

# RICE FARMING AND MICROCREDIT IN TAKEO PROVINCE



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# **Rice Farming and Microcredit in Takeo Province, Cambodia**

**A socio-economic and social anthropological study  
with special reference to *Intean Poalroath  
Rongroeurng* (IPR) microfinance institution**

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*Cover photos:*

Pumping water to the rice fields

Thumbprinting documents for IPR micro-loan

## Preface

*This study was carried out in accordance with an agreement between the research team (the authors) and the microfinance institution Intean Poalroath Rongroeurng (IPR). The agreement, signed by the parties in January 2012, was reached on the basis of a shared interest by IPR and the research team in the socio-economic conditions of the rice farmers and the circumstances under which they availed themselves of the financial services (i.e. loans) offered by microfinance institutions, in this case particularly those offered by IPR.*

*The study was not commissioned by IPR. It forms part of the authors' wider research work on poverty and social inequalities in Cambodia, funded by the Swedish Research Council. The research team was thus not given a set of Terms of Reference to fulfil for this particular study, and was not employed as consultants for IPR. The team was economically fully independent of IPR; no fees or travel costs were paid by IPR, and the team did not reimburse IPR staff (or clients) for the time spent with the researchers. The agreement stipulated that the IPR would provide the team access to the institution's policy documents and to oral information from its staff as well as to addresses/locations of clients according to the wishes of the team. The team, in its turn, would make its report available to the IPR, to use at its discretion.*

*Rather than being a 'customer satisfaction survey' of IPR clients, this study is a qualitative anthropological background study of the socio-economic conditions under which rice farmers, in parts of Takeo province in particular, live and work. We have not aimed at a statistically representative survey but at a relatively detailed account of these conditions based on a limited number of case studies (an even more limited number of which are summarily presented in the appendix). We hope our findings may be interesting, as well as potentially useful for IPR and other microfinance institutions, and perhaps for policy-makers in the field of agriculture.*

*The authors would like particularly to thank Hsu Ming Yee of IPR for encouraging and facilitating the study, as well as for comments on the draft. Thanks also to Chan Sophal of the Cambodian Economic Association for useful inputs.*

*The authors are solely responsible for the data presented and the opinions expressed in this study.*

## Summary

This is an anthropological study of rice farming and microcredit in four different districts in Takeo province, in which the microfinance institution Intean Poalroath Rongroeurng (IPR) is conducting its services.

Characteristic of rice farming in this study area is that it represents a gradual transformation from the traditional subsistence-oriented farming to a system of the cultivation of rice as a cash-crop. In addition to, and gradually replacing the traditional wet season cultivation, dry season farming, with sustained irrigation and the cultivation of fast-growing, high-yielding varieties, is increasingly resorted to. The preconditions for this transformation include the area's proximity to the border to Vietnam and the possibilities of trans-border trade. Virtually all dry season rice produced in the area is sold across the border.

This gradual transition from subsistence orientated farming to cash-cropping has entailed a very substantial increase of rice production, both because of the much more intensive use of available land, making possible two or even three harvests per year, and because of the significant increase of the yield per area unit. The average yield of dry season rice is 4–6 t/ha per harvest. This high productivity depends on (1) the availability of sufficient water for irrigation, (2) the growing of high-yielding varieties of rice with a growth cycle of only about 3 months, (3) warm and dry weather during the growth cycle, and (4) the abundant use of industrial fertilizer and chemicals (pesticides and micronutrients). In addition, efficient cultivation is facilitated by (5) the increasing mechanization of cultivation. These factors have dramatically increased the production costs for the farmers, and they are likely in the long run to have both ecological and socio-economic consequences.

The heavy use of fertilizer and pesticides will have adverse effects on the riceland fauna, including fish and frogs caught for human consumption in the rainy season. The transition to commercial dry season rice farming entails increasing mechanization of the production. Tractors and hand tractors are replacing the ox-drawn plough. Fields are irrigated efficiently by petrol-fuelled water pumps. Harvesting is done by a hired cutting machine, after which the crop is taken to the village to be threshed by a hired threshing machine, instead of being cut by sickle and threshed by hand. Increasingly, hired combine-harvesters are used. Sowing is done by broadcasting which saves time and labour for transplanting. All this entails a significant decrease in the demand for manual labour in the peak agricultural seasons. This means a loss of temporary employment opportunities for the poorest, often landless families whose much-needed income becomes converted into a profitable income for the owners of the harvesting machines.

By expanding the cultivated area and intensifying cultivation of dry season rice, farmers are living up to the government's policy, the 'system of rice intensification' (SRI), i.e. dry season irrigated cultivation of high-yielding rice varieties. And

according to the Ministry of Agriculture, Takeo is the champion of SRI implementation.

But the production costs for dry season rice cultivation on a commercial basis are extremely high. On average, the production costs will amount to between half and two thirds of the value of the harvest. Moreover, the main costs – notably for seeds, fertilizer, pesticides, and petrol for pumping irrigation water – will have to be met several months before the income from the harvest has been secured, while at least part of the costs for irrigation water (also a major expenditure) may be deferred until after the harvest.

Therefore, the majority of farmers will have a continuous need of access to short-term credit, as the net income of the harvest hardly ever permits sufficient savings to meet the production costs for the next cultivation cycle.

Under these economic conditions, microcredit loans fill an important function for the farmers. Microfinance institutions (MFIs) offer readily accessible loans, to varying degrees adapted to the farmers' financial needs and their capability to pay back at relevant points during the agricultural cycle (typically after harvest).

The microfinance institution *Intean Poalroath Rongroeurng* (IPR) has specialised in micro-loans to rice farmers. Its services are well adapted to local economic and social conditions and therefore attractive to the clients. A number of fairly well-educated credit officers, most often with a background in the local rural society, arrange the loans and often act as economic advisors to the farmers. Local IPR offices are modest and non-intimidating. Processing of loan applications is done quickly and discreetly, and loans are paid out in Cambodian riel (rather than US\$). Most loans are between one and five million riel, they may run for 3–12 months and carry a monthly interest that depends on amount borrowed. Collateral is demanded in land holdings (residential or agricultural land); the amount borrowed may not exceed half the estimated value of the collateral.

It should be noted, however, that microcredit to rice farmers under the current economic and production circumstances has become quite removed from the original concept of microcredit, i.e. that poor people only needed a temporary infusion of capital to 'lift themselves out of poverty'. In the Cambodian commercialised system of rice intensification that the government is eager to promote, it is clear that micro-loans can hardly ever be a one-off, but that for most farmers there is an annually recurrent need for such capital infusion. So farmers are quickly becoming dependent for their livelihoods on constantly taking micro-loans. And there is a clear tendency to increase the amounts of annual loans.

So if the government has every reason to applaud the production results of the Takeo farmers, the farmers, unfortunately, have much less reason to applaud the government. Severe under-financing of the relevant ministries (Agriculture and Water resources) means that government agricultural extension services are rudimentary. Instead of providing adequate agricultural extension services for the rice farmers, which could assist them, among other things, in determining the proper amount of fertilizer and pesticides necessary, the government has enabled private companies to establish a virtual monopoly of the import and distribution to retailers of these

products. And instead of taking responsibility for the development and maintenance of rural infrastructure (roads and, most notably, irrigation canals), the government has licensed these tasks to private entrepreneurs, whose costs and profits are likewise paid by the farmers. The most egregious example is the government's lack of practical responsibility is the infrastructure for provision of water for irrigation, which is left to dysfunctional water user associations. This in turn has allowed local entrepreneurs to make handsome profits on the maintenance of canals and supply of irrigation water. The water fees that farmers have to pay may be up to 10 per cent of the value of the harvest, despite the fact that the main waterways are state public property and thus ought to be a public good.

Under this current neoliberal order, Cambodian microfinance institutions fill an important niche. Their services have enabled viable farming enterprises to increase their rice yields and significantly improve these farmers' standards of living. However, the landless and land-poor are left out of the equation as they are not eligible for micro-loans.

The past decade or so has seen the emergence of a fairly large number of MFIs that operate on a commercial ('sustainable') basis, meaning that their operations are financed by investors rather than by donors. The basic reason why so many MFIs have become financially 'sustainable' is that they have been able to attract financial investors by offering a 'sustainable' revenue on investments. The source of this steady revenue is the interest paid on loans by the borrowers. In other words, the success of Cambodian MFIs in making themselves independent of donors is paid for by their borrowers, among them rice farmers, some of whom live close to the poverty line, who have to take recurrent loans to make their living and contribute to the government's rice policy.

## Introduction

The study covers the area of Takeo province in which IPR operates, that is, the districts Treang, Angkor Borei, Borei Cholsar and Koh Andaet. More specifically, the general study area may be defined roughly as that which lies south of Takeo town, north of Kirivong district, east of the National Road no. 2, and west of the border to Vietnam. Within this area, the research team has worked in 8 villages in 6 different communes.

The field research for the study was carried out by the research team during three field trips, each of three–four days' duration, between 6 and 23 January 2012. Some of the time in-between the field trips was spent discussing and analysing the field material.

The research methodology included formal in-depth interviews with about 20 IPR clients, formal and semi-formal meetings with IPR management and staff at the Takeo Branch Office in Treang district, as well as at the local offices (Service Posts) in Angkor Borei, Borei Cholsar and Koh Andaet districts. Interviews with clients took place in eight different villages in the above-mentioned districts. Apart from the interviews with IPR clients and staff, interviews were also held with a few non-clients, a commune chief and a district office director of Water Resource Management and Meteorology. In addition, the research team noted observations and conducted casual interviews and conversations with a large number of local people (farmers, shopkeepers, workers) encountered in the course of the field visits.

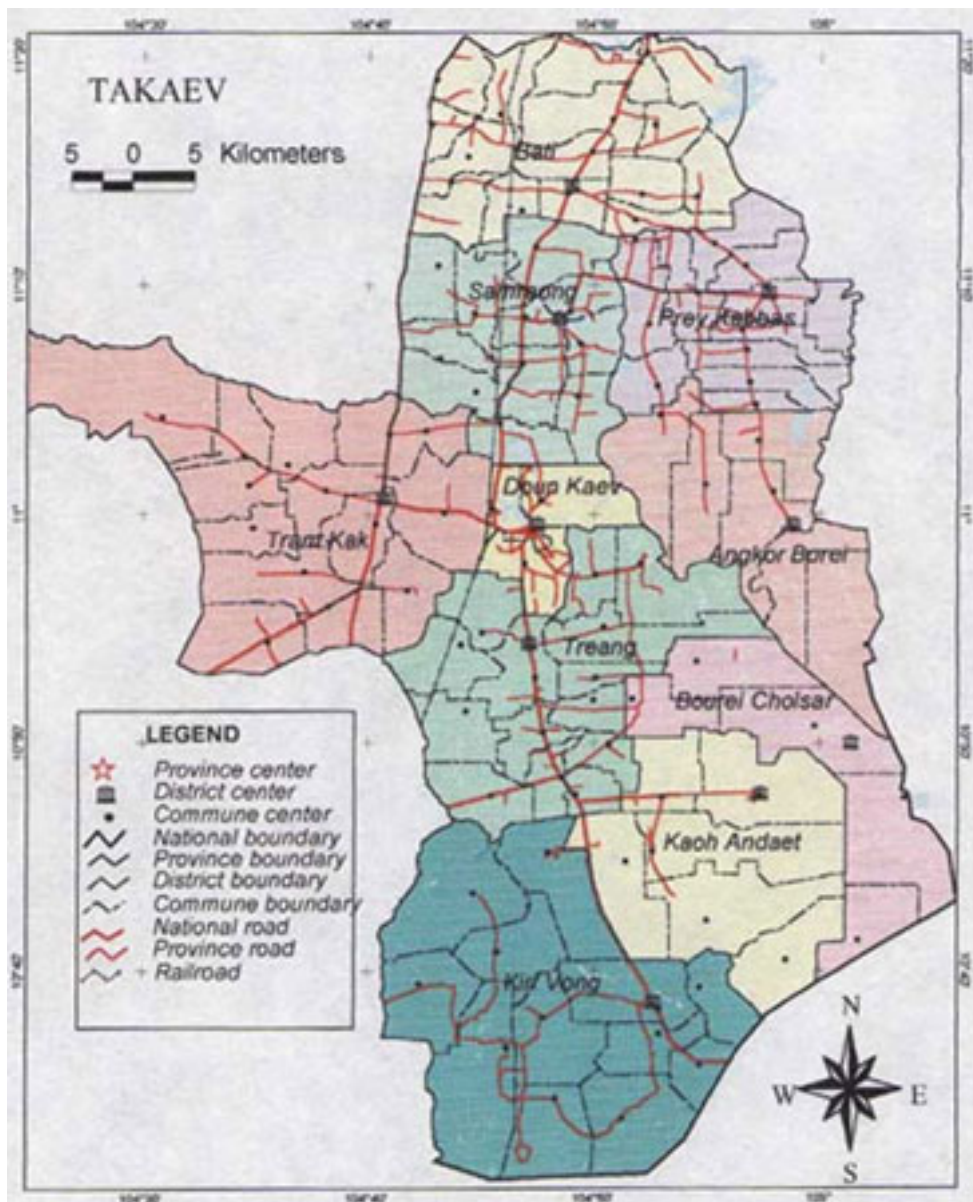
The transformation of the empirical field data into the present report involved consulting a number of written sources relevant to the issues dealt with. Those sources that have been specifically referred to are found in the list of references at the end of the report.

The first two chapters of the report are mainly descriptive, setting out the empirical context in which the study was done. Later chapters supply additional observational and interview-derived details and also contain analytic points as well as occasional authors' opinions, based on available evidence. Since this is a background study rather than a consultancy report, the authors have refrained from proposing specific recommendations, but a few suggestions have been made here and there.

The appendix contains summaries of a few selected cases based on interviews with IPR clients; they are meant to illustrate some of the variation in the socio-economic conditions among individual clients.

Monetary amounts are given in the national currency, Cambodian riel, because that, rather than the second official currency, US dollars, is what people in the countryside use. 1 US\$ equals 4,000 riel.





Map of Takeo province

## 1. General Characteristics of the Study Area

The study area has experienced significant changes over the past decade, which have led to improvement of the standard of living for the population in general. These changes are due to a number of factors, the most important being infrastructural and technological development and increased opportunities for trans-border trade with Vietnam.

The overwhelming majority of the population in the study area are rice farmers; some who live near the main waterways (rivers and lakes) engage in some fishing during the seasonal flooding; many farmers also breed cattle, and some have specialized in breeding ducks or pigs. In addition to this rural population, the commune centres and other main villages are homes of local entrepreneurs, merchants and shopkeepers, as well as a modest number of government officials (working in the administration, schools and health centres).

### ***Infrastructural development***

The most important infrastructural development in the area is the gradual rehabilitation and expansion of a number of irrigation systems. Several main irrigation canals, some originally constructed in the Pol Pot period, and generally running east–west from the lake and river systems near the Vietnam border, have been or are being brought back into service, with pumping stations by the water intake points (by the rivers and lakes). Also a number of new major canals have been constructed during the early and mid-2000s, funded by the World Bank, the European Union, and the government. The most important one was constructed by PRASAC (EU), almost 60 km long and spanning the districts of Kirivong, Koh Andaet and Borei Cholsar. Further main canals are at the planning stage; one, executed by the Australian organization CAVAC (Cambodia Agricultural Value Chain Program), was started in 2010. From all these main canals, numerous secondary and tertiary canals have been constructed to supply irrigation water to the fields. The result of these water control measures has been that vast expanses of land that was formerly unutilized swamp and bush or underutilized fields have been converted, or are in the process of being converted, into low-lying rice fields (*srae krom*, ‘low-lying fields’, or *srae boeng*, ‘lake fields’) for dry season cultivation with a potential productivity of up to three harvests per year.

The development of irrigation in the study area has primarily affected the area’s eastern part. The area is subdivided by a not very conspicuous flood-prevention dam that runs roughly north–south, from Dong Khpos commune to Kirivong district. West of the dam we find a more traditional form of rice cultivation with emphasis on wet season cultivation on fields around the villages (*srae leu*, ‘high-lying fields’), supplemented with dry season cultivation on *srae krom*. East of the dam, on the other hand, cultivation is dominated by dry season, irrigated fields, and even *srae leu* are cultivated by dry season methods.

Apart from irrigation systems, infrastructural development has also included a certain upgrading of access roads from the National Road No 2 into the study area. This has facilitated the local availability of a variety of goods necessary for agricultural production, such as fertilizer, pesticides, and petrol and diesel for pumping water. Some villages have electricity supply, organised by a private entrepreneur who has (legally) tapped into the main grid from Vietnam that also serves Phnom Penh with electricity, and who takes care of local distribution; villagers pay about 1,200 riel per kWh.

### ***Trans-border trade***

The possibilities of trans-border trade with Vietnam have been extremely important for development in the study area. The trade is conducted by boats along the many waterways that run through the eastern parts of the area. Imports from Vietnam include seeds, fertilizer, pesticides, and building materials (steel, bricks and tiles). The main export article is dry season rice; the sale of rice to Vietnam is supremely important, as it is the economic precondition of the agricultural development. Other exports include goods in transit from Thailand (such as cement and sugar), and recyclable waste (plastic bottles, aluminium cans, cardboard boxes, to be processed in Vietnam). Ports of landing include Takeo town, Kbal Po (Treang district), Thmor Sar, Kampong Ampil and Thmor Bai Dom (Borei Cholsar district).

The combination of the emphasis on dry season rice cultivation and the proximity to Vietnam, with the trading opportunities that this entails, has radically transformed the traditional rice farming in the eastern parts of the study area, from being subsistence oriented to becoming a market enterprise where rice is grown as a cash crop. This tendency seems to have started about ten years ago and is at present most advanced in Koh Andaet district, which (of the four districts covered in this study) has played a pioneering role. In Angkor Borei and Borei Cholsar, the transformation from subsistence production to cash-cropping began later, about five years ago, while it seems just about to start in Sambour commune (Treang district).

## **2. Farming Conditions**

This gradual transition from subsistence orientated farming to cash-cropping has entailed a very substantial increase of rice production, both because of the much more intensive use of available land, making possible two or even three harvests per year, and because of the significant increase of the yield per area unit. With only the traditional wet season cultivation, rice land could yield from 1 to 3 t/ha, while the productivity of dry season cultivation may be as high as 7 t/ha for the first harvest; the average yield, however, is 4–6 t/ha per harvest. This high productivity depends on (1) the availability of sufficient water for irrigation, (2) the growing of high-yielding varieties of rice with a growth cycle of only about 3 months, (3) warm and dry weather during the growth cycle, and (4) the abundant use of industrial fertilizer and chemicals (pesticides and micronutrients, collectively referred to as *thnam*, 'medicine'). In addition, efficient cultivation is facilitated by (5) the increasing mechanization of cultivation.

The application of these measures has dramatically increased the production costs for the farmers, and they are likely in the long run to have both ecological and socio-economic consequences.

### ***Water control and irrigation***

The construction of irrigation systems, with main canals filled from the main sources: lakes, rivers and reservoirs through pumping or gravity flow, is a highly efficient method of water control for agricultural purposes. But it can never result in total control. Weather conditions need to be optimal to ensure the maximal harvest. Periods of cool and rainy weather during the dry season may negatively affect the yields, as the dry season rice varieties demand warmth and sunshine, as well as sufficient amounts of water. Excess of water by the end of the rainy season may result in prolonged flooding, which may destroy already planted crops as well as delay planting; this was seen in the Oct–Nov 2011 floods. The possible depletion of the water sources during the latter part of the dry season is another hazard; at the time of our research (Jan/Feb 2012), severe shortages of water for irrigation were reported in both the Tonle Sap region and the eastern provinces (*Phnom Penh Post* 28 January 2012). Such shortages are likely to be most acute when irrigation water is pumped from dug wells, whereas in the study area surface water from rivers, lakes and reservoirs are the main sources for irrigation. But adverse weather conditions, excessive flooding, and later water shortages may all have severe negative consequences for both harvest yields and number of harvests per annual cycle.

The main irrigation canals serve as the backbone of the irrigation systems. Water for the main canals is pumped up from natural lakes and rivers, or from man-made reservoirs. The water sources are ultimately part of the Mekong/Bassac river system that periodically inundates the low-lying areas on both sides of the border to Vietnam. The canals are either former (Pol Pot time) constructions that have fallen into disrepair and are currently being rehabilitated, or canals constructed by internationally funded development schemes during the late 1990s and early 2000s. In both cases these canals are the property of the state, that is, ultimately, of the Cambodian people. Responsibility for their maintenance is formally delegated to a number of Farmers' Water User Communities (FWUC, *sahakum kasekar neak preur prah teuk*), of which there should in principle be one for every 500 ha of irrigated land. The constitution of the FWUCs and the election of representatives to serve on the FWUC committees are regulated by royal decrees and sub-decrees by the Prime Minister. This entails very complicated and time-consuming procedures (establishment of a FWUC may take up to 4 years!), and among ordinary farmers there is a marked lack of enthusiasm for the institution. In the case of the internationally funded canals, the pro forma existence of FWUCs was demanded by the donor agencies.

As for the old (Pol Pot time) irrigation schemes, the government has commonly outsourced the rehabilitation and maintenance to private companies. The companies finance their operations (rehabilitation and maintenance of canals and operating the pumping station) by levying a water fee from the farmers to allow them to use the water. The government licence to the company implies that the company pays a fee to the government. In other words, instead of supplying water (a common good) for

free to the farmers, the government allows private companies to make a profit from the farmers' labour and even takes part of that profit for itself. This is despite the fact that Cambodia receives about one billion dollars per year in international development aid. The new, international donor constructed irrigation schemes, have been delivered with instructions for water distribution through the FWUCs. But also the newly established irrigation systems require the levying of water fees from the farmers.

Conducting the water from the main canals into secondary and tertiary canals, and eventually onto the fields, also requires pumping. In the case of the new canals – to take the PRASAC canal as an example – the donor appointed a number of farmers to be responsible for the distribution of water from the main canal. Referred to as *machas pleuv teuk* ('owner of the waterway') or *mao ka teuk* ('organizer of water work'), these people were authorized to levy the water fees from the farmers. The amount of the fee is in principle agreed between the farmers (assumed to be represented by the committee of the FWUC) and the operators, the *mao ka teuk*. The same principles apply throughout the area, and being a *mao ka teuk* is potentially quite a lucrative business, but it requires capital for initial investment in pumps and continued maintenance of the canals served. And it requires that the landowners actually pay the fee; almost all small-scale farmers do so, but it can often be difficult to levy the fee from bigger landowners who rent out their land to be cultivated by others, as it can be subject to discussion whether the fee should be paid by the owner or by the renter.

Water from the secondary and/or tertiary canals is pumped onto the fields by the individual farmer. The water fee is calculated (and most often also paid) in rice; it varies, depending on local circumstances, between 300 kg and 750 kg of paddy rice per hectare, to be paid after harvest (often collected directly from the field). The government-appointed private companies, however, may demand half the fee to be paid in cash before irrigation starts, and the rest in kind after harvest. This level of water-user fees means that irrigation may cost the farmer as much as 750,000 riel per hectare and year, which commonly amounts to between 4 and 10 per cent of the value of the harvest, in addition to which he will have to use his own pump, and buy the fuel, to water his individual fields.

### ***High-yielding rice varieties***

The seeds for dry season cultivation are of varieties commonly grown in Vietnam. This is because the whole production is destined for sale to Vietnam, and farmers prefer to grow varieties that they are sure will have a market in that country. Farmers usually keep part of their dry season harvest as seeds for the next cultivation cycle. But the seed material should be renewed occasionally to maintain the quality, level of fertility and genetic purity; and in case of flooding that necessitates re-sowing, farmers may have to buy additional seeds. The seeds cost up to 1,800 riel per kg. Sowing is done by broadcasting (no labour-intensive transplanting is needed), and the farmer uses 400–500 kg of seeds per hectare. The dry season varieties are fast growing, one of them is known as '88', signifying the number of days between sowing and harvest. They are also less tall than traditional wet season varieties; the name of another variety is the Vietnamese word for forty-five, referring to the height in cm. This means that the crop produces very little straw that may be used for cow fodder;

all breeding efforts have been directed at maximizing the amount and size of the grain.

### ***Fertilizer and plant medicine***

The fast-growing, high-yielding dry season varieties require not only recurrent irrigation, and continual attention to water regulation during the growth period, but also the supply of fairly large amounts of industrial fertilizer, micronutrients and pesticides.

Most farmers use two or three different brands of fertilizer, of different compositions. Fertilizer is applied, by broadcasting, at least twice during the growth period. The soil is sometimes allowed to dry up for a brief period to make the plants 'hungry', and fertilizer is applied, followed by a thorough irrigation. Fertilizer is sold in 50 kg sacks, and farmers generally use 6–8 sacks per hectare, at an average price of 120,000 riel per sack. This means a cost of about 850,000 riel per hectare.

Apart from fertilizer, the rice crop needs 'medicine' (*thnam*), the local term for pesticides (insecticides, herbicides and fungicides) and micronutrients (allowing the crop to make maximal use of the nutritional components of the fertilizer). The 'medicine' is sprayed on the crop by using a tank with a hand-pump; the farmer carries the tank filled with liquid 'medicine' on his back while walking through the field, pumping with one hand while swinging the length of perforated pipe back and forth with the other, ensuring the even distribution of the liquid. Most farmers use ready-mixed packages of 'medicine', to be dissolved in water. The fields are sprayed about once a week during the latter part of the growth cycle. The cost of the 'medicine' commonly amounts to about 500,000 riel per hectare. But the ready-mixed medicine no doubt entails an over-use of such chemicals, which is unfortunate both economically and environmentally. Many farmers are aware of the unhealthy aspects of the pesticides and will avoid spraying the fields themselves, so they hire landless poor to do the job, not to risk their own health. Farmers who exclusively grow the dry season, high-yielding varieties will not keep any of the harvest for their own consumption, as they do not see the crop as fit for (Khmer) human consumption. This is both because of the heavy use of pesticides, and because the grains, when cooked, are hard and do not smell and taste good. Instead they spend part of their income on buying wet season rice from farmers further to the west of the study area to feed their families.

There is little doubt that over-utilization of agricultural chemicals is very widespread in the area. Agricultural extension services could potentially be helpful in addressing the economic and environmental problems created by over-utilization of chemicals. But most often training courses organized by provincial and district agricultural offices or by NGOs are ineffective, because the knowledge they seek to impart to the farmers is too theoretical and lack field demonstrations that would enable farmers to relate the knowledge to their practical daily concerns (Ngo Sothath and Chan Sophal 2011: 36–38). And many farmers cannot find the time to attend courses, as they are too busy farming.

## ***Mechanization***

The transition to commercial dry season rice farming entails increasing mechanization of the production. Tractors and hand tractors are replacing the ox-drawn plough. Fields are irrigated efficiently by petrol-fuelled water pumps. Traditional methods such as waler-wheels pedalled by people, or using two people to swing baskets of water between canals and from the canal to the field, are now almost obsolete in the area. Harvesting is done by a hired cutting machine, after which the crop is taken to the village to be threshed by a hired threshing machine, instead of being cut by sickle and threshed by hand. Increasingly, hired combine-harvesters are used.

The positive sides of the mechanization are that they save time, physical labour, and money. While harvesting by hand requires the work of about 25 people for two days per hectare, to the cost of about 1 million riel, a machine can do the job in less than a day, at the cost of 350,000 riel. Equally importantly, the mechanization relieves the farmers of much physically demanding manual labour, which impacts positively on the general public health of the population. Besides having machines to do the heavy work of harvesting and threshing, the sowing of dry season rice by broadcasting relieves people of the back-breaking work of transplanting the rice seedlings. On a more cultural note, however, it may be noted that these peak agricultural moments, particularly harvesting, are, or used to be, occasions of sociability and joy, of the confirmation of the intimate relationship between human beings and the rice crop, and of pride and optimism about the future. The custom of bringing the first sheaf of rice to the house and tying it to the roof beam as an offering to the earth goddess (*neang kong hin*) is hardly observed anymore; today the roof beam may instead be 'decorated' with the telephone number of a local MFI credit agent.

The mechanization also requires investments by the individual farmers. While harvesting and threshing machines are most often hired (because they are needed for only a short time by the individual farmer), tractors, hand tractors and water pumps must be acquired individually, as they are needed more continually and simultaneously. One can buy a good second-hand tractor for about 1,000 US\$, and a water pump for about 200 US\$.

Mechanization, in combination with dry season cultivation, also entails a significant decrease in the demand for manual labour in the peak agricultural seasons, as labour for transplanting is rendered superfluous, and harvesting and threshing is increasingly done by machines. This means a loss of temporary employment opportunities for the poorest, often landless families whose much-needed income becomes converted into a profitable income for the owners of the harvesting machines. For most smallholder farmers, however, the work load is huge. Many go out to tend their fields at night or in the early morning when the water level in the canal is higher, so that they may save a little fuel for pumping water. Several respondents related that they wanted to grow three rice crops a year on their *srae krom* plots, but that they simply did not have the time, as they also had to tend to their *srae leu* fields. A smallholder's land usually consists of a number of small plots in different locations, further intensification of cultivation presents serious logistical problems of tending to several plots simultaneously.

Mechanization also means that oxen as draught animals are less needed than before. The cutting of the fields by machines leaves most of the straw in the field (the level of cutting above the ground is higher than when the rice is cut by hand), and this means that there will be less or almost no straw to be collected as cattle fodder. For this reason most farmers still prefer to have part of the harvest done by hand. The machines, especially combine-harvesters, are also less meticulous than humans in gathering all the seeds, but leave more in the fields. This has implied a niche for duck-breeders who transport their ducks onto the newly harvested fields to eat the spilled seeds.

### **3. The Farmers' Predicament**

By expanding the cultivated area and intensifying cultivation of dry season rice, farmers in Takeo are living up to the government's policy, the 'system of rice intensification' (SRI), i.e. dry season irrigated cultivation of high-yielding rice varieties. In an overview of agricultural developments during 2011, the Ministry of Agriculture, Forestry and Fisheries observed that despite a certain shortage of water in the middle of the rainy season, and the Oct–Nov flooding, the country's agricultural production showed a considerable increase. The paddy surplus production was almost 4 million tons, 'a great success', according to the Ministry. Contributing significantly to the success has been the increase of the practice of SRI, and 'Takeo is the champion of SRI implementation' (Ministry of Agriculture 2011).

So when we reflect on the socio-economic conditions of the farmers in our study area, as revealed by our empirical data, we should bear in mind that in temporal and nationwide comparison we are looking at a best-case scenario. Not only have farmers in Takeo been skilful, diligent and hard-working to secure their production, they have also been blessed with favourable climatic conditions. Thus, only 4 per cent of households in Takeo province were affected by the Oct–Nov floods, compared, for example, to 18 per cent in neighbouring Prey Veng province, where the floods had devastating material and socio-economic consequences for large number of rice farmers (Access to Finance 2012).

In the study area, following the government's recommendation to expand and intensify dry season cultivation (the SRI) has resulted in notable benefits for many farmers. Faced with the possibility of making their farming economically profitable by engaging in commercialised cultivation, it is little wonder that so many embrace the opportunities the SRI present: Dramatically increased yields and easy sale of the whole harvest at a favourable price. And the intensified cultivation for the market has indeed implied a substantial improvement in income and living standards for a large number of farmer families.

But like any system of cash cropping, the farmers make themselves dependent on factors outside their control. One such factor, as already mentioned, is the climatic conditions. The size of the harvest can never be guaranteed but depends on fluctuations in the availability of water, often beyond human control.



A second factor is the current demand for rice by Vietnam (who for the time being has an interest in maintaining its position as the world's second-largest exporter of rice and therefore is eager to buy as much rice as possible). The current combination of the Vietnamese market demand and the practical and economic relaxation of the local trans-border trade is not necessarily an eternal state of affairs but a political-economically determined expediency. By orienting their dry season rice cultivation solely towards the Vietnamese market – because of the proximity of the Vietnamese border, and by using Vietnamese seed varieties – the farmers have made themselves dependent on the current state of this market. If the Vietnamese buyers were to lower their prices, or if restrictions were made on the trans-border trade, the farmers would face severe difficulties.

### ***The need for credit***

Despite the much improved living standards of most rice farmers today, compared with previously, a very substantial number of farmers – not only and not mainly the poor – are dependent on taking loans to make ends meet. For the rice farmers in pre-colonial Cambodia and throughout the colonial period, 'chronic indebtedness to the local money-lender was the rule rather than the exception' (Slocomb 2010: 71). And after independence in the 1950s, it was estimated that 24 per cent of Cambodia's farmers were chronically or temporarily indebted, while a much larger percentage regularly bought commodities on credit (Delvert 1961: 519–520). It is a sad and perhaps unexpected fact that mainly as a consequence of the 'successful' implementation of the rice intensification policy in the study area, the situation of farmer indebtedness today is structurally similar to that of the 1950s.

The main reason for this is that the production costs for dry season rice cultivation on a commercial basis are extremely high. On average, with a landholding of 2–5 ha, the production costs will amount to between half and two thirds of the value of the harvest. Moreover, the main costs – notably for seeds, fertilizer, pesticides, and petrol – will have to be met several months before the income from the harvest has been secured, while at least part of the costs for irrigation water (also a major expenditure) may be deferred until after the harvest.

Therefore, the majority of farmers will have a continuous need of access to short-term credit, as the net income of the harvest hardly ever permits sufficient savings to meet the production costs for the next cultivation cycle. With a yield of 5 t/ha and landholdings of 3 ha and two harvests a year, a farming family can, under the most favourable circumstances, produce up to 30 t of rice, the market value of which will be about 27 million riel. The production costs will typically be about 15 million, which leaves the family with a net income of 12 million. If the family were to meet the costs for the next annual production cycle out of this income, they would have virtually nothing left to live on, so a temporary infusion of capital is mandatory. In case of unfavourable climatic conditions, farmers' income will be significantly reduced. But their pre-harvest costs will remain on the existing level. Such a situation will force many families to take extra loans (as the survey of the effects of the Oct–Nov 2011 floods has shown; Access to Finance 2012); and this will constitute an additional economic burden for the farmers over the following years. Many of the economically most vulnerable smallholders may be forced to sell their land.

Under the existing economic conditions for rice farming, microcredit loans fill an important function for the farmers. Microfinance institutions (MFIs) offer readily accessible loans, to varying degrees adapted to the farmers' financial needs and their capability to pay back at relevant points during the agricultural cycle (typically after harvest). In the case of IPR (see further below), most such 'working capital' loans are between 2 and 6 million riel and run from three to twelve months; the monthly interest rate is around 2.9 per cent. Other MFIs offer similar conditions. The loans are typically used to buy seeds, fertilizer, pesticides and fuel for the water pumps, but also for minor investments (in water pumps and hand-tractors, for instance).

### ***Alternatives to microcredit***

Microcredit is available to most farmers, but not to the poorest. Loans are granted against collateral, that is, land (residential plot and/or rice land); a loan usually cannot exceed half of the value of the collateral. Therefore, families who are landless or have very little land, often of inferior quality and value, are excluded from taking advantage of microcredit, unless they can find a personal guarantor for their loan (which, unsurprisingly, is very difficult). In any given village, the poor amount to 5 to 10 per cent of the local population. The only alternative for these people is borrowing from private moneylenders who charge at least 6–7 per cent in monthly interest. One way for a private moneylender (a local shopkeeper, for instance) to operate is by giving modest loans in cash before the harvest, and being paid back in rice after the harvest. The amount of rice for repayment will be calculated by setting the value of the rice well below its market value, and the shopkeeper collects her interest through selling the rice at market price.

Another way of financing agricultural production without microcredit, commonly resorted to by less poor, and even comparatively well-to-do farmers is to buy the necessary materials on credit from the local merchant as need arises and pay one's bill after the harvest. In the case of fertilizer (to take the major and most conspicuous item), the cash price for a 50 kg sack is between 100,000 and 140,000 riel (depending on brand and individual merchant), and the merchant will add between 10,000 and 20,000 riel per sack when paid after harvest. This means that credit from the merchant carries a monthly interest of 3–5 per cent, i.e. more than for microcredit, but less than for a private loan. Often the merchant is not only selling the industrial products but will also buy the rice from the farmers and make an additional profit from the export. For the average farmer, this implies that credit from the merchant is commonly not perceived in the same terms as a proper loan in cash (from MFI or private lender), but rather as the sale of the harvest after deduction of the accrued costs. Many merchants, however, are also engaged in private moneylending.

### ***Perceptions of credit and separate economic spheres***

It is important to note that taking a loan, no matter how necessary and/or economically rational it may be, is not something people do gladly. To owe money to others (outside one's closest relatives) is considered shameful, and people are reluctant to admit to their indebtedness to other people. During our interviews, clients were often very reluctant to talk about their loans if neighbours or other fellow

villagers were present. This was most notable for clients in their forties or older, but even a couple who had newly established their own household, independently of their parents, and had taken their first MFI loans to finance their own fairly promising farming enterprise, admitted that they did not sleep well at night because of the loan. Such hesitancy to take regular loans may also be one reason why many people prefer to rely on credit from the local merchants instead.

Gradually, however, an increasing number of farmers are beginning to apply a more market-economic rationality and compare the interest rates offered by MFIs to those offered for credit by the merchants, which works to the advantage of the MFIs. This trend should no doubt be related to the transition of rice farming from being a subsistence-oriented activity to becoming more of a business enterprise.

But this change does not imply that money can be spent indiscriminately of its source. Many households derive an important part of their income from family members employed in (garments and shoes) factories in Phnom Penh or provincial cities, or do temporary labour migration to Thailand. The remittances from family members with wage labour income, although sometimes seriously needed to cover the daily costs of living, are typically seen as means of investments rather than day-to-day consumption. They may be earmarked to pay for the children's education, or they may be spent on durable consumer goods such as a TV or a motorbike. Larger remittances, stemming from prolonged labour migration, may be set aside as savings, often converted into gold, to eventually be spent on building a new house, preferably a modern concrete one, or buying land. Income from wage labour is in any case perceived as belonging in a different economic sphere than income from farming, which is still seen as basically a subsistence activity even when partly commercialised. It is therefore almost inconceivable that remittances from family members' wage labour should be spent on buying fertilizer and the like, since the costs for that belong in the sphere of the farming economy. Seeking salaried employment outside the rural home area is therefore not really an alternative to microcredit for financing the farming enterprise.

#### **4. Modes of Operation of IPR**

The name of this MFI, *Intean Poalroath Rongroeurng*, means 'prosperity for the population through credit'. IPR originated in 2003 as a credit unit within the Cambodian Rice Millers' Association. It gradually shifted its focus from credit to rice millers to credit to small farmers, and was licensed as an independent MFI in 2005 ([www.iprmfi.com](http://www.iprmfi.com)). So, the part of the population IPR seeks to serve through microcredit are primarily rice farmers but also owners of small and medium-sized rural businesses. Considering that about 70 per cent of Cambodia's population are rice farmers (Ngo Sothath and Chan Sophal 2011: 1), IPR fills an important function by catering to the credit needs of this large and economically very significant segment of the population. As already mentioned, 98 per cent of all IPR loans (at least in Takeo province) are granted to rice farmers. This may be compared to Cambodian MFIs in general, among which less than a third of microcredit clients are farmers (Kang Chandadarot and Dannel Liv 2011: 16).

The following section is neither an explicit nor an implicit comparison of IPR to other MFIs that operate in the study area. It is a list of points which we deem relevant for the perception of IPR by its clients and potential clients, as well as the local population in general.

### ***IPR credit officers***

Credit officers are mostly recruited from the local area in which the office/service post is located. This means that they have a good background knowledge of local conditions, their parents often being farmers (or small/medium businesspeople) themselves. It also means that they are able to relate to clients and potential clients as individual persons, rather than as representatives of a relatively unknown institution; such personal relations are the traditional and socially preferred norm for social interaction in rural environments in general. Indeed, clients often think of their loan facilitator in terms of the specific officer who handle their case, to the extent that clients in one location would refer to *taneakea cheth* ('Cheth's bank', after the credit officer named Socheth [pseudonym]) rather than the less familiar sounding Intean Poalroath Rongroeurng. However, in order that the local knowledge and social connections of the credit officer may not unduly influence his judgement on loan eligibility, and to prevent nepotism, credit officers are usually assigned to work in communes that are not their own home base, but rather in neighbouring areas. Furthermore, credit officers commonly circulate, in connection with promotion, between different service posts within the province.

In terms of the formal education of the credit officers, IPR seeks to recruit staff with a relevant higher education, such as a (completed or nearly completed) university degree (BA or MA) in banking and finance. Several credit officers work for IPR during the week while pursuing their academic studies at a university in Takeo town during the weekends.

The combination of the credit officers' familiarity with local condition and their formal education entails that an officer may also to some extent act as economic advisor for the client and recommend size of loan and terms of payment of interest and repayment of the principal, according to the client's individual situation and preferences.

IPR credit officers receive a fixed basic salary plus a variable pay-out according to their performance. Other staff benefits include a Khmer New Year bonus, insurance and pension fund. The variable pay-out is determined by four factors: the size of loan portfolio, the number of clients, proportion of overdue loans in the portfolio, and the due payment collection rate. This induces the credit officers to actively seek potential clients and at the same time eliminates the temptation of recommending potentially non-performing loans for the sake of increasing their own salary, and thereby putting clients in a difficult situation with respect to repayment. But it may also direct the officer's attention to non-poor or even well-off potential clients, which runs counter to the tenet of microcredit as poverty alleviation.

### **Offices**

In contrast to certain larger MFIs, the IPR branch office and service posts are housed in ordinary houses in the villages; the ground floor of a village house may be rented and converted into an office. This means that the clients do not have to enter a large and unfamiliar, and therefore intimidating building for the thumbprinting of the loan contract and the receipt of the money. This is also a positive adaptation to the preferences of the clients.

### **Dealings with clients**

The evaluation of a potential client's eligibility for a loan is conducted discreetly, first by the individual credit officer, and then, on his recommendation, by the branch office or service post office manager. This means that the proceedings are kept reasonably confidential, and the client will avoid public exposure of his or her borrowing. Such discretion is very much appreciated by most clients.

In the actual processing of the loan, the formal bureaucratic procedure is kept at a minimum. For a client's first IPR loan, his or her land certificate is deposited at the IPR office as collateral. For subsequent loans, the procedure is smoother, as the collateral is already in place. This also diminishes the chance of multiple borrowing.

Another feature of the loan processing that is appreciated by the clients is the relative rapidity of the process. An initial loan may take a week or so to process, while a subsequent loan may be ready for disbursement in a couple of days.

### **Interest rates and categories of loans**

The most commonly heard complaint from IPR clients concerns the perceived high interest rates, particularly for larger loans, where IPR rates seem to be marginally higher than those offered by certain (larger) competitors. But as IPR explicitly concentrate on farmers with modest credit needs, it seems a reasonable policy to focus on keeping interest rates low for this category of borrowers and indirectly leave it to more generalized MFIs to cater for clients who need or want larger loans (including some medium-sized businesses).

IPR distinguishes between two categories of loans, those meant as an infusion of 'working capital' to cope with expenses for agricultural production (or running a small business), and loans for investments in land, machinery, means of transportation or other productive assets. The working capital loans are by far the most common in Takeo province. They may run for 3–12 months and carry a monthly interest depending on the amount borrowed; the higher the amount, the lower the interest rate. The loans may be disbursed in riel, Thai baht (in the provinces closer to the Thai border), or US\$. Because the Cambodian riel is the currency used for all practical purposes in the countryside, virtually all farmers in Takeo prefer to get their loans in riel, even though they carry a marginally higher interest rate compared with loans in US\$. The borrowed amount may in principle be up to 20 million riel, but loans of more than about 6 million are rare; in Takeo, 88 per cent of all loans are under 6 million riel. Investment loans may run for up to 3 years; they are disbursed in

US\$, with a minimum borrowed amount of 5,000 \$, and a monthly interest that is lower than for working capital loans.

The option of getting working capital loans in Cambodian riel is much appreciated by clients. But what is even more important, and appreciated, for the clients are the terms of repayment. While most other MFIs demand payment of interest and repayment of the principal in monthly instalments, IPR offers working capital loans as so-called balloon loans, where repayment of the loan principal is required only at the end of the loan term. Under these conditions, even the payment of interest is deferred according to a '50% End' principle. This means that half of the calculated interest accruing during the loan term is paid when the loan is disbursed (i.e. deducted from the disbursed principal), and the other half is paid together with the principal at the end of the term. This system is very well calibrated to farmer clients who have a seasonal cashflow profile. It is another example of how IPR's mode of operation is successfully adapted to the clients' daily life situation; the '50% End' option of repayment is chosen by 86 per cent of the clients who take their loans in riel.

According to IPR statistics for 2011 for Takeo province, the vast majority (88 per cent) of IPR loans are 'working capital', and 70 per cent are for an amount of 4 million riel (1,000 \$) or less.

In terms of the purported purpose of the loans, the overwhelming majority (98 per cent) in Takeo province are granted for rice cultivation, divided according to IPR's classification, into dry season (79 per cent) and wet season (19 per cent) cultivation. This division into dry and wet season cultivation does not always reflect farming realities on the ground, as dry season methods, as we have seen, are also used during the wet season; and in any case, farmers using their loans to buy fertilizer, for example, apply the fertilizer for both wet and dry season cultivation, and on fields designated as either *srae leu* or *srae krom*. Furthermore, such 'working capital' loans may even be used for modest investments such as the purchase of tractors, hand tractors, water pumps – and even boats and fishing nets, which are strictly speaking not agricultural implements.

In short, farmers put their loans to the best possible use under the circumstances, irrespective of IPR's classifications. A minority of farmers expressed a wish for a larger ('investment') loan, to purchase additional rice land when available; the contemporary average price of desirable rice land is about 12,000 US\$ per ha. For such loans, farmers said they would probably prefer one of the larger MFIs (typically Aceda Bank), as they could get a marginally lower interest rate there.

### **Savings accounts?**

Unlike some larger MFIs, IPR does not offer savings accounts for their clients. It has been argued, particularly among NGOs, that savings (organised by village savings groups, for instance) could build a sensible basis borrowing, and even that 'savings-led microfinance' would have a number of advantages for the poor over the conventional 'credit-led microfinance'. While the authors of this study are sceptical about the practicability of this philosophy in the context of Cambodian smallholder

farmers, the additional service option of an MFI savings account would not be a bad thing.

Most rural families would like to expand their income possibilities beyond their basic rice farming. Breeding of pigs, chicken or ducks, or fishing during the flooding season, for example, may bring significant additional income that is not synchronised with the rice harvest (and thereby with the usual times for repayment of loans). Part of such additional income could well be saved if opportunities to easily do so could be provided. Given the personalised relationship of trust between credit clients and their individual credit officer, the credit officer might be entrusted to collect a client's savings when he is visiting the village anyway, carrying the necessary slips of paper for thumbprinting the transaction and taking the money back to the office to be deposited in the client's savings account. A savings account should, of course, accrue interest for the depositor. Savings might also be linked to the loans by reducing the interest on the loan in proportion to the amount deposited. Whatever kind of inducement to individual saving would be offered, such savings benefits would probably be more realistic than group savings (and resultant group loans) of the 'savings-led' model.

## **5. Rice Production and Microcredit in Cambodian Society**

As the above section has shown, IPR has succeeded very well in adapting its loan services to the local conditions of its clients, and in making these services attractive; the discretion as well as the speed with which loans are processed appeals to people, as do the personalised relations between the client and the credit officer.

In this connection it should be noted, however, that microcredit to rice farmers under the current economic and production circumstances has become quite removed from the original concept of microcredit, i.e. that poor people only needed a temporary infusion of capital to 'lift themselves out of poverty'.

In the Cambodian rice farming economy, particularly in the commercialised system of rice intensification that the government is eager to promote, it is clear that micro-loans can hardly ever be a one-off, but that for most farmers there is an annually recurrent need for such capital infusion. So farmers are quickly becoming dependent for their livelihoods on constantly taking micro-loans. In that sense, the microfinance industry has become 'sustainable', a trend that runs counter to its original (or at least purported) intentions (cf. Chan Sophal 2011). Indeed, such 'sustainability' seems both natural and desirable to the industry.

If the government has every reason to applaud the production results of the Takeo farmers, the farmers, unfortunately, have much less reason to applaud the government. Despite the announcement that rice production is a government priority, the two key ministeries (Ministry of Agriculture, Forestry and Fisheries, and Ministry of Water Resources and Meteorology) have seen their budgets reduced from 3 per cent of the total government budget in 2005 to 2.5 per cent in 2010. And in terms of actual expenditure, these ministeries have been able to spend only 65 per cent of

their allotted budget (Ngo Sothath and Chan Sophal 2011: vi). This 'has left small farmers under-supported by [the already very] limited public services' (ibid.).

So, instead of providing adequate agricultural extension services for the rice farmers, which could assist them, among other things, in determining the proper amount of fertilizer and plant medicine necessary, the government has enabled private companies to establish a virtual monopoly of the import and distribution to retailers of these products. And instead of taking responsibility for the development and maintenance of rural infrastructure (roads, irrigation canals), the government has licensed these tasks to private entrepreneurs, whose costs and profits are likewise paid by the farmers.

When entering a district centre village in the study area, one may get a tangible illustration of where the money is to be found. Apart from the very visible standardized money-temple architecture of Acleda Bank, also other major MFIs (such as Prasac, Amret) have signalled their local presence through fairly imposing buildings in the village streets. Private, newly-built three to four-storey houses are sure to belong to either fertilizer merchants or big landowners (who have invested in dozens or even hundreds of hectares of dry-season rice fields and rent them out to land-poor farmers at a million riel per ha).

When ordinary farmers have managed to build themselves a modern concrete house, the money has almost invariably come from family members doing temporary migrant labour in Thailand. The proceeds from a family rice farming enterprise, no matter how intensified, can hardly ever finance the building of a new house. Indeed, many smallholder farmers, despite doing both wet season and dry season cultivation, live close to or below the official poverty line of consumption of 2,500 riel per person per day, and quite a few are only able to survive thanks to remittances from family members working in city factories or as temporary migrant labourers in Thailand. Not long ago, individuals who had left their rural village in search of employment opportunities elsewhere could still look to their home village as providing a social and economic security net. Nowadays, rather the opposite is the case; many rural families are dependent on outside wage labour of family members to make ends meet.

At the same time, family members working temporarily or permanently outside the village need to repeatedly reassert their belonging to the moral community of rice farmers by returning to the village to take part in the work during the peak agricultural periods. The integrational function of this labour also pertains to the local people who are hired as labourers. The day wages for these people used to include a midday meal; this was appreciated not primarily for its nutritional value, but for the symbolic value of partaking of the common substance that signifies the moral community: the rice. Nowadays it is increasingly common for farmers to pay for hired labour on the basis of the area to be harvested, and for a local middleman to arrange for the number of labourers needed to fulfil the contract. The meal is usually not part of the contract, and thus the poor are further alienated from the moral community of rice farmers.



## 6. Cutting the Costs?

If the rice farmers in the study area were to be adequately economically rewarded for their contribution to the success of the government's rice intensification policy, and for their relentless labour in the rice fields, ways should be found to lower the production costs – costs that are mostly outside the farmers' control.

The main production costs are hire of labour and machinery; fees for water for irrigation; purchase of seeds, fertilizer, plant medicine and fuel; and interest on loans. Together, the costs for seeds, fertilizer and plant medicine, for example, often amount to over 40 per cent of the market value of the harvest.

### ***Hire of labour and machinery***

The labour costs vary very considerably according to the proportion of wet season and dry season cultivation resorted to by the individual farmer. In the traditional system of wet season cultivation, with transplanting and little or no irrigation, and with harvesting done by hand, hire of labour is the dominant cost. The monetary costs may be reduced by having family members to contribute to the labour, and the peak agricultural seasons have typically been occasions when family members working in city factories or doing migrant labour in Thailand will come back to the village to lend their hands.

When putting more and more emphasis on intensified dry season cultivation methods, sowing is done by broadcast and transplanting becomes obsolete. Harvesting is progressively mechanized. This means a very significant reduction of the cost for hired labour for the individual farmer, compared to the traditional wet season cultivation. But it also means that the traditional income opportunities for the landless or land-poor during the peak agricultural periods (transplanting, harvest) are largely disappearing. The rural proletariat is thus becoming even more vulnerable and ultimately face exclusion from the rural society altogether because of the decreasing demand of labour during the traditional peak agricultural seasons, transplanting and harvest. This process of exclusion has progressed unequally in different parts of the country. In Prey Veng province, for example, the rate of emigration from the rural areas has over a ten-year period equalled the natural population growth, so that the province has had a zero growth in number of inhabitants between 1998 and 2008 (National Institute of Statistics 2009: 219). But even Takeo has had a population growth of less than half of the national average during that period, indicating a net emigration of about 75,000 people. So when viable rice farming households save money on hired labour, the poorest will be forced to leave.

### ***Water for irrigation***

For dry season cultivation, the water user fees amount to between 4 and 10 per cent of the market value of the harvest. Although the water fee is far from the heaviest of the production costs, it is the one that farmers complain most about. Their main

argument is that they have already given up part of their rice land to the government to make room for the canals, and therefore the government should be obliged to provide free access to the water. But the government has divested itself of this obligation through the legislation about Farmers' Water User Communities (FWUC). 'The FWUC is in charge of the everyday management of irrigation and maintenance works. The role of the State is explicitly only to provide the organisational framework and support the FWUC; it has disengaged itself from any responsibility, particularly financial, for maintenance and repairs' (Pillot 2007: 493).

Given the general lack of enthusiasm among the rural population for community based organisations such as FWUCs, and the complicated and non-transparent procedures of recruitment of its committee members, there is a strong probability that the FWUC may nevertheless be seen as 'just another level of state authority in which officials put their own interests before those of the community' (Chea Chou 2010: 7; cf. Öjendal 2000). In any case, the FWUC committee is authorized to decide the water user fee in consultation with the private entrepreneurs (entrepreneurial companies and local operators, *mao ka teuk*). It is an added source of grievance that the profit that a *mao ka teuk* can make on his operation widely surpasses an ordinary farmer's income. At the same time, it is well known that big landowners are able to eschew the water user fees while smallholders are reported to the commune or district authorities if they refuse to pay the fee, the size of which they have had no chance of influencing. For a number of farmers of the older generation, this feels like adding insult to injury, as they had themselves worked on constructing the canals, as slave labourers under Pol Pot. Finally, the water fee has to be paid irrespective of the amount of water available in the canals; and as mentioned above, relative water shortage is not uncommon and may lead to diminished harvests and thus diminished income for the farmers. A recent study has suggested that greater efforts should be made to ensure 'the availability of water in both wet and dry seasons, establishing appropriate levels of water for effective irrigation and ensuring equitable water allocation across the regions' (Tong Kimsun et al. 2011: 1).

### **Seeds**

For the traditional wet season cultivation, part of the harvest is usually kept for seeds for the following season, as the traditional rice varieties are generally well adapted to local conditions and provide adequate seed material. A few farmers have agreements with local seed-trading companies to grow wet season rice for seed production. As for dry season seed material, farmers most often follow the traditional practice and set aside part of their harvest for the following season. But the dry season high-yielding varieties are less robust, and the seed material should be renewed regularly to ensure maximal fertility and genetic purity. Seeds may also be lost if flooding occurs after sowing. The cost of new seeds, when needed, will typically be about 10 per cent of the value of the harvest.

### **Fertilizer**

For the average farmer, the purchase of industrial fertilizer is the major production cost, often amounting to more than 15 per cent of the value of the harvest. Fertilizer is primarily applied in the dry season cultivation, but even the wet season fields need to be fertilized. Traditionally, the wet season fields were fertilized with manure (cow

dung). And there is no doubt that this would be the ecologically preferable and financially least expensive method. But the dry season crops are dependent on such large amounts of fertilizer that manure would be an impractical, not to say impossible way to meet the needs. On a nationwide basis, agronomists' calculations (of the number of cattle and area of rice land) have shown that the amount of manure that may possibly be produced corresponds to an average of 1.2 t per hectare of rice land, while on most soils an average of 5 t/ha would be needed (Blair and Blair 2010: 268–269). So in the country as a whole, there is simply not enough cattle to supply the necessary quantities of natural fertilizer. Moreover, in the study area, people are increasingly investing in hand tractors and have therefore reduced the number of cattle they keep. An added problem is that the production of manure for fertilizing demands a lot of heavy manual labour for collecting the dung and transporting the manure to the fields and spreading it. Given that the ordinary farming family can usually fill their working days with other tasks, manure fertilizing is not a realistic option, even if it would imply no financial costs.

One possible way of cutting the costs of fertilizer would be, of course, to decrease the amounts applied. In current practice, farmers will apply industrial fertilizer according to some very general recommendations (mainly given by others in the community or by fertilizer merchants), or according to what they feel they can reasonably afford. The soils used for rice cultivation in Cambodia are generally of rather poor quality, but there are significant variations in fertility between the various soil types. Among the best quality types of soil is one called 'Kbal Po', named after a location in the study area, in Takeo's Treang district. Unfertilized wet season rice yields on Kbal Po soil range from about 1.8 to 2.6 t/ha (White et al. 1997: 26–27). So the fertility of the soil in the study area is comparatively high. But there are probably local variations, and to determine the soil quality, and thus the fertilizer requirements (in terms of both amount and chemical composition, i.e. N, P and K requirements) of specific rice fields requires concrete soil analysis. On the basis of such analysis one may determine the 'site specific nutrient management' (SSNM). 'An economic analysis [has] shown substantial increases in both profitability and benefit/cost ratio in using SSNM [rather than general] recommendations' (Blair and Blair 2010: 267).

But to adequately implement SSNM would require that the government provides efficient agricultural extension services – which, regrettably, it does not, despite its proclamations about rice cultivation as a key government priority.

The fertilizer sold to the farmers in the study area is imported from Vietnam; some brands are also produced in Vietnam, some in China. Import of fertilizer to Cambodia, and distribution to local merchants, are in the hands of a small number of big import-export companies that have established a virtual monopoly on this business. Attempts by farmers to privately import fertilizer for themselves and/or members of the local communities are not encouraged and possibly directly obstructed.

Another problem is the lack of quality control of imported fertilizer. It has been estimated that 70 per cent of fertilizers sold in the market are adulterated (Blair and Blair 2010: 267). Once again the government has eschewed its responsibility to the farmers for the sake of the profit interests of private companies.

### ***Plant medicine***

Costs for plant medicine constitutes another significant drain on the farmers' budget. Medicine costs are commonly as high as those for fertilizer, i.e. up to 15 per cent or more of the value of the harvest.

We have not come across recent studies that allow the determination of optimal kinds and dosages of pesticides (and micronutrients) for dry season irrigated rice fields. It seems that herbicides are largely unnecessary. Although crops sown by broadcast are more vulnerable to weed infestation than those that have been transplanted (Jahn et al. 1997: 88–89), proper water control in the irrigated fields seems to be deemed sufficient to counteract weed infestation (Pillot 2007: 241). And according to the farmers, insects rather than weeds are the only real pests that may significantly affect the harvest.

The farmers, however, have very little possibility of determining the actual ingredients contained in their 'medicine packets' sold by the merchants, or of deciding the optimal and necessary dosages. One of the major import companies active in the study area advertises its products on its website; among the purportedly most popular plant medicine products are two brands of insecticides from India that turn out to be particularly suited for crops of beans and tobacco (!) ([www.hpc-ie.com.kh](http://www.hpc-ie.com.kh)). This should hardly inspire confidence for rice farmers, had they been able to read the labels.

One farmer we talked to, a veterinarian by education, applied the medicine selectively. He distinguished between the various ingredients and their functions, and applied each kind of medicine separately and only after thorough inspection of the crop to diagnose present needs. He had been able to reduce the cost of medicine from the usual half a million riel per hectare to only about 60,000 riel. But to do so requires a level of agronomic knowledge not generally found among ordinary farmers who are reluctant to risk a diminished harvest through experimenting with reducing the 'medicine' treatment.

On the whole, the problems of high costs of medicine are similar to those of fertilizer, discussed above: Lack of adequate government agricultural extension services and lack of control of relevance and quality of the products offered at the market.

### ***Interest on loans***

Compared to the inescapable costs of water, seeds, fertilizer and medicine, the in principle voluntary costs of microcredit are more modest. These costs also show more individual variation between farmers, depending on how large a loan they feel they need and/or will be able to pay back. For a relatively successful farmer with landholdings of 2 ha for dry season cultivation, a minor loan of 2 million riel over 6 months will result in a cost for the interest of only about 1.5 per cent of the market value of the harvest.

Nevertheless, interest rates have for quite some time been an issue of debate in discussions of microfinance. A general point of contention has been that interest on micro-loans is generally higher than the interest more well-to-do clients pay to ordinary commercial banks. It has been argued that for MFIs to operate on a commercial basis, the interest on micro-loans must be higher because they carry higher administrative costs. The general consensus within the microfinance industry has been that competition among different MFIs is the only realistic way of getting them to lower their interests (Helms and Reille 2004). This seems to actually have happened to some degree. Between 2003 and 2006, the annual interest yield of MFI portfolios in the Asia-Pacific region had dropped by almost 4 per cent (from 44.3 to 32.6 per cent) (Rosenberg et al. 2009: 9). In Cambodia, the interest yield has decreased from 39.7 per cent in 2004 to 29.3 per cent in 2010 (Planet Rating 2011: 4).

Still, a monthly interest rate of around 2.6 per cent would be seen as fairly high by most people. But in the pre-microcredit Cambodian society, loans to rural people were given by private moneylenders who charged a nominal interest of between 10 and 20 per cent per month; in comparison, less than 3 per cent is cheap. And the partial competition between MFIs and private lenders has resulted in the latter lowering their rates till around 7 per cent, while merchants offering goods on credit charge an effective interest of about 5 per cent per month.

The past decade or so has seen the emergence of a fairly large number of MFIs that operate on a commercial basis; there are currently more than 30 licensed MFIs in the country, serving about 1.4 million clients. The Cambodian Microfinance Association portrays 'the transformation of a number of MFIs into sustainable enterprises, with no further need for donor funding' as a 'key innovation in Cambodia.' The association sees it as a result of the MFIs' commitment to this goal (CMA, n.d.). While not doubting CMA members' commitment, we would suggest that the basic reason why so many MFIs have become financially 'sustainable' is that they have been able to attract financial investors by offering a 'sustainable' revenue on investments. The source of this steady revenue is the interest paid on loans by the borrowers. In other words, the success of Cambodian MFIs in making themselves independent of donors is paid for by their borrowers, among them rice farmers – some of whom live close to the poverty line – who have to take recurrent loans to make their living and contribute to the government's rice policy.

Given the MFIs' interest in the preservation of their financial 'sustainability', it is unlikely that a significant reduction of the rates of interest will take place in the foreseeable future. And while minor reductions may be symbolically important for clients, the economic effects will be fairly minimal. To take an example, if the interest on a loan of 8 million riel over 8 months should be lowered from 2.6 to 2.4 per cent monthly interest, the borrower would save only an amount equal to the price of one sack of fertilizer.

But there may be other ways in which the MFIs could contribute to the rice farmers' economic security, namely by showing a greater willingness to share risks. As it is, the MFIs take a certain risk by giving loans, and although they demand collateral in land holdings, the retrieval of both principal and accrued interest through the enforced sale of a client's land is a cumbersome and not very lucrative procedure, so it is

rarely resorted to. But most MFIs can nevertheless boast of a very low proportion of 'bad' or non-performing loans. Even in case of unforeseen misfortunes (such as serious illness in a family, for example), the MFI is reasonably sure to get its money back, with the stipulated interest, as the borrowers will do all they can to avoid the shame of not being able to repay a loan. And in case of natural hazards, such as severe flooding or drought, that may affect a larger area, the borrowers are still forced to honour the loan contract, even if this obliges them to take extra loans for their temporary economic survival (cf. Access to Finance 2012). 'The poor tend to be poor of bargaining power and knowledge, not just poor of cash and assets' (Chan Sophal 2011), and if they become impoverished by occurrences beyond their control, it is perhaps unreasonable that they should be further economically punished by inflexible demands of repayment for the benefit of the MFIs and their investors' demand of profit. A policy of risk-sharing in emergency cases (temporary suspension of repayments and accumulation of interest, for example) could be a welcome contribution, not necessarily to 'breaking the poverty cycle' (CMA's motto), but at least to preventing the initiation of further poverty cycles.

## Conclusions

The farmers in the study area are in the middle of a significant transformation of Cambodian rice cultivation, from the traditional, subsistence oriented rice farming of wet season cultivation to a market oriented system of cash-cropping based on dry season methods of continuous irrigation that enable three rice harvests per year. The promise of the dramatic increase in rice yields that this transition implies has been irresistible for most farmers, and it has indeed improved the material living conditions for most – though not necessarily for the poorest. As the farmers in Takeo province have been named pioneers of the government's rice intensification policy, it is likely that developments in the study area are an indication of the direction that rice cultivation is currently taking in the country as a whole.

The hardships that farmers (and the Cambodian population in general) suffered under Pol Pot and the succeeding PRK regime are now fading from the collective memory, and the living standards are steadily improving. The younger generation seems fairly optimistic about the future and the increasing possibilities of securing a better education for their children.

Still, most farmers voice legitimate complaints about the meagre economic rewards they get for their hard work and the considerable rice yields. The production costs under the rice intensification scheme are extremely high, and the government's neoliberal policy has allowed a number of surrounding actors to make considerable profits on the farmers' diligent efforts. There is very little the farmers can do about it.

The opportunity to take microcredit loans is therefore often the best way for farmers to make ends meet. The availability of microcredit for farmers is a crucial component of the current mode of implementation of the rice intensification policy, and the MFIs fill an important function in enabling the farmers to successfully cope with the challenges that the transition to commercial rice farming entail. But we should also

bear in mind that the profits the MFIs make on the interest on loans are extracted from the local society to satisfy the investors' demand for revenue.

Therefore, one should beware of making inflated claims about the beneficial impacts of microcredit. The recent study commissioned by the CMA is a case in point. It is claimed that if the results of the study show that microcredit clients are better off than non-clients (which it does), it means that microcredit has had a positive impact (Kang Chandadarot and Dannet Liv 2011: 10). This is not necessarily the case. Apart from pure luck and quality and location of agricultural land, for example, there will always be variations among farmers in professional skills (as is the case for practitioners of any profession); and there will be variations in the amount of social capital, as well as differential deployment of individual agency. If there is a correlation between amount of social capital, relative gender equality ('women empowerment'), and microcredit borrowing (ibid.: 6), this does not mean that social capital and gender equality is caused by, or shows the impact of, taking microloans. It is rather more plausible that the decision to take a micro-loan, overcoming the traditional socio-cultural aversion against borrowing money except under extreme circumstances, is the combined result of skills in planning and managing the household farming economy, using one's individual agency and social networks to one's best advantage, and living in a place where access to a microfinance institution is easy.

Under the present circumstances, the main challenge for the MFIs, as we see it, is to become more convincing in practice about the rhetoric of poverty reduction. Given the unlikelihood of any drastic reduction of interest rates among MFIs, even a modest reduction may have an effect, although mainly symbolic; but it could well make the particular institution, IPR for example, even more attractive to potential clients. And in this way expanding the client base could make up for a slightly reduced income from interests.

According to one of its folders, IPR has a vision of becoming the country's leading MFI. While attaining such a leading position in quantitative terms (size of loan portfolio or number of clients) does not appear realistic at present, there are other, qualitative, ways of taking a leading role. To become leading in terms of poverty reduction measures might appear worthwhile. The availability of deposit account services could be a modest element in such a scheme. But what could be really important would be a policy-based preparedness to share the risk that any borrower is necessarily running. For the farmer there is always the risk of having the harvest diminished due to climatic conditions, insect attacks on the crops, or insufficient labour input because of illness. The introduction of a force majeure clause in the loan contract, allowing the borrower postponement of repayment and temporary suspension of interest accumulation, subject to negotiation with the MFI, could be quite an important measure to prevent borrowing-related poverty, and would be worthy of a morally leading microfinance institution.

## Appendix: Summaries of Selected Cases

*The selected cases presented here are meant as illustrations only. They are not strictly speaking comparable in terms of household economies, since allowance has to be made for possible inconsistencies in respondents' calculations, and for the possibility of respondents' additional sporadic sources of income, not mentioned during the interviews. To arrive at an accurate description of the rural economy of any given household would require weeks of participant observation rather than a couple of hours' interview.*

*In Case 1, where the family does not grow any rice for consumption, we have added the estimated cost for consumption rice based on an annual consumption of 250 kg paddy per person, plus a ceremonial fund.*

*The significant differences in costs of hired labour, between Cases 3 and 7 for instance, are related to the amount of labour available from family members ordinarily engaged in wage labour outside the local community but who return to the village to give a hand in transplanting and harvesting.*

*The cases illustrate the fact that the proportion of the gross income that is available to the farmer as net disposable income for consumption most often correspond to farmers' general rule-of-thumb calculus that about two thirds of the gross income from the rice harvest has to be spent on production costs. In calculating this proportion we have made allowance for basic food security (i.e. rice sufficiency), as well as for the costs for interest on loans.*



## 1. Romenh commune, Koh Andaet district

Farmer family, married couple in their mid-30s with three young children.

Land holdings: 3 ha, dry season cultivation methods, 2 harvests per year

Production: 5–6 t/ha for first harvest, 4 t/ha for second harvest.

Total for the year: 28 t

Keeps 1 t for seeds, sale 27 t

Gross income from sale of rice: 27 t at 850 riel per kg	23 million
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Production costs:

Fertilizer 2.4 million

Pesticides 4 million

Petrol (for pumping water) 0.78 million

Water fee 1.2 million

Labour and hire of machinery for harvest, threshing 2.6 million

Total production costs	11 million
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Estimated cost of rice for consumption (food security)	2 million
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Net income (after food security)	10 million
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Microcredit loans:

Client has previously taken loans from Prasac for three consecutive years, now a customer of Acleda and IPR

Current loans

4 million from Acleda, 1 year at 2.4% interest  
for buying water pump and a cow

2 million from IPR, 6 months at 3% interest  
for buying fertilizer, pesticides and repair of tractor

Annual interest on current loans	1.2 million
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Net disposable income	8.8 million
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Net disposable income as percentage of gross income	38.3%
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## 2. Thlok commune, Treang district

Farmer family, married couple in their mid-40s with one young child at home, two daughters and a son working in Thailand.

Land holdings: 1 ha (*srae leu*), wet season as well as dry season cultivation, 2 harvests per year

Production: 3.5 t/ha for wet season, 2.5 t/ha for dry season.

Total for the year: 6 t

Keeps 2 t for consumption, sale 4 t

Gross income from sale of rice: 4 t at 1,100 riel per kg 4.4 million

Production costs:

Fertilizer 1.4 million

Pesticides 1 million

Petrol (for pumping water) 0.26 million

Hire of combine harvester 0.37 million

Total production costs 3 million

Net income 1.4 million

Microcredit loans:

Took a three-year loan of 12 million three years ago, 3% interest, to buy 0.2 ha of rice land; paid 4 million a year for the first two years. For the final year borrowed 2 million from mother to help with the final reimbursement. After that, took out a new loan of 4 million and paid back the 2 million to the mother.

Annual interest on current loans 1.44 million

Net disposable income of rice cultivation – 40,000 riel

The family's meagre net income is eaten up by credit costs, and the family is left with a negative disposable income for consumption. The family lives on remittances from the grown-up children working in Thailand.

### 3. Dong Kpos commune, Borei Cholsar district

Farmer family, married couple in their 50s with one married daughter living next door, and two daughters working in garment factory in Phnom Penh.

Land holdings: A number of small plots, total 3 ha of which 2 ha *srae leu* and 1 ha *srae krom*. Wet season as well as dry season cultivation, 1 harvest per year on *srae leu*, 2 harvests per year on *srae krom*.

Production: 4 t/ha for wet season, 5 t/ha for dry season.

Total for the year: 18 t

Keeps 5 t for consumption, sale 13 t

Gross income from sale of rice: 13 t at 1,140 riel per kg 14.8 million

Production costs:

Fertilizer 1.7 million

Pesticides 1 million

Water for irrigation 0.52 million

Petrol (for pumping water) 0.3 million

Labour for transplanting 6.3 million

Labour for harvest 1.3 million

Hire of combine harvester 0.4 million

Labour for threshing 0.23 million

Total production costs 11.8 million

Net income 3 million

Microcredit loans:

Client has borrowed from IPR for the past five years (did not take any microloans before). Earlier loans were 1 or 2 million per year.

Current loan 5 million from IPR at 2.7%, to pay for fertilizer and a new water pump. Repaid after 4 months.

Annual interest on current loan 0.54 million

Net disposable income 2.46 million

Net disposable income as percentage of gross income 16.6%

The reason this elderly couple keeps a large quantity of rice for consumption is probably to ensure the food security of their neighbouring daughter's family as well, and to supply their two daughters in Phnom Penh, who send most of their income to their parents.

#### 4. Dong Kpos commune, Borei Cholsar district

Farmer family, married couple in their late 30s with three small children.

Land holdings: Total 5 ha of which 3 ha *srae leu* and 2 ha *srae krom*. Wet season as well as dry season cultivation, 1 harvest per year on *srae leu* (plus harvest of dry season rice on 0.4 ha only, due to flooding; these fields had to be resown after the floods); 2 harvests per year on *srae krom*.

Production: Average 7 t/ha per year.

Total for the year: 22.4 t

Gross income from sale of rice: 18 t at 1,000 riel per kg	18 million
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Production costs:

Seeds 3.6 million

Fertilizer 1.7 million

Pesticides 1 million

Water fee 0.9 million

Petrol (for pumping water) 0.4 million

Labour for harvest 0.26 million

Hire of combine harvester 1.6 million

Labour for threshing 0.24 million

Total production costs	9.7 million
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Net income	8.3 million
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Microcredit loans:

The client has earlier taken (and paid back) IPR loans, to cover annual production costs. Plans to take a new loan for the next agricultural cycle, size depending on result of the harvest.

Current loan: 8 million from IPR at 2.6% interest over 8 months, to buy land and repair hand tractor.

Annual interest on current loan	1.66 million
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Net disposable income	6.64 million
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Net disposable income as percentage of gross income	36.9%
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## 5. Sambour commune, Treang district

Farmer family, married couple in their 40s with three schoolchildren living at home and a grown-up daughter in Siem Reap. Husband (also) works at commune health centre.

Land holdings: Total 5 ha of which 2 ha *srae leu* and 3 ha *srae krom*.

Apart from rice cultivation, the wife breeds pigs and chicken

Production: 2.8 t/ha for wet season, 2.7 t/ha for dry season.

Total for the year: 13.6 t

Keeps 5.6 t (wet season) for consumption and occasional sale, sold 8 t (dry season)

Gross income from sale of rice: 11.6 t at 1,100 riel per kg	12.8 million
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Estimated net income of pig and chicken breeding	4.8 million
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Rice production costs:

Seeds 2.9 million

Fertilizer 1.2 million

Pesticides 2 million

Water fee 1.4 million

Petrol (for pumping water) 0.6 million

Hired labour 1.6 million

Total production costs	9.7 million
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Microcredit loans:

The client has taken IPR loans for the past five years, to cover annual production costs and children's education. She started with a loan of 500,000 and after that borrowed 2–3 million per year, usually paid back after 6 months. This year she borrowed 5 million over 12 months, to finance the acquisition of additional rice land. She plans for a new loan next year, to pay back the rest of the current loan and buy a new hand-tractor.

Current loan: 5 million from IPR at 2.9% interest over 12 months.

Annual interest on current loan	1.74 million
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Net disposable income (from rice and livestock)	6.16 million
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Net disposable income as percentage of gross income	35%
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The household's relatively high net disposable income is due to the additional livestock breeding; the net disposable income deriving from rice cultivation amounts to 1.36 million only

## **6. Sambour commune, Treang district**

Married woman with small (or medium sized) business; husband a policeman. 4 children, two daughters are at university (in Phnom Penh and Kg Som, respectively), a daughter and a son go to school.

The family seems quite well-off. Their new house was built two years ago, cost 40,000 \$; at the time of the interview, trucks were depositing soil, filling in the residential land.

The woman runs a diversified business from her shop in the village street. The shop has the usual array of consumer goods (such as soap, detergent, toothpaste, cigarettes, beer, soft drinks, local liquor, crisps, spices) as well as medicine (kept in the house) and home-made sausages (which she was preparing at the time of the interview). She also breeds ducks and chicken. She used to trade in milled rice, her cousin is a rice-miller. Nowadays she seems to have shifted to money-lending, lending cash to poor people before the harvest and getting paid back in paddy rice after harvest, for which she credits 800 riel per kg. At a market value of 1,000 riel per kg, this means a profit of 20 per cent, typically over three months, equalling about 7 per cent monthly interest on the loans. She also owns a total of 2 ha of rice land for wet season cultivation, hires labour for the cultivation; sells rice surplus when in need of cash.

She is a recent (and possibly one-time) customer at IPR, took a loan of 5,000 \$ last year to buy more rice land and expand her moneylending operation.

This year she borrowed 10,000 \$ from Acleda to buy a truck for her brother in Kg Som, who sends her part of the profit from the trucking business (and takes care of her student daughter).

## 7. Dong Kpos commune, Borei Cholsar district

Farmer (widower?) lives with his eldest daughter and her baby son; has one son in Thailand and two in Samlaut (all with their own families, do not send remittances, but presumably return to the village to assist in transplanting and harvest).

Land holdings: Total 5 ha of which 3.5 ha *srae leu* and 1.5 ha *srae krom*. Wet season as well as dry season cultivation, 2 harvests per year on *srae leu*, 1 harvests on *srae krom*.

Production: 1.7 t/ha for wet season, 6 t/ha for dry season.

Total for the year: 14 t so far; is about to start dry season cultivation on *srae leu*.

Keeps 2 t for consumption, sale 12 t

Gross income from sale of rice: 12 t at 1,000 riel per kg	12 million
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Production costs:

Seeds 1.1 million

Fertilizer 2.2 million

Pesticides 0.5 million

Petrol (for hand tractor and pumping water) 1 million

Labour for transplanting 0.6 million

Labour for harvest 0.7 million

Hire of harvester 0.14 million

Labour for threshing 0.42 million

Total production costs	6.7 million
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Net income	5.3 million
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Microcredit loans:

Client has borrowed from IPR for the past five years. Earlier loans were 1 or 2 million per year.

Current loan 5 million from IPR at 2.7%, to pay for fertilizer and a motorbike. But had to pay back a 2 million private loan from his brother, so no motorbike this time. The 5 million debt is still outstanding, hopes to be able to pay back after second harvest.

Annual interest on current loan	1.62 million
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Net disposable income	3.68 million
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Net disposable income as percentage of gross income	30.1%
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