the paddy quality properly and offer an appropriate price to the farmers, the quality improvement by them might be achieved. Therefore, it is prerequisite that rice millers and traders value paddy for its quality and buy paddy from paddy collectors at a proper price. If paddy collectors can feel their own merit, they will then demand improvement of the quality of paddy by farmers; but the present mechanism is not the case. Without motivation, the improvement of paddy quality by farmers will never be achieved.

#### Sale of paddy by farmers

The time for farmers to sell their paddy is just after harvest and at the time when they start to purchase production materials such as fertilizer and fuel for the next cultivation. The sale made immediately after the harvest is to get cash for not only supporting their living but also paying for fertilizer bought on credit. In the case of the rainy season crop, the sale is at the harvest time of November to December and at the preparation time for the next crop around April and May. Average farmers who produce and sell paddy have 1.5 hectares of planted area and 3 tons (paddy) of production. They keep 1 ton for self-consumption and sell 1 ton just after the harvest and another for the preparation of the next crop. Also, 15-20% of the large-scale farmers keep 1-2 tons of paddy of the preceding rainy season crop in anticipation of the rise in price after July.

While those living near rice mills take their paddy to sell there directly, most of farmers just wait until paddy collectors come to purchase it from them. As the paddy collectors usually come first to make villages accessible in order to improve collection efficiency, remote villages have limited contacts with them and limited market information, which eventually leads to information divide. Having weak bargaining power, individual farmers are forced to accept the offered price of the paddy collectors. There is no cooperative sale of paddy by farmers at present.

Paddy collectors distribute paddy bags to farmers for free. After being filled with paddy (60-90kg), every bag is weighed with a spring scale belonging to the paddy collectors. Tare weight (0.1-0.2 kg/bag) is ignored and fraction below 1 kg is usually rounded<sup>1</sup>. Although farmers often have a distrust of inaccurate scales and the weighing method, they have no means to verify them. Sometimes, one bag holds more than 100 kg when its top is covered with rice straws in order to save the required number of bags; this causes the straws to mix with the paddy. Most of payments are made in cash on the spot, but some paddy collectors pay farmers after they have resold the paddy to rice

---

<sup>1</sup> For example, in the case of 70 kg/bag, although farmers sell paddy at 500 riel/kg, the actual price will be 475-460 riel/kg - declining 4.3-8.6% as 1.4% of weighing error and 2.9-7.2% of weighing loss of foreign matters/impurities (2-5kg/bag) are considered.

millers or traders. No any paper is made on the weight and price at the transactions. There is off-the-record condition for the transaction except a short memo of paddy weighing for integration of weights.

These business practices appear to be the result of selected practical means. For example, a relatively accurate platform scale is difficult to transport and expensive, and it also needs weights to do adjustment for every weighing work. On the other hand, while a spring scale is less accurate, it has the merits of cheap price and quick weighing.

#### Paddy storage of farmers

Farmers need to store paddy safely for self-consumption purpose and later sale. In some areas, every farmer household has a granary on the premises of their house, but usually paddy is stored in bulk in a large container (made of bamboo with approximately 1 ton capacity) under the floor of a stilt house. To store paddy for a long period, it is dried around 14-15%, but no measures are taken to prevent damage by rats and insects. Sometimes, insect outbreak occurs around following March in paddy harvested in November and December<sup>2</sup>. In that case, farmers sell it as soon as possible and it is often mixed with other normal paddy in the distribution process. Paddy of dry-season crop of IR varieties is not stored for a long period.

#### Issues of post-harvest practices of paddy

- Simply comparing the offered prices of paddy collectors, most farmers merely sell their paddy to any one who seems to offer the highest price. Since farmers have yet been in a stage to negotiate the price, they are coping with inaccurate weighing and unfair buying price of paddy collectors by mixing with high-moisture paddy, foreign matters and impurities. Unfair transactions become a habit.
- Since a village community is underdeveloped, there is no custom of agricultural collaborative work except at some locations. Labor is paid in principle and human relations among villagers are weak and businesslike. Cooperation such as group or cooperative sale of paddy is difficult to organize. It seems that there is a reciprocal distrust among villagers.

### **3.2 Present condition and issues of paddy quality**

#### What is paddy quality?

While paddy is a product grown by farmers, for consumers it is commercial goods dealt by paddy

---

<sup>2</sup> According to the loss assessment of the “Plan on Improvement of the Marketing System and Post-harvest Quality Control of Rice” (2001), the paddy storage of farmers is said to loss more than 2% in a half year. It is mainly caused by leaky roof, insects and rats.

collectors, rice millers and traders because they usually purchase milled rice, but not paddy. However, since paddy is the raw material of milled rice, its quality directly affects the quality of milled rice. Paddy quality is thus important to ensure the quality of milled rice demanded by the consumers.

The quality of milled rice is dependent on the taste derived from the physical features (shape of grain / color / aroma / starch composition) associated with varieties, growing environment (location / year) and post-harvest practices. Though varieties have the most profound effect on the taste, it is difficult to measure/identify them on the face of the milled rice, as features, shape and other physical properties, disappear through the milling process. Sensory test on the cooked rice is the only way to evaluate the taste of the milled rice.

Cambodian consumers choose milled rice to purchase based mainly on varieties, production sources, aroma and prices. The year of production is not concerned as little old rice is on the market. Foreign matters mixed with milled rice are removed by hand at the wholesale / retail stage. However, pebbles whose color is similar to that of the milled rice are not easily identified with bare eyes; thus they cannot be removed.

#### Paddy quality at transaction

Although the paddy quality expected by buyers must be maintained, it is not necessary to be the same. The quality of paddy needs to be understood in terms of the excess moisture/foreign matters and impurities, which are not essential paddy, and items such as broken rice/red rice/damaged grains, which are directly related to the paddy and affect its quality. The variety purification and the quality uniformity of same lot are also important for handling in the distribution and processing stages. The uniformity of paddy quality is especially important for rice millers. The milling machine is usually required to be adjusted in every 2-3 minutes, as the quality of collected paddy varies greatly.

As wet threshing is a common practice, paddy just after threshing contains foreign matters and impurities (1 to 2%) and has high moisture content (22-25%). At the time of sale, paddy with moisture content of over 18-19% needs to be dried, or its quality will deteriorate during distribution. However, it is often sold in combination with paddy with moisture content of less than 18-19%. Buyers, therefore, check the moisture content and the quality of each bag according to their experience and instincts.

In case many foreign matters and impurities (straw dust/ sand/ weed seeds) are found, sellers and buyers will then negotiate the weight deduction. In most cases, however, buyers are in a stronger position. Thus, it is unnecessary to dry (14-15%) and to screen (0.5%) the paddy fully, as paddy transactions are done with the moisture contents below 18-19% and the weight deduction for foreign matters and impurities. These business practices seem to disrupt the improvement of paddy

quality.

### Paddy quality in Cambodia

As the data of paddy quality in the Cambodian market, the paddy quality at the time of loss assessment of the “Plan on Improvement of the Marketing System and Post-harvest Quality Control of Rice” (2001) and the average paddy quality found in this study are shown in the Table 3-1 & 3-2.

**Table3-1: Quality of paddy sold by the farmers**

	Moisture content %w.b.	Red kernels %	Cracked/broken rice %	Damaged grains %	Foreign matters/impurities %	Immature grains %	Whole grains %
Dry-season average (April to May, 2000)	19.3	3.01	9.65	2.38	1.85	6.31	79.41
Standard deviation	6.20	6.38	12.62	2.21	1.68	2.40	7.34
Wet-season average (October to November, 2000)	18.4	3.95	11.62	1.18	1.00	3.44	83.92
Standard deviation	5.28	7.61	12.00	1.73	1.46	2.56	8.39

Note: dry-season IR variety, wet-season mixed variety

**Table3-2: Quality of paddy bought by the rice millers**

	Moisture content %w.b.	Red kernels %	Cracked/broken rice %	Damaged grains %	Foreign matters/impurities %	Immature grains %	Whole grains %
Dry-season average (April to May, 2000)	14.2	6.56	23.91	2.23	4.10	8.07	83.37
Standard deviation	0.96	3.09	9.54	2.29	1.31	2.64	6.76
Wet-season average (October to November, 2000)	15.3	7.43	21.49	0.33	1.75	5.00	91.99
Standard deviation	2.53	5.84	8.27	0.34	1.01	2.34	7.46

Note: Paddy sample after cleaning, yellowish rice (discoloration to yellow or orange caused by the propagation of mold, which has ill effects on the human body)

As the standard deviation is greater than the mean, the quality appears to be not uniform. Although paddy of the rainy-season crop contains less damaged grains, foreign matters/impurities and immature grains and its quality is better than that of dry-season one, there are many cracked grains in it due to inappropriate drying before threshing; and they cause the rate of broken rice to rise during milling. As the drying capacity of farmers during the harvest peak cannot meet the requirement, yellowish rice might be produced. In some cases, there is more than 20% of red rice. It means that varieties with different properties (grain size / bran content / hardness) mixed in them will cause uneven milling process and broken rice.

On the other hand, it is clear that rice millers are demanding the fully dried, well screened and uniform paddy in order to reduce the amount of broken rice and to achieve high milling rate. How-

ever, this feasible demand does not reach the farmers because rice millers basically offer the same price for a certain quality of paddy. They are not able to offer properly different prices for paddy of better quality. Therefore, rice millers are requested to do quality testing and differentiate paddy prices based upon the scientific management.

Significance of paddy-quality improvement

The paddy quality (good or bad) is basically determined by various conditions before harvesting such as the availability of superior seeds, growing environment and fertilizer management, but it is also affected greatly by the post-harvest practices. The quality improvement at post-harvest practices is to prevent, beforehand, factors that might affect the paddy quality in the various processes after harvesting; and also to remove factors that have already affected the paddy quality. The former is heated grains by high moisture content and cracked grains at drying. The latter is to remove red rice grains, dusts and weed seeds.

The purpose of paddy quality improvement is to raise the price of paddy, which is the raw material, and to boost the market value of milled rice, which is the end product. To be specific, it is to improve unit price and milling rate. In other words, if the market price of paddy is raised, then it means the income of farmers will be raised as well. Rice millers can also earn more profits by producing better quality of milled rice more from a certain amount of the raw material.

Meanwhile, paddy collectors/traders are not directly concerned with the improvement of paddy quality. They are only concerned with the difference between buying price and selling price, and with the amount of transactions. They can, however, play an important role of passing information on what quality is demanded by the market. In order words, to increase the amount of transactions and to be able to earn more profit are prerequisites. Under the free distribution, the quality-improvement demand of the market seems to have the greatest impact on the production side.

**Table3-3: Potential and constraining factors on quality improvement**

Items of quality improvement	Potential	Constraining factors
Popularization of technologies	Farmers understand the discrimination between paddy qualities through long experience, and achieve quality control for self- consumption.	Quality improvement is at halt though many studies / seminars / workshops have been achieved. There is no conventional wisdom on how the qualities of paddy sold by farmers should be, and there is no recognition of the need for farmers to dry paddy and to do screening work.
Pricing based on quality	Relevant price difference should be made based on quality levels with a proper quality grading. This will lead to quality improvement.	Though drying and cleaning are methods of improving quality, they reduce not only the weight, but also cost. It is difficult to reflect the condition due to price competition of paddy transaction.



Items of quality improvement	Potential	Constraining factors
Adoption of paddy quality standard	It is reasonable to ensure the paddy quality standard after using it as OPM's self-imposed standard (regulation). Limited application will start to revise it easily.	Paddy-quality standard is a target and indication of the quality level. However, there is no chance to use it unless the government purchases paddy, and there is no inspection equipment (moisture meter, test husking machine, etc.) either.
Demand of the market	The buyers are infatuated with the buying price. It is possible to improve paddy quality if the buyers introduce it as well as the price concerned to the sellers. Though Vietnamese traders (buyers) are not interested in paddy quality, they strongly require paddy with low moisture content and low percentage of impurities.	A buyer's raising of awareness of paddy quality improvement is important. Though some buyers move through the market demands (consumers' requirements), degree of ripeness is still not so high.

#### Problems/issues of paddy quality improvement

- In the paddy transactions, to make use of a scale (prohibiting transaction without a scale) and to make use of a moisture meter are the surest way to make transactions based on the quality (moisture).
- In Cambodia, the longer paddy is stored, the more likely it is that fungus which emits toxin will grow and propagate. Colored rice is definitely moldy (not smell of oxidized rice bran). Transaction price needs to be lowered drastically though it depends on the degree of damage. A lot of paddy that contains yellowish rice will not be attached with any value. So, it is important to prevent yellowish rice from taking place. Drying immediately by farmers after harvesting is the only way to solve the problem.

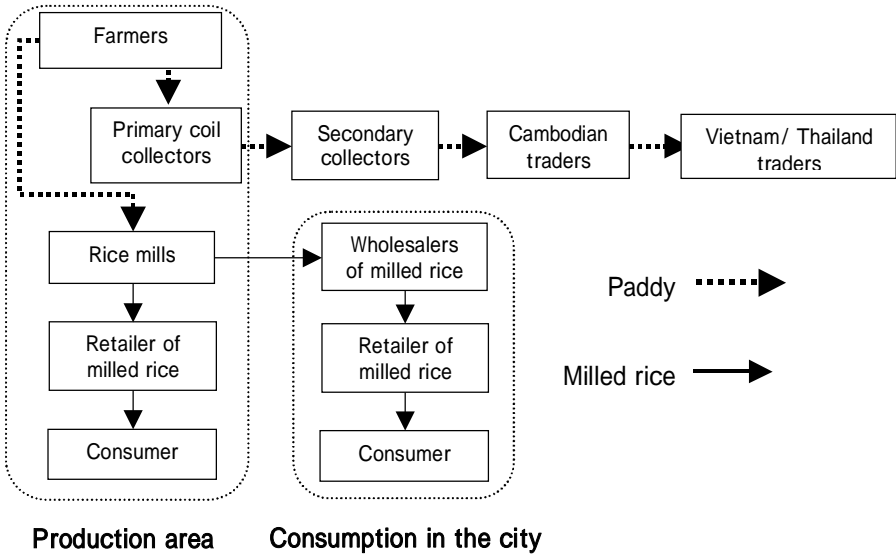
### **3.3 Present condition and issues of paddy distribution**

#### Each step of distribution route

For the normal situation of rice distribution in Cambodia, it is the paddy collectors' custom to go around farmers' houses with small to medium-size trucks to collect paddy though in some cases farmers take their paddy to a rice mill by bicycle/motorcycle/cultivator's trailer<sup>3</sup>. As paddy collection can be started by anybody if a truck and funds to purchase paddy are available, local influential farmers are often primary paddy collectors. According to the baseline survey of the pilot project, 89% of paddy-selling farmers sell their paddy to paddy collectors. Also, 46% of paddy collectors are lowland-rice-cultivating farmers, who collect paddy as a seasonal side business.

<sup>3</sup> According to the baseline survey, farmers who own transportation means are below 4% of the total.

In principle, the operation of the primary paddy collectors is limited within the province. Secondary paddy collectors, however, own a medium-to-large-size truck. They buy paddy from the primary paddy collectors; then transport it to Cambodian traders outside the province. Therefore, in case the transportation is within 100 km more or less, the secondary paddy collectors do not intervene. Rice millers usually purchase paddy from the primary paddy collectors. In brief, the transportation of paddy for domestic consumption is only to a rice mill within the province while paddy transported a long distance is exported to Vietnam and Thailand by traders. According to the baseline survey, the shipping ratio (weight base) of paddy collectors are 46% to rice mills, 37% to traders in Vietnam, 11% to other paddy collectors (secondary paddy collectors) and 5% to traders in Cambodia. The basic distribution channel can be illustrated as follows:



**Figure 3-4: Basic channel of Transaction/ distribution channel**

Distribution direction of paddy

Rice moves from the point of origin to the point of consumption according to the supply and demand. On that base, the absolute condition of distribution direction is price difference, and goods move from a place with cheap price to another place with high price under the free transaction / distribution. It is often said that underdeveloped distribution infrastructure (especially road) is the obstacle to the distribution, but that is not an absolute condition. If the price difference can compensate the distribution cost, goods will be transported even on a long and poor road. For example, unofficial paddy export crossing the border by truck is operated using poor bypaths (side roads). For the distribution direction of rice/paddy in Cambodia, rice (milled rice) and paddy need to be reviewed separately. The distribution direction of paddy can be summarized as stated blow:

- Paddy for domestic consumption:
 

While rice mills near Phnom Penh, where rice is not grown, must buy paddy from outside provinces, paddy is, in principle, transported within the province or to neighboring provinces and milled. Considering high transportation costs, it is practical to mill rice in nearby mills,

as paddy is bulky and heavy.

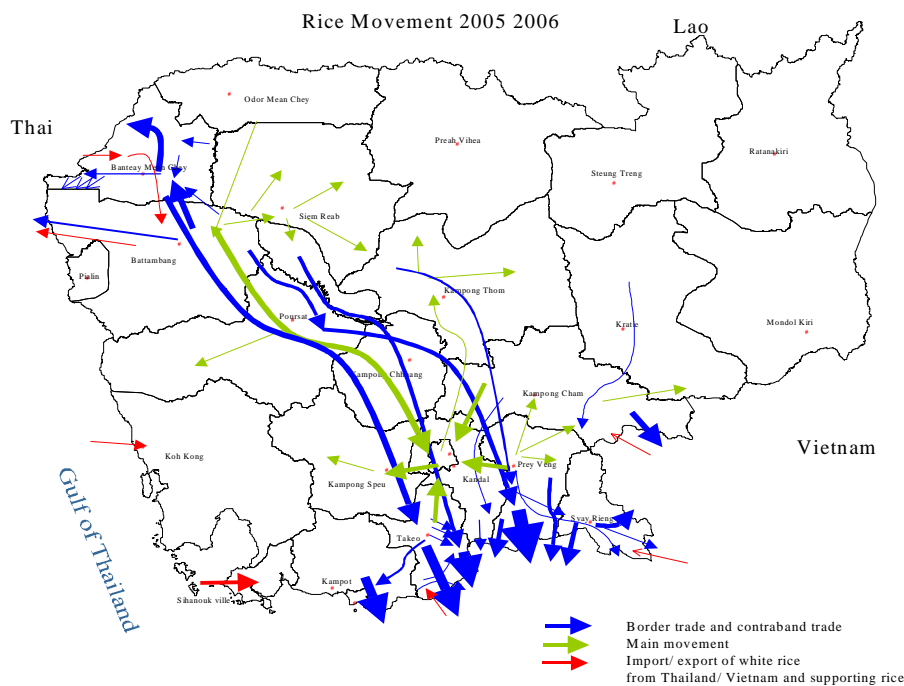
- Paddy to be exported to Thailand and Vietnam:

The distribution direction is determined by the paddy price and paddy importing situations of both countries. Until around 2002/03, Pursat was the watershed towards Thailand and Vietnam. As the purchasing power for Cambodian paddy in Vietnam rose then, paddy were transported to Vietnam even from Banteay Mean Chey and Battambang, which border the north-west part of Thailand. While Thailand is promoting the export of high-grade rice, the export of Vietnam is focusing on low to medium-grade rice for the time being. This is the background of the direction of paddy flowing from Cambodia; and the paddy produced in Cambodia is imported to Vietnam basically as the raw material of the low to medium-grade rice.

By the way, nowadays, brown rice, mainly the aromatic rice/ floating rice, is unofficially exported from Battambang to Thailand. Brown rice can assure the quality assessment of rice for transaction and reduce transportation cost better than paddy. However, since the Thai government has got a supporting-price system as a protective policy for its farmers, it is supposed to be cautious about Cambodian rice / paddy creeping into the Thai rice.

The figure 3-2 is a conceptual map indicating the distribution direction of rice (paddy/milled rice) in Cambodia. The thickest arrows represent the amount of distribution volume (Movement of paddy and milled rice 2005-2006).

**Fig3-2: Rice movement 2005/ 2006**



Source: Study team

### Volume of distribution

As the data on the volume of sales by farmers does not exist, the volume of sales is estimated by deducting the volume for self-consumption from the production. It is not, however, accurate as some farmers sell paddy for self-consumption and purchase later milled rice for consumption. For the exports and imports through the official procedures, data from MOC, the Customs, the Port Authority and Camcontrol is available. Its reliability is, however, questionable as data varies among them. It is estimated to be around 20,000-30,000 tons per year as it is done by containers, which can be called niche trade, unlike the export carried out in large lots (milled rice) by Thailand and Vietnam. Official import was mainly aid rice handled by WFP, but in recent years aid rice has been procured in Cambodia.

It is clear that the unofficial cross-border trade is greater than the official export and import. It consists of the paddy exported to Thailand/Vietnam and the import of broken fragrant rice from Thailand. Although the paddy exported to Vietnam has been increased drastically in recent years, its data is not available as it is done unofficially. It is estimated that 1.0-1.5 million tons of paddy (in the case of 2005/06, it was 1.5-2.0 million tons) is exported per year. Broken rice produced in Thailand is dealt by rice wholesalers in the cities like Phnom Penh, but consumers are limited due to the palatability.

Considering these actual conditions, the surplus, which is the remaining amount left after the deduction of the self-consumption volume from the production, can be considered to be the distribution volume of paddy because the most plausible figures are available.

### Domestic distribution

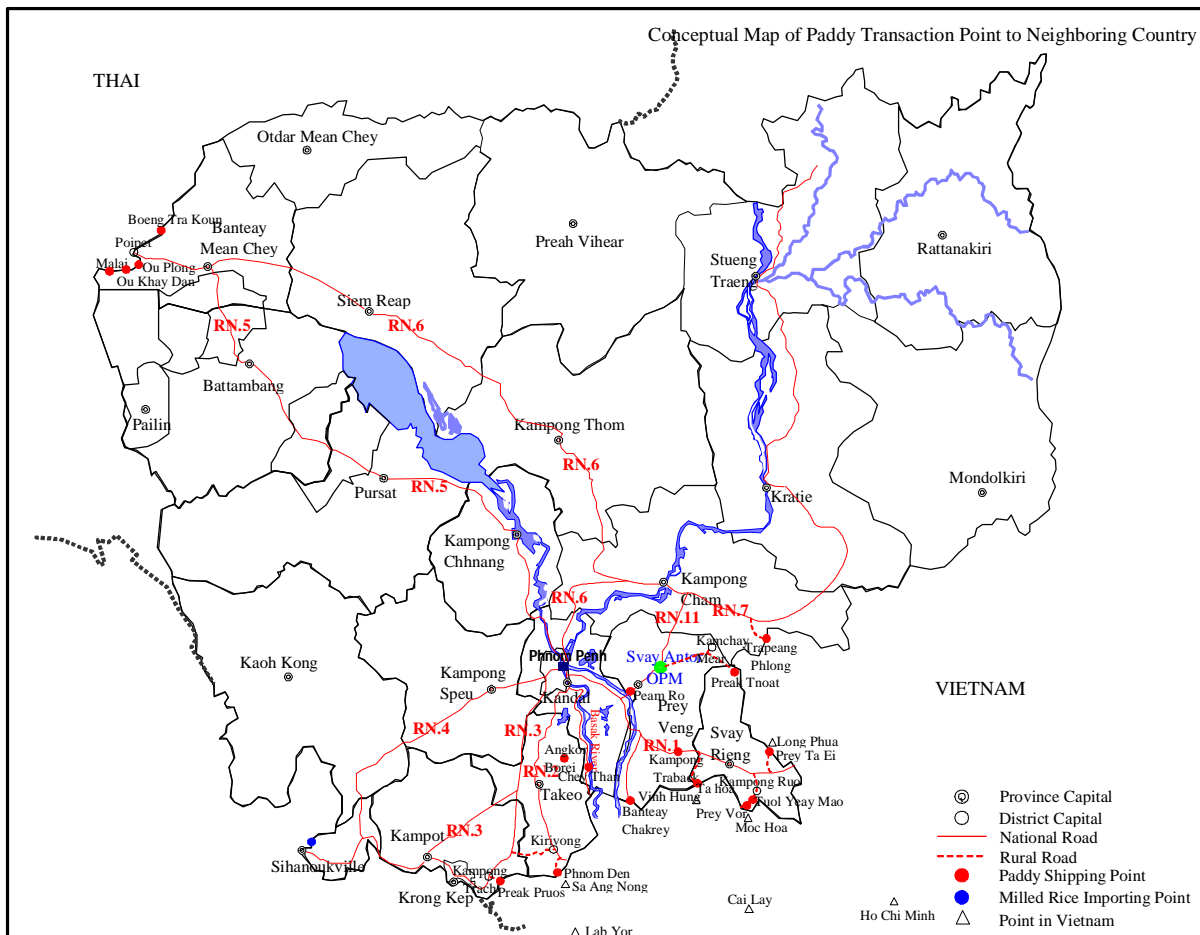
As being mentioned above, parties involved in the paddy transactions are farmers, primary paddy collectors, rice millers, secondary paddy collectors and Cambodian traders. They are not sorted strictly. Sometimes, a rice miller is a primary paddy collector and/or a trader at the same time. Transactions between sellers and buyers are basically negotiated transactions. Usually, a buyer informs an acquainted seller of variety/price/date of collection by word of mouth or a cellular phone. Therefore, when the seller takes paddy to the buyer, a standard price has already been set. Only paddy with particularly high moisture content or many foreign matters/impurities is subject to a discount (actually weight deduction) negotiation.

In case a farmer takes paddy to a rice mill based on the information by word of mouth, the rice-mill side is in a strong position to negotiate. The way of settlement is, in principle, a cash transaction as a credit transaction is underdeveloped. For regular customers, the payment is sometimes made in a few days later. Thus, the pricing between sellers and buyers is always done with negotiation but not in an open environment. Although it is not clear for outsiders, the market price of paddy in Cambodia is set by the asking price of Vietnamese traders.

Distribution between neighboring countries

The largest transaction of paddy is an unofficial export of paddy from Cambodia to Vietnam. There is no official export of paddy and the procedure of export declaration is not carried out. It is, however, not smuggling as tolls are collected by the military/police/local government/customs. As the amount of tolls varies with toll-collection points (location) and routes (boat/truck), traders choose the lowest costs of the point/route.

The Figure 3-3 indicates the points of paddy export to Thailand and Vietnam from Cambodia. All of them are not official checkpoints and the transportation means are boats and trucks. However, loading jetties and roads across the border are merely maintained by traders in a temporary basis. The places might move by the change of transaction environment. As the transshipment from a large-size truck to a small/medium-size truck has been done, the rationality of distribution is not considered at all.



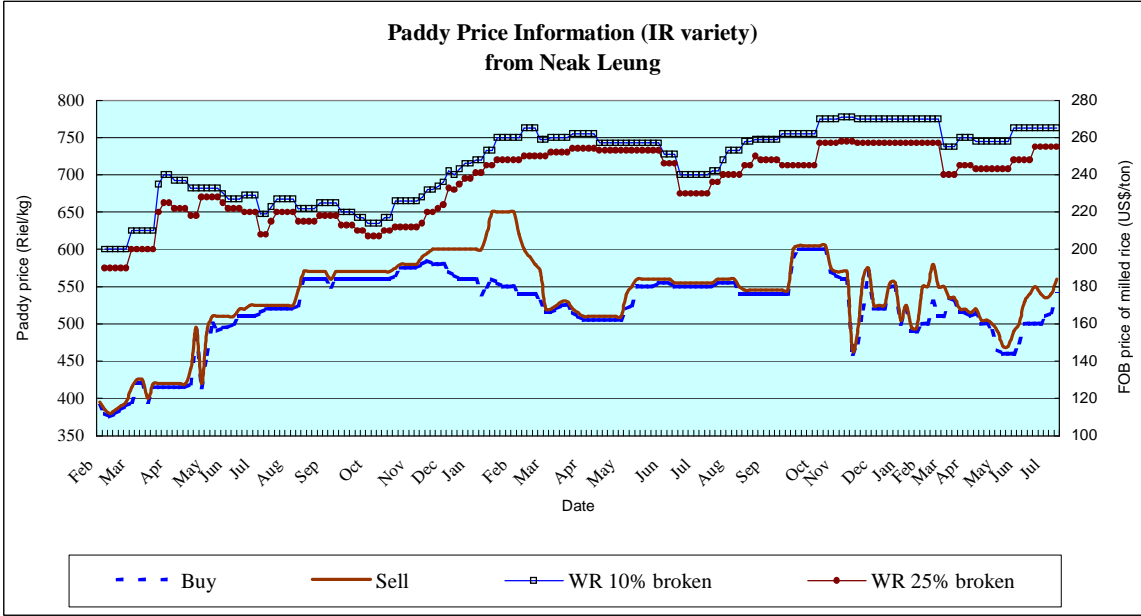
Source: Study team

**Fig3-3: Paddy-transaction point to the neighbor countries**

Cambodian traders and Vietnamese traders conduct negotiated transactions at the exits indicated on the above map (separate from toll collection points). As traders in Vietnam side specifies in advance varieties and prices to traders in Cambodian side, it can be said that it is only the act of delivery based on measuring/quality testing. As an exceptional case, in Banteay Chak Krey of Prey Veng and Kompong Rour of Svay Rieng, the market function, in which traders/paddy collectors of Cambodian side take paddy and seek a buyer with the best condition (price) among Vietnamese traders, has started to grow. The settlement is mostly made in cash and traders in Vietnam side pay in their own currency (Dong).

Market price

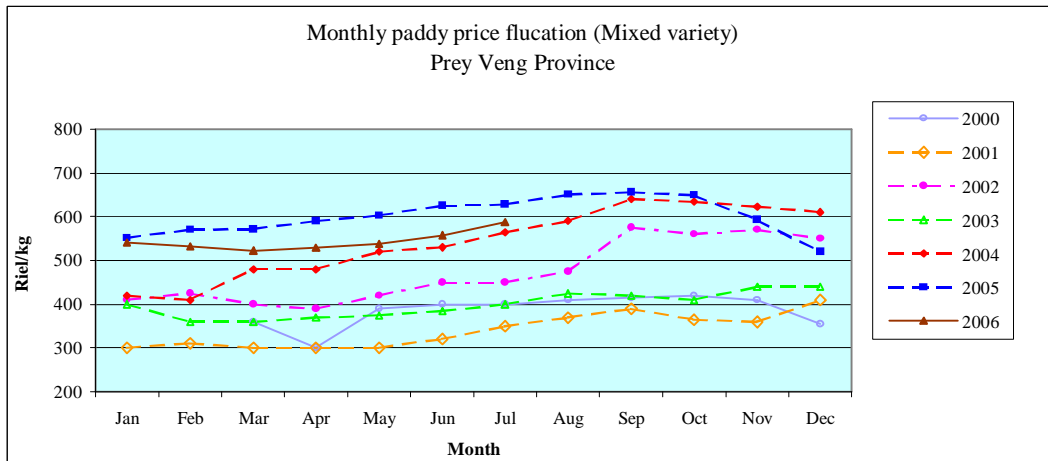
The market price of a mixed variety in Neak Leung, Prey Veng Province, from February 2004 to April 2006 is shown in the Figure 3-4. It can be seen that the price was stable at more than 500 riel/kg from May 2004 to March 2006. The fluctuation of buying price in this period (2 years and 3 months) was 225 riel, which is 43% of the average price of 521 riel; and its selling price was 270 riel, which is 51% of the average price of 534 riel. In October 2005, both buying price and selling price were recorded 9% down in one day. The maximum price difference between buying price and selling price was 100 riel (19% of the average buying price); the average was 13 riel (3%) and the median was 5 riel (1%). Comparing the paddy price with the FOB price of Vietnam's exported milled rice, the tendency of the paddy price movement was following Vietnam's leading FOB price though there was a time lag of the price movements, except for the FOB price of a high quality milled rice, which was inflated.



**Fig3-4: Paddy price in Cambodia and FOB price of mille rice in Vietnam (IR variety for paddy)**

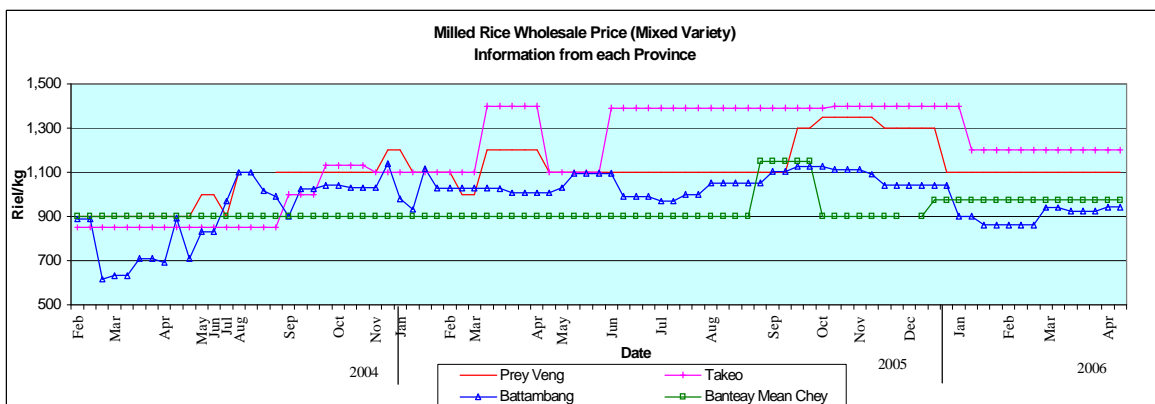
The annual price fluctuation of the same mixed variety in Prey Veng Province from 2000 to 2006 is

plotted on the Figure 3-5. It shows that the peak is from September to October, and the price declines from November to January, and then gradually rises afterwards. This is because the harvest of the wet-season crop starts from November to January, and then the price seems to rise while the amount of stock is declining. The price drop from November to December of 2005 appears to be substantial compared with the cases in recent years. This is attributable to a good harvest.



**Fig3-5: Monthly paddy price fluctuation (Mixed variety)**

Next, using the retail price of milled rice of mixed variety, the difference among 4 provinces, Prey Veng, Takeo, Battambang and Banteay Mean Chey, is reviewed. In Takeo and Prey Veng, the export price to Vietnam has a strong impact; in Banteay Mean Chey and Battambang, the export price to Thailand also has the same effect. According to the data of 2006, there is, however, 100 riel/kg difference between Takeo and Prey Veng, and between Prey Veng and Banteay Mean Chey (Battambang). The price fluctuation is small, and the price is more stable in Takeo than in Prey Veng and the same in Banteay Mean Chey than in Battambang. It can be guessed that both provinces are more susceptible, in location wise, to the influence of large size market in neighboring countries than other provinces.



**Fig3-6: Milled rice wholesale price**

### Operation of rice millers

With the free marketing policy of rice, many fee-based rice mills for self-consumption and commercial rice mills were established. In the background, there is a history of a large number of commercial mills being operated by overseas Chinese in the past. The table 3-4 is prepared based on the registration record of the Ministry of Commerce and the building permit of the Ministry of Industry, Mines and Energy.

**Table3-4: the number of registered rice mills**

(Date of general research, February 2004)

Provinces	No. of registered rice mills
Banteay Mean Chey	51
Battambang	55
Pursat	24
Prey Veng	29
Takeo except capital	16
Kampong Cham	18
Kampong Chhnang	0
Kampong Speu	59
Kampong Thom	6
Kampot	3
Kandal	5
Siem Reap	23
Svay Rieng	0
Total	289

Source: Department of Industry, Mining and Energy

According to the Ministry of Industry, Mines and Energy, the registered rice mills are only a part of them; the actual total (more than 50 horse powers) will be 50% more, it said. In fact, it is easy to find several rice mills only in Svay Rieng alone. Commercial rice mills excluding fee-based rice mills are considered to be around 90% of the total, and there appears to be 390 mills.

By assuming that the current facilities are 2 times more than the presented ones with the average capacity of 1-ton/hour input of paddy, the following review could be made. Assuming that the domestic consumption of milled rice is about 2 million tons and 30% is consumed in the urban area, it will be 600,000 tons. If adding 200,000-400,000 tons of milled rice drained to neighboring countries, the milled amount handled by commercial rice mills will be 800,000-1,000,000 tons per year. If one rice mill operates 8 hours/day and 330 days/year, it will mean that about 5,280 tons of paddy can be milled and 3,400 tons of milled rice will be produced. In that case, it can be calculated that about 295 mills ( $=1,000,000/3,400$ ) are enough and about 100 rice mills will be forced to be overabundant to the entire rice business.



Milling facilities in Cambodia are thus overpopulated and the selection through competition among commercial mills has started. The cases of closure of rice mills and conversion to paddy traders have been observed. As the future direction, the enlargement and centralization of rice mill are possible. However, it is expected that the mills that have enough funds to purchase paddy and can secure the market route of milled rice, which is the end product, will surpass other mills since the merger of rice mills is difficult in Cambodia. As a matter of fact, when the surplus of rice is reduced, there is the phenomenon of speculation in rice by some paddy collectors and rice millers who have enough funds.

Rice millers association was founded in the main provinces. In early days, there was only one organization. However, there currently are two organizations splitting up to Federation of Cambodian Rice Millers Association and National Cambodian Rice Millers Association. Those organizations are not based on any specific national law but perform within an ordinary association regulation.

#### Transaction/ Distribution policy

##### **【Domestic transaction/ distribution policy】**

Rice (paddy) transaction/distribution in Cambodia before the present free-distribution regime (1985) was under the government controlled system and managed by MOC and operated by Kamplimex (Food Authority). Although the storage houses of that time were decrepit, many of them still remain nationwide without use until now. It is also believed that staff who engaged in food control still remains as redundant staff in PDOC of each province.

The government abolished the food-controlling system due directly to the financial pressure. However, upon the introduction of the market economy as the national policy, rice distribution was liberalized. As rice was in deficit for the whole country until around 1995, rice distribution was limited to milled rice from the point of origin to the point of consumption and paddy distribution was limited within the production area.

##### **【Export and import policy】**

After 1995, although there is a deficit of rice in mountainous area, Cambodia as a whole started to produce surplus and the export of paddy to neighboring countries also started. The export of milled rice was not regulated then, but the export of paddy was regulated. In brief, although paddy export was unofficial, the government was not in a position to control it. Then, in 2001, paddy export control was abolished by the notification of Minister of Commerce on July 26, 2001. However, unofficial export of paddy without export declaration has continued till today.

The distribution stock of paddy in Cambodia, which is only for domestic consumption, is in rice mills (and in some cases, in paddy collectors/traders as well); and the paddy collected by Vietnam-

ese traders from farmers reaches rice-milling (husking) plants in Vietnam within a few days. In other words, to disrupt the transaction flow (cash flow) by stocking paddy is a business obstacle for dealers with less financial resources.

Despite the export of agricultural products is an important policy, the export of paddy, which is the largest export product, has been done unofficially. Therefore, the amount of export cannot be grasped, the supply-and-demand situation is unknown, and the export continues with issues such as the underdevelopment of loading facilities and transportation through bypath (side road). There is a fact that the Cambodian government is not able to control the border fully and it also means that Thailand and Vietnam are accepting unofficial paddy import. To import paddy from Cambodia might openly cause a problem to both countries. To export paddy through official route from Cambodia means both Thailand and Vietnam must import officially. Today's paddy export has thus been operated in a quite unstable condition.

#### **【Food reserve policy】**

As a member of ASEAN, Cambodia has committed 3,000 tons (milled rice) of rice reserve in order to implement the food reserve system. MOC, as a responsible government agency, notified every commercial rice mill on October 1, 2001 to stock ( earmark) constantly one month portion of the annual amount and at the same time instructs its affiliated government corporation, GTC (Green Trade Company), to stock as well. However, the regular confirmation of paddy stock has yet been done.

Furthermore, in order to prepare for natural disasters such as floods, the reserve of rice seeds by MAFF and the reserve of emergency food for disaster areas by National Committee for Disaster Management are supposed to be arranged. In reality though, it is often responded to the magnitude of disaster after the sign of disaster has appeared.

Since the reserve of rice needs a large amount of purchasing funds and storage costs, it is an immense burden for the government. It is also not suitable for private business.

#### Market information

Market information is mainly price information and it is communicated by word of mouth, radios, televisions, newspapers and other means.

MAFF and MOC collect the price information of agricultural products by fixed point observation through their respective local organizations (PDAFF/PDOC). MAFF collects data on rice, the buying price of paddy at rice mills by provinces / main varieties, and provides it to government publication, radios, televisions and newspapers. MOC collects data on No. 1 and No. 2 of milled rice in major local markets. However, there is no clear definition of No. 1 and No. 2, which are merely classified by the price levels. Collected data is distributed as the Weekly Gazette of MOC

(300 copies).

However, information of MAFF/MOC lacks timeliness and it is doubtful that it is utilized for actual business. After all, buyers and sellers judge buying/selling prices based on information by word of mouth. As the cellular phone network covers most of the area, the speed and coverage of word-of-mouth are completely different than the one in a few years ago. The use of cellular phones in villages is, however, limited to particular farmers.

Retail market/Wholesale market

There is no retail market specialized in milled rice and milled rice retailers are conducting their business in ordinary retail shops and in the public retail markets. Although the wholesale market specialized in milled rice is underdeveloped, there is a place where many rice retailers concentrate, which is in front of Phnom Penh railway station.

**Table3-5: Potential and constraining factors on transaction/ distribution improvement**

<b>Items of transaction/ distribution improvement</b>	<b>Potential</b>	<b>Constraining factors</b>
Increasing of export	There is possibility to increase paddy production, especially the yield. Export to Vietnam must be done in the form of brown rice but not paddy. While the rice-milling quality for export is difficult for the present Cambodian technology and facilities, brown rice can be exported. Since the brown rice has 1/2 of volume and 75 - 80% of weight compared to paddy, transportation cost can be reduced greatly. Although the brown rice is easy to deteriorate than the paddy, it is not a problem as shipment to milling facilities in Vietnam takes only about 2 days.	Domestic rice market is limited. In addition, it is difficult to break into international rice market except Vietnam and Thailand as it stands. Rice export is performed in milled rice. There is no exporting organization carrying out with minimum 5,000ton of uniformed quality of milled rice in a month arrangement. Exporters require technology / budget / trust-worth (contract performance). And there is no price competitive power because of high cost of transportation / processing and low workability / illegal levy/ inefficient export procedure and others.
Streamlining of transaction/ distribution	The system of transaction / distribution for paddy will be carried toward the rationalization under the market oriented.	Promotion of the streamlining for transaction / distribution situation is at the stop due to a continuation of unofficial paddy export.
Demand of market	Under the market oriented, a buyer's demands will make improvement of quality and transaction / distribution that required to be improved. Growers' side will have to response to the condition.	The market demands have never reached the growers due to information disparity.

### Problems/issues of paddy distribution

#### **【Lack of price information】**

Regarding the possession of market information, the buyer's side is always in a better position than the seller's side is. In other words, transactions are conducted with information gap. Despite many farmers are selling paddy, there is no standard price of transactions and the selling price is decided transaction by transaction. While average farmers have limited places to sell their paddy, paddy collectors have many farmers to deal with, which put them in a relatively strong position. Farmers are, therefore, forced to accept the offered price of the buyers.

#### **【Inaccurate weighing and poor quality】**

As buyers are in a strong position, inaccurate weighing methods such as weighing with an inaccurate scale, rounding up of fractions, and counting only the number of bags then multiplying by less weight are rampant. Farmers counter with high moisture paddy and putting foreign matters / impurities in it; and then buyers lower the unit price further; and then farmers try to cheat more. It is fallen into the vicious circle: poor quality leading to low price being offered, which will render the poor quality further.

#### **【Poor maintenance of branch road】**

Roads other than asphalted national roads are not paved and the maintenance of branch roads is done only by filling holes as a temporary measure. They are, therefore, very bumpy. When it rains, the roads become muddy at once; and automobiles are unable to pass through everywhere. The decline of fuel efficiency of motor vehicles and the increased costs of repair are substantial and the loss of time and expenses are immeasurable.

#### **【Make unofficial export of paddy into official export】**

A large amount of paddy is exported unofficially from Cambodia. The reason of unofficial export in Cambodian side is because the official export procedure is cumbersome and it will result in cost increase. Also, it is because Thailand and Vietnam sides do not import Cambodian paddy officially.

They both are large rice exporting countries and need Cambodian paddy. It seems that the unofficial import becomes a necessary evil in the importing side as the official import might cause them problems. In other words, producers of both countries might oppose the import as the price of the domestic paddy falls due to the cheap imported paddy. Although Cambodia needs to export the surplus paddy, the unofficial paddy export of Cambodia seems to be the result of the convenience of Thailand and Vietnam.

## **Chapter 4 Outlining Plan on Establishment of Open Paddy Market**

### **4.1. Reasons for necessity of the Open Paddy Market**

#### **4.1.1 Necessity of the Open Paddy Market for Paddy transaction**

Cambodia could cover self sufficient in rice in 1995. It has been producing surplus amount of rice since that time. Surplus amount of paddy has unofficially been exported to Thailand that is the biggest rice exporting country and Vietnam that lately is a competitive rice exporting country.

On the other hand, domestic rice transaction/ distribution situation generally remains unchanged, though there is preference of taste changing to eating quality varieties with betterment of diet. Under the circumstance, effect of unofficial exporting paddy to the neighbor counties makes some of overabundant rice mills from the beginning shift to paddy collectors/ traders.

Under the condition of these paddy distributions, though the government of Cambodia set down liberalization on rice transaction/ distribution, unregulated marketing/business practice is widespread under the undeveloped socioeconomic system. There are shifty practices of weighing, willful mixture with foreign matters/impurities, and a climate of disregard for drying/cleaning treatment, which develop a bad habit against relevant transaction and quality control improvement. At the same time, the farmers have a difficulty in receiving market information, which is different as there are information gaps, from paddy collectors/traders/rice millers as information gaps. The farmers are, therefore, led to lacking of bargaining power.

A big amount of unofficial exported paddy without any trading procedure and record has made balance calculation between surplus and deficit of rice/paddy impossible. Furthermore, such transaction has been done with paddy that is low-value-added products as milling material with a non-uniform quality and without being dried and cleaned. Through these unofficial exports to the neighbor countries, a present transaction/distribution has been achieved heading in the opposite direction due to hidden levy paid to authorities at the border, transportation through a way of bad condition, extra loading/unloading paddy to another truck(s) that runs on the side road, etc. However, if surplus paddy is not exported, domestic paddy price will come tumbling down, and paddy production will drop sharply because of downbeat of farmers' motivation for paddy production.

The Open Paddy Market is to be effective methodology for initiation of a fair and equita-

ble trade and quality improvement of paddy through supply of market information, proper weighing, reasonable quality assessment, relevant pricing by quality levels.

#### **4.1.2 Necessity of Open Paddy Market for developing rice business**

The present export of paddy is a propositional act along with activities for increase of agricultural production, export promotion, acquisition of foreign currency and income growth of the group of poor farmers under the government plan.

However, rice is normally not exported in paddy but milled rice. Paddies are seeds having problem with planting protection and high transportation cost caused due to its large volume and weight. Even though Cambodian paddy export to the third countries means that Cambodia has a possibility to export rice to the third countries, there is no total power for exporting milled rice directly as it requires business skill/budget/management, except a niche trade. Cambodian ability to perform at present day is serious risks to exporters.

The necessary step of Cambodian people as a realistic approach is to learn the international market demands with continuation of export of paddy to Thailand and Vietnam. This is an idea to improve paddy quality and strengthen competitive pricing power. The second step is to export brown rice to Thailand and Vietnam in order to build Cambodian collective strengths for exporting milled rice. The Open Paddy Market will practically be able to contribute along such an improvement direction, but not mere theory/academic plan ending.

#### **4.2 Results of the general survey and F/S**

Based on the survey/study results, the suitable place for the OPM was selected by analyzing the harvested volume and the conditions of paddy distribution.

A province is an area of administration but does not represent a range of production distribution. Under the market economy where goods can be transported freely into and outside of provinces, the production area is appropriate to be regarded as one whole area. The size of one production area is not limited to the area where one OPM can cover. More than two OPMs might be developed in the area in the future.

When the OPM is considered, the residential/farming area of farmers who are sellers is not going to be very wide due to the convenient paddy transportation. The activity area of paddy collectors/rice millers who are buyers is wide. Under the free distribution pol-

icy, the distribution beyond a province is common. According to the results of the above- mentioned survey conducted in 13 provinces, 3 areas stretching over 4 provinces (12 districts) where the paddy production (surplus), the number of buyers and the distribution scale are adequate have been selected.

**Table 4-1: Comparative table of target area of F/S, 2002/03**

Area	The south area of Banteay Meanchey and the north area of Battambang	The south area of Battambang and the north area of Pursat	The north area of Prey Veng
District	Mongkol Borie (BTMC) Thmar Koul (BTB) Bavel (BTB)	Moung Ruessei (BTB) Bakan (Pursat)	Kanh Chhriech, Sithor Kandal, Pea Rang, Kam Chae Mear, Prey Veng, Kampong Leav, Peam Ro
Production (ton)	192,962	144,432	283,866
Surplus amount of paddy (ton)	78,404	56,353	96,272
No. of rice mills	63	21	26
Scale of paddy distribution	Huge	Big	Big
Feature of area	To receive an economic impact from Thailand. Developed area of commercial agriculture production	Rice miller with enough budget to keep more than 1,000 ton of paddy can run the factory. 20-30% of rice millers shifted to collectors or closed because of shortage of budget.	There is the largest production; both dry/wet season cropping in the recession rice area. Rice here has lower brand potential than Battambang rice.

Source: PDAFF/the study team

The site of the OPM must have a potential as a project-executing area. Existing storage houses were supposed to be repaired and utilized in the study. Therefore, after reviewing the existing storage houses in the F/S area, the only facilities which could be used in the 3 areas were those belonging to the Ministry of Commerce and the GTC located in Svay Antor, Prey Veng District, Prey Veng Province.

With major data of each district in Prey Veng Province, the subject areas of the F/S are listed in the Table 4-2.

**Table 4-2: Main data on each districts (2002/03)**

Area	District	Commune	Village	Population	Nos. of Household	Production (paddy ton)
Northern area of PreyVeng Province	Kanhchriech	8	97	60,647	13,251	37,868
	Prey Veng	11	138	108,496	20,767	36,685
	Kampong Leav	8	42	45,573	9,021	43,791
	Peam Ro	8	41	41,125	9,026	29,568
	Pea Rang	11	83	122,873	24,046	45,453
	Sithor Kandal	11	60	64,692	13,879	22,883
	Kam Chae Mear	8	129	77,432	17,056	41,353
Total		65	590	520,838	107,046	257,601

Source: MAFF, SEILA

### 4.3 Outlining of the open paddy market development plan

#### 4.3.1 Objectives of the open paddy market development plan

Based on the study results, the objectives of the open paddy market development plan are listed as following:

- The aim of the OPM establishment is to develop an environment where fair and equal transactions will be conducted in the paddy transactions.
- OPM is to benefit participating producers (farmers) and distribution dealers, and to contribute to the local economic development (rice industry in particular).

#### 4.3.2 Target areas (Districts) of the development plan in 13 provinces

Based on the study results, the OPM development plan is best to be reviewed district by district. In the sense that it is to understand the whole plan, districts where the OPM might be developed (there is the surplus of more than 10 thousand tons) are listed in the table below. By combining these districts, the development of the OPM becomes possible. Whereas the necessity of the OPM in the districts bordered with Vietnam seems to be dependent on the changes of border trade conditions.

**Table 4-3: Districts covering by the establishment step**

No.	province	Target area for the pilot project (for 2 years)	Spread effect period (for 4-5 years) Annual production: 50,000 over, Surplus: 20,000 over	Maturation stage Annual production : 30,000 to 50,000, Surplus: 10,000 over	No. of districts
01	Banteay Meanchey		Mongkol Borei	Preah Netr Preah	2
02	Battambang	Thama Koul Moung Ruessei	Bavel		3
03	Kampong Cham		Bateay, Or Reang Ov	Chejung Prey	3
04	Kampong Chhnang			Rolea B'ier	1
05	Kampong Speu				0
06	Kampong Thom			Baray	1
07	Kampot			Chuok	1
08	Kandal				0
14	Prey Veng	(Svay Antor), Prey Veng	Kamchay Mear, Kanhchriech, Pea Reang, Kampong Leav	Kampong Trabaek, Peam Chor, Preah Sdach	8
15	Pursat		Bakan		1
17	Siem Reap		Kralanh Puok	Chi Chaeng	3
20	Svay Rieng			Kampong Rou	1
21	Takeo		Ankor Boei, Bati, Bourei Cholsar, Prey Kabbas, Samraong, Treang	Kiri Vong	7
<b>Total</b>		<b>3</b>	<b>17</b>	<b>11</b>	<b>31</b>



The potential place for the OPM is classified into the area with the annual production of more than 50 thousand tons and the surplus of more than 20 thousand tons, and the area with the annual production of more than 30 to 50 thousand tons and the surplus of more than 10 thousand tons. In the action plan of the study, the target site/area for the OPM will be selected in combination with some districts.

### 4.3.3 Requirements for OPM operation

#### (1) Desirable functions of OPM

Necessary inputs are planned by reviewing the necessity of each selected function and operation of the OPM,. Each planned function (which is the potential service item of the OPM) is reviewed in the Table 4-4.

**Table 4-4: Planed functions of Open Paddy Market**

<b>Function</b>	<b>Necessities and Operation Methods</b>
<u>Provision of place (function as a wholesale market)</u>	The basic function of the OPM is a function of a wholesale market to assist sellers to secure a precise valuation in quantity from buyers to sellers and to assist buyers to secure uniform (quality wise) goods efficiently from sellers to buyer. It is operated by the commission income serving as a go-between for sellers and buyers and contributes to fair and equal paddy transactions. The records of sellers, buyers and prices in the transactions are also important for understanding new actual conditions of distribution.
<u>Weighing service</u>	A lack of credibility and an assertive quality assessment regress a weighing method. It is essential to establish a precise-weighing practice.
<u>Quality grading</u>	With a unified price without quality differentiation, the quality improvement cannot be expected. This is to provide sellers and buyers with fair pricing standards according to the quality inspected on the paddy and graded according to the grading classification. The properties items such as moisture/cracking rate and inferior/ paddy mixing rate are graded according to the standards.
<u>Threshing service</u>	Drying in rice fields has been stopped in order to prevent paddy from being stolen. Threshing with high moisture results in increase in impurities of foreign materials, and drying has not been done due to the fixed price transactions. To prevent mixing of foreign materials and to improve paddy quality are essential.
<u>Transportation service</u>	As the road conditions are poor, major roads are far and rice millers and farmers have no proper transportation means, this service is called for. Being in a position to serve as a go-between for sellers and buyers (no direct involvement in transactions), the service is engaged in the loading, transportation and unloading of paddy with the dispatch of the OPM's vehicles upon requests from rice millers and farmers.
<u>Drying service</u>	This service can cope with the case of weight loss due to over-drying of paddy as farmers cannot control the moisture properly, the case of damage by pests caused by high moisture and the rejected buying and unreasonable discount from buyers' side for the reason of high moisture.
<u>Cleaning service</u>	This service is used in conjunction with the threshing service and it is applied to paddy with low-moisture content; and it can improve the paddy quality by removing light weight foreign materials such as empty grain and straws.

<b>Function</b>	<b>Necessities and Operation Methods</b>
<u>Storage business (deposit function)</u>	The storage business needs to be a part of functions as: storage space for mortgage paddy of financing scheme (owner is a seller like farmer at this moment); storage space for sellers' paddy awaiting until the selling price rises; temporary storage space for rice millers who purchase paddy and keep it until they resale it; and proper storage space for collateral; supplemental function.
<u>Financing function</u>	Some farmers who suffer high interest rate have nothing left to feed their family as they borrow the whole expected amount from sale before planting and have to pay more than 30% of interest. This service secures the income of farmers as much as possible by using the seasonal price difference of paddy in order to eliminate the situation where many farmers have to sell paddy at the lowest price immediately after the harvest.
<u>Settlement</u>	This service is to settle the payment and to pay the balance of the mortgage financing. The requirement of transparency in the transactions has to be satisfied.
<u>Seed distribution</u>	Seed paddy of farmers is mixed with various varieties. This service responds to the problem by introducing proper seeds and their acquiring methods/price, and by providing information; but not by actually selling them in the market.
<u>Fertilizer distribution</u>	This service was not considered at the time of outlining the development plan.
<u>Provision of market information</u>	The daily transaction prices are displayed by quality at every transaction and they will be the reference prices of next transactions. The service has been adjusted as many times as possible to suit the communication means of users, by setting a large size price-display board at the front of the market, by communicating through cellular phone and wireless radio facilities and by displaying at District and Commune offices.
<u>Instruction on post harvest treatment improvement</u>	In addition to the abovementioned provision of seed information, the introduction of technical information and instruction will be provided to farmers on post-harvest treatment, water management, pesticide application and fertilizer application (recommendation of appropriate fertilizer).
<u>Sale of paddy bags</u>	When middlemen and rice millers purchase paddy from farmers, paddy bags are lent (although many of them are used/old). It means that the bags are free. However, what is really happening is that the purchasing price of paddy is discounted and the weighing is cheated. Sellers would like to pay for the cost of the bags, after all. This service makes the price of paddy bags clear and makes users to pay with being convinced.
<u>PR and business activities</u>	Business activities by the OPM staff in their territory and surrounding areas are vital to improve the utilization rate and to facilitate efficient use of the market.

## (2) Specifications of OPM

The specifications of OPM are as following:

### 【Setting conditions】

Annual transaction volume: 10,000 tons

Peak period of incoming paddy: 90 to 120 days (double cropping)

Maximum incoming paddy: 200 tons/day,

Sun-drying capacity: Approximately 40 tons/day

**【Basic specifications】**

Storage capacity: 5,000 tons (paddy).

Floor space: Approximately 5,000 m<sup>2</sup> (5,000 tons/1.5 tons/m<sup>2</sup>/66% effective)

Sun-drying field/loading area (including traffic line): 2,500 m<sup>2</sup> (0.03 m thickness x 2,500 m<sup>2</sup> x 0.6 apparent specific gravity)

Office/Testing room: 50 m<sup>2</sup> each. Equipment: weighing equipment, transportation equipment, cleaning equipment, testing equipment and others

**【Service fees】**

Since they are counted as distribution costs, the service fees must be kept as low as possible by enhancing working efficiency of the OPM.

(3) Management body

According to the example of Thailand, the management body is diversified including individual, agricultural cooperative, local government, rice miller and government bank. Although the same direction can be applied to Cambodia on the premise of adequate capacity of responsible government agency, developed market regulations and the existence of fair competition, the steps have yet to be taken until the introduction of various management bodies.

The required quality to be the management body is to be trusted by users as a business body, to be equal (neutral) to sellers and buyers in order to guarantee the sustainability of the business and to have a transparent and aggressive business mind (reduction of operational costs and other efforts) without being an extreme profit seeker.

Although the credibility of foreign NGOs is generally considered to be high in Cambodia, the project without aiming at profit including the activities of local NGOs is considered difficult. The concept of NPOs is yet to be rooted. The OPM is considered to be a local public infrastructure. As the management of public markets is entrusted to the private sector, the government, as a management body, has a low management capacity and a low operational capacity in terms of financial aspects and lacks the credibility of the public sentiments. The staff of government agencies including government's corporation cannot follow the working hours, as they are busy with other income-earning activities. Under such circumstances, the public sector or NGOs are the only choice to be the project management body of the OPM.

Many local public markets (retail markets) are adapting the PFI method due to a lack of human resources in the government and the tight financial situation. What makes this system possible is that the management systems of many public markets operating nationwide are almost the same. As many people can acquire the operational know-how,

many of them are interested in this method of operation. As long as the mechanism to maintain public interests is secured, it can be an option.

#### (4) Operational funds

Fund raising is the biggest issue as financial assistance from Cambodian government cannot be expected. Although the operational costs need to be covered by the service fees, to solicit investors according to the local situations or low interest public funds are necessary as the amount required for the paddy mortgage scheme is huge. Besides, the mission team did not recognize fully the necessity of paddy-purchasing funds as it had been assumed at the time of outlining of the development plan that the sellers and buyers would conduct the transactions at the market and the payment settlement would be finalized at that time as the transaction mechanism of the OPM.

In order to achieve the goal, the suitability of functions, the operation methods and the impact that may invade the existing distribution must be judged. Besides, at the time when this study was started in 2004, there was no any concrete plan for the rice distribution; and the things concerning business conduct of sellers and buyers in the OPM were still in the investigating stage and they were merely in the outline.

### **4.4 Necessity of implementation of the pilot project**

#### **4.4.1 Necessity of the pilot project**

It was difficult to make the OPM users understand its system and policy though the Study team had conducted many workshops to explain them about the concept of the OPM as a wholesale market despite it is a new idea for Cambodian people. So, the best way to make the local resident understand was to let them personally use the OPM through the pilot project.

The OPM's business policy and target is fair and equitable trade. It will take time to correct the business custom in the entire society. It is important to develop a methodology of the transaction system and to show it to the users and staff of the OPM using/operating the OPM during the pilot project performance.

Though it was a provisional design to outline the establishment of the OPM, there was not enough accuracy and measures to finalize it. Through the pilot project, it will be remedied, especially whether there are users paying OPM service charges or not; otherwise it will be hard to say.

The operation body was set under the idea/strategy of “government control Joint venture of government and civilian private organization” during the pilot project performance. In addition, the operation body must have budget for the OPM management (running and laying-in a stock. However, nobody would approach till profitability is clear. Under the circumstance, profitability should be verified.

The pilot project was a starting point of establishment of the OPM in the Study.

#### **4.4.2 Implementation of the pilot project**

In order to verify an outlined plan and raise the precision of the OPM's function/ system/ management, the pilot project needed to achieve. Though the pilot project planed to achieve more than 2 sites in the F/S areas, only the Open Paddy Market at Svay Antor, Prey Veng was achieved from December 2004 to March 2006, and the cooperative shipping project by farmers’ groups in Khan Chhriech districts was achieved from December 2005 to February 2006.

## **Chapter 5 Implementation of Pilot Project**

### **5.1 Brief description of Pilot Project**

#### **5.1.1 Brief description of Svay Antor Open Paddy Market**

Open paddy market can be positioned as a public infrastructure like public markets (retail markets) found around the country. In Cambodia, as can be seen from the fact that the operation of most of the public markets are commissioned to local private organizations, in the present situations the government lacks operation know-how and financial resources required of an operating body. In addition, the public sentiment also shows lack of confidence in the operation by the government. However, it was revealed that since there is no practical example of an open paddy market in Cambodia, the operating body can not be determined in the same way as with the public markets.

The market was put into operation after the refurbishment of existing depositories and the procurement of necessary equipment and materials had been started in September, 2004 and completed in December 14 that year. The selection of the operating body, the procurement of necessary financial resources, the recruitment and training of the staff, the formulation of the operating procedures, the designing of the contents of the functions and services had been scheduled to be completed before the opening of the market. However, since it was already in the midst of the harvest period, they had no other choices but to embark on the project without appropriate preparations. Since the selection of an operating body and the financial resources were linked with each other, these two issues became so much more important and difficult problems for the establishment of a public paddy market.

With respect to the operating-body issue, the idea of a NGO/NPO operating body had been discussed since the second year of the project. While the Ministry of Commerce accepted the idea, the Ministry of Agriculture, Forestry and Fishery insisted on the operation under their control. They failed to reach a common policy. Following the failure, the closure of the public paddy market became an agenda. However, the Ministry of Commerce formally announced it would take over the project just before the end of the third year, and the operation was commissioned to the newly established “NGO Svay Antor Open Paddy Market”.

#### **5.1.2 Brief description of Cooperative Paddy Collection and Shipment by Farmer Groups in Kanhchriech District in Prey Veng Province**

As the alternative, a small-scale project regarding the establishment of a cooperative paddy collection and shipment system by Farmer Groups in Kanhchriech district in Prey Veng province was put into operation with an aim to verify the experiences and lessons learned through the operation of the Svay Antor Open Paddy Market.

## 5.2 Implementation of Svay Antor Open Paddy Market

### 5.2.1 Objectives of Svay Antor Open Paddy Market

- 1) Improve further the predetermined contents of the open paddy market development plan and establish the plan through the implementation of a verification research in the form of a pilot project.
- 2) Ensure know-how regarding the formulation of the open paddy market development plan and the ins and outs of the operation of the OPM to be transferred to the counterparts and to the OPM staff respectively, through the implementation of a verification research in the form of a pilot project.

### 5.2.2 Activities of Svay Antor Open Paddy Market

The Table 5-1 shows major activities of the pilot projects.

**Table 5-1: Activities of the pilot project**

<b>function</b>	<b>Activities</b>	<b>preparation for facilities/ necessary facility and equipment</b>
<u>Providing place for transaction( function of central wholesale market )</u>	This is to create an appropriate transaction form and to provide storage space until transactions complete (without fees). The commission is set around 1% of paddy price as a basic fee when OPM is used.	Toilet, pump, price board, desk, chair, table, rocker, computer
<u>Weighing service</u>	In order to establish an accurate weighing, OPM uses a high precision standard weight upon the request.	500kg : accuracy 1/200, calibration block
<u>Grading inspection</u>	This is to provide equal pricing (tentative) standards to sellers and buyers by verifying the paddy quality and grading according to the grading classification. Physical properties items will be tested in a short time and the paddy will be graded.	Inspection devices : sample moisture meter, inspection
<u>Threshing service</u>	This is to materialize higher price transactions by preventing the mixing in of foreign materials and improving the paddy quality.	Thresher Truck for carrying
<u>Transportation service</u>	It is in actual conditions where middlemen and rice millers are providing the transportation service to farmers and at the same time purchasing paddy from them.	Parking lot, dump truck or
<u>Drying service</u>	This is to eliminate the weight loss by over dried paddy due to the fact that farmers are unable to control moisture properly, the pest damage caused by high moisture and the rejected buying and unreasonable discount for the reason of high moisture.	Drying yard etc.
<u>Cleaning service</u>	This is to improve the paddy quality by removing light weight foreign materials such as empty grains and straw from low moisture paddy.	winnowing fan cleaner + bucket elevator Vinyl
<u>Storage service (deposit function)</u>	The storage service will be a part of function as a storage space for mortgage paddy and for sellers until selling price rises and as a temporary storage space of purchaser until rice mill processing and resale. The fee is set by the quantity of the product and the storing period.	Warehouse
<u>Settlement</u>	This is to verify what the transparency of transactions (receipt, statement and other documents) is.	

<b>function</b>	<b>Activities</b>	<b>preparation for facilities/ necessary facility and equipment</b>
<u>Paddy mortgage</u>	This is to secure the income of farmers as much as possible by using the seasonable price difference. As this is a loan with high credibility and without collateral and below 3% of monthly interest rate, it will be started from September 2006 with less than 2% of interest rate by using the counterpart funds of KR2.	
<u>Seed distribution</u>	This is to introduce and to provide information on proper seeds and their acquiring methods/price.	-
<u>Market information service</u>	A large size price display board will be placed at the front of the market and cellular phone and wireless radio facilities will be provided. The service will be offered free of charge to users.	I-com
<u>Post-harvest technology</u>	Techniques on post-harvest treatment, water management, pesticide application and fertilizer application (recommendation of appropriate fertilizer) will be provided to farmers.	-
<u>Paddy bag</u>	This is to verify whether the ultimate buyers can bear the costs of paddy bags or not.	
<u>PR and business activities</u>	This is to conduct business activities to improve the utilization rate and to facilitate the efficient use of the open paddy market.	computers

The Table 5-2 shows the fee for each service that OPM set during the pilot project. It is an activity to alter the fees following market situation.



**Table 5-2: Fee for each service of Svay Antor OPM**

Items	Fee ( the first year of pilot project→the second year modified )	Remarks
Basic fee	5riel/kg	Weighing, quality inspection, loading, unloading, carriage charges, including settlement. The transaction place provided is to be paid by users (sellers).
Paddy bag	5riel/kg → 8riel/kg	Price was altered at the second year in accordance with the bag capacity. The payer is final a buyer at OPM.
Threshing	13riel/kg or 1/35 of value → 15riel/kg or 1/32	This is a service that serves as a first contact to farmers with low price. The commercial thresher price was referred to make relevant fee from the second year.
Transporting	(0.215 km-riel x ℓkm + 2riel)/kg → (0.392 km-riel x ℓkm + 2 ~ 4 riel/kg)	To charge the cost, vehicle and driver/ loading fees are separately calculated cording to the increase in diesel price (140%); and effectiveness was overhauled (77%). It is very close to collectors' tariffs surrounding OPM.
Drying	6riel/kg	Here's not clear for the drying service in Svay Antor. The fee is charged according to that from Pursat and Battambang cases: 4.5 ~ 5riel/kg + quality inspection after drying.
Cleaning	6riel/kg	No reference at that time, so to estimate 8hours running for fuel + 3 to 4 workers payment + quality inspection/ scaling cost = cost price. To keep the same price until increasing demands.
Temporary	1.2riel/kg→1.5riel/kg	There were existing services in private warehouse by 1.4riel/kg ~ 1.8riel/kg. To check market price continuously.
Market information	Free	To provide price board on the warehouse wall to show the latest price by quality level and variety daily.
Post-harvest technology information	Free	To advice post-harvest technology/ information, loss reduction, protection of seed mixture etc.
Fertilizer distributing	Market price	OPM has commenced this service since October 2005. Cost price of fertilizer + transportation from the border + informal check point fee + OPM basic fee = price for sale attached to the board price for buyers' reference
Paddy mortgage scheme	2%/ month for half value of paddy	Guarantees of micro finance are land, house, big animal husbandry that the render can keep for while. Notionally "interest" of collectors' and rice millers' could be converted from 4 to 7%/month; so, OPM should decide half of those.

### 5.2.3 Results of Svay Antor Open Paddy Market

#### (1) Business environment

The Svay Antor OPM is located at the southern chip end of Svay Antor town, 14km from Prey Veng town, capital of province, along the national road root 11. There are approximately 30 rice mills

surrounding the Svay Antor OPM. Area within a 20km radius centered at Svay Antor was the OPM's real targeted area in 7 target districts. According to terrible condition of roads, vehicles must run on an alternate to make a one-way travel distance of 35km in average. Those districts are the paddy productive area and surplus amount is regularly more than 100 thousand ton/ year. The size of a small lot per transaction is 500 to 1,000kg. 50% or more of farmer householders of 110 thousand are targeted within a 20km radius. Paddy produced there has low brand potential, which should almost be sold to Vietnam.

The annual production is trice in 2000-06 (second year of pilot project) compared to that in 2004-05 ( first year of pilot project ) . In 2004-05, there was draught, which brought very low production along root 11; however, there was enough rain in 2005-06, which brought about production of 100 thousand tons of surplus paddy for just only the wet season. There were difference of business environments between years. There is a lot of surplus paddy in the entire Cambodia in 2005-06. People in the city area, Phnom Penh and Kandal, are available to affluently purchase Battambang rice, which cause the Svay Antor rice millers to reduce their production activities. This is because Prey Veng rice brand is much lower than that of Battambang's rice. Rice millers in Svay Antor have to shift to paddy collectors or lost work time. Moreover, The number of paddy collectors has increased double in entire Cambodia within the year and their over-competitions have been found in some local areas.

## (2) Management body

It is important for the OPM to ensure the neutrality in the paddy transaction and prepare the fund its financial management. There were all kinds of nominal parties/ organizations/ personnel from a private sector and the government, but none of them was suitable for the OPM management; so three persons from PDOC/ PDAFF/ study team were nominated to serve as the operation body of OPM, which has continued to manage it. According to baseline survey result, many users expected a private organization, especially an NGO, to manage it, as at the moment nobody believes the government involvement. NGOs exist as symbolic neutrality in Cambodia.

## (3) Handling Amount

The following figure shows the changes (up to June 30, 2006) in the handling amounts (sales volume [sales for which basic fees are charge] + inventory volume); and the income and outgo in the first year of the pilot project (2005-2006 open paddy market business year).

Although the operating efficiency has improved, it is not likely that a positive financial balance will be achieved. Also, the handling amount remains roughly two thirds of the planned volume. Moreover, rice millers have started to play the role of a collector, resulting in an excess number of collectors. It cannot be denied that the project is one step behind the actual developments.

Although it was assumed, before the begging of the Pilot Project, that farmers would carry their paddy to the OPM, all most all farmers did not have conveyance means. At the beginning of the Pilot Project, it has been planned that the OPM would implement a transporting service by trucks based on farmer’s request to collect their paddy. However, the collecting amount did not increase in the actual operation. Therefore, the staff of OPM had to visit villages and collected paddy in order to increase the collection amount.

Since the OPM had no fund for the purchase, the staff collected paddy in exchange for a shipping slip at farmers’ doors. And the payment was made with deduction of the handling charge after the paddy was sold, which took a few days after the shipment; while collectors carry cash with them when they go to buy paddy at the farmers’ doors and made the payment immediately. In short, farmers who sold their paddy through the OPM had to wait for the payment from the shipping day till the selling day. In case the staff made a mistake, which caused the drying work to delay due to rain, the payment would be sent to the farmer more than five days later after the collection day. The waiting period was a burden for the users and some of them complained to the OPM about this matter.

Although the operating efficiency has improved now, it is not likely that a positive financial balance will be achieved. Also, the handling amount remains roughly two thirds of the planned volume. Moreover, rice millers have started to play the role of a collector, resulting in the excess number of collectors. It cannot be denied that the project is one step behind the actual developments.

Based on the recognition that the improvement of the operating balance and the establishment of the operating body were important tasks to be tackled among other things, additional equipment for the purpose of increasing the paddy collection was introduced and the drying facility was expanded. The resulting increase of handling amount led to the improvement of the operating balance. However, the targeted operating balance was not achieved after all by the completion of the pilot operation.

1 ) Carrying in amount

The handling amount in six months by the end of May 2005 was about 2,000 tons and the operation ended in a deficit. However, the accurate measurement, the improved quality and the reasonable pricing were valued highly by many users and 2,000 farmers corresponding to 4% of all farmers who sold paddies and

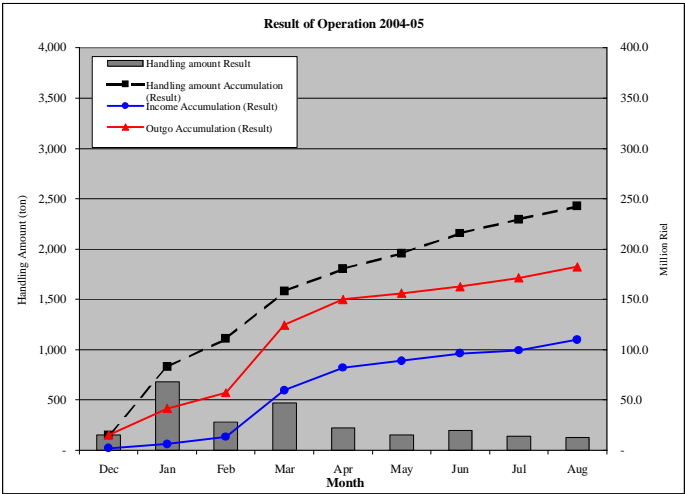


Figure 5-1: Handling amount, In-come, out-going

most of the rice millers in the target area used the open paddy market. On the other hand, it became apparent that the handling amount should be substantially increased in order for the realization of self-sustainable operation; and for that purpose the market facilities should be expanded. Meanwhile, with respect to the paddy mortgage service, it was decided that KR2 counter-part fund would be used. It is supposed that there would be break-even point at the handling amount 7,000 to 8,000 ton.

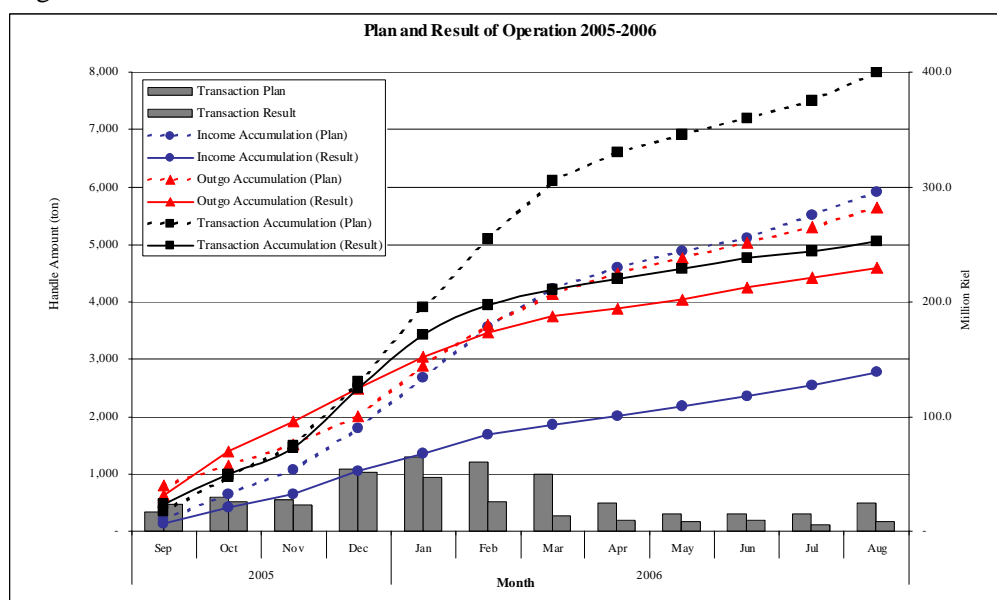


Figure5-2: Handling amount, In-come, out-going (2005-06)

The amount of paddies directly taken into the Svay Antor Open Paddy Market by farmers and those purchased by mid-traders in each business year of the pilot project are shown by district in the Table 5-3.

Table 5-3: Collected amount by area

List of Paddy Transaction Amount by district (sellers) From 14 December 2004 to August 31, 2005					List of Paddy Transaction Amount by district (sellers) From September 1, 2005 to August 31, 2006					
Province	District	No. of lots	Quantity (kg)	Rate of area	Province	District	No. of lots	Quantity (kg)	Rate of area	
Prey Veng	Provincial Sub-total		2,605	1,696,905.3		Prey Veng	Provincial Sub-total		4,010	2,952,141.3
	Kam Chay Mear	50	59,427.3	3.40%	Kam Chay Mear		277	299,476.5	9.73%	
	Kanhchriech	154	137,187.8	7.85%	Kanhchriech		815	535,276.1	17.39%	
	Peam Ro	22	6,298.6	0.36%	Mesang		5	279.0	0.01%	
	Pea Reang	1,687	909,494.3	52.05%	Peam Chor		1	26.6	0.00%	
	Prey Veng	432	251,439.4	14.39%	Peam Ro		2	2,279.1	0.07%	
	Kampong Leav	142	263,221.9	15.06%	Pea Reang		1,154	827,047.5	26.87%	
	Sithor Kandal	118	69,836.0	4.00%	Prey Veng		1,607	1,145,500.5	37.22%	
Kompong Cham	Provincial Sub-total		73	50,361.3		Kampong Leav	34	31,377.5	1.02%	
	Ou Rang Au	73	50,361.3	2.88%		Sithor Kandal	115	110,878.5	3.60%	
	<b>Grand total</b>	<b>2,678</b>	<b>1,747,266.6</b>	100.00%	Kompong Cham	Provincial Sub-total		35	125,658.9	
	<b>Average paddy-in amount (kg/lot)</b>		<b>654.4</b>			Cheung Prey	2	2,572.4	0.08%	
	<b>Re-selling amount at OPM</b>	<b>854</b>	<b>713,789.5</b>			Ou Rang Au	33	123,086.5	4.00%	
	Ration of reselling, using mid-trader :			40.9%		<b>Grand total</b>	<b>4,045</b>	<b>3,077,800.2</b>	100.00%	
	<b>Total handling amount</b>	<b>3,524</b>	<b>2,461,056.1</b>			<b>Average paddy-in amount (kg/lot)</b>		<b>760.9</b>		
	<b>Average amount of handled lot (kg/lot) :</b>		<b>698.4</b>			<b>Reselling Amount</b> :	<b>2,946</b>	<b>2,040,376.1</b>		
						Ration of reselling, using mid-trader :		<b>66.3%</b>		
						<b>Total Handling Amount (kg) :</b>	<b>6,991</b>	<b>5,118,176</b>		
						<b>Average amount of handled lot (kg/lot) :</b>		<b>732.1</b>		
The number of sellers (farmers/ collectors) :			2,054		The number of sellers (farmers/ collectors) :			2,949		
The number of village :			91		The number of village :			128		
The number of commune:			26		The number of commune:			37		
The number of district:			8		The number of district :			11		

In the first year of the pilot operation, the volume of paddy collected in Prey Veng district, where the open paddy market is situated, was rather small because the project was in a fledgling period. In the second year, however, the paddy collection was smoothly conducted in neighboring areas of Svay Antor; and even in remote areas far away from the national road in Khan Chriech district, the paddy collection grew steadily. However, in Pea Reang and Kompong Leav districts, paddy collection remained sluggish due to the intense competition with other collectors.

The number of villages and communes utilizing the open paddy market has also increased. The market initially aimed to cover the area within a 20km radius from the Svay Antor Open Paddy Market, but in reality half the communes and villages in the target area (7 districts) were covered. In the second year, 34 out of 65 communes (roughly 52%) or all communes falling within the 20km radius and situated within the reach of the paddy collection were covered. In addition, customers were acquired from 127 out of 590 villages (roughly 22%). These villages may be within the reach of word-of-mouth communication.

The users consisted of 2,600 farmers and 24 collectors. Assuming that about half the farm households in the target area, or 53,500 farmers, out of 107,000 farmers (2003-4 PDAFF) are living within the 20km radius, the above figure could be translated into a utilization ratio of about 4.8%. Also, taking into consideration the number of villages utilizing the open paddy market, these figures are not big enough to exert a meaningful impact. However, as shown by the fact that the monthly collection volume is increasing roughly by 43%, the collection volume is growing steadily. Gradually but steadily the idea of the open paddy market is being accepted by the local general public.

The amount of paddies taken into the open paddy market was about 2,960 tons. The amount of surplus paddies varies considerably depending on the amount of rainfall of that year, but that of the target area is estimated to be 100,000 ~ 200,000 tons. Assuming that the surplus paddies produced in the area within the 20km radius is half that amount, the pilot project handled 4 to 6% of the total surplus paddies.

During a harvest season, small lot transactions of one to two bags (50 to 100kg/lot) take place more often. However, the average weight per lot increased from 654kg to 761kg in a year, and this contributed to the improvement in the operating efficiency of the open paddy market. This is because the confidence toward the open paddy market has increased, although just a little, from the time of the initial wait and see attitude, and the user's understanding toward the market was promoted. (Table and Figure move to the item 5.6 at the end of report)

## 2 ) fertilizer ( selling amount )

The right graph shows selling result of fertilizer. The OPM is proceeding with selling without

credit as well as possible. Effectiveness of demonstration experiment of fertilizer achieving until the handing over day worked well, then selling record grows up from the middle of May. From July 2006, farmer groups commence to buy fertilizer so far well. A pace of annual sale of fertilizer is between 200 to 300 ton/year. Farmers still wishes that the fertilizer could be sold on credit, but the OPM has shortage of budget that it has to continue and make sales by cash. For more farmers to buy fertilizer, limited resources should be appropriately distributed. There is a potential for fertilizer sale to be increased by 3 to 5 times more without credit sales.

( 4 ) The results of financial management and each function

1 ) Balance

The next graph shows monthly balance with and without rental vehicles.

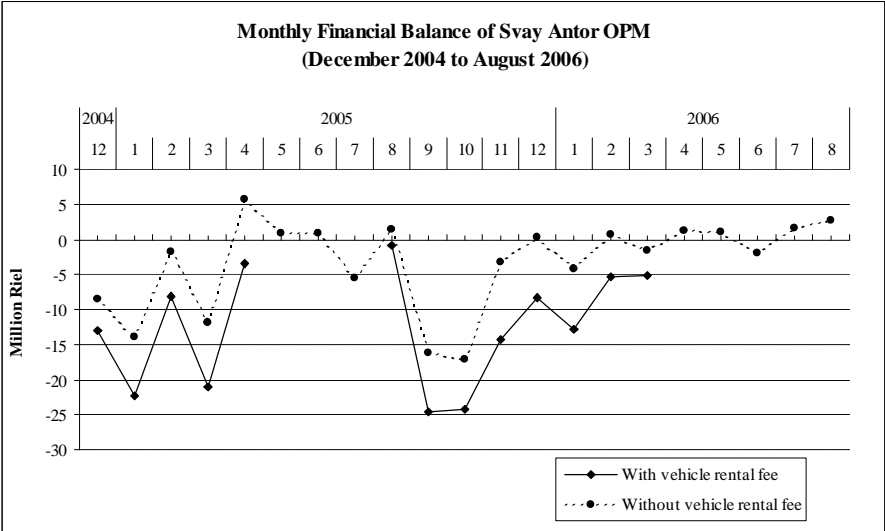


Figure 5-3 : Monthly financial balance of Svay Antor Open Paddy Market (Dec 2004 to Aug 2006 )

Without cost for rental vehicles, the OPM could keep the break-even point. Without the out-going amount for the rental fee, the OPM could be above the break-even point.

2 ) Expenditure for trial during the pilot period

This is the first case that the new idea of central wholesale market comes into Cambodia. Each service required extra cost for promotion of them. Expenditure was to be included with the cost of one staff member at the manager level. An OPM manager’s salary is 500,000 ~ 600,000riel/month. In normal situation the OPM financial balance is considered this expenditure from regular condition.

3 ) Results of main services

Transportation service

This service is the biggest problem depending upon effectiveness and work volume. At the place

beyond someone's view, failure of the OPM drivers and workers could make the OPM's income go down. Advance of service fee never solve any problem of workers' behavior. Piecework wage system should be considerably implemented.

Without rental fee of vehicles, the OPM needs promotion of streamlining by 5 to 10%, and with rental fee of vehicles, promotion of streamlining by 20 ~ 30%. Promotion of streamlining with advance of each service fee should be considered by service item.

#### Drying service

Drying service adapted 68.4% of paddy carried in the OPM at the peak of harvest ( for 3 months: December 2005 to February 2006 ). According to the extension situation of commercial threshing service, this ratio maintains for a while. Under the circumstance, the OPM's drying availability is calculated relating to the availability for the annual handling amount.

At the OPM, 21.6ton/day ( = Area of drying bed 2,000 m<sup>2</sup> x thickness of paddy for drying 0.03m x the apparent specific gravity of paddy 0.6 x effectiveness 0.8 x rainy day at one of 4days 0.75 ) , therefore , the daily collectable amount is 31ton/day (= 18ton /day/ 0.864).

In consequence, 2,800ton ( = 31ton/day x 90 days ) can be dried at the peak of harvest, 1,200ton handling amount from October to November and 1,600ton from March to September; and those data are accumulated to the annually handled amount of 5,600ton.

#### Usage of storage

Effectiveness of the usage was considered 66%, however, because of transactions by lot were frequently achieved to hold the space for loading/ unloading, carrying-in/out and piling, 45 ~ 50% of effectiveness exists. In addition, it was guessed that usable amount per unit area would be 1.5ton /m<sup>2</sup>, but in actual practice is only 0.8ton/m<sup>2</sup>. This was because high piles could not be made due to small lot and deferent bag sizes. With the exception of the office area, the warehouse area is 2,800 m<sup>2</sup>. So, (2,800 x 0.5 x 0.8 =) there is 1,100 ~ 1,200ton of storage availability. The average storing duration is approximately 17days. Storing amount of 500 to 600ton before the peak of harvest exists. If 600ton of 1,100 to 1,200tonof capacity is always a transshipped pile, 3,200ton ( = 600ton x rotation for 3months 90/17 ) can be handled at the peak. There are 1,200ton handling amount from October to November and 1,600ton from March to September. Those data are accumulated to annually handle of 6,000ton.

#### Fertilizer distribution

Fertilizer sales indicate a clear work rate to OPM workers to keep effective income. For stable financial balance, this is an essential service.

#### Paddy mortgage scheme (PMS)

The maximum using PMS amount was 50million riel during the pilot project period. Though

there are guarantee systems of other micro-finance and bank, two subjects should be cared. 1) In this case, to borrow the money with paddy as a guarantee awaiting for better price, 2) not to keep paddy guarantee in the paddy owner hands without regard to percentage of interest. They feel cause of instability without having paddy in their ownership.

#### Fumigation service

Though it has never been taken in to implementation, destructive insects, Sitophilus and Tribolium, were found. The study team confirmed a necessity of a fumigation service. Paddy stored at farmer's storage for more than one month is swamped with insects by 80% in 2 weeks to 3 months after coming to OPM.

#### Activities of the mid-traders

In January 2005 during the first year of the pilot project, paddy collection based on direct sales from farmers to buyers almost came to a deadlock. Farmers selling paddies were eager to get cash money but buyers were slow in making payments. In some cases, the time lag between sales and payments reached more than one week. In these situations urgent need for financial resources for buying paddies emerged. The pilot project had tried to buy paddies out of the funds of the open paddy market, but gave up the idea because of lack of money and also because buying paddies using the market's financial resources would be detrimental to the neutrality of the open paddy market which is the essential concept of the project. Therefore, it was necessary to ask for the participation of mid-traders in order to secure enough financial resources to purchase paddies. In the second year of the pilot project, US\$89,000 was gathered from mid-traders, and the transaction volume by mid-traders amounted to 60% of the total transaction volume.

The mean of rotation is about 3 times for 145 to 303 days. Average rotation of the total fund is 5.12 times. Based on these data, available amount to collect paddy annually is stated below:

With the same amount of fund, high-ranking varieties were collected between October to November and for 60 days between December to January at the peak of harvesting.

#### □ October to November

$US\$89,000 \times 4,100\text{riel}/US\$ = 364,900,000\text{riel}$ , average paddy price: 650riel/kg  
 $364,900,000 / 650 = \text{approximately } 560 \text{ ton}$

#### □ December to January

364,900,000riel including the benefit was used for an average paddy price of 540riel/kg, and then 675ton of paddy was collected.

Therefore,  $560 \text{ ton} + 675\text{ton} \times (5.12 - 1) \text{ times} = \text{approximately } 3,340\text{ton}$  going through the mid-trader. And if this amount is 60% of the entire transactions at OPM, the total annual handled



amount of paddy will be 5,000 ~ 5,300ton . Fund of the mid-traders is the key to enlarge the handling amount of the OPM. Actually, between the end of November 2005 and January 2006, there were farmers and collects offering to sell they paddy, but the OPM could not buy for 15 days in total.

The buyer trend

The final buyers were 12 local rice millers and 8 Vietnamese traders. The transaction volume by Vietnamese traders represents 39% of the total transaction volume and it is likely to continue growing in the future.

Achieving additional 25 to 30% improvement of efficiency will attain a break-even point.

(5) Quality of Paddies Handled by Svay Antor OPM

As the first attempt in Cambodia, the Svay Antor OPM is extracting samples from each lot of paddies delivered into and shipped from it to conduct an analysis on them by using analyzing instrument . The analysis is performed according to the voluntary criteria shown in the Table 5-4.

**Table 5-4: Temporary paddy quality standard ( March 2006 )**

<b>%</b>	<b>Moisture content %w.b.</b>	<b>Red kernels %</b>	<b>Cracked grain or broken</b>	<b>Damaged grain</b>	<b>Impurities</b>	<b>Immature grains</b>	<b>Whole grains</b>
Grade 1	14.0	<2.0	<2.0	<0.5	<0.5	<1.0	>98.0
Grade 2	14.0	<5.0	<4.0	<1.0	<1.0	<2.0	>96.0

Note: For Grade 2, all the reference values (indicated numbers), except moisture contents, were fixed at the round value within 5 to 10% of all the inspected samples from OPM, which could be cleared. For Grade 1, all the reference values were fixed at almost the half value of the Grade 2 to be a feasible target for quality improvement of paddy.

The inspection results show that, in the second year, the variation of quality was smaller and the overall quality improved. The decrease of red-kernelled rice of Banlapdav cultivar shows that the information on the prevention of cultivar mixing in the post-harvest treatment process was well communicated to users. The fact that in the second year slightly better quality of paddies were received by the pilot project tells that the sellers’ perceptions are changing. (Refer to Appendix 10)

The quality of paddies received by the Svay Antor Open Paddy Market is as explained above, Considering the quality level currently demanded by the market, some of the paddies can be put into distribution as they are, but most of them need a certain level of quality improvement efforts. At the Svay Antor Open Paddy Market, drying and cleaning of paddies are performed as the paddy quality improvement services. More particularly, paddies are solar dried till its moisture uniformly reaches 14 to 15%, and then the paddies are carefully cleaned by a machine till foreign substances

in the paddies are 0.5% or less. This means that values are added to the paddies and, therefore, reasonable service fees should be paid to compensate for handling/storage costs and weight loss. However, it cannot be said that rice millers and traders who are purchasing those paddies do not yet understand the benefit. . Though the paddy prices should spread by paddy quality level, the present market players try to prevent pressure on it, especially in the buyer side. However, some buyers, Vietnamese trader taking the lead on understanding the idea of the Open Paddy Market, have accepted a reasonable price under Open Paddy Market practice for paddy. The importance of the paddy quality, relevant moisture content and whole grain ratio of more than 96%, is becoming widespread. This is a motive force to adapt to the right paddy price with quality label/ inspection for the base of milling recovery.

(6) Price Formation and Changes in Prices

The fees charged by the open paddy market exert an influence on the price of paddies sold at the premises of farmers. If the price difference between paddies sold through the open paddy market and those distributed through the traditional channels reaches 50 riels, then, in the current situations, purchase through the open paddy market would become difficult. At present the price difference is 20 to 40 riels. When it reaches 50 riels, the open paddy market has to wait for the price to increase. Accordingly, the payment to farmers who sell paddies through the open market would be postponed. Based on the current service fee system, an average 10% or more increase would be difficult, even if future widening of price difference were taken into account. It is true that there is a difference in quality, but it takes time till such a price difference can be seen. However, the emerging tendency can be seen that some farmers sell their premium quality paddies through the open paddy market and poor quality paddies to collectors. We conclude that the policy of pricing according to quality, which is the concept of the present project, is after all appropriation.

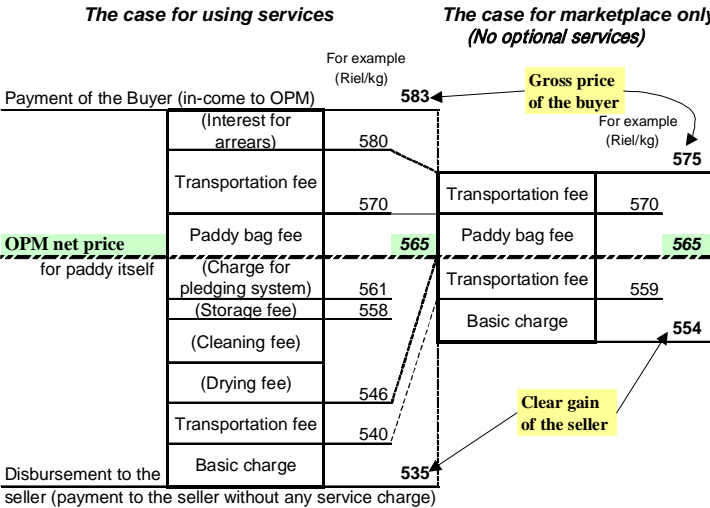


Figure: Mechanism/ definement of pricing in the paddy transaction

Figure5-4: Mechanism of pricing in the paddy transaction

( 7 ) Price display of OPM

If the buying price of Vietnamese traders is 600riel/kg at Vietnamese border, the OPM pricing would be 540 ~ 560riel/kg, pulling up the price as high as possible. Price display is quite highly effective with impact to the local area.

The paddy price fluctuation was 150 to 250riel/kg annually. There is a quite stable situation, 100 to 120riel/kg of fluctuation. Vietnamese traders said that without the OPM, they could buy paddy by 50 to 150riel/kg lower. If 50riel/kg can be raised, 2,000,000ton of surplus paddy will make 100 billion riel ( US\$24,000,000 ) of income up. It means that farmer can gain about 50,000riel ( US\$12 ) / householder of income.

( 8 ) Fixation ratio of OPM staff

The fixation ratio of OPM staff is too low. The OPM's salary base is suited comparing with other organizations'. There is responsibility as a work; however, people here never shake down any work with responsibility. The OPM employed 55 workers, 6 of whom were employed on a permanent base , with is equal to 11% of the fixation ratio. Though workers should be discharged between seasons, the same people coming back to the OPM also are about 10% low.

( 9 ) Limitation of computer management (accounting)

Interlock circuits were provided and it was exercised all kinds of things to protect it against mistakes and to be prepared for unforeseeable circumstances. There were losses of financial documents and miss inputs to the computer; so, computer system will not be an effective management tool. Handwriting financial notes also make same things happen.

#### **5.2.4 Evaluation of the Svay Antor Open Paddy Market**

In order to clarify the framework of the project so that common perceptions will be promoted among parties concerned, a Project Design Matrix (hereinafter "PDM") was introduced for the purpose of the management of the pilot project. The PDM is a log frame where a brief description of the project, the abstract, applicable indicators, the means for acquiring indicator information, and the external conditions are included. The project abstract includes the higher-order objectives, and targets, results and activities of the project; and the relations between those elements are also described.

The PDM is shown in the next page.

**Table 5-5: PDM of Svay Antor Open Paddy Market**

PDM

Name of the Project: The Pilot Project of OPM / The Feasibility Study on Establishment of Open Paddy Market in Cambodia

Duration: December 2004 - March 2006      Project Area: Prey Veng District Svay Antor      Target Group: Farmers, Collectors, Rice millers, Middlemen

Date: October 2005

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p><b>Overall Goal:</b> The establishment plan for the open paddy market is formulated through the implementation of the Pilot Project.</p>	<p>The establishment plan for the open paddy market in the principal area of rice growing is formulated practically.</p>	<p>The establishment plan for open paddy market in Cambodia</p>	<p>Facilities and funds for the original investment shall be secured.</p>
<p><b>Project Purpose:</b> The OPM is managed soundly.</p> <ol style="list-style-type: none"> <li>1. Self-directed organization is brought up for the OPM.</li> <li>2. The OPM makes a little profit.</li> <li>3. Fair paddy price is established by the OPM.</li> <li>4. High quality paddy is shipped through the OPM.</li> </ol>	<ol style="list-style-type: none"> <li>1. The OPM is managed autonomously, following the action plan.</li> <li>2. The operating balance becomes plus, including the depreciation cost.</li> <li>3. The selling price of paddy exceeds 1.0 % up of the price of the traditional practice, estimated by farmers.</li> <li>4. The proportion of the amount of high quality paddy becomes equal/higher than 50 % of the total amount.</li> </ol>	<ol style="list-style-type: none"> <li>1. The action plan and the management record</li> <li>2. The accounting report</li> <li>3. Research on users' opinion</li> <li>4. Situation of paddy selling</li> </ol>	<p>Rice price does not come down rapidly.</p>
<p><b>Outputs:</b></p> <ol style="list-style-type: none"> <li>1 The number of farmers who use the OPM will be increased.</li> <li>2 Administration of the OPM               <ol style="list-style-type: none"> <li>2-1 The income of basic service exceeds the expenditure.</li> <li>2-2 The income of transporting service exceeds the expenditure.</li> <li>2-3 The income of drying service exceeds the expenditure.</li> <li>2-4 The income of cleaning service exceeds the expenditure.</li> <li>2-5 The income of storing service exceeds the expenditure.</li> <li>2-6 The income of threshing service exceeds the expenditure.</li> </ol> </li> <li>3 The number of the users of paddy</li> </ol>	<ol style="list-style-type: none"> <li>1. The annual number of farmers who use the OPM exceeds the target number, 4,000 households/year.</li> <li>2. Administration of the OPM               <ol style="list-style-type: none"> <li>2-1. The handling amount of basic service exceeds the target volume.</li> <li>2-2. The handling amount of transporting service exceeds the target volume.</li> <li>2-3. The handling amount of drying service exceeds the target volume.</li> <li>2-4. The handling amount of cleaning service exceeds the target volume.</li> <li>2-5. The handling amount of storing service exceeds the target volume.</li> <li>2-6. The handling amount of threshing service exceeds the target volume.</li> </ol> </li> <li>3. The weight ratio of mortgaged paddy to the handling amount</li> </ol>	<ol style="list-style-type: none"> <li>1. Administration record</li> <li>2. Administration of the OPM               <ol style="list-style-type: none"> <li>2-1 Operational record of basic service</li> <li>2-2 Operational record of transporting service</li> <li>2-3 Operational record of drying service</li> <li>2-4 Operational record of cleaning service</li> <li>2-5 Operational record of storing service</li> <li>2-6 Operational record of threshing service</li> </ol> </li> <li>3. Operation record of paddy</li> </ol>	<p>A big accident on the administration of the OPM does not happen.</p>

V-15

<p>mortgage scheme is increased.</p> <p>4 The organization and staff of the OPM</p> <p>4-1 Proper organizational system is settled for the OPM.</p> <p>4-2 Self-directed managers are brought up.</p>	<p>becomes equal or higher than 20 %.</p> <p>4. The organization and staff of the OPM</p> <p>4-1. The statute is prepared and the OPM acquires a corporate body of NPO.</p> <p>4-2. The managers' meeting makes a generalization of their activities, and makes an action plan for the next term.</p>	<p>mortgage scheme</p> <p>4. The organization and staff of the OPM</p> <p>4-1. The statute and the registered certification of corporate body</p> <p>4-2. Managers' meetings</p>	
<p><b>Activities:</b></p> <p>1. Explanation of the OPM to the stakeholders</p> <p>2. Administration of the OPM</p> <p>2-1. Basic services (inspection, grading, and settlement / fertilizer selling)</p> <p>2-2. Transporting service</p> <p>2-3. Drying service</p> <p>2-4. Cleaning service</p> <p>2-5. Storing service</p> <p>2-6. Threshing service</p> <p>3. Utilization of paddy mortgage scheme</p> <p>4. Organization / Capacity building</p>	<p style="text-align: center;"><b>Inputs:</b></p> <p>&lt; Japanese Side &gt;</p> <p>1. Experts Team Leader / Marketing Policy (1 person), Marketing Infrastructure / Cost Estimation / Site Management (1 person), Marketing System / Project Evaluation (2 persons), Agriculture / Post-harvest Processing (2 persons), Rural Society (1 person)</p> <p>2. C/P training</p> <p>3. Procurement of equipment, and renovation of warehouses</p> <p>4. Support of the OPM administration</p> <p>&lt; Cambodian Side &gt;</p> <p>1. Management of the whole plan by the Steering Committee</p> <p>2. Planning of the Pilot Project by the task force group at the beginning of the administration</p> <p>3. Procurement of a fund for the paddy mortgage scheme, and the management (Utilization of counterpart fund, about 200,000 US\$)</p>		<p>Large-scale drought/flood is not occurred.</p> <p><b>Precondition:</b> MOC provides warehouses and land for the Pilot Project.</p>

(1) Achievement Degree of Outputs of the Pilot Projects

(a) Has the number of farmers utilizing the open paddy market increased?

It is estimated that about 3,000 people used the OPM, and the target number of 4,000 people set forth in the PDM indicators was not achieved. The total lot number from September 2005 to February 2006 was 3,058. According to the activity plan of this period, 57% of the handling amount<sup>1</sup> from September to February was recorded in March to August. Therefore, the annual lot number is estimated to be 4,800 (3,058 x 1.57). This figure means 4,800 people used the OPM in a year. Meanwhile, since the percentage of the people utilizing the OPM twice a year was estimated to be about 60%<sup>2</sup>, net users of the OPM was estimated to be 3,000 people per year (4,800/1.6).

(b) Was profitability secured with respect to each service?

Since it was difficult to sort out expenditures of each service, the target-handling amount of each service set by the activity plan so that profitability was secured was used as an indicator in PDM.

**Table 5-6: Achievement Degree of Each Service (Sep 2005 – Feb 2006)**

Services	Result (a)	Target (b)	Achievement (%) (a/b)
Basic service (ton)	3,385	3,800	89
Transporting (ton)	3,359	8,300	40
Drying (ton)	1,674	3,900	43
Cleaning (ton)	371	2,160	17
Storing (Riel)	2,492,756	4,575,000	54
Threshing (ton)	289	1,740	17

The achievement degree of each service is shown in the above table (the figures of storing service are revenues in Riel). With respect to all services, the target handling amounts were not achieved. Especially, the achievement degrees of cleaning and threshing services are notably low, less than 20%. The main reason for such low achievement degrees is believed to be the low productivity of each service and the unreasonable targets (excess expectation).

(c) Has the number of people using the paddy mortgage service increased?

The weight ratios of the paddies sold using the paddy mortgage service to the total handling amount are shown in the following table. The average ratio in the second phase is 10%, half the PDM target

<sup>1</sup> Handling amount is the sum of sales volume and inventory volume. About thirty percent of collection volume is stored as inventory.

<sup>2</sup> This ratio was estimated by the marketing manager.

of 20%. The main reasons for the low utilization of the paddy mortgage service are thought to be the following three.

- 1) Many farmers need cash money immediately after the shipment of their paddies<sup>3</sup>, and cannot wait till the price rises.
- 2) Since the paddy price was relatively high during the second phase, there were little needs for price increase.
- 3) The interest rate of 2.0% was not regarded as reasonable in the circumstances of 1) and 2).

**Table 5-7: Weight Ratio of Paddy Mortgage Scheme to Handling Amount**

2005-2006	Sep	Oct	Nov	Dec	Jan	Feb	Total
Paddy Mortgage Scheme (ton)(a)	100	74	54	95	41	21	385
Handling amount (ton) (b)	481	521	452	1,025	946	522	3,947
Weight ratio (%) (a/b)	21	14	12	9	4	4	10

Originally, Paddy Mortgage Scheme was supposed to loan farmers on their paddy at low interest in order to make the farmers avoid selling them when the price was depression and wait to sell them up to the price would be increased. However, farmers who have enough money to wait the selling up to the recovery of the price were rare even if they could get the loan of the half of the appraised value.

Farmers who sold their paddy through the OPM had to wait for the payment after the shipping of their paddy till they are sold at the OPM. About 70 percent of the uses of the Paddy Mortgage Scheme were a loan with payment term of less than ten days for the wait for a few days. The OPM introduced, in mid January 2006, a payment-at-collection system. Accordingly, farmers can get cash payment at the time of shipping their paddy. This has eliminated demands for a loan with payment term of less than ten days.

(d) Has an appropriate organization structure been established?

It was decided that the agent in charge of this survey implemented the Pilot Project and the Cambodian side would assign the general manager in the steering committee, held in March 2005. Two co-general managers were assigned by MOC and MAFF in June. The system of co-general managers started in earnest in September 2005.

The OPM filed an application for an NGO registration and acquired the status of legal entity in March 2006. Through a trial and error process, a three-department-operation system consisting of

<sup>3</sup> According to the baseline research, 74% of paddy farmers (82% of the sales volume) sell paddies immediately after harvesting.

marketing/in-house operation/management departments, and a field operation management system by foremen and group leaders have been formulated and established. As can be seen from the foregoing, it is a practical organization structure well adapted to the field needs.

The chief executive was selected among assistant researchers of the research team as late as in March. He is one of those having the best understanding of the significance of the OPM, and, therefore, it was the most appropriate selection. However, since his taking office as a chief executive was after the pilot operation period, he does not have field experiences, leaving a little concern in that respect.

(e) Has supervisory staff acting on their own initiative been developed?

Since the management of daily operations by the supervisory staff was implemented, they seem to have acquired the basics of independence, which is indispensable for the self-sustainable operation of the open paddy market. However, they have not yet acquired the skill of summing up their own activities and developing an annual plan for themselves.

(2) Achievement Degree of the Project Purpose

(a) Has a self-sustainable operating organization been established?

It may be said that an operating organization with basic independence has been build, but it has not yet reached a stage where they can develop and expand their activities for themselves. The co-general managers of PDOC and PDAF did not more than attend the co-general manager's meeting every week because they were busy with other jobs. Therefore, the leader of the Study Team had to take the role of the general manager, and the co-general managers of PDOC and PDAF monitored the administration.

To begin with, examination is made with respect to the supervisory staff consisted of managers, assistant managers and foremen. They hold a meeting every evening to report the results of each service, discuss problems to find out its solutions, and formulate an operation plan for the next day. The results of the meeting are compiled every week and submitted to the Corporate Responsibility Meeting. This means that the supervisory staff can manage the daily operation of the OPM without difficulty. However, the monthly target values are based on the annual plan formulated by the Study Team, and the supervisory staff has no experience of preparing an annual activity plan.

Secondly, with respect to the field workforce composed of about thirty people, those who had been working at the OPM for more than six months understood the role and the importance of the OPM and could do their jobs on their own initiatives. Conversely, those who did not understand the role and the importance of the OPM and thought they were doing one of mere manual labor quitted



within six months or was fired. The ratio of workers who can independently do their jobs is one third of all the workers. The improvement of the quality of the workforce is a serious issue to be tackled.

(b) Has the balanced financial status of the open paddy market been attained?

**Table5-8: Monthly Financial Balance in Sep 2005 – Feb 2006**

	Sep	Oct	Nov	Dec	Jan	Feb	Total
Income (1,000 Riel) (a)	6,853	13,941	12,123	19,908	15,107	15,949	83,881
Outgoing (1,000 Riel) (b)	31,479	38,075	26,494	28,301	27,870	21,378	173,597
Outgoing ratio (%) (b/a)	459	273	219	142	184	134	207

Although the monthly financial position has improved considerably during the pilot operation period as shown in the above table, the operation ended in a deficit for all the months. The final total balance of payments is the deficit of 89,716,000 (22,043 Riel) when depreciation is not taken into account. The outgoing during February is 130 percent of the income. The bad results from September to November were due to the high initial investment and low productivity.

(c) Has fair pricing of paddies been formed?

The sales price of paddies received by the users of the OPM was estimated to be about 4% higher than those of the conventional transactions. This figure is satisfactorily higher<sup>4</sup> than the 1% target set by the PDM. The staffs have been seeking to raise the sales price by improving the quality while maintaining the service fees as low as possible. It can be said that, through these business efforts, the formation of more fair prices than in the conventional transactions was achieved.

According to the user attitude survey conducted on farmers, the average unit-selling price in the transactions through the OPM was 522 Riel/kg. On the other hand, the unit-selling price in the conventional transactions with collectors/rice millers estimated by the users is 492 Riel/kg. This difference of 30 Riel corresponds to 6% of the conventional price. This is why farmers in the neighboring areas take their paddies into the OPM by carrying them on a bicycle and a bike.

The above research was conducted on the users who took their paddies into the OPM for themselves, and, therefore, little transportation fees were generated there. For that reason, in order to estimate the average of the selling prices of all transactions, it is necessary to deduct the average transportation fee. The OPM transportation fee is calculated by the formula of (3.5 Riel + 0.392

<sup>4</sup> If the unit buy price had set as 1 % high as the existing price and the users had been able to sell their paddy at the same price of the actual result, the OPM could have increased the income of 15 Riel/kg. This increase multiplied by the total handling amount of 3,385 ton is 50,775 thousand Riel, which is equivalent to 57 % of the total deficit of 89,716 thousand Riel. However, if the unit buy price is held down, it is expected that collection amount will be decreased considerably and the cost will be increased.

Riel/km)/kg. Assuming the average distance is 15km, it will be about 10 Riel/kg. Based on this transportation fee, the difference from the conventional price would be 20 Riel (4%).

(d) Has premium-quality paddies been shipped through the OPM?

According to the marketing manager, the percentage of the shipment of premium paddies to the total shipment as of October 2005 is about 50%, being the same level as the PDM target. Thereafter, the shipment of premium paddies continued growing and reportedly it reached about 70% in February 2006. Since all the paddies shipped through the OPM are properly measured, it can be said that the OPM motto, “fair and equitable transaction of premium paddies” has been realized.

### (3) Results of the Evaluation with Five Criteria

The Pilot Project was evaluated from the viewpoints of the five criteria<sup>5</sup>.

#### (a) Relevance

The evaluation of adequacy means to examine whether the project results, targets, and higher-rank objectives are appropriate as the targets of the present project even at the time of the evaluation. Still now, the needs for the OPM are very high. It was confirmed that it is useful not only for farmers but also for rice millers/mid-traders. The catch phrase of OPM, “fair and equitable transactions” and the basic principle, “distribution of premium paddies” is in alignment with the paddy distribution needs in Prey Veng province. If in the near future, the productivity of wetland rice culture improves and as the result paddy distribution volume increases, the necessity of OPM would be further increased.

#### i) Needs of Farmers

The most needed activity among the activities farmers want the OPM to perform is accurate measurement. Many collectors are using inaccurate scales, rounding down decimal fraction parts, and multiplying the counted number of paddy bags by less than actual weight. Many farmers are angry with the current measuring practices. Some farmers even say, “they choose a buyer who performs correct measurement even if they get less paid due to a little lower unit purchase price than that offered by such a buyer.”<sup>6</sup>

---

<sup>5</sup> The five evaluation criteria are comprehensive perspectives for the evaluation of the project. They were originally proposed by Development Aid Committee (DAC). DAC proposed an evaluation methodology based on broad perspectives including not only the achievement degree but also, for example, the five evaluation criteria (relevance, effectiveness, efficiency, impact and sustainability).

<sup>6</sup> This statement was made by a few farmers who were present at a village explanatory meeting held by OPM staff and were so impressed by the concept of the OPM. Their words represent their anger with the inaccurate transaction practices and their expectations for purchase based on an accurate measurement by the OPM.

Farmers utilizing the OPM can increase their income by increasing the sales weight with accurate measurement. This weight increase can amount to a considerable volume, and this is the biggest motivation for farmers to use the OPM. In addition to this weight increase, farmers can expect higher, although a few percentage, unit purchase prices than those offered by conventional collectors.

#### ii) Needs of Rice Millers/Mid-traders

The OPM has created a market where premium paddies are transacted at higher prices. Since premium paddies contain appropriate moisture and less foreign substances, the milling cost can be reduced. Many of the rice millers purchasing paddies through the OPM are now regular clients of the OPM, because they are recognizing that the use of premium paddies leads to the reduction of fuel cost.

#### iii) Needs of OPM Staff

The OPM is providing stable employment opportunities to farmers in the neighboring areas. More than 40 workers are registered with the OPM and working for the OPM. Their wages are at the same level with those of local unskilled workers, but OPM workers can work almost every day for a long period of time. In rural areas opportunities for cash income are so limited that this employment opportunity is quite valuable for them. Long-term employment opportunities at shops and factories are scarce, and many of the workers are employed as short-period day labor at construction sites and during rice planting and harvesting seasons.

#### (b) Effectiveness

In the evaluation of effectiveness, examination is made on to what extent the project targets were achieved or are likely to be achieved. The red-ink operation of the OPM continued till the end of the pilot operation period. Therefore, it has to be admitted that the effectiveness of the present project during roughly one year of the pilot operation is low. On the other hand, the project functioned quite effectively with respect to the achievement of the objective, the fair transaction of premium paddies.

#### i) Independent Operation Organization

During the pilot operation period the status of a legal entity was not acquired and the chief executive was not selected. This may be an afterthought, but both of these matters should have been realized before the project was put into operation. If we had waited the decision of the general manager, the Pilot Project would have not started. Therefore, we could not help taking the way, which groped for the general manager, carrying out the operation. Nevertheless, it should have been avoided to start the operation without the operating body and its chief executive being decided since

it was to be operated as a business, which was the first trial in Cambodia and required to balance the income and expenditure.

The manager of the marketing division and foremen and workers working long hours are skilled in the operations at the OPM, and are able to perform their jobs on their own initiatives. As for the assistant managers of the in-house operation division and the management division, they need a little more experiences till they can perform their duties independently. However, it is expected that they will become skilled through on the job training. Nonetheless, there was no ultimate decision maker among the staff including managers during the pilot operation.

From the following perspectives, the establishment of the OPM operator and the selection of its chief executive might have been left to the initiative of the Cambodian government.

- 1) Putting the OPM into operation requires the support from concerned authorities.
- 2) Registration of the operating organization requires the approvals of concerned authorities.
- 3) Concerned authorities have information resources needed for the selection of the chief executive.

The OPM is in essence a public project, and, therefore, the candidates should be those who understand such a nature of the OPM better than any others. The above 3) does not necessarily intend to limit the candidates to public servants, but it means that the human resource information held by the authorities are helpful in finding a suitable candidate.

## ii) Balance of Payment

Although the contents of the pilot project and the timing of its inauguration were not at all reasonable, it is true that the handling amount was considerably below the original target of 8,000 ton and that the balance of income and outgo was not attained. It has to be admitted that the financial effectiveness of the present project is low. The primary reason of the low productivity is that the collection operation took considerable time in the fledgling period. It was the first time for farmers to hear the word, OPM. Thus, the OPM staff had to explain the paddy collection procedures from A to Z, and persuade them into using the test services. The OPM tried to change the local paddy distribution practices by taking on all these burdens.

The second reason of the low productivity is the high transportation cost at the time of collecting paddies. Most of the farmers do not have any means of transporting paddies at the time of shipment, and, therefore, the OPM had to pick up their paddies by using a truck. Since the OPM did not have enough financial resources to purchase a truck, it was forced to rent one. This rental charge was a burden. In addition, the fuel cost and the maintenance cost are rather expensive compared to other daily commodities. Moreover, in addition to such expensive basic costs, the bad road conditions were detrimental to the gasoline mileage, resulting in a higher administrative and maintenance

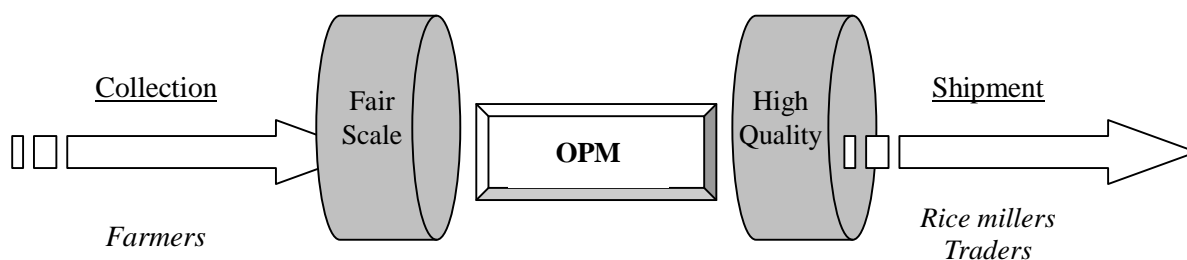
expense.

The third reason is that it took time to obtain detailed information about the distribution situations. The jobs of OPM are influenced to a considerable extent by seasonal factors as with wet-rice farming. Since even within the covered area, planting timing varies from village to village<sup>7</sup>, not only the shipping timing but also purchase prices by millers/mid-traders and the market price vary considerably. The OPM staff learnt the business know how through the period of the pilot operation, but they were not competent enough to take timely measures for improving the daily operations in response to changing situations. In order that the staff acquire the skill to catch up with ever-changing distribution situations, at least one year of on the job training was necessary.

### iii) Fair and Equitable Transaction of Premium Paddies

Farmers shipped their paddies to the OPM benefited from accurate measuring and fair pricing realized by the OPM, and this lead to tremendous handling amount. The prices offered by the OPM were based on actual transactions. In other words, they are prices accepted both by sellers (farmers) and buyers (millers/mid-traders), and no unfair margins are added to them. Accordingly, it can be said that the existence of the OPM was effective in the formation of fair prices.

Through the shipment of premium paddies, the effectiveness of the OPM was confirmed with respect to the quality. At the time of the completion of the pilot project, about seventy percent of paddies shipped from the OPM were premium paddies. The OPM succeeded in creating a new premium paddy market by explaining the advantages expected from it to millers/mid-traders and farmers.



**Table 5-5: Fair and equitable transaction of good quality of paddy**

“Accurate measurement” and “high quality” both served as the drive of the operation of the OPM. The OPM challenged the existing paddy market as a new comer. But in order for this challenge to be accepted, a new method different from the conventional method that would bring merits both in collection and shipment was necessary. It was “accurate measurement” and “high quality” that responded to the necessity, and they are indispensable elements like a pair of wheels in a car for the operation of the OPM. The car of OPM ran smoothly and, thus, the effectiveness of the two wheels,

<sup>7</sup> The difference of cultivation patters is due to the fact that the situations concerning plant area, availability of irrigation system, existence/nonexistence of arterial road and employment opportunity are different from village to village.

namely “accurate measurement” and “high quality” was confirmed. However, at the same time, keeping the wheels running required a lot of money.

### (c) Efficiency

In the evaluation of efficiency, the productivity during the pilot operation, or to what extent input was converted into results, and the adequacy of means, method, timing (period) and cost are to be examined. The highest level of efforts was put into the operation of the OPM, but the efficiency remained low. In the area covered by the project there exist situations hard to be solved, and they may be problems commonly seen in other areas in Cambodia. This means that, in order for the full-scale introduction of this new mechanism into the Cambodian society as a whole, the efficiency of the project must be improved at least to the level where the OPM can operate independently on an ongoing basis.

#### i) Operation Structure

Cambodian people were not enough involved in the administration because PDOC and PDAF could not assign full-time staff to the co-general managers and the Study Team had to take the role of the general manager. Although the function and the role of OPM were displayed well, the technical transfer of the operation and management skills was not carried out efficiently.

Three posts of the (assistant<sup>8</sup>) managers were changed three times in average during only 15 months. In the action plan of OPM, it is necessary to take measures to avoid the replacement because the loss from the replacement was huge, such as trouble in daily work, recruiting for a vacant post, and training for a newcomer.

#### ii) Productivity of Workers

If the supervisory staff hires a field worker and find him lazy, then the staff should make him resign at the earliest possible time. This is the conclusion reached after the direct observation of the workers working at the field. Major job of these workers is to collect paddies from the villages and dry them in the in-house facility. The sustainability of the OPM activities is premised on the worker’s collecting and drying paddies as planned. Nonetheless, quite a lot of workers were not robust enough to stand a day’s operation.

After the field observations it was found that while most workers were working hard, it was about one third of the workers who could work actively all the day. Productivity of other one third deteriorates considerably in the afternoon because they were short of physical strength. In other

---

<sup>8</sup> In the Pilot Project, the candidates of managers were employed as assistant managers in order to bring up managers of each division. They were promoted to managers when they learned the necessary skill through OJT.

words, they were too tired to work efficiently. In the afternoon their capacity to think also deteriorated, and they were unable to work out an efficient work method and plan.

Remaining one third of workers did not have enough physical strength to work at the OPM. In collecting paddies, workers have to carry on their shoulder a paddy bag weighing more than 60 kg and climb a steep ladder up to the loading platform of a truck. They just could not do that. Some of the workers who were not robust enough to carry paddy bags tried to play the roles of driver<sup>9</sup>, mechanics, and sales person. Of course, it is very useful if workers who can perform ordinary jobs acquire such skills. However, there is no technical job that lasts a whole day at the OPM, and therefore, workers who can only do technical jobs are not needed at the OPM. The OPM cannot afford to employ workers without enough physical strength to carry paddy bags.

### iii) Introduction of Equipment and Materials

Most of equipment and materials that were introduced into the OPM are indispensable for each activity. To what extent the productivity can be improved using these equipment and materials depends on the initiative of the staff. When the forklift was first introduced, the skill of the operator was poor, and the other workers were watching a novel machine stopping their hands. They had never seen a forklift working before. But they learned in six months not only how to operate the lift but also how to perform jobs efficiently using the lift.

Trucks are a common means of transportation in the area covered by the OPM, but it is difficult to use them efficiently on village roads. In the rainy season, the truck used by the OPM often got stuck in dirt roads. The transportation team often encounters a situation where it seems difficult for a truck to proceed. When the team leader is not sure if they can make it, the team is not allowed to go further. Reinforcement of the road surface, pushing the truck from behind, unloading cargos and workers, and changing the route are some of possible countermeasures. However, when they are not sure if they can proceed, they have to take all possible measures till they feel confident.

### (d) Impact

In the evaluation of impact, both positive and negative effects directly and indirectly generated through the implementation of the project are examined. The activities of the OPM are in conformity with the life of local inhabitants, and basically operated by their hands. All the staffs except for the managers are farmers from the neighboring areas, and most of them are engaged in wet rice cultivation. The positive impact of the OPM activities can be summarized that it changed the conventional paddy distribution practices in the area covered by the OPM into fair and equitable

---

<sup>9</sup> The wage of a male worker paid by the OPM is 8,000 riels/day and that of driver, 12,000 riels/day. Considering the contents of the job, the wage of the driver should be regarded as the sum of the wage of an ordinary worker, 8,000 riels plus driver's allowance, 4,000 riels.

ones. On the other hand, the negative impact is merely that the balance of payment was not realized, but the improvement in that respect is a prerequisite for the continuity and the development of the OPM.

#### i) Impact to the Formulation of Open Paddy Market Development Plan

Through the implementation of the pilot project, the first OPM in Cambodia was set up and operated, and this means that the development plan that had been merely a desk plan was transformed into a realistic idea. Relevant parties came to understand the specific activities, the functions and the importance of the OPM by actually seeing how the OPM operated. As late as in February 2006, MOC and MAFF embarked on concrete actions to continue the Svay Antor OPM, and selected the chief executive to establish an NGO-led operating body. The series of these movements were very sluggish, but it cannot be denied that these are the realities of today's Cambodia.

The Deputy Director-General of the Domestic Distribution Agency of MOC visited the OPM and said, "Lots of arguments have been made on many things about paddy distribution, and many reports have been prepared. But no one has ever dared to put a formulated plan into practice. Seeing how the OPM is operating here, I am convinced that the important thing is to put the open paddy market development plan into practice." He is now the auditor of the NGO newly set up for the Svay Antor OPM. The ever red-ink operation of the pilot project work to convince the related parties of the urgent need for an open paddy market development plan.

On the other hand, it is true that the fact that the project never turned a profit during the pilot operation exerted a negative impact to the continuity of the Svay Antor OPM as well as the feasibility of the open paddy market development plan. Profitability is an absolute requirement for a feasible business model. The Svay Antor OPM is not a project designed to display activities, but it is a verification research based on a feasibility research. Therefore, the financial plan should have been accurate so that it would be in conformity with actual activities.

#### ii) Impact to Farmers

According to the user research conducted on farmers, it seems that farmers taking their paddies into the OPM could sell their paddies 4% higher than the conventional price. In addition to the increased unit price, the users enjoyed weight increase due to accurate measurement. It is difficult to estimate how much weight increase was achieved by utilizing the OPM since it is influenced by many factors such as collector, variety, quality, timing, and region. However, taking also the unit price increase into consideration, it is estimated that at least 5% increase from the conventional selling price was achieved.



The collection amount in the second phase of the Svay Antor OPM was 2,471 tons, and the conventional selling price was 492 Riel/kg (according to the user research). Accordingly, it is estimated that 60,787,000 Riel (about 14,935 dollars) that corresponds to the above-mentioned 5% (492 Riel/kg x 5% x 2,471 tons) is the direct benefit enjoyed by the farmers using the OPM. This estimated amount corresponds to 68% of the total deficit from the second phase operation. Since the number of user farmers in the second phase is estimated to be 1,911<sup>10</sup>, the average direct benefit per farmer is 31,800 Riel (60,787,000÷1,911). The income of 31,800 Riel corresponds to five days wages of the benefiting farmers<sup>11</sup>.

### iii) Impact to Collectors

In the benefiting areas, the commission income of the collectors reduced by the handling amount by the OPM. This may be a negative impact to them, but it does not seem that any of them suffered a serious loss due to the reduction of collection amount. It is because collectors can easily change their collection area and it is easy for them to switch their handling commodities from paddies to other products.

Major changes the Svay Antor OPM has brought to the conventional collection practices of collectors are the following three:

- 1) Price Information: Daily market prices publicized by the OPM worked to equalize purchase prices, serving to prevent unfair pricing.
- 2) Use of Platform Scale: Collectors in the neighboring areas came to measure paddies on the premises of farmers by carrying a platform scale on the truck like the OPM collection team did.
- 3) Purchase Slip: Traders in the neighboring areas came to draw up a purchase slip at the time of shipment and hand them to farmers shipping paddies.

Since all of these changes were started by collectors in the neighboring areas following the activities of the OPM, they can be regarded as the influence generated by the pilot project.

### ix) Impact to Millers/Mid-traders

Millers utilizing the OPM can reduce the milling cost by using premium paddies. Appropriate moisture and little foreign substances may lead to reduced operating hours of milling machines. It is difficult to estimate the benefits enjoyed by the mid-traders using the OPM since their business results are influenced by many factors. Judging from the number of user traders and their attitudes,

---

<sup>10</sup> The total number of lots handled in the second phase is 3,058, and the percentage of farmers using the OPM twice is assumed to be 60% (based on the hearing with the staff). Accordingly:  $3,058 \div 1.6 = 1,911$  farmers

<sup>11</sup> The wages of unskilled labor is 6,000 to 7,000 in an average village in the benefiting area.

it seems that they are enjoying as much benefits as millers. They might stop trading paddies at the OPM unless they earn profit. However, in reality, they are continuing and expanding their trades with the OPM.

According to millers using paddies purchased through the OPM, about ten percent cost reductions are possible by using premium paddies. The milling fee in Svay Antor is 200 Riel/kg, and assuming the margin percentage of the millers is 10%, the benefit (cost reduction) enjoyed by the millers utilizing the OPM is about 18 Riel/kg ( $200\text{riels/kg} \times 90\% \times 10\%$ ). The amount of paddies collected in the second phase is 2,471 tons, and then the direct benefit the rice millers (mid-traders) enjoyed in the second phase is 44,478,000 Riel (about 10,928 dollars) ( $18\text{ Riel/kg} \times 2,471,000\text{kg}$ ). This amount corresponds to about half the total deficit of the second phase. The sum of the direct benefit of the benefiting farmers (61 million Riel) and that of millers/mid-traders (44 million Riel) is 105 million Riel (about 25,799 dollars), and this figure corresponds to 117% of the total deficit.

(e) Sustainability

In the evaluation of self-sustainable development, whether the benefits realized by the project will be maintained after the completion of the pilot operation is examined by focusing on the self-sustainability of the project. Judging from the situations at the completion of the pilot project that 1) the red-ink operation was continuing, 2) no chief executive was in place, and 3) the corporate status was not established, it has to be said that the possibility of self-sustainable development of the OPM is low and the continuity of the operation is not assured.

i) Staff of the OPM in Svay Antor

A former young assistant surveyor of the Study Team assumed the post of the general manager of the OPM in Svay Antor. He has enough understanding of the establishment plan for OPM, and knowledge and experience of the administration. Now, he struggles to improve the state of the administration, which continues to be hard. Accordingly, it is expected that his performance as a general manager will be increased.

However, it is impossible to manage the OPM in Svay Antor only by him. At least two managers are necessary for the management division and the marketplace division even if they focus their activity on the continuation of the OPM, and he holds the manager of marketing division concurrently. Nevertheless, the employment of the (assistant) manager still does not last long. It is all they can do to take over the task of former managers not to make a trouble on the daily operation, which causes inefficient administration extremely.

It is necessary to aim working condition, which make good laborers continue to work for a long period because the ratio of laborers who stay the OPM more than one year is about ten percent. But

this problem is not so serious in comparison to the problem of manager because laborer's work is not so difficult and newcomers can learn the basic work in a few days.

#### ii) Facility, Equipment and Technology of the OPM

It is guaranteed that MOC rents the facility and the equipment of the marketplace to the NGO, that is operating the OPM in Svay Antor. MOC is the owner of the facility and the equipment. The technology, which is introduced in the Pilot Project, is applied well by the local staff. Material, which needs for the continuation of the operation has secured through the implementation of the Pilot Project. The staff is to improve the way of their work in detail, such as investigation items and recording measures, considering the maintenance cost of the necessary equipment. They have to aim for cost reduction furthermore.

#### iii) Financial Operation of the OPM

The OPM could earn necessary income through selling the stock, which was collected in the project period, after the establishment of the NGO. They will face serious situation in the next harvesting season whether they will be able to collect paddy, keeping the financial balance. If the balance is collapsed, they cannot secure operating funds, which means the end of the operation because public financial support is not planned yet. Accordingly, they have to continue patient administration for the moment, which restricts expenditure within income based on a high-precision financial plan, and continues effort to increase working efficiency.

### **5.3 Implementation of Cooperative Paddy Collection and Shipment by Farmer Groups in Kanhchriech District in Prey Veng Province**

#### **5.3.1 Objective of Cooperative Paddy Collection and Shipment by Farmer Groups in Kanhchriech District in Prey Veng Province**

- 1) Increase the farm household income through the cooperative paddy shipment by Farmer Groups.
- 2) Strengthen the price bargaining power of farmers by giving them the chance to experience accurate measurement and price setting based on paddy quality.
- 3) Procure enough volume of safe fertilizers through the implementation of cooperative fertilizer purchase.
- 4) Increase handling amount of the Svay Antor OPM

### 5.3.2 Activities of Cooperative Paddy Collection and Shipment by Farmer Groups in Kanhchriech District in Prey Veng Province

Each farmer group independently manages the operation, having discretion with regard to the selection of buyers and the decision of the selling prices. At a selected pickup point in each village, price information is posted on a bulletin board and paddy bags and samples of fertilizers are on display. Each group maintains records of paddy sales and fertilizers purchases.

The project aims to sell 30% of surplus paddies a year through the OPM.

### 5.3.3 Results of Cooperative Paddy Collection and Shipment by Farmer Groups in Kanhchriech District in Prey Veng Province

31 % of target collecting amount (approximately 770 ton: 30% of estimated surplus amount in the target areas, 2005-06; 10.4% of the estimated surplus amount; 2.5 times more than the other areas) from the areas was performed up to the end of June 2006. During the short period cooperative paddy collection/ shipment by farmer group can be effective. Since the harvest season is over, the cooperative purchase of fertilizers is now in progress. Concerning how it should be operated in the future, the groups themselves need advice.

#### ( 1 ) Attendance ratio to the project

The members of the farmer's groups and the number of whole households are shown in the table below. The total ratio of the members to the whole households is 32 %, which is higher than 30 % of the target ratio. The ratios of Prey Tbal village and Chom Bork village are less than 20 %. These villages seemed to be difficult to organize the villagers because their houses were located widely. But the numbers of the members are enough for joint shipment.

**Table 5-9: Ratio of Group Member to Whole Households**

Commune	Village	Member	Household	(%)
Choung Ampil	Pea Rong	30	73	41
	Prey Tbal	34	294	12
	Chom Bork	37	242	15
Thmar Poun	Beng	78	208	38
	Chpeus	146	241	61
	Phreah En Smoth	88	222	40
Total		413	1,280	32

#### ( 2 ) Decrease in the threshing fee

Farmers could reduce threshing fee more than 20 % in the joint use of a thresher. According to the result of the baseline survey, the average of threshing fee is 1/29, which means farmers have to pay

paddy of one bowl every 29 bowls<sup>12</sup> of the threshed paddy. Namely, the ratio of the existing threshing fee is 3.4 % of the threshed paddy. If the unit price is 540 Riel/kg, the threshing fee is 19 Riel/kg. (540/29)

In the Pilot Project, threshers were used jointly in each village by the fee of 1/35, which was equal to 2.9 % of the threshed paddy. The threshing fee is 15 Riel/kg<sup>13</sup> if the unit price is 540 Riel/kg. Therefore, the threshing fee was reduced 4 Riel/kg. The difference is 21 % of the existing fee, which is higher than the target ratio of 10 %.

### ( 3 ) Practice of joint shipment

#### ( a ) Periodic joint shipment

In the discussion on the planning of joint shipment, the group members requested OPM to collect paddy periodically. OPM decided to dispatch a track every Thursday in response to the request. OPM and the farmers carried out this plan in February 2006. We can see this style as a joint shipment because the farmers can sell their paddy jointly at the market price. And, the periodic joint shipment brings benefit to OPM as well through increasing the amount of collection, efficiently.

The farmers jointly shipped their paddy on the regular day with proper weighing and suitable prices. And they could save the time to find and call a collector. OPM also gained the benefit through the collection style. The staff could collect paddy, which waited collection, packed by farmers, every week. The saving of time for the transporting groups is obvious in comparison to their collection trips without certain prospects.

#### ( b ) Joint shipment by a small group

In the three villages, the group leaders and the village chiefs<sup>14</sup> planned joint shipment by a small group. The shipment was intended to collect buyers' information, to choose the best buyer, and to negotiate with the buyer in order to sell their paddy at the highest price. Four groups were organized in the three villages and the three groups succeeded to sell them at higher price than the ordinary price. The last one group was not satisfied with the price, which were shown by buyers, and decided to wait for a rise in the price.

---

<sup>12</sup> In threshing service, a metallic bowl is used for the scale of paddy. The bowl can contains paddy of 16 – 19 kg.

<sup>13</sup> This is the threshing service fee of the OPM.

<sup>14</sup> The village chiefs in Pea Rong and Chom Bork played the role of a group leader in the Project.

**Table 5-10: Practice of joint shipment by a small group**

Commune	Village	Member	Amount (ton)	Options (inc. OPM)	Ship to	Variety
Choung Ampil	Pea Rong	13	4.0	3	OPM	Mixed / Somaly
	Chom Bork	5	2.0	3	-	Mixed / Sticky
Thmar Poun	Chpeus	4	5.6	3	OPM	Mixed / Sticky
		3	5.0	3	Collector	Konsrow
Total		25	16.6	12	-	-

( 4 ) Activity of quality improvement

The lot and weight ratio of high quality paddy, whose moisture content is 13.5 ~ 15.0 %, in the six villages is about 30 %, according to the manager of OPM. The same ratio in the whole target area of OPM is 15 ~ 20 %. “Excellent” and “Good”, two categories of the market price were shown on bulletin boards in the depots. The staff of the OPM provided the basic knowledge of quality improvement on the villages, intensively. It seems that the farmers could understand the actual difference between the prices of the Excellent and the Good, and practiced the activities of quality improvement.

In the joint shipment by a small group in Pea Rong and Chpeus, all farmers (20) who joined the shipment succeeded to sell at high price through the practice of the quality improvement. The points of the quality improvement are well known by farmers but most of the farmers do not carry them out. For example, they dry paddy well for their consumption though they do not dry paddy enough for the sale.

**5.3.4 Evaluation on the Joint Shipment by Farmer’s Group in Kanh Chriech District**

The PDM is shown in the next page.

**Table 5-11: PDM for the Joint Shipment by Farmer's Group in Kanh Chriech District**

**Name of the Project: The Joint Shipment by Farmer's Group in Kanh Chriech District**

PDM

Duration: December 2005 - February 2006 Project Area: Choung Ampil Commune and Thmar Poun Commune in Kanh Chriech District, Prey Veng Province

Target Group: Farmers, Collectors, Staff of OPM

Date: December 2005

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p><b>Overall Goal:</b> It is verified that the joint shipment by farmer's group is useful for OPM.</p>	<p>The annual shipping amount from the project area to the OPM will exceed 770 ton.</p>	<p>The collecting record of OPM</p>	<p>A big accident on the joint shipment does not happen.</p>
<p><b>Project Purpose:</b> The paddy selling power of the farmer's groups are enhanced. 1. The selling price of paddy is increased. 2. The options of buyers are increased. 3. The time of shipment is saved.</p>	<p>1. The price of the joint shipment exceeds the price of individual shipment. 2. The options of buyers are increased by one or over. 3. The time of the joint shipment is less than the time of individual shipment.</p>	<p>1. Interviews with farmers 2. Activity record 3. Interviews with farmers</p>	<p>Farmer's groups utilize OPM.</p>
<p><b>Outputs:</b> 1. Farmer's groups for the joint shipment are organized. 2. Threshing cost is saved. 3. The way of the joint shipment is developed. 4. The quality of selling paddy is improved. 5. The users of the joint purchase of fertilizer are satisfied with the quality.</p>	<p>1. More than 30 % of the total farmers participate in the Project. 2. The threshing fee of the joint use of a thresher is decreased more than 10 % of the existing fee. 3. The joint shipment is implemented in accordance with the plan. 4. The activity of quality improvement is carried out. 5. More than half of the farmers who purchased fertilizer jointly and used it are satisfied with the quality.</p>	<p>1. Member lists of the farmer's groups 2. The results of the baseline survey 3. Activity record 4. Interviews with farmers 5. The result of the follow-up survey</p>	<p>Rice price does not come down rapidly.</p>

V-34

<p><b>Activities:</b></p> <ol style="list-style-type: none"> <li>1. Selection of the target villages</li> <li>2. Explanation and discussion on the content of the Pilot Project</li> <li>3. Grouping of the farmers in the target villages</li> <li>4. Joint use of a thresher in each village</li> <li>5. Building of depots for joint shipment</li> <li>6. Providing of the market information of paddy</li> <li>7. Planning of the joint shipment</li> <li>8. Practice of the joint shipment</li> <li>9. Joint purchase of quality fertilizer</li> </ol>	<p style="text-align: center;"><b>Inputs:</b></p> <p>&lt; Japanese Side &gt;</p> <ol style="list-style-type: none"> <li>1. Experts Team Leader / Marketing Policy (1 person), Marketing Infrastructure / Cost Estimation / Site Management (1 person), Marketing System / Project Evaluation (1 person)</li> <li>2. Material and equipment to the villages (6 sets, joint use in each village) Building materials of a depot, Round woods, A bulletin board of marketing information, Blue sheets, A stand-scale</li> <li>3. Machinery and equipment to the district (1 set, priority use in the district, managed by OPM) Two moisture-meters, A thresher, A 2ton-truck, A set of sieves, An inspection kit</li> <li>4. Providing of market information of paddy</li> </ol> <p>&lt; Cambodian Side &gt;</p> <ol style="list-style-type: none"> <li>1. Management of the whole plan by the Steering Committee</li> <li>2. Providing of cultural information of paddy by PDAFF in Prey Veng</li> <li>3. Providing of distributional information of paddy by PDOC in Prey Veng</li> </ol>	<p>Large-scale drought/flood is not occurred.</p> <hr/> <p><b>Precondition:</b> Some villages in the project area want to carry out the joint shipment of paddy.</p>
---	---	--



( 1 ) Achievement of the Project Purpose

( a ) Did the price of the joint shipment exceed the price of individual shipment?

Some farmers estimated that the average price of the OPM was about 5 ~ 10 Riel/kg higher than the price of ordinary collectors. If we assume a unit price was 540 Riel/kg, farmers who utilized the periodic joint shipment could enjoy the rising of about 1 ~ 2 %. The result of the shipment of 54 ton by 88 farmers shows that the users recognized the advantages of the joint shipment, which were the fair price and the accurate weighing by the OPM

At the first trial of the joint shipment by a small group in Chpeus, the price of the OPM, which was chosen as the buyer, was 510 Riel/kg, and the prices of two collectors were 500 Riel/kg. Namely, they could sell at 10 Riel higher, which was equal to 2 % of the usual price. In the same way, the members in Pea Rong sold their paddy through the OPM at 510 Riel/kg, and the prices of two collectors were 480 Riel/kg and 500 Riel/kg. Namely, they could sell at 2 ~ 6% higher price.

At the second trial in Chpeus, the members chose a collector as the buyer because the price was 10 Riel/kg (2%) higher than the price of another collector and OPM. The 2 % was the result of the negotiation, which was carried out between the collector and the group leader<sup>15</sup> by phone. The three members got together at the leader's house and discussed their sales strategy during the negotiation.

( b ) Did the farmer's group get new options of buyers by one or over?

Firstly, the OPM was added to the farmers' options of regular buyers through the periodic joint shipment. The farmers who have not yet used the OPM will be able to ship their paddy to it as long as the operation is continued. The farmers can utilize the OPM confidently because "Fair and Equitable Trade" is its basic policy.

Secondly, the members who practiced the joint shipment by a small group in Chpeus could increase their options of buyers by one. In the second trial, the collector chosen as the buyer was not familiar to the villagers but the members and the group leader found the new collector and negotiated with him in order to sell their paddy as high a price as possible.

( c ) Was the time of the joint shipment less than the time of individual shipment?

The farmers who utilized the periodic joint shipment could save the time to look for and call a collector. At the first trial, they have to consider the new transactional way of the OPM, but once they use the OPM and understand the system, they will just check the market price and decide whether to ship or not on the next Thursday. In the existing situation, ordinary farmers have to wait for the visiting of collectors or go to a collector's house by bicycle to ask a collection when they

---

<sup>15</sup> The group leader did not ship his paddy in the joint shipment because he did not have the paddy of the variety that was collected by the members.

ship their paddy.

The members who joined the shipment by a small group could save the time to collect the price information from plural collectors and to negotiate with them in addition to the time to wait for or call a collector because the group leaders collected the price information and negotiated with the collectors on behalf of the members. The group leader in Chpeus used his mobile phone for the negotiation. The members tried to pay the telephone charge to the leader but he refused the offer, as the charges were very small<sup>16</sup>.

## ( 2 ) Achievement of the overall goal

Will the annual shipping amount from the project area to the OPM exceed 770 ton?

In the planning of the Pilot Project, 30 % of the total surplus was expected to ship to the OPM, but the result will be held about 13 %. The total shipping amount to the OPM in January and February was 54 ton. The annual shipment was estimated 320 ton (54ton/2months\*12months), which was 42 % of the target amount.

According to the baseline survey, conducted in December 2005, the average of the annual production is 3.6 ton and the selling amount is 2.0 ton per household. The target amount of the shipment to the OPM was set 30 % of the surplus, following the experience of the collection in OPM. The target amount was calculated 770 ton (2.0ton/hh\*1,280hh\*30%).

**Table 5-12: Shipment amount to OPM**

Commune	Village	Jan	Feb	Total	(%)
Choung Ampil	Pea Rong	0.0	1.7	1.7	3.2
	Prey Tbal	0.0	0.6	0.6	1.2
	Chom Bork	0.7	8.4	9.0	16.8
Thmar Poun	Beng	8.0	6.7	14.6	27.2
	Chpeus	17.6	5.2	22.8	42.4
	Phreah En Smoth	2.6	2.3	4.9	9.1
Total		28.9	24.9	53.7	100.0

## ( 3 ) Results of the evaluation with five criteria

### ( a ) Relevance

It is considered that enhancement of paddy selling power is a farmers' basic need to increase their incomes, and the joint shipment is a realistic approach because farmers can begin with only the idea.

<sup>16</sup> The telephone charge per shipment was estimated about 400 Riel (\$0.1).

According to the baseline survey, whose target was the six villages, 52 % of the total respondents recognize the problems of paddy sale. The biggest problem is inaccurate weighing by collectors and the second one is low selling price. Joint shipment by farmer's group is the quickest way to solve these problems. In the project period of two months, about 20 % of the members practiced the periodic joint shipment.

**Table 5-13: Number of shipment to OPM**

Commune	Village	Jan	Feb	Total	Member	%
Choung Ampil	Pea Rong	0	4	4	30	13.3
	Prey Tbal	0	2	2	34	5.9
	Chom Bork	1	20	21	37	56.8
Thmar Poun	Beng	9	12	21	78	26.9
	Chpeus	12	17	29	146	19.9
	Phreah En Smoth	2	9	11	88	12.5
Total		24	64	88	413	21.3

( b ) Effectiveness

The effectiveness of the Project was confirmed through the achievement of the three details of the project purpose. The paddy selling power of the farmer's groups were enhanced at least in the level of the periodic joint shipment. However, it was also confirmed that the effectiveness in the level of the joint shipment by a small group differed very much among the six villages.

The practice of the joint shipment by a small group needs a good leader as well as other joint activities. They are required to enjoy villagers' confidence though the actual works for the joint shipment are not so hard. One of the leaders mentioned two necessary conditions for a good leader: 1) He/She must show a good example to the villagers. 2) He/She must be always honest.

( c ) Efficiency

The activities were carried out efficiently because the farmer's groups could collaborate<sup>17</sup> with the staff of the OPM, and utilize its services. The inputs are considered to be comparatively small since the six villages jointly use the high-priced machines and equipment, such as a track (\$2,600), a set of sieve (\$1,400), and a thresher (\$1,100).

The OPM played an important part in the periodic joint shipment on one hand, but it became an obstacle to progress to the joint shipment by a small group on the other hand. The farmers can sell their paddy thorough the periodic joint shipment at the market price with accurate weighing. Therefore, they are satisfied with the system and avoid testing the new way of the next stage though the OPM is not always the best choice for their shipment.

<sup>17</sup> In the study tours, some members of the farmer's group visited OPM and discussed the activities of the Pilot Project with the staff of OPM.

#### ( d ) Impact

The activities of the Pilot Project affected the practice of quality improvement considerably. The activities and the utilization of the OPM stimulate the motivation of the sale at a high price. The introduction of the market price seems to make the farmers clearly understand the difference of prices between the grades of excellent and good.

Two provincial officers of PDAFF and PDOC visited the six villages in February 2006. They monitored the activities and the materials, which were provided in the Project. They also discussed paddy cultivation with the farmers. The reaction of the farmers was good and a village chief requested the revisit of the officers though their schedule did not allow it.

#### ( e ) Sustainability

The sustainability of the activities much differs in the villages. The two villages, which have practiced over the joint shipment by a small group, can be expected to continue their activities. But, the sustainability of other villages, which includes the maintenance of the machinery and the equipment, depends on the continuation of the operation of the OPM in Svay Antor. If the OPM continue the operation, the periodic joint shipment, the joint purchase of fertilizer, and the joint use of a thresher shall be continued in the six villages because every activity has enough merit for the farmers.

### **5.4 Evaluation on Related Issues in the Both Pilot Projects**

It is important for the administration of the OPM to incorporate joint shipment by a farmer's group in the activity of paddy collection, especially for an OPM that collects paddy from farmers directly. The joint shipment is effective in increasing handling amount of the OPM, which was verified by the Pilot Project in Khan Chriech.

### **5.5 Lessons learned from the Pilot Projects**

#### ( 1 ) Decision of prime counterpart agency

Prime counterpart agency should be decided when plural agencies are established as counterparts for a project of ODA. Two ministries are counterparts for this development survey; therefore the Pilot Projects were carried out under the formation of the two ministries and the Study Team. The formation caused an inefficient survey because it took a lot of time to adjust opinions of the two ministries. The formation means that there are two final decision makers. The basic conflict between the two ministries was exposed in the face of the continuation of the OPM in Svay Antor.

## ( 2 ) Establishment of an operational body

It is necessary to establish an organizational system, which includes the person in charge, in the first place for a project that intends to develop an organization. The Pilot Project in Svay Antor could not establish the operational body, which would take over the project, and the general manager up to the end of the project period. Therefore, the target persons of technical transfer were not fixed, and the Study Team had to manage the OPM. A project that has no operational body cannot develop the organization. It just produces exhibitivie effect, no matter how big input is introduced to the project.

## ( 3 ) Strengthening of the local civil servant system

It is considered that the staff of PDOC or PDAF should lead the actual operation of the OPM in Svay Antor because it was the first trial in Cambodia, the managers were required to work at the site continuously at least during the project period, and the knowledge and skill gained in the Pilot Project were disseminated and utilized. However, there was no budget to arrange full-time staff from the local civil servant for the administration of OPM, and the Study Team could not find person, who understood the necessity of OPM and would try to extend the activity after the Pilot Project, in the local officers, which included former officers in charge of staple food control.

Owing to the difficulty in utilizing human resources in the public sector, the Study Team tried to utilize human resources in the private sector and made the limit of the utilization clear. It is considered that the new system of the OPM will not extend without persons, who promote the system at the site, even if the central government tried to promote it hard because the site of paddy distribution is in local area. It is difficult to expect a private citizen to promote the new system of the OPM in the local area. The local civil servant system should be strengthened as soon as possible because their roles are indispensable to implement local projects.

## ( 4 ) Extension of a project in confirmation of the financial balance

Regarding the administration of the OPM in Svay Antor, it is considered that more careful approach, which begins from the most important activity and extend the scope gradually in confirmation of the financial balance, should have been applied because the Pilot Project tried to introduce the new system of paddy distribution without the administrative body, which would take over the administration after the Pilot Project. It is the result of business that nobody knows even if enough preparation is carried out.

## ( 5 ) Expanding the OPM users

On increase of handling amount and profitability, it is important for the users to understand OPM system. As a result, OPM would gain handling amount and benefit enough to manage and to

increase impact to the target area. The OPM requires 2 to 3 staff that is on top of its system. Adversely, the OPM labor-class staff could not persuade the users, especially farmer, accomplishing nothing. In a past year, understandable users were 3 to 4 people only; it is more than 100 people increasing. It was found that other users could follow understandable person of the OPM. Such understandable persons have improved their understanding while using the OPM step by step. Workshop was effective<sup>18</sup> at first, but it is no good to proceed with it rarely. Workshop can be continuously concentrated heavily on conducting at villages with understandable people to participate. It exceeds more than other promotion of streamlining to expand the number of users and to make repeaters.

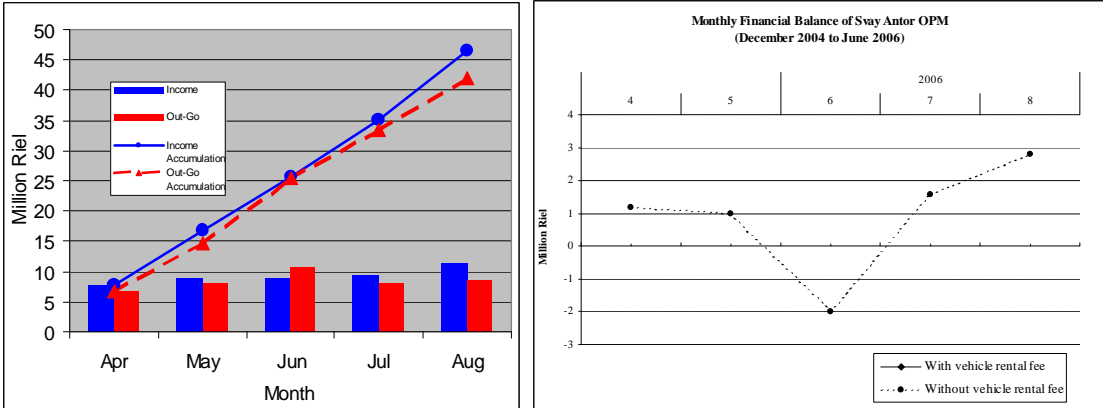
( 6 ) Scale of OPM and handling amount

The handling amount depends on fund volume for purchasing paddy. Though the Svay Antor OPM collected US\$89,000, it will be difficult for it to handle paddy of more than 5,000ton with the same value for the next season. However, if there are enough budgets to purchase paddy, it is also difficult to handle paddy of more than 6,000ton because of the sizes of warehouse and drying yard. The OPM should collect budget for purchasing paddy as well as consider the effective utilization, increase of face-to-face transaction, increase of dried paddy amount at farmer house, methodology to combine paddy lots and others.

5.6 Results of Svay Antor Open Paddy Market after handing-over

(1) Situation after handing-over (result and evaluation)

Figure 5-6: Handling amount, In come, Out-going, Financial Balance of Svay Antor Open Paddy Market (Left: Income/ Out going, Right: Monthly financial balance)



<sup>18</sup> Workshop is an effective way to disseminate OPM because the staff can discuss the new system with many farmers at the same time. It is important to hold a workshop just before harvesting season, and distribute paddy sacks to farmers who wish to sell paddy through OPM to ask them to pack the paddy in order to increase the efficiency of collection.

Financial management of the OPM kept above the break-even point after handing over to MOC, March 2006, though there was theft case of a pump and a truck accident, which needed to spend extra money. (Refer to Figure 5-6)

There is the condition that the buyer's trade inquiry still has a strong showing and the entire paddy market has no basic direction with paddy price down. If Vietnamese rice market has to treat more amount for exporting, it will be possible to make paddy price rise suddenly. It would affect paddy quality improvement for paddy of new crop.

Purchase of paddy bags could be achieved by revolving fund that their stock (48,800 bags at the end of August 2006; worth of 21 million riels = approximately US\$5,200. There is still serious problem to rent tracks during the busy season.

**Table 5 -14 : Comparison of handling amount of Svay Antor Open Paddy Market, before an after handing over**

From 1 September 2005 up to 30 August 2006

<b>Grand total</b>	<b>4,045.00</b>	<b>3,077,800.16</b>
Average paddy-in amount (kg/lot)		760.89
Reselling Amount :	2,946.00	2,040,376.10
Ration of reselling, using mid-trader (%) :		66.29%
Total Handling Amount (kg) :	6,991.00	5,118,176.26
<b>Average amount of handled lot (kg/lot) :</b>		<b>732.11</b>
The number of village :	128	
The number of commune:	37	
The number of district :	11	

After Handing Over (19 March 2006 up to 30 August 2006)

<b>Grand Total</b> :	<b>718.00</b>	<b>486,003.76</b>
Average paddy-in amount (kg/lot)		676.89
Reselling Amount :	578.00	443,751.10
Ration of reselling, using mid-trader (%) :		91.31%
Total Handling Amount (Kg)	1,296.00	929,754.86
<b>Average amount of handled lot (kg/lot)</b>		<b>717.40</b>
The number of village :	36	
The number of commune:	15	
The number of district :	3	

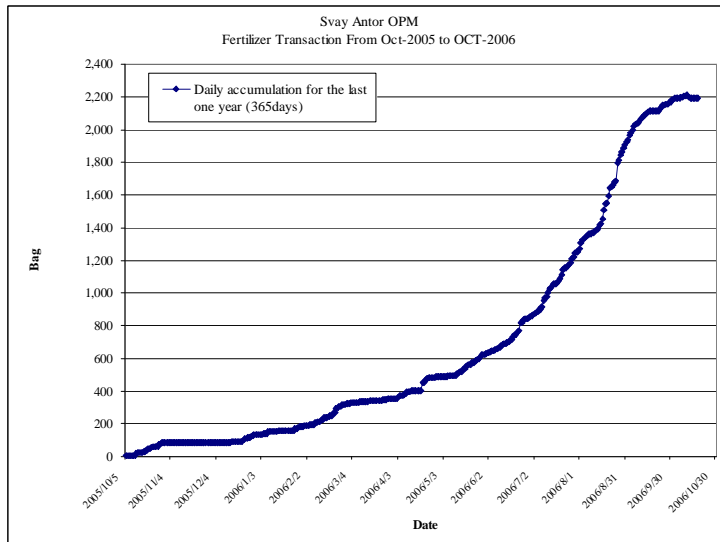
Before Handing Over ( 1 September 2005 up to 18 March 2006)

<b>Grand Total</b>	<b>3,327.00</b>	<b>2,591,796.40</b>
Average paddy-in amount (kg/lot)		779.02
Reselling Amount	2,368.00	1,596,625.00
Ration of reselling, using mid-trader (%) :		61.60%
Total Handling Amount(Kg)	5,695.00	4,188,421.40
<b>Average amount of handled lot (kg/lot)</b>		<b>735.46</b>

Table 5-14 shows handling amount of the management of Svay Antor 2005-06, dividing before from after the handing-over. The mid-trader use increased, keeping level of confidence of them to the Open Paddy Market. On the other hand, the farmers tried to use the Open Paddy Market if they have good quality of paddy, having a tendency toward. Volume of a paddy lot handled at the Svay Antor Open Paddy Market was almost the same between them. It meant the same confidence after the handing-over.

The fertilizer sale increased causing merchandising and promotional activities of the Svay Antor Open Paddy Market from November 2005. If the farmers continuously purchase fertilizer from the Svay Antor Open Paddy Market, it help financial situation for both, Open Paddy Market/ farmers, and good reform for fertilizer market with a big problem in quality and quantity in Cambodia.

**Figure 5-6 : Secular movement of fertilizer sale (Oct 2005 to Sep 2006)**



Under full year research, it has clarified action assignment and order of business to the Open Paddy Market. Though the financial management of Svay Antor Open Paddy Market turned profitable after the handing-over, incomes were mainly based on paddy collected from the end of November 2005 to the beginning of February 2006. During the off-season after April, collecting amount was 100 to 200 ton/month only. That high amplitude of paddy business made fund management efficiency worse. The Open Paddy Market requires working capital as a reserve fund.

During the off-season after April, collecting amount was 100 to 200 ton/month only. That high amplitude of paddy business made fund management efficiency worse. The Open Paddy Market requires working capital as a reserve fund.

Manners of working for the next fiscal year of the Svay Antor Open Paddy Market are stated as below:

- 1) There are plans of paddy collection,
  - From September to October 2006: 100 to 150 ton of Remaining amount of farmers and Thmor variety (mixed variety, low grade variety: eating quality is hard not being easy to find the buyers)
  - In November: 300 to 350 ton of Somaly/ Koun srou vaireties, high grade varieties, increasing handling amount up to a busy season
  - From April to August 2007: 1,000 to 1,200 ton as same as last year
 (Average of collecting amount: 9 to 10 ton/day )
- 2) Fertilizer sale in year 2006-07 should be promoted up to double of the last year record (approximately 230 ton). This idea is to boost retention of staff of Open Paddy Market during the off-season, reducing a fluctuation of business volume.
- 3) Salary system of the staff will be considered to make the job procedure effective.
- 4) There is a problem for fiscal arrangement of each transaction using small-value of note. It takes time to count those. For manpower saving and security, the method of handing over money should be change to the betterment.
- 5) Svay Antor Open Paddy Market will open up a milled rice market for Prey Veng rice millers to increase usage of the Open Paddy Market.
- 6) And should continuously promote a good use of Open Paddy Market by Vietnamese trader.
- 7) Increasing in service fees will thoroughly be checked up. (Threshing, transporting, storing, etc.,)



The main reason of deficit financial condition is a cost of rental vehicles (tracks and a forklift 2.5ton capacity). The Svay Antor Open Paddy Market require smart twists to have margin of financial management and consideration of their solution as stated as below:

- A necessary fund for management of paddy collection will be US\$20,000 to 30,000.-. For the new Open Paddy Market, they should estimate promotion fee included, approximately US\$10,000.- for workshop, brochures, communications etc.)
- OPM needs mid-traders' funds for fertilizer business, paddy transaction and paddy bags.
  - Fund for paddy transaction           US\$ 100,000 to 110,000.
  - Fund for fertilizer transaction       US\$ 5,000 (30% possible credit to users)  
US\$ 10,000 (50% possible credit to users)
  - Fund for paddy bag                    US\$ 5,000 to 6,000.
- Open Paddy Market shall be spread to the entire Cambodia through the Cambodian government plan. However, the Svay Antor Open Paddy Market shall continuously run on as a basic form (businesslike footing) as every new open paddy market refer it. Maintenance fee of the Svay Antor Open Paddy Market in the future should be set aside to sustain it.
- All the reserve funds are set for 1) Maintenance fee/ enlargement of business including purchase of equipment, vehicles with saving benefit of 30 to 50%. 2) Paddy bag with saving all of benefit for sale, recording inventory individually. Those funds shall be controlled without improper showing benefit (those funds aren't benefit to use). The management shall consider a new accounting process.
- Funds set aside should be record on the bank note saving on a routine basis to clarify and simplify the accounting work for those fund management.
- A bank function should be in heavy usage. In future, showing a good use for the bank, the bank will settle every money movement and the bank officers will came the open paddy market to take a necessary work there. It can reduce work volume and any risks of open paddy market financial management. Branch office in the open paddy market or some towns would be attracted. This is also an idea to protect from corruption.
- It is suppose that the handling amount would increase. A necessary condition is 30 ton/day of paddy to collect during the busy season. Moreover, OPM is also required to purchase 2 more trucks and increase number of labors to serve the users at the peak season of paddy as a pressing task as same as fertilizer revolving fund. The Open Paddy Market should consider financial assistance from any aid arms.
- It is important to promote handling in bulk to the seller/ buyer because paddy bags cost is an affect pricing paddy.

## (2) Outlook of future management

Under the result of the present management, it can reach to break-even point with approximately 3,500 ton of paddy collection including the mid-trader purchase (more than 66% of collected amount), totally handling amount of approximately 5,800 ton. It isn't so easy to always keep 9 to 10 ton/day for a year. There is a requirement to collect more amount of paddy and store the paddy corresponding to the buyer's request for having service charge.

In this case, in an inefficient running of fuel consumption and workers during the busy season, 20million riels (approximately US\$4,900.-) should be estimated. Moreover, there is a condition to have stable sale of fertilizer for covering the management during the off-season. 250 ton (5,000 bags) of fertilizer sale should be needed to make 28 million riels benefit. A balance of 8 million riels will be the reserve fund. Though it is difficult to suddenly enlarge the business of the Open Paddy Market, consistent management mentioned above is right way in Cambodia.

On the quality of paddy Open Paddy Market, there are 3 to 4% of grade 2 paddies only. The Open Paddy Market has a grade standard as target of quality improvement and base for calculating correct price of transaction. This is a previous step for the Cambodian government to institutionalize the rice standard. In the case of paddy, standardization of paddy cutting fine is not necessary. (Referring the table on Appendix 10 "conversion chart deducting extra impurities and moisture, firstly users have to have an experience through the chart and sensually grasp the meaning of paddy quality. It can fix the lowest level of good quality to escape the situation an existing transaction with rough communication to cheat the people. We could find improvement point(s) if the paddy price based on any items of inspecting matters would be initiated. Specific quality information at least shall be necessary to compare others. It will be spread to the entire Cambodia little by little. Even though it is drastic solution of quality level, market of paddy requires specific quality level (standard) as a basis for.

## **Chapter 6 Planning method on Establishment of Open Paddy Market**

### **6.1 Relation between plan outlining and pilot project**

In this study, the outlining of the development plan is prepared based on the result of reconnaissance study and the pilot project was implemented in order to enhance the accuracy of the outlining. The pilot project examines mainly project environment, project contents and project management body. As a result, unexpected various issues have been encountered during the pilot project implementation and the outline needs to be reviewed continuously. In other words, it is necessary to prepare the development plan including project contents and management body which can respond to changes, assuming the business environment surrounding open paddy market is changing dynamically at all times. Resources (human resources, facilities, funds and information), which are basically required for the project operation, in particular need to be incorporated properly in the development plan.

### **6.2 Major components of open paddy market development planning**

#### **【Development objectives of the development plan】**

The open paddy market development plan is related to the food security, the promotion of agricultural products and the poverty alleviation in the development plan of the Cambodian government. The immediate objectives, though, are the quality improvement of paddy and the distribution improvement, and the rice industry of Cambodia is to be developed through stakeholders including farmers, who are the majority in Cambodia.

#### **【Target year】**

Although the wholesale market of agricultural products has long history, transactions of wholesale market in agricultural products distribution in recent Japan have been declining. So-called out-of-market distribution, in which large scale consumers conduct direct transactions with producers, is increasing. Transaction style in which producers do not take actual agricultural products to the market is also increasing.

The degree of necessity for the open paddy market as a wholesale market changes with the development stage of social economy. It is therefore appropriate that the open paddy development plan of this study is to be planned assuming 5 years to complete the development plan, with the understanding of 30 year lifespan of this kind of project based on the case in Thailand.

#### **【Target area】**

The target area of this study is 13 out of 24 provinces and it accounts 90-95% of the total rice production and it produces most of the production of rice in the market. The open paddy market development plan is therefore appropriate to cover the paddy distribution of the whole Cambodia.

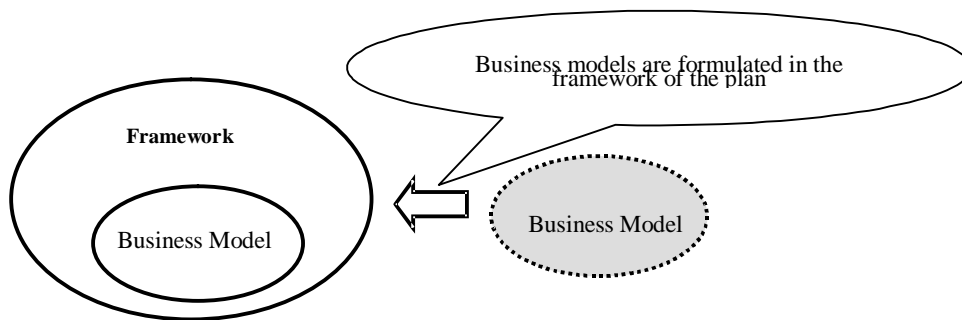
**【Targeted people】**

The directly targeted people of the development plan are establisher of open paddy market, the government supporting the establishment, the user of established open paddy market, rice growing farmers who sell paddy, paddy collectors, rice millers and traders. For farmers, mainly individual farmer is targeted, as farmers group and agricultural cooperative are underdeveloped.

**【Basic policy of development planning】**

By developing a realistic and sustainable open paddy market, to facilitate the quality and market improvement of paddy is a direct objective. The open paddy market itself is a business entity and the development planning, as a development plan needs to review in parallel various conditions to exist as a business.

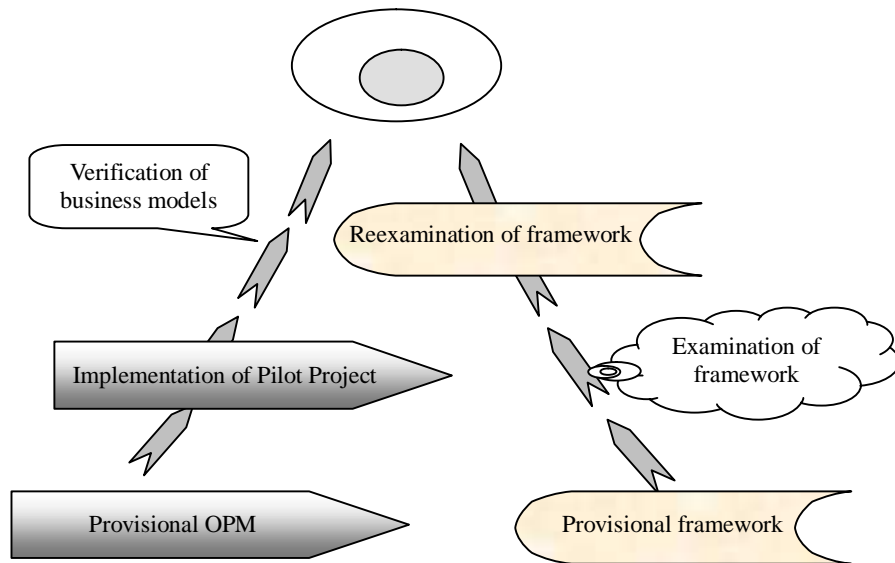
In other words, the framework, which contains various conditions is to be set, and then the business model of open paddy market as a business, is to be prepared. The open paddy market can be considered as a business operated within the framework. As shown in the Figure 6-1, the framework is an external factor of business model and the business model is recognized as an activity upon accepting the framework.



**Figure 6-1: Image of the Plan for Establishment of OPM**

This study operation has been conducted in line with two viewpoints: framework review and business model review. The Figure 6-2 puts time in a vertical axis and shows the image that two viewpoints are converging into one open paddy market development plan as the study proceeds from below to top.

### Plan for Establishment of OPM



**Figure 6-2: Making Image of the Framework and the Business Models**

The open paddy development plan is therefore composed of the framework and the business model put within the frame.