

Land, Rural Livelihoods and Food Security in Cambodia

A Perspective from Field Reconnaissance

Working Paper 24

Kim Sedara, Chan Sophal and Sarthi Acharya



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Responsibility for the ideas, facts and opinions presented in this research paper rest solely with the authors. Their opinions and interpretations do not necessarily reflect the views of the Cambodia Development Resource Institute.

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*Phnom Penh, August 2002
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Acronyms and Abbreviations

Acronyms

ACLEDA	Association of Cambodian Local Economic Development Agencies
CDRI	Cambodia Development Resource Institute
DFID	Department for International Development (UK)
GRET	Group de Reserches et d' Échanges Technologiques
GTZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit
RGC	Royal Government of Cambodia
UNICEF	United Nations Children's Fund
VDC	Village Development Committee

Cambodian Words

<i>Chamcar</i>	Land, which is used for growing crops other than rice.
<i>Tra Kuan</i>	Morning glory, a common tropical vegetable.
<i>Ko Yon</i>	A two-wheeled tiller.
<i>Chup</i>	A net with a rounded bamboo frame usually used for catching small fish and shrimp.
<i>Lop</i>	A steel or bamboo trap, frequently used for trapping crab and squid.

Executive Summary

The Cambodia Development Resource Institute (CDRI) has been undertaking a systematic study of the different facets of rural livelihoods, land and environment in Cambodia, since the late 1990s. The first studies were conducted between 1997 and 1998, with further studies being undertaken between 2000 and 2001. This research paper, which forms part of a larger research project on Land and Food Security initiated in 2001, discusses the changing livelihood strategies, land use, and access to natural resources in rural Cambodia. More specifically it aims to answer the following questions:

- (a) What are the patterns and dynamics of agricultural land distribution?
- (b) What are the patterns and intensity of land use?
- (c) What are the different non-farm activities that villagers undertake, in addition to or instead of, farm activities as part of their survival strategies, and what is their efficacy in ensuring livelihoods?
- (d) How have the rural markets for land, agricultural produce and credit emerged?
- (e) What are the demographic, migration, and labour market characteristics?

The study, carried out in six villages representing all the broad agro-climatic zones in Cambodia, was carried out using anthropological and other qualitative methods. A great variety of village people were interviewed. These included, for example, fisherpersons, foragers, migrants, women's groups, village elders, large and small land holders, traders, transporters and moneylenders. The survey instruments were semi-structured questionnaires. Some information was also gathered from secondary sources, as well as from a parallel survey carried out using structured questionnaires, the results of which will be published separately.

The findings of this research suggest that despite a relatively egalitarian distribution of agricultural lands in the late 1980s, considerable inequality in land holdings and landlessness has emerged through the last decade. There are numerous reasons for this and some more prominent ones are:

- (a) Land sales due to an excess of expenditure over revenue, primarily originating from high volatility and the crash in agricultural product markets;
- (b) Atomisation of land due to rapid population growth and the formation of new families, at a time when land frontiers are not growing at the same pace;
- (c) Excessive demands on land (and natural resources) from outside the agricultural sector;

- (d) The lack of means available to some farmers to enhance the effectiveness of their land use; and
- (e) Immediate cash demands to meet expenses resulting from illness in the family.

Although cutting down forests and reclaiming marshy areas from mangroves has provided some extra land, the demand for land has far exceeded the supply.

In some locales a few farmers use land intensively, applying modern inputs to achieve yields exceeding 3 tonnes per hectare. These are mainly the larger farmers. Smaller farmers are not able to gain adequate benefits from farming as they face varied problems, ranging from uneconomically small sizes of plots, insufficient irrigation facilities, poor market integration and expensive credit. Increased farm mechanisation is also helping just a select few since the distribution of gains from large machines in an imperfect market is not always neutral. Additionally, interlinked markets and localised monopolies tend to control both input and output marketing systems in agriculture, much to the detriment of small farmers' interests. Clearly small farmers and the landless have gained much less than larger farmers from the agricultural modernisation of the last few years. Finally, in some villages poor quality soils, a non-availability of modern inputs, and isolation have all contributed to keeping yield rates low. In these villages poverty is uniformly high.

People also work in a number of non-farm activities, mainly collecting forest produce and fishing, both on a seasonal basis and year-round. Although natural resource-based off-farm and non-farm activities are largely absent, in at least one locale people were found engaged in making salt. The activities closely linked to the natural resource sectors are now reaching saturation. For example, fishing and forestry resources are facing severe ecological strain as their use has been unplanned, unscientific and over-exploitative. Additionally, privatisation of some commons has affected poor people's employment options. Salt making in the coastal villages provides regular work to many, though recently the price of salt has stagnated due to an opening in the market for cheap imports. This has kept the earnings of Cambodian workers low.

In many villages people now adopt varied coping strategies either migrating across provinces or even out of the country, opting for wage labour on others' farms and other unskilled manual activities, and taking up seasonal work in non-agricultural activities like petty trading. These activities help to lengthen the period of productive-time engagement, but there are inherent limitations to them. For example, cross-border movement to Thailand is illegal and hazardous, and although many have been successful in getting jobs at 80–100 bahts a day (about \$2), some have been duped and subsequently repatriated. Additionally, wages paid locally in unskilled work are low, in the range of 3,000 – 4,000 riels per day, which is insufficient to ensure adequate food security. Finally, there are not enough jobs in the cities for example, in the trades or the garment sector, so people who migrate to cities are unable to earn adequate wages. Jobs outside agriculture are also limited because of a stagnant market: there is a recession and other problems related to structural underdevelopment. In this regard, limited human capital is proving to be a major impediment to maintaining a reasonable livelihood.

Food security is to an extent seasonal, although in some villages it tends to assume chronic dimensions. A combination of excessive population pressure, poor human capital and low employability, shrinking job opportunities, unfavourable market integration, and lack of physical and market infrastructure all contribute to this situation.

Based upon the experiences of other Asian countries this paper suggests a number of policy options. The proposal is to make a holistic change in society rather than to pursue narrow sectoral targets. Principal recommendations include:

- (a) Agricultural modernisation and crop diversification;

- (b) Efficient and competitive functioning of product and factor markets;
- (c) Security of land tenure and control of excessive land atomisation;
- (d) Occupational diversification and strengthening of human capital; and
- (e) Labour market interventions to establish a minimum liveable wage and other safety nets.

A simultaneous implementation of a broad spectrum of policies would be more beneficial than a piecemeal approach.

Chapter One

Introduction

It is generally accepted that the distribution of agricultural land was fairly egalitarian among farmers and villagers when Cambodia de-collectivised lands in 1989. Each household engaged in agriculture at that time, received small plots of between one and two hectares depending upon the availability of land in that area and the household size. Not much is known about the agrarian situation in the early 1990s, but by the late 1990s there were indications that concentration of land into the hands of a few and associated landlessness were on the rise. Such a trend in an economy where the majority of the people are subsistence farmers can create conditions of joblessness and consequently food insecurity, a situation already documented in government reports as well as individual studies (Murshid 1998; Biddulph 2000; RGC 2001; So *et al* 2001; Bhargavi *et al* 2001; RGC 2002a; Chan 2002). Moreover with factors like population growth and the introduction of market systems playing their role, food security can be affected in more ways than one.

What are the processes of land and asset redistribution, land use and socio-economic change at the village level, how do they affect food insecurity, and what are the survival strategies that people adopt in the face of the emerging agrarian structure? This broad group of questions forms the premise for this paper.

More specifically, the paper attempts to seek answers to the following questions:

- What are the patterns of land distribution and land use?
- What are the patterns and trends in non-land activities that villagers undertake to complement or substitute farm incomes?
- How have the rural markets for land, agricultural produce, and credit/capital emerged?
- What are the demographic, migration, and labour market characteristics, and has a rapid population growth played a role in exacerbating associated problems?

This paper, which is part of a larger research programme on Land and Food Security, addresses these questions based on a field study conducted in six villages. The initial objective of this research was to conduct a nine-village survey using quantitative survey questionnaires. However, after the completion of the questionnaire based survey it was deemed necessary to conduct supplementary surveys, using qualitative methods to understand the dynamics of a village society. This supplementary inquiry was therefore conducted in six out of the nine villages, using group interview and observation techniques.

The next section in this Chapter presents an outline of the qualitative methodology used and an explanation of the selection of the sample villages. Chapter Two then includes a thematic presentation of data obtained from these village studies and discusses the following: land holdings, their distribution and land markets; agricultural production and rice

availability; non-agricultural activities (including those based on natural resources); capital and credit markets; and labour markets in terms of wages and different coping strategies — including migration. A synthesis of principal issues which emerged during the study is then presented in Chapter Three. Chapter Four considers a wide range of public policy options seen as part of a *systemic* solution to agricultural problems in Cambodia. Finally, after a brief conclusion in Chapter Five, detailed synopses of the village studies are then appended to the paper.

Methodology and the Survey

There are four to five major agro-climatic zones in the country. The principal zones are the region around the Tonle Sap, the uplands, the rich-soil western plains, the coastal region, and the lower Mekong region.¹ The larger sample of this study contains nine villages covering all the agro-climatic zones in the country. However, for the qualitative analysis, only six of the nine villages were visited. Not much was lost in terms of geographic representation however, because the fuller sample covered more than one village in some zones to capture the intra-regional variations in some larger areas.

Data on some characteristics of the villages are summarised in Table 1.1. The survey design and the field records dictate the way data has been presented in the table and a number of subjective words like 'high' and 'low' have been used. These are relative to other villages and to the national average figures.

Besides agro-climatic representation, there were other criteria for selecting these villages. Some areas are rice deficit (Trapeang Prey) while others are rice surplus (Krasaing, Babaong). Others are fish-dependent (sea fish in Kompong Thnaot and freshwater fish in Prek Kmeng), and some are primarily forest-dependent (Dang Kdar). This illustrates a number of prototypes for socio-economic survival and patterns of occupation in the sample. This paper does not necessarily compare the differences across the regions — the sample is self-selected in this regard — but it highlights the processes and changes taking place that affect food security across the regions; for better or worse, and as narrated by the respondents.

Interviews were conducted with the following categories of people: Village elders, transportation owners, affluent people, landless farmers, widowed women, poor farmers, traders, large landowners and moneylenders. Although some of the interview categories overlapped, the categories were retained to cross-check certain facts. The survey instruments were semi-structured questionnaires. Some information was also gathered from secondary sources as well as the parallel quantitative inquiry. The presentation of this paper is thematic rather than village specific, although synopses of the individual villages studied are appended. The reference period for discussion was generally the last five years, i.e. the late 1990s to the early 2000s. For three out of the six villages, Prek Kmeng, Trapeang Prey and Babaong, some select comparison on a few parameters is made from the earlier surveys of 1997.

¹ This paper indicates that there are four to five agro-climatic zones rather than mention a definitive number as there is no consensus on the number in Cambodia. Statisticians differ from agro-scientists.

Table 1.1: Characteristics of the Villages Studied

Village name	Krasaing Village	Babaong Village	Trapeang Prey Village	Kompong Thnaot Village	Dang Kdar	Prek Kmeng
Province	Battambang	Prey Veng	Kompong Speu	Kampot	Kompong Thom	Kandal
Distance from main road	Easy, all weather road	Road can get flooded; travel by boat in monsoon	All weather road; interior	All weather road, easy access	Dirt road; deep interior	Flooded for six months
Whether near/ in forest	Adjacent to inundated forest	No	Forest is far away at 10-15 km	Rapidly diminishing forest	In the forest	Adjacent to inundated forest
Whether near river	Yes	Yes	No	Near sea	No	Yes
Rice land (hectares)	337 hectares	695 hectares	31 hectares	150 hectares	127 hectares	137 hectares
Population	1,263 (228hh) ¹	2,571 (536hh)	347 (68hh)	2,048 (339hh)	1,422 (306hh)	1,592 (402hh)
Landlessness	High	Not too high	Low	High; plots of very small size	Nil	High
Non-farm jobs-fish	High	High	Nil	Very high (sea fish)	Nil	Very high
Non-farm jobs-forest	Limited	Nil	Nil	Very limited	Plenty	Limited
Migration	High	Low	High	Low	Nil	Nil
Market influence	Present	Present	Not present	Limited	Not present	Present
Land quality	Good	Good	Poor	Medium	Medium/poor	Good
# New families	Low	Low	Low	High	Nil	Medium
Population growth	High	High	Medium	High	Medium	High
CPR ² availability	Yes	Dwindling	No	Dwindling	Yes	Yes

Note:¹ hh refers to households; ² CPR refers to common property resources

Chapter Two

Findings from Field Reconnaissance

Before presenting the findings it is important to define the meaning of food security in the Cambodian context. Food security is mainly, though not exclusively understood as the availability of rice in the village — since rice is the main staple food — and the capacity of a household to get sufficient rice for its needs. A household can ensure entitlement to rice through producing its own food or through purchase or exchange. A household will have to purchase part or all of its requirements if it owns no land, insufficient land to produce the food it requires, or is unable to retain its produce. If it cannot purchase food for lack of sufficient income from other sources — exchange entitlements in Amartya Sen’s terminology — or has to undertake uncertain and hazardous jobs for indefinite periods at low subsistence wages, it is considered food insecure. In such cases either the household makes do with less, survives on the largesse of others, or adopts other precarious survival strategies. This paper uses the words ‘food security’ or ‘insecurity’ as per this definition.

The six villages studied here differ widely in their demography, occupational structure, quality of agriculture, levels of development and in the changes that have taken place in land transfers and food production. Farm yield rates in Krasaing (Battambang) and Babaong (Prey Veng) are high at 3–3.5 tonnes per hectare and they produce food for markets. This is because they are located in the most fertile areas and have some controlled irrigation. Trapeang Prey (Kompong Speu) is food deficient owing to poor quality soil, water shortage and virtually no other resources like forests or fish which are common elsewhere: its rice yield is 1–1.4 tonnes per hectare. The two principal fishing villages (Prek Kmeng and Kompong Thnaot) and the forest village (Dang Kdar) present a picture of heavy dependence on natural resources where villagers face difficulties associated with a strain on the local ecology. In terms of infrastructure, all villages except Dang Kdar have a primary school, though medical centres were always at a distance, usually the district centre. Due to under-funding and under-staffing the quality of all social services is indifferent. All-weather roads connect Krasaing, Trapeang Prey and Kompong Thnaot, though the condition of the road to Krasaing is very poor; Babaong and Prek Kmeng get marooned and/or inundated in the rainy seasons — they can be accessed only by boat; while Dang Kdar is connected by a dirt road. The marketing of products, migration, and other livelihood styles are affected by all the factors mentioned above. (The appended synopsis of village studies provides more details.)

2.1. Access to Agricultural Land

Perhaps greater than anywhere else, agricultural land in Cambodia has been subject to the effects of a turbulent history. Land was under private control until 1975 when it was collectivised. It underwent another type of commune controlled management in 1980, and

was re-privatised in 1989.² Large population movement and resettlement accompanied these transitions and largely because of these disruptions the land issue is still not fully settled. Some farmers are still seeking land on which they can properly settle down, some are looking for more suitable locations and still others are waiting for the resolution of land conflicts. With regard to land, a few of the major outstanding issues are the incomplete cadastral measurement and titling, identification of jurisdiction, and security of tenure. This is in addition to problems in the functioning of land markets, landmines in some areas, and landlessness. Perhaps the most irksome is the issue of landlessness, since lack of access to land becomes the paramount cause of impoverishment in an agrarian society.³

In Krasaing, Battambang province, land was never formally redistributed — this is true for the whole of Tmor Kol district — due to the security situation in parts of the region in the 1980s and early 1990s. Senior citizens in the village maintain that until 1994 people faced a shortage of cultivated land because the Khmer Rouge occupied large chunks of low-lying, flooded lands on the Tonle Sap. After 1993–94 when peace returned, people extended their activities to flooded areas up to about 15–20 km further from the village and began to use these lands for dry season cultivation.⁴ Since then, lands have also exchanged hands particularly in the flooded areas. Landlessness is increasing annually with the population increase. In late 2001, the time of this survey, there were 125 landless households (more than half the total), 24 of whom were widowed.⁵ Many of these households have had to sell or mortgage their rice lands to meet expenses on different items: paying off debts, illness expenses and/or tiding over seasonal food shortages, or travel expenses for seeking work across the border in Thailand. At times, the larger landowners who are also moneylenders, acquire the lands. Although the average land holding could be a little less than two hectares (of rice land), those who have purchased lands in the recent years possess more, while correspondingly, those who have sold lands own smaller plots or none at all. A handful own more than 20 hectares each. Villagers from a neighbouring village (Rusei) control over 100 hectares of rice land in Krasaing.⁶ They have come to acquire these lands mainly through purchases and mortgages.

Babaong in Prey Veng province, faced no major political disturbance in the 1980s, and farmlands were distributed fairly evenly in 1989 with each household receiving between one and two hectares. However, inequality in landholdings began to emerge soon after because some households having able-bodied persons and draught animals cleared up inundated forests and converted them into farmlands. Additionally, with the setting up of an irrigation system in the late 1990s, some farmers acquired more land through clearing up commons to gain economies of scale. The advent of farm mechanisation in the 1990s also induced a few farmers to consolidate land, again to benefit from economies of scale, which further caused land inequality: some aggressive land purchase and consolidation of smaller holdings was reported for that period.⁷ In 2001, 15–20 households possessed large chunks of land: at least two households own more than 20 hectares each, while another 10–15 farmers own 10–15 hectares each. This excludes the mortgaged lands. At the other end of the spectrum, distress-

² Historical accounts can be seen in Thion (1994) and Meijers (1994), while shorter statements can be seen in So et al (2001) and Sik (2000).

³ Comprehensive narration on land related issues, particularly landlessness, can be seen in Kato (1999), Williams (1999), Sida (2001) and So et al (2001).

⁴ They also took back their inherited residential lands that their parents had owned before 1975.

⁵ One of the reasons why widowed households are landless is that they lack human power to plough the land. If they hire labour for cultivation, the costs become excessive. In the absence of firm tenural rights, tenancy is not always safe. They very often therefore, sell the land.

⁶ People in Rusei compared to those in Krasaing enjoy a higher standard of living, because residents in that village are traders at the Tmor Kol market. Some also have relatives overseas who occasionally repatriate money.

⁷ In any imperfect market system, some acquire more wealth than others, and rather quickly, which allows them to buy lands. Such acquisitions have been reported in Chan and Acharya (2002).

sale and mortgaging of land to meet urgent expenses (particularly on illness and food), debt servicing (interest rates are high at 10–15 percent per month), and in a few cases gambling, were reported as some reasons stated for landlessness.⁸ Additionally, some small landholders who lack adequate inputs have also sold their lands because they are unable to till them effectively. Third, very few returnees from the Thai-border camps have been able to obtain lands. Fourth, a small community of Vietnamese origin has no agricultural or residential land — they live in boats as their livelihood is obtained mainly from fishing. Population increase too is a contributing factor: there were 536 households in 2001 compared to 434 in the late 1980s: the consequent land atomisation has also created inequality and landlessness.⁹

In Trapeang Prey, Kompong Speu province, the average size of an agricultural holding is 0.57 hectares, though a few better-off households own two or three hectares each. The population has been growing in recent years (an increase of seven families in five years or 2 percent per year) but land has not, and there is therefore no more land available in the village to be put under the plough. The village leaders and elderly pointed out that there are newly married couples still living with their parents for want of even homestead land. Land inequality and landlessness have risen as some smaller farmers have sold their lands to the larger ones. The reasons for this were that some households owned uneconomically small plots of land with perhaps no means to cultivate them; they could have been indebted too and in need of cash. The numbers of landless households increased from six to ten between 1997 and 2001. Tenancy exists to the extent that the poor hire out their lands to the non-poor and migrate out for work. The buyers on the other hand, may have owned lands contiguous to those of the sellers and they used this opportunity to enlarge their farms. As the price of land locally is quite low the transaction is easy for the moneyed: a plot of land measuring 50m² could be bought for as little as 500,000 riels (\$128) in 2001. Here, the kinship relationship among the wealthy also strengthens their position: they pool their resources together to multiply their wealth. For example, some resourceful people from this village have teamed up to consolidate lands as they have affluent relatives engaged in trading in Bat Doeung, a trading centre 3 km away.

Prek Kmeng, Kandal province, is inundated for part of the year. In fact the whole area is low-lying and not much land is available for regular cultivation in the wet season. Over 400 households share the 252 hectares land in the village: up to a third of the households in the village are landless (see Table 1.1). *Prek Kmeng* is among those villages where the arable land has actually decreased compared to about 10 years ago. An estimated 40 hectares are left idle because a private pumping station on the Mekong stopped operating in 1994 after several villagers failed to pay the water fees. Another land area measuring between 60–150 hectares is not cultivable or scarcely usable now, because it has become marshy and waterlogged after a drainage canal got blocked some five years back. Population pressure is growing both due to natural increase and in-migration. Despite these facts, farming is the second most important means of livelihood here and there is no significant crisis emerging out of landlessness since fishing and fish related activities ensure a livelihood throughout the year.

In Dang Kdar, Kompong Thom province, households divided up the limited rice land between themselves in 1981. Each person was given 0.07 hectares regardless of age: thus a household with five members would have received only 0.35 hectares for regular cultivation. The notion of open landlessness, however, has been less persistent in this village (compared to villages having similar landholding patterns) for two reasons. First, people could take up swidden¹⁰ forms of cultivation in the open forest areas. Second, forestry, foraging and hunting

⁸ It was strongly articulated that expenses exceeded incomes because the products market collapsed in 2000-1 after peaking between 1996 and 1999.

⁹ There is an active tenancy market that operates to offset problems of land fragmentation and non-availability of tools, means and human power.

¹⁰ Swidden is a common technical term for shifting cultivation.

assume a more important place in the livelihood patterns rather than crop farming. In recent times however, some purchases and sales of land have been reported. Also, with a greater articulation of property rights over forests by concessionaires since the mid to late 1990s, access to land for swidden is less easy, a problem compounded by the rising population. These developments suggest that at least for land, a demand-led market penetration is taking roots in the village.

Lastly, in *Kompong Thnaot*, Kampot province, most land holdings are rather small, in the range of 0.5–0.6 hectares though a few larger holdings are in the range of three to four hectares. Landlessness has emerged due to population pressure in recent years: there has been a 35 percent population increase in the last decade, which includes returnees, in-migrants and a natural population growth. As newer families are formed, lands are subdivided to the extent they cannot be split further and this leads to landlessness. Land sales have also occurred for meeting pressing expenses or paying back loans. However like Prek Kmeng and Dang Kdar, non-farm activities — mainly sea fishing and processing — are important sources of livelihood and landlessness does not create a crisis situation in this village.

General Summary

- Although land was *formally* redistributed in a fairly equitable fashion in the late 1980s, the implementation process was not really as uniform as believed to be. Many were left out as they came to the villages later, others had problems in establishing their identities, and in some areas the state of insecurity was high.
- Land inequality and landlessness have come about for a variety of reasons. These are inadequate land distribution, demographic forces, reduction in arable land due to mismanagement, reduction in swidden cultivation, mechanisation and realisation of economies of scale (two agriculturally advanced locales have experienced land consolidation) and a squeeze in profits, particularly of the smaller operators due to unfavourable market conditions.
- There is a prevalence of land tenancy to the extent that those who are unable to use their lands for want of adequate means hire them out. This at least ensures effective land utilisation.

2.2. Land Use and Crop Food Availability

Sustainable food security in agrarian societies requires effective land use as well as distribution of gains. This section examines these aspects in the sample villages.

2.2.1. Land Use for Agriculture

In *Krasaing*, farmers practice both flood recession rice in low-lying areas cultivated in the dry season (3–3.5 tonnes, yield per hectare) and normal upland rice cultivated in the wet season (2.5–3.5 tonnes, yield per hectare). Rice grown on uplands requires more fertiliser inputs since there is no natural nutrient left behind by receding flood-waters and the crop also requires transplanting, which raises the costs. Excessive flooding in 2000 and 2001, however, has prevented farmers from cultivating low-lying lands for the last two years. Despite the fact that *Krasaing* has a surplus rice production (meaning it is a net exporter), some farmers face a rice shortage for up to three months each year because they are either landless or possess very small plots of land. Additionally, many have to sell all their produce at harvest time at low prices to pay back loans and/or to meet expenses. They buy food during the lean months. For such farmers, farming is not a profitable proposition. *Chamcar* crops (home garden, horticulture and fruit trees) are an important source of food, and are critical to maintaining the food balance during lean months. Farmers cultivate orange, banana, mango, jackfruit, papaya, guava and a variety of medicinal flora. Cash incomes earned from *chamcar* are limited, however, as most of the crop is for personal consumption or exchange and not for sale.

Chamcar land is more equitably distributed compared to rice land, which helps in strengthening the food security situation.

In *Babaong*, modern rice farming adopted since the early 1990s entails extensive application of high-yield seed varieties, fertilisers and mechanisation. With proper input application, yield rates have reached 3–4 tonnes per hectare, though unscientific application of chemical inputs has raised acidity in some plots. Recently farmers have shifted from transplant-type cultivation to other types of sowing to save on the cost of hiring labour (estimated at about 120,000 riels per hectare). With this practice, however, they obtain high yields for just two crop cycles, and then the yields drop. Many farmers therefore rotate between different farming practices to achieve optimum results. This observation suggests that productivity and profitability are not always coterminous and that farmers are aware of this. According to the village leaders, high farm-gate paddy prices (500 riels/kg) between 1997 and 1999 were of enormous help to villagers financially: at least 20 households built new houses or renovated earlier ones. The drop in farm-gate price thereafter has adversely affected the farming community; at least seven households have mortgaged all their farmlands. High costs and low revenues plague the farming community. Small farmers face a higher income squeeze since their options are limited. Despite the fact that this village is surplus in rice, about one third of the households face a rice shortage for three to six months each year due to differential — or no — access to land and an incapacity of farmers to retain their produce for the whole year. Of course *chamcar* crops help in ensuring some extra food, but its overall impact is limited.

Trapeang Prey is deficit in rice — it imports rice — and almost 60 percent of the population faces a rice shortage for at least three to five months each year.¹¹ Rice productivity has not shown any improvement in the last five years. Problems of poor quality soils (in some parcels sandy), use of traditional rice varieties, and little or no application of fertilisers has resulted in paddy yields of only 800–1,300 kg per hectare. Irregular rain and lack of irrigation facilities also keep agriculture backward. Rice is produced only for personal consumption and there is no marketable surplus. Respondents reported that, on average, a five-person household owns no more than half to one hectare of farmland, which does not permit economies of scale and it is therefore not possible to produce a surplus for the market. Only about four or five large farmers have so far reaped the benefits of modern farming. There is potential to grow cash crops, such as watermelon, sweet potatoes and some vegetables. For want of working capital and marketing outlets only a few better-off households have so far taken up this type of cultivation which earns them each about 100,000–200,000 riels per year. The number of cash crop growers is declining over time because according to the villagers, cultivating cash crops is a high input and low return activity in this village. Besides lack of water and marketing risks, free-roaming animals eating the standing crop was cited as another problem. The larger farmers are shifting to growing rice while the smaller ones try to move out of agriculture altogether.

In *Prek Kmeng*, rice cultivation is the next most important source of livelihood after fishing, although rice is only sown in about 137 hectares out of a total of 252 hectares due to the geographical location of the village. Farmers plant rice in the dry season as the water recedes: wet season rice is not possible here since the village is inundated for six months. They irrigate the crop from rivulets and lakes using diesel pumps. The land is very productive due to rich sediments left behind by the receding waters of the Mekong. Not surprisingly, rice yields range between 3–3.5 tonnes per hectare, depending on the kind of seed sown. Between 1979 and 1999 most rice farmers grew a local seed variety, which is a four-month duration crop. Since 1999, the majority of rice producers have shifted to high yielding varieties, which can be harvested in three months and yield 1 tonne more per hectare compared to the local

¹¹ More detailed data can be seen from the quantitative survey of this study. Earlier data pertaining to 1997 can be seen in Murshid (1998).

variety. Farmers hire machinery as most cannot afford to buy, and the six-month inundation does not permit the keeping of draught animals (although previously draft animals have been hired). Additionally, labour is hired from among the landless. The total expenditure per hectare for the rice crop is about 500,000 riels. At the local price of paddy, (350 riels/kg), output from one hectare can generate a gross revenue of about 1–1.4 million riels (\$250–\$350). After subtracting the costs, the net income from a hectare of agricultural land comes to about \$120–\$220. Despite the high productivity, rice production in the village is reportedly not sufficient for consumption needs because of the land and its distribution. At the village level, about 10 percent of the rice-producing households generate surplus for sale, 20 percent grow sufficient amounts for personal consumption, while the rest, 70 percent, are net rice buyers for at least two to three months each year, according to a group of knowledgeable villagers. As stated earlier, up to about a third of the households do not possess any land. For non-food crops, farmers grow reed which is exported to other provinces as well as Vietnam, though its cultivation has reduced in the past five years because paddy is more profitable. A few households grow sesame, corn and vegetables as well. The village is a net importer of rice, vegetables and meat, while it is a net exporter of fish. Due to its proximity to Phnom Penh the village has attracted a lot of development aid to the village which helps to alleviate problems related to food shortage.¹²

In Dang Kdar, farming is an important, though not the largest, source of income. Farmers nevertheless cultivate both rice and *chamcar*. Rice is regularly cultivated on 127 hectares of land owned by about 280 households. The quality of the soil is poor, yielding a maximum average of about 1.4 tonnes per hectare without much modern input. Only 30 percent of farming households are presently able to afford some chemical fertiliser, and there is virtually no controlled irrigation facility. Rice production is enough to meet only about a third of rice consumption in the village: the rest is purchased from outside. Ten farming households are reported to have bought up land from others; they produce surplus rice for sale. Another 10 households produce just sufficient rice for personal consumption; the rest buy rice from the larger farmers and traders. *Chamcar* cultivation includes growing cashew nuts and banana on lands cleared of forests. This land does not belong to the villagers: it is presently under forest concessions, but villagers' claim that it has been under swidden and/or plantation cultivation for at least 50 years. Farmers have been periodically opening up more lands in response to the sharp increase in population. Fifty households now practise swidden-farming compared to 20 in the pre-war period.¹³ The swidden farmers have no permanent rice lands. The concessionaires have tried to obstruct this expansion but have not fully succeeded. They are now reconciled to allowing a larger area for the villagers to carry out shifting agriculture in the interior of the forest, away from the village and public eyes. In swidden, the productivity is very low compared to that in permanent rice lands. The 50 households who practice shifting rice-cultivation are among the poorest in the village. Detailed inquiries revealed that for each worker, swidden cultivation yields a gross income of only about 1,000 riels per day, much less than any other unskilled activity in which the typical daily wage is 2,500 riels. Farmers still practise swidden since their primary concern is to ensure some rice in their homes.

Kompong Thnaot relies on wet-rice cultivation in addition to sea fishing. Its total rice-land stretches across 150 hectares and there are 339 households. The village does not lie in a natural disaster-prone zone, facing neither floods nor droughts. However, the average rice yield is only 800–1,200 kg per hectare because modern input application is low, land plots are rather small thereby not allowing efficient use, and there is also some salinity in some patches of land, restricting high yields in those areas. In spite of these factors, there is a small marketable surplus (from about a dozen households), though many vulnerable families face a

¹² For most years in the recent past, the village has been a recipient of food aid from NGOs during the flood season.

¹³ Any reference to war here pertains to the period (1970-92).

rice shortage for part of every year. Compared to elsewhere in the country, the price of rice does not fluctuate very much (un-husked rice is priced at 500 riels/kg), but farmers are not able to produce more rice because of supply constraints arising from the small size of farm plots. The village therefore gets extra rice supplies from neighbouring Takeo province to supplement their consumption. Most households also possess land plots within their homestead area on which they grow vegetables and fruit trees, and harvest the crop in both wet and dry seasons. Fruit and coconut trees are usually located near the house, though some are also scattered in random profusion. One green coconut fetches 200 riels so if a household has 20–25 coconut trees it might earn at least 80,000–100,000 riels per year. In contrast to the farm-gate price of 200 riels, the price in Phnom Penh is 800 riels. Normally, middlemen come to the village to buy the coconut produce. There are many palm trees in the village, though no one in the village processes palm sugar because of the high soil salinity.

The more affluent farmers in Kompong Thnaot grow peanut, sesame, watermelon, coconut, corn, and soya bean in addition to rice. In this way they protect themselves against seasonal food shortages as well as earn some extra income. The input cost to grow cash crops, peanuts for example, in a half-hectare plot is at least 100,000 riels, which includes expenses for fertiliser, seed, insecticide and irrigation. The harvest can be worth 200,000 riels. It is evident that only those who have available cash can afford to grow these crops. Some families borrow from moneylenders at a 15 percent interest rate per month; their net earnings can halve after interest payments if the crop is normal. In the event of crop disease they could lose. Only a small fraction, less than 10 percent, of the households grow cash crops, the rest prefer to fish because fishing fetches them a *daily* income at apparently lower risks.

2.2.2. Impact of Farm Mechanisation

Farm mechanisation was introduced in 1993 in Krasaing, Babaong and Prek Kmeng (for tilling land, boats and transport), Trapeang Prey (for transport) and Kompong Thnaot (for boats). Dang Kdar does not yet have mechanised equipment other than timber cutting saws. Three main types of machines are used: 1) diesel engines for pumping water, threshing, powering boats and electricity generation, 2) two-wheel tillers for pumping water, transportation, and ploughing/harrowing, and 3) tractors for ploughing, harrowing and transportation. The more affluent villagers owning large rice lands also own the machinery (Krasaing, Babaong, and Prek Kmeng). Most use the farming equipment on their own farms in addition to renting it — the price charged for ploughing one hectare is 900 baht (\$23). The same people are also intermediaries in the rice trade since they possess the means of transportation as well as the capital to buy rice and stock it during the harvest time, to release it later. In this way they earn profits from multiple sources. In contrast, small farmers hire-in machines since they cannot afford to buy them. This implies an outflow of revenue as they may borrow at high interest rates. Additionally, the costs of operations and repairs are high since locals have insufficient knowledge of mechanical engineering, there is no regular spare part supply and diesel is imported and expensive. These costs however, are often borne by the hirers since the hiring rates are fixed by the machine-owners. In this sense, mechanisation costs a lot more to the smaller farmers and because of this their profit margin is often low, nil or even negative. This is not to say that mechanisation of agriculture is *per se* harmful: instead, it is suggested that the benefits of mechanical technology are often unequally distributed between the large and small farmers, in which the latter gain less.¹⁴ Considering these difficulties it would be pertinent to ask why farmers take up mechanisation? There are two reasons suggested. First it is difficult to continue with the older technologies when newer ones are present since the newer technologies gain higher relative productivity. Second, modern market relations tend to encourage new technologies and these replace the reciprocal relations (for example labour-exchange) that are necessary for traditional methods to survive.

¹⁴ Such unequal distribution of gains has been observed elsewhere in Asia as well. See Griffen (1974); Pearse (1980); Farmer (1977).

General Summary

- Some families in every village experience rice shortages for some months. In the more backward villages it is due to low production and productivity (partly due to low quality lands) in addition to land inequality; while in others there is high land inequality and landlessness. Rice shortage at the household level originates from small land sizes, landlessness, and unfavourable input to output price ratios. At times adverse climatic conditions also affect crops.
- There is little harnessing of water for irrigation. This is a major lacuna in the modernisation process.
- The small sizes of plots are generally a deterrent to investment and productivity. Small farmers do not have the means, nor is it technically possible to effectively invest and obtain adequate returns from very small plots. As a result, productivity and profitability in very small farms is low.
- Mechanisation of land operations and commercialisation of agriculture can raise productivity and efficiency, but at the same time increase inequity as well as reduce labour use. Commercialisation can also replace reciprocal relationships and consequently raise the demand for cash. This is expensive and usury in nature since the principal source of cash will be moneylenders.

2.3. Non-agricultural Activities

As with every agrarian society, there was considerable off farm and non-farm activity in all six villages studied. In some cases these are complementary to agriculture though in others they provide supplementary incomes. These activities provide jobs to some and supplement the farm incomes of others. They also act as a cushion against crop failure and seasonal food shortages. This section describes only the principal off-farm and non-farm activities existing in the villages.

2.3.1. Fishing and Fish Processing

2.3.1.1. Fishing

In Krasaing, Babaong, Prek Kmeng and Kompong Thnaot, most households fish for personal consumption in lakes, rivers, rice fields and the sea.¹⁵ All villages except Kompong Thnaot, which is located on the sea, faced severe restrictions to access until late 1990 due to the concession system. The easing of the concession system has resulted in an increased income of villagers (and consumption), and consequently a reduction in conflict. Apart from catching fish, people collect snails, fresh water shellfish and other plant and animal water-borne edibles. The poorer families and households, having either no male workers or very few, gather these and a female-headed household can earn about 3,000–5,000 riels daily, (though a male-headed household could earn 5,000–10,000 riels per day for the same activities). There were three common problems faced everywhere and these were: 1) the use of non eco-friendly methods of fishing which is reducing the stock, 2) increasing numbers competing for the same stock and 3), a lack of modern gear with some, especially the small operators.

Commercial fishers in Krasaing usually spend two or three nights out at a time, to catch about 15–20 kg of fish, frogs, snakes/eels and birds during the fishing season.¹⁶ Eels, snakes, and frogs are dried and salted, or kept alive to ship to Thailand for sale. The quest to sell the produce for cash, to meet debt obligations and household expenses, is so high that some

¹⁵ There are no substantial water bodies in Dang Kdar and Trapaing Prei.

¹⁶ The number of outings depend upon availability of human power and equipment.

among the poorer sections complained of protein shortage — even in the peak fishing season — due to substitution of consumption by export. Over the last few years, there has also been a sharp decline in fish availability because many people have begun to use non eco-friendly equipment. The fall in fish availability has to an extent dampened the positive effects of freeing the concessions. Last, it needs to be mentioned that two households control all the export in the village.

Fishers in Babaong earn around 20,000 riels per day during the peak season which is between December and February. During the dry season people catch crabs and snails in rice fields. Those with boats, particularly mechanised boats, can fish better. About a dozen households can be labelled as commercial fisherpersons, implying that they have larger incomes from fishing than other households. Between December and February they can net up to 20–25 kg per night (about 50,000 riels). Not all earn as much as the majority of the villagers are middle and small operators. A group of anglers maintain that they need equipment as well as market experience to take full advantage of the opening up of fishing lots.

In Prek Kmeng, a fisher could earn an average of between 5,000–20,000 riels per day, in addition to the allocation of fish for personal consumption. Many fishers do not sell all their fish catch but use part of it as feed for the bigger fish that they raise in cages. In a full year a household could earn between 1–2 million riels by selling fish. To earn this amount however, they have to spend 400,000–800,000 riels on fishing nets imported from Thailand. Even in Prek Kmeng however, a reduction in the fish caught has been reported. Both over-fishing and use of non eco-friendly methods of fishing have been blamed for this.

In Kompong Thnaot over half the households commercially fish the sea all year round. Almost every fisher owns either a rowing boat or a small mechanised boat. People who own rowing boats fish near the shore where the water is about 0.8–1 m deep, because of the risk of storms. Ownership or access to mechanised equipment clearly differentiates people's access to the marine produce. All fishers are men; normally a father and son form a team. Women stay home to process fish and crabmeat for the market. The gender division of labour in fishing operations is therefore evident. Villagers allocate the small fish and crab for family consumption and sell the bigger ones in the market. The average net income from fishing — after deducting the expenses on fishing gear which is in the range 50,000–70,000 riels annually — could be between 3,500–5,000 riels per day. The village folk complain that production has dramatically declined in the last four to five years due to over-fishing. With many persons from elsewhere fishing in the area, the mangrove flood forest has also become degraded. This supply inelasticity keeps fishers' incomes low despite a fledgling market.

As found earlier, those who possess mechanised boats and gear are able to get a better catch. Also, former fishing lot concessionaires (who continue to be active in the fishing business and were also interviewed in this inquiry) as well as local authorities, maintain that there is use of illegal equipment in most locales including the use of very small-hole nets or car batteries for catching fish. These practices prevail because law enforcement is weak. Villagers, including village and commune chiefs know who carry out these acts but do not prevent them for fear of retaliation.¹⁷ With 57 percent of the fishing area now released to the public, at least in Prek Kmeng, illegal fishing activities have increased. To check this requires collective pressure and strong governance; both an urgent requirement. The government's policy of establishing community management of the water bodies has been slow due to the lack of human, organisational and financial resources. A consequent decrease in fish stock may worsen people's livelihood in the not too distant future.

¹⁷ The most feared retaliatory measure is the poisoning of caged fish, which can financially ruin the owners.

Since the 1980s, population growth has increased the competition to net more fish though the stock is the same. This by itself is a huge constraining factor in raising the standards of living of people.

2.3.1.2. Fish Raising in Cages

Villagers from Prek Kmeng raise snakefish in cages in an all-season rivulet flowing through the village. Until a few years previously, fingerlings were caught from the local waters, but now they are brought in from Kompong Chhnang as more and more households have taken up the business.¹⁸ It takes about eight to ten months (between June/July to March/April) for the fish to reach the optimum size when they are ready for sale to traders. In Prek Kmeng people began to raise cage fish in 1990. By 1997, about 25 percent of households took it up as an additional activity; in 2001, 85 percent of households were raising fish in cages. Every June, each fish raiser needs around 500,000 riels to buy fingerlings for which about 90 percent of farmers raise loans. The common practice is to borrow four *Chis* of gold (about 500,000 riels) from a private moneylender in a nearby village. After selling the fish the following April (10 months later), they have to pay back six *Chis* — the interest works out to about 5 percent per month. In the early 1990s, one kg of snakefish was worth 2,000 riels; in the late 1990s, it was 2,500 riels and between 1999 and 2001, it rose to 3,000 riels. The price increase however, has not kept up with the devaluation of the riel, which is a cause of discontent, particularly as fishing nets are imported. In 2001, a household with about 3,000 fish to sell could gross about 5 million riels. After subtracting half a million riels spent on the fingerlings, 0.3 million on interest and about 1 million riels on other purchased inputs, a net annual income of 3 million riels could be obtained, despite a survival rate of only about 60 percent. The business is profitable (20 percent return on gross sales), though the anglers still borrow for working capital from moneylenders. Regular availability of fish-feed at a reasonable price was also stated as an anxiety. As a result of this, people work very hard and at times resort to illegal practices. This is an issue that will need addressing.

2.3.1.3. Fish Processing

Villagers in Prek Kmeng also process fish: up to 85 percent of the households buy small fish in the peak season (January-February) and smoke them. This is a profitable business — a household can earn about 300,000 riels with an investment of 25 household days (60–70 person-days). Smoked fish is marketed in other provinces as well as exported to Vietnam. Since the late 1990s the availability of small fish has reduced, which some believe is caused by the extraordinarily high water levels. Many fish processors have begun to buy the stock from other villages.

2.3.2. Forest Produce and Foraging

As some people from every village collect weeds, firewood and edibles, a reduction in the access to commons, both due to privatisation and natural degradation has created general discomfort. In some cases disposable incomes have fallen as well. Nonetheless, these collections continue to provide food supplements as well as save on costs. Persons from female-headed households, landless households and children, provide the main human resource to carry out the foraging activities in most of the villages. In some locales these products are marketed as well (in Krasaing, Babaong and Kompong Thnaot) and one person can fetch up to 1,500–2,000 riels per day.

In Dang Kdar, the largest source of income for the villages is timber harvesting. Villagers benefited considerably from anarchic logging between 1991–94 when the demand suddenly increased following the opening up of the economy and when forests were under no

¹⁸ While fish raising in cages was found only in Prek Kmeng in this sample, it is quite common in those villages that are on, or very near to the banks of Tonle Sap and Mekong.

real control. In 1992, 13 sawmills were set up and workers were employed to cut trees by the sawmill owners at 3,000–4,000 riels per cubic metre of log — more than a day's work. Since 1998 and the end of the fighting with the Khmer Rouge, there has been a stronger control exercised by the concessionaires and stricter implementation of laws. Consequently private logging has reduced and the sawmills were down to two by 2001. Technically although private logging is illegal, since the trees are not village property (they belong to the concession companies) the activity covertly thrives. Timber harvesting now entails a group of three to four workers undertaking a week's 'block job' about twice a month. This includes identifying a tree, felling it, clearing a path to it and transporting it to either the village or a nearby area for sale. The profit is 20,000–30,000 riels per job. The villagers however, face a risk of being caught by the company patrol in which case they must pay heavy fines. Only a third of the total households are presently able to carry out these 'illegal' activities since the investment includes at least a pair of big water buffaloes which cost \$500, and \$250 for a cart that can carry logs 3–7 m long.¹⁹

About a tenth of the households in Dang Kdar claim to possess resin-producing trees. Villagers stated that they have 'owned' these trees for generations. Each of these households previously possessed between 300–700 trees, up to 20–30 km away from the village. This was before 1995 when the concession companies came in. At present, fewer households own trees, and each owns no more than about 50. A clause in the forestry law which prevents the resin trees from being cut has saved many resin trees. On their part, villagers have agreed to accept 4,000–10,000 riels from the companies for each resin tree since they fear that the trees would be cut anyway. Currently, a tree could provide resin worth about 20,000 riels per year. Since people have fewer resin trees now, they rely on collecting other forest by-products and/or resort to illegal logging.

In forest villages, rattan collecting was previously quite common although it has now reduced. In Dang Kdar, groups of four to five families travel deep into the forest for five to ten days and over each trip a family collects enough rattan to earn between 20,000–50,000 riels. Villagers believe that this resource remains plentiful but the price is very low and too many people share the benefit in the trade chain. A quarter of the households also engage in hunting and gathering roots and fruits from the forest. Groups of three to five men travel deep into the forest to trap deer, snakes, turtles, and other animals. Villagers could also find other seasonal food supplements in the forest: wild potatoes, fruits, insects and spiders. Some of these are sold in nearby markets (25 km away). Trappers could earn as much as 15,000 riels per day. According to those interviewed, the number of wild animals has declined considerably though the number of people looking for them has increased. Additionally, hunters now find it increasingly difficult to evade the law enforcement machinery with regard to hunting wildlife.

In poorly endowed villages like Trapeang Prey and excessively degraded ones like Babaong and Kompong Thnaot, the decline of firewood has created visible problems. Up to 30–40 percent of the households in Trapeang Prey buy firewood. A few who own ox-carts travel for two to three days to fetch firewood and sell it in the village at 10,000 riels per cart. Only a few influential households are able to access firewood from the otherwise out-of-bounds forest area. Even in the collection of firewood therefore, an unequal right to use can be seen. The poor rely heavily on collecting palm leaves and branches around the village; otherwise they buy firewood. This has added to their cost of living. In Babaong and Kompong Thnaot, villagers have begun to uproot privately controlled inundated trees for a price. The groups interviewed predict that all trees and roots will be exhausted in the next three to four years.

¹⁹ Villagers do not incur these financial costs as they raise the animals and construct the carts themselves.

2.3.3. Raising Livestock

People in all the villages keep domestic animals and birds: cattle, pigs, ducks and poultry for example; some for meat production and some for draught power. The number of cattle, particularly draught animals, has declined in villages where mechanisation has set in (Krasaing, Babaong and Prek Kmeng), but poultry and pigs are plentiful. Prek Kmeng has a lower number of animals anyway because the village is inundated for almost half the year. The reduction in cattle in some locales (Babaong, for example) is also allegedly responsible for the increased uncertainties of smaller farmers, who could sell their animals in times of crisis. There appears to be a positive association between higher farm productivity and the size of livestock: the per capita livestock is higher in Krasaing and Babaong compared to that in Trapeang Prey and Dang Kdar.²⁰ This suggests that crop activity and livestock activity are complementary to each other. Almost nowhere was livestock activity found to provide full time work: this activity is part time and mainly undertaken by women and children. Farmers in Krasaing, Babaong, Prek Kmeng and Kompong Thnaot trade animals for meat; elsewhere they use them for personal consumption and some barter. Problems that affect the economics of animal husbandry and poultry are prices of meat at the farm-gate, prices of animal feed at the farm-gate, animal disease and death of live stock, and at least in one locale, theft (Krasaing).

2.3.4. Other Activities

2.3.4.1. Palm Sugar Making

An earlier study conducted in Trapeang Prey shows that besides rice cultivation, villagers relied a great deal on incomes from palm sugar processing. There were 27 households making palm sugar in 1997 (McAndrews 1998). At present due to the disappearance of firewood only seven households process palm sugar. Although the cost of firewood is now twice as high, the price of palm sugar has only increased from 550–750 riels per kg, over the last five years. A group of palm sugar makers stated that during the last palm sugar processing season, i.e. November–April 2000/2001, they spent an average 250,000 riels, just to buy firewood. They spent only around 130,000 riels for the same amount of firewood in the mid-1990s. It is not uncommon that people buy old palm trees to be used as fuel and construction material (one palm tree costs 50,000 riels).

2.3.4.2. Salt Farming

In Kompong Thnaot, the total salt farm area is 159 hectare divided among eight owners who are also the wealthiest people in the village. In 1989 when the market system was reintroduced, salt farms were privatised. Some, including former government officials who had the skills in this work — which they acquired when the salt lands were state-owned and they were the officials-in-charge — and who also had the resources, acquired the salt lands. Each saltpan is about 50m² and enclosed by an earthen boundary. Water is mechanically pumped into the saltpan and salt is recovered after the sunlight and heat evaporates the water. At least two or three skilled workers permanently work on each farm, at a salary ranging from 180,000–200,000 riels per month. During the harvest season (November–April), each salt farm additionally employs at least 15 workers, mostly women, to collect and move salt into warehouses adjacent to the salt farms. Although the workers are employed on piece-rate, the average wage works out to 3,500 riels per day. Fifteen hectares of land, on average, provide about 700 tonnes of salt annually. At present, one sack of salt — about 70 kg — fetches about 12,000 riels. According to the salt farm owners, the price of salt has been low for the last three years because the government has allowed imports of salt from China and Vietnam. This adversely affects Cambodian salt producers' profits

²⁰ See Chan (2002) for numbers.

General Summary

- Most villagers take up diverse off-farm activities, in fishing, gathering, hunting and foraging. These activities provide full time jobs to many and important job supplements to some, and helps strengthen household food security. Many of these activities engage women in critical roles. Unscientific exploitation of natural resources, however, is posing a strain in most areas.
- There is a positive, if limited, association between farm and non-farm activity. This interdependence suggests that farm and non-farm work is often complementary.
- Non-farm rural activities are as yet largely limited to exploiting natural resources. More value-adding activities like food processing (perhaps other than making smoked fish in one village), particularly those activities in which human capital assumes primacy, are yet to emerge. Technologies applied in existing jobs are too rudimentary. This is a constraining factor.
- Workers with more equipment, working capital, or influence are better placed to earn incomes than those who do not. The workers without resources merely earn subsistence incomes.

2.4. Structure of Markets

It needs to be stated at the outset that rural Cambodian markets suddenly opened up to international competition in the 1990s and there is now a virtual free-flow of goods and services from across the borders. This is despite tariff regulations being in place. Agricultural product prices, including those of rice, are influenced by the prevailing prices internationally, (i.e. prices prevailing in Thailand and Vietnam, depending upon where the village or market is located). There are a few traders who control the market — they control both commodity off-take and prices — who maximise their profits by buying products cheaply at harvest time and offloading them year-round. As for money markets, traders and local landlords control them as a form of monopoly. The cost of money is therefore very high. Institutional credit is scarcely available and in any case it is not cheap. This section provides examples of market imperfections that may affect livelihoods and food security.

2.4.1. Product, Commodity and Input Markets

A few examples, drawn from the village studies, are reproduced below to provide an illustration of the existing markets:

1. In Krasaing, the price of rice drops to 3.5 baht per kg during harvest time and rises to 4.1 baht during the rainy season. Most farmers get low prices for their produce, though traders and millers get high prices when they market the farmers' produce. Households sowing dry-season rice also complained about high prices of diesel, fertiliser and pesticide, in contrast to the prices of rice. There are just a handful of traders (who control the local market) who have connections through kinship relationships in the Tmor Kol Market, a large market in the vicinity.
2. In Babaong, prices of rice were 500 riels per kg between 1996–99, but this fell to 240 riels in 2000 and 2001. Considering the fact that the riel also depreciated during this period by 25–30 percent, the setback to farmers has been greater than the halving of prices indicates. It is believed that up to 40 farmers have become landless as a result of the crash in farm-gate prices in the last two years and seven

more may follow suit. Five traders — who have access to the Neak Leaug Market — largely control the local market.²¹

3. In Kompong Thnaot, a coconut fetches a farm-gate price of 200 riels per piece, though the prevailing price in Phnom Penh is 800 riels. Traders, transporters and others in the trade chain take the margin.
4. In Krasaing just two traders control the fish and other product markets for aquatic animals, creating a form of monopoly — they also control much of the trade in these products with Thailand.
5. Farmers who sell cage-snakefish in Prek Kmeng were dissatisfied about the price of their product not keeping pace with devaluation of the riel in the recent years. Since fishing nets have to be imported from Thailand, the relative price of their product *vis-à-vis* their input is adverse.
6. Salt manufacturers in Kompong Thnaot complain that prices of salt have stagnated since cheap imports from Vietnam and China have been permitted.
7. A few traders from Kampot town control most of the marine products harvested in Kompong Thnaot village.

All these examples suggest that farmers, particularly small farmers, face low prices as well as high fluctuations in the prices of their products. In some products the prices are internationally determined, translated through local traders. At the same time input prices are non-negotiable, since fertilisers and petrol/diesel are imported, suppliers fix tractor-hiring costs, and so on. In the process the middle-persons and traders gain considerably.

A point about the nature of market control needs to be stated. In the earlier sections it was mentioned that many land plots have changed hands and a few individuals control relatively large chunks of land. In many cases the big landowners are also the traders, transporters and controllers of markets (Krasaing, Babaong, Trapeang Prey). It is not uncommon that the incidence of low prices or price fluctuations in the larger markets is passed on from the big landowners to smaller operators and the landless through low procurement prices and subsistence wages.

2.4.2. Money Markets

Given the cyclical nature of farm activity, money is periodically required in any agrarian setting. People need cash for buying agricultural (and other) inputs (e.g. fishing gear), expenditure for food and rituals, purchasing assets, tiding over cyclical crises, travel (for migration or personal purposes), or even for servicing past debts.

Villagers in Krasaing stated that they are compelled to borrow from relatives, sell assets such as land and animals, and borrow from moneylenders when faced with financial shortfalls or natural disasters. Although smaller amounts could be borrowed from within the village, for larger amounts farmers have to go to Tmor Kol market. Here is where kinship and kindred come into play: if the borrowers have family or good relations with the lenders, the interest rate might only be 5 percent per month and the loan is made available without collateral. Poorer households may not have that network and must pay higher interest rates of 10–15 percent per month in addition to collateral. Many of them lose their collateral because

²¹ The richest of these five maintains that he does not set prices: traders from Vietnam set the prices while he merely earns a fixed percentage. Of late, Vietnamese traders scarcely come since large bribes are demanded at checkpoints. This has led to depression in prices. This example shows how prices are controlled from across the border.

of late payments or inability to pay.²² High interest rates generally increase the debt burden of borrowers, who repay the loan from revenues obtained from rice sale. This gets them into a cycle of food shortage. Additionally, there are no written records of borrowing or the collateral used; all agreements are verbal, and this is a cause of conflicts as well. There are six moneylending households in Krasaing, most of whom are big landowners. In Babaong, up to 70 percent of the farming households are reported to regularly need loans and most lean on moneylenders for the supply. They borrow to hire agricultural machinery and buy other farm inputs, to be paid back at harvest time. Monthly interest rates could be as high as 20–30 percent. For those who cannot offer collateral, their labour is pledged. Villagers in Trapeang Prey borrow from Bat Doeung Market (about 3 km distance) at interest rates of 10–20 percent per month. A similar picture was painted in Kompong Thnaot, where relatives of rich farmers who have settled in Kampot town are the principal moneylenders, and offer loans at a monthly interest rate of 10–15 percent to anglers and farmers alike.²³

As mentioned earlier, people borrow for food as well. To ease the situation in some villages rice banks have been created. Although the idea of rice banks is appealing, the interest rate on rice borrowed is not small, making the loan not so egalitarian. Rice loans though, are not subject to price fluctuations and the amount borrowed cannot be diverted for other purposes; hence it ensures better food security. In this sample rice banks are functional in Dang Kdar and Kompong Thnaot villages.

Institutional credit schemes in the form of extension of micro credit have been promoted in all six villages. Either ACELEDA loans, UNICEF created schemes, GRET promoted credit groups, GTZ financed rice banks, or World Vision supported programmes were found across the villages. There are several issues that were put forward regarding limitations of institutional credit. Principally, the rates of interest are not necessarily low — they were mostly in the range of 4–5 percent monthly.²⁴ The reason quoted by some NGO workers, was the high transaction cost; but explanations are not helpful to the farmers. Additionally, the excessive formality for obtaining credit, rigid timings of payment, small outreach and limited funds of the agencies, differential access and unsettled tenure rights, were some other impediments to an effective utilisation of formal credit.

General Summary

- Farmers are ‘price takers’ for their products as well as farm inputs. There is no perfect competition and external forces and traders largely control prices, as well as the demand and supply of different commodities. Farmers do not necessarily gain from plugging into the larger markets under these conditions. The ‘price gap’ illustrated by this survey is significant, and part of this is the traders’ gain.
- The most common means of procuring loans is through moneylenders, who charge rather high interest rates in absolute terms. This again reduces the income margins of the farmers.
- In many cases the larger farmers are traders and moneylenders as well; if not directly, then through extended family networks. This ‘intertwined monopoly’ ensures the control of a few over a large portion of the local resources.

²² A moneylender says, “Most borrowers ask for cash to migrate for working in Thailand. I can earn at least 1,000 baht a month from lending out money to them.” This and similar statements offer credence to the belief that the private money-lending market is flourishing.

²³ Small amounts of food and rice seed, though, could be borrowed from relatives and neighbours without interest, but only for very short periods.

²⁴ The high cost of micro credit from institutional sources has been a concern raised in the Senate as well. See, Phnom Penh Post, Vol. 11, No 10, May 10-23, 2002, page 4.

- Institutional credit sources are few, their resource base and coverage are limited, the procedure to obtain credit from them is lengthy, and their interest rates are not inexpensive. All these factors make them unattractive.

2.5. Population, Migration and Labour Markets

This section highlights the different survival strategies — as seen from the sample villages — that people adopt in the face of rising population and agrarian change.

The population is rising in every locale. Although the absolute population in Cambodia is not large, the present pattern of resource use — swidden methods of land use in some areas, low input/low productivity agriculture in most locales, insufficient off-farm occupations, to name a few — on the one hand and the demographic dependency structure²⁵ on the other, make livelihoods difficult for many households. Krasaing, Babaong and Kompong Thnaot received small numbers of returnees in the early 1990s, while general in-migration for settlement over long periods of time was reported only in Prek Kmeng and Dang Kdar. Population growth rate in the last decade has been in the range of 2–2.5 percent.²⁶

Many workers hire-out their labour locally, in neighbouring or far away villages and towns, and some migrate abroad for wage work (other than in Dang Kdar). In fact migration for work is emerging to be an important survival strategy for the poor. Of course the labour allocation pattern in locales is different according to the capacity of each activity to create jobs and the asset holding pattern. Details of this are given in the report presenting the findings of the quantitative data, published separately.

2.5.1. Migration

The landless and small farmers in Krasaing travel extensively to Thailand to seek work between the sowing and harvesting of wet season rice, the period when the local demand for labour is low and consequently many people face food shortages. Most of those who migrate are able-bodied men and women, who take up unskilled and semi-skilled work along the Thai border as well as deeper into Thailand. Those who do not possess rice lands migrate for longer periods. The average wage prevalent there is 80–100 baht (about \$2–\$2.5) per day, a wage much higher than the local wages.²⁷ The landless migrate locally as well, for work as daily wagers, traders and transport workers, in the vicinity of the village. A wage of 50–60 baht a day plus one meal (a total package of about 7,000 riels) is again considered reasonable in the local environment.

In both Babaong and Trapeang Prey, many workers from the landless and small plot-holding households, hire out their labour in neighbouring districts during the wet season. In 2001, some workers in both areas pledged labour in advance, for a price. An average daily wage of 5,000–6,000 riels was reported for work in construction and masonry. Out-migration is increasing in both these villages, in turn making an important contribution to household food security. Both male and female youths now travel longer distances rather than migrate to neighbouring districts as in the pre-mid 1990s. Also, unlike migration patterns in 1996 and 1997, men and women out-migrate in near equal numbers.²⁸ Young girls in both these villages

²⁵ The reference to demographic structure finds meaning here since there are too many dependents compared to earning members, a phenomenon originated from the high fertility rate of the 1980s and 1990s.

²⁶ See Appendix and earlier studies on three of these six villages for numbers (Murshid 1998).

²⁷ Some complained that at times deals in Thailand are not fair. For example, Soeun, 28, who returned from Thailand a month ago (end-2001), had gone to work on the other side of the border. He was promised 100 baht per day, but after seven months, the owner paid him only for four months. Many borrow large amounts to meet the informal costs of travelling to Thailand though not all reap the benefits.

²⁸ Data for 1996 and 1997 can be seen in McAndrew (1998).

are reported to have moved out to work in garment factories or as waitresses in restaurants in urban areas. However, only the better off among the poor can access jobs like those in the garment factories (where the pay is \$45–\$60 a month). The very poor still migrate within the neighbourhood, as they cannot afford the costs associated with long-range migration. All this suggests that local job availability has fallen while the demand for remunerative and cash-generating jobs has risen.

Interestingly at the same time, at least in Babaong (and to a limited extent in Krasaing) receding rice (dry season crop) increases the demand for hired labour during the harvest between January and April. In Babaong this attracts about 400–500 seasonal *in-migrants* from neighbouring districts. Prek Kmeng also receives in-migrants attracted by its fish resources. Dang Kdar has received in-migrants for a long time, lured by its timber resources.

2.5.2. Hiring out Labour Within the Village

In areas where modern methods of agriculture have found roots, hired labour is gradually replacing labour reciprocity between households. For example, labour exchange practices in transplanting, harvesting and threshing have given way to wage-based relations. Some also take up wage work on earthmoving.²⁹ In areas of backward agriculture, small farmers and the landless that do not migrate out, work for the large farmers as casual labourers. Since the timing for transplanting is very critical, contracting labour for a wage is increasingly becoming popular in Krasaing and Babaong. The emergence of wage labour is partly a result of farm mechanisation and partly the introduction of markets.

The wage rate everywhere is low and it barely permits subsistence. In 2001, the piece-rate for transplanting seedlings in Krasaing was 1,500–2,000 riels (for 40 bunches) plus one midday meal. This amounted to about half a days work or perhaps a little more. For ploughing it was 5,000 riels for half a day, paid at time-rate. Work could be paid in cash, kind or in very limited cases, reciprocated. In Babaong the daily wage was 2,500–3,000 riels and two meals, for transplanting rice seedlings and about 4,000 riels a day for harvest-time activities.³⁰ The average piece-rate for earthworks in Trapeang Prey, was 3,000 riels for moving a cubic metre of earth, which amounted to an average 4,000–6,000 riels per day. In Kompong Thnaot the rise in the number of landless families has partly been responsible for the breakdown of the exchange labour system.³¹ Many female-headed households earn daily wages by gathering salt (Kompong Thnaot), digging drainage trenches, transplanting, harvesting, earthmoving, and so forth. By working as a wage labourer in a salt farm, one can earn 3,500 riels per day normally, and 7,000 riels per day at the peak harvest time. Although the harvest is only at its peak for one month in the year.

General Summary

- In at least three villages, both migration and wage work are increasing as local jobs become more difficult to get for a growing labour force, and wages are at subsistence. Interestingly, migration is high in at least one village (Krasaing) that has experienced agricultural modernisation. This implies that while modernisation has ushered in market relations, it has not necessarily promoted a better distribution of gains. Wages for work in Thailand, through cross-border migration from

²⁹ Since the demand for labour under farm mechanisation is less, there is a reduction in the total number of jobs. Hence some farmers take up work on earthmoving.

³⁰ In contrast, a tractor owner could earn 100,000 riels for ploughing or harrowing one hectare of land, owners of a pumping machine could earn 2,500–3,000 riels *per litre of fuel* for renting the equipment, and the owner of a rice-threshing machine can earn one sack per 30 sacks of threshed paddy.

³¹ It is important to remember that reciprocation is possible only when the farmers have lands: they can then share each other's labour to optimise human resources.

Krasaing, are twice compared to those prevailing locally though the travelling is not always easy as cross-border migration has its own hazards.

- Migration within the country fetches higher wages in semi-skilled, non-agricultural activities — garment factories and masonry for example — while earnings are lower in low-skilled work like earthmoving. In agriculture, wages are merely subsistence level, although the timing of the work, such as at harvest time may command some premium.
- The practice of wage-paid labour is rapidly replacing exchange labour. Agricultural modernisation, market penetration, population increase and land atomisation are all contributing to the rise in wage labour. Despite the fact that wages are at subsistence, people still tend to take up hired labour jobs since this increases the number of working days in a year in what is a largely mono-crop economy.

Chapter Three

A Synthesis from Field Observations

The principal issues emerging from some key findings in the field studies, presented above, are now summarised under the following subheadings:

3.1. Demographic Issues

There has been a visible population increase in recent years compared to the decades prior to the 1980s. This has resulted in existing resources becoming increasingly inadequate to meet the livelihood demands in the present organisation of resources, technology and knowledge. Additionally, it is not only the increase in population *per se*; it is the population pyramid (a large number of children compared to earning members), which adversely affects household food security because of low *per capita* earnings. Additionally, due to the excessive deaths of men (through war etc.) the gender imbalance has resulted in a large number of female-headed households, which are presently ill endowed with the means of cultivation. This also jeopardises household food security.

3.2. Ecological Strain and Degradation of Natural Resources

The quality of the natural environment is depleting — water, fish, mangroves and forests all face an increased strain — as more is demanded from them without a compensatory replenishment, making livelihood both more difficult and less sustainable. This is happening because of low supply elasticity (due to little technological change), inadequate management of natural resources, and use of unscientific practices. Even in a short period of a decade or so the adverse impact is being felt. Although the village communities are not responsible for all the degradation — in fact much of the demand emerges from outside of the agrarian society — they nevertheless face the consequences.

3.3. Emerging Land Inequality and Landlessness

Inequality in land distribution and landlessness has emerged for several reasons. These are a sudden increase in demand for land from multiple sources (for more than just subsistence agriculture), market exposure, the introduction of a cash oriented economy, and an increase in the population. A few have been able to amass large chunks of land though others have not necessarily gained. Additionally, the dynamics of agricultural and non-agricultural activities are such that large quantities of cash are needed for working capital. If farmers do not possess these monies, they have to borrow, often from moneylenders. If the debt is not serviced on time, part or all of their land and assets could be lost. There are reports of land having changed hands this way from the small and low-resource farmers to the large and resourceful ones, again causing land and asset inequalities. In turn this creates problems of food insecurity for the small farmer. The resourceful also consolidate their position through kinship networks — they share each other's resources to multiply their wealth.

3.4. Land Atomisation

In many locations individual land plots are sub-divided to the extent that they are economically and technologically non-viable. It is neither possible to make realistic investments on them, nor is it feasible to bring these lands under intensive cultivation with application of modern inputs. Households which till very small plots of land are therefore handicapped on account of both inadequate land and low yields.

The argument against very small plots can be extended to non-farm operations as well. For example, smaller fishers are presently not able to exploit the opportunities that a market provides, whether they are for inputs or product markets. They are also not able to use modern methods to optimise their yields.

3.5. Farm Mechanisation and Distribution of Gains

There has been some selective mechanisation of agricultural as well as off-farm activities. For example, mechanisation is replacing draught animal power to differing degrees almost everywhere (perhaps other than in Kompong Thom); similarly mechanised boats have been introduced for fishing. Since machines are large and expensive, it is inevitably the large farmers who own them. This process has therefore benefited individual farmers who hold land plots of certain sizes. Similarly, the mechanised boat owners have gained more than those who have no mechanised equipment. Although the overall productivity of the system has risen, small farmers have not necessarily gained as much since they cannot readily pay cash to hire machines and must resort to borrowing at unrealistically high interest rates in addition to mortgaging their assets. The costs of machine hire are high. This is partly determined by the prices of machines reigning in the neighbouring countries (from where they are imported), partly by the costs of operation and partly due to the high premiums fixed by the suppliers; all of which jeopardise the economics of small farm management.

3.6. Agricultural Modernisation

There is some application of modern inputs in agriculture in many locales: varieties of high-yield seeds are sown, fertilisers and pesticides are applied, and so on. The output in many cases (e.g. Krasaing and Babaong) has risen to 3–3.5 tonnes per hectare. However, because controlled irrigation is less than adequate, both cropping intensity is low and the productivity levels are not as high as the potential 4–4.5 tonnes per hectare.

All modern inputs are imported at prices externally determined, though output prices are low and fluctuate seasonally. In many cases output prices are dictated by cheap imports from neighbouring countries since the borders are virtually open. In this regard, the terms of trade between the agricultural products on the one hand, and modern inputs and other mill-made products — machines, fertilisers, pesticides — on the other, are not always in favour of the farm sector.³² Hence, in the present milieu, the gains from modern technology and higher productivity are not necessarily accrued to the farmers.

3.7. Market Imperfections and Control

While adverse terms of trade affect the farm sector as a whole, the more resourceful farmers and operators possess the means to pass on this incidence to the smaller ones. For this, mechanisms such as low wages, high interest rates and high capital costs (e.g. for hiring equipment) are extensively deployed. Additionally, many larger farmers are those who locally control the input and product markets as well, and in many cases are also the moneylenders.

³² While there are as such no studies to make a judgement on the terms of trade, some related studies like those by Sik Boreak (see Sok, Chea and Sik 2001), and price data collected by CDRI since 1997, stand witness to the slower and halting movements in Cambodian food prices compared to steady increases in non-food prices.

This market imperfection, controlled extensively by middle-persons does not augur well for the interests of all. In many cases market imperfections are also perpetuated by poor infrastructure and lack of information.

Since there are few and insufficient institutional mechanisms to hedge against price fluctuations (easy bank loans, price support, etc.), small farmers face perpetual indebtedness to moneylenders. Transport costs are also very high, information on markets and prices is low, and protection against products perishing is minimal, all of which negate the advantages of markets to the poor, while encouraging monoposony to flourish. There have been efforts to bring in institutional credit but these are sporadic and less than successful.

3.8. Employment Options and Earnings

The numbers of farm jobs are reducing while the numbers of non-farm jobs are not rising fast enough. The emerging gap between the demand for work and its supply — mainly owing to farm mechanisation, vanishing commons, opening up of borders for cheap imports and rapid growth in the labour force — contributes to anxiety over cash availability and food security for the poor.

As adaptive strategies, people have increasingly begun to take up wage labour while at the same time periodically migrating to cities, other rural locations, and even across country boundaries to look for work. Limited options of occupational diversification and low earnings, even through migration are a cause for concern. Wages of unskilled work seldom exceed 3500–4000 riels a day anywhere in the country. Even in Thailand they are in the range 80–100 baht a day (about \$2, though the net wage may be lower).

Additionally it is important to note that in the context of wages and earnings, daily wages are more or less similar in all locales irrespective of the relative prosperity of the area. The main difference between a prosperous and backward area is the number of days for which jobs could be available. The functioning of the labour market, population dynamics, migration, local monopoly situations and poor quality human capital appear to be responsible for keeping wages low.

Chapter Four

Policy Options

There are abundant policy statements emerging from government departments, international aid agencies and NGOs about policies and approaches to agriculture, rural development and poverty alleviation in Cambodia (Brown and Timberman 1998; RGC 2002a; RGC 2002b). Many policies are being pursued on land reforms, agricultural modernisation, forestry and fishery reforms, promotion of micro credit, and attempts to harness water for irrigation. To some extent, each of these has helped in improving agriculture and allied activities, and in turn helped raise people's living standards. However, many of these attempts have been towards finding *micro-management type* solutions. The problems in Cambodia require *systemic solutions* in addition to micro-management type approaches.³³ For example, a systemic solution to the land issue would also address issues in food security as well as natural resources management, while a solution in micro-management would not necessarily do so.

The policy options now suggested are in the spirit of 'broad based policy prescriptions', though their purview is limited to the findings that directly emerged from case studies. At best they could be seen as complementary to the existing policy proposals being implemented in the country.

4.1. Agricultural Modernisation

First, there is need for massive modernisation and diversification of agriculture, in addition to land, product and factor market reforms. The principal purpose is to remove the implicit and explicit inadequacies that the farm sector faces *vis-à-vis* the larger economic system. Such an approach may entail large-scale harnessing of water to sustain up to two or three diverse crops a year. As has been demonstrated in Taiwan, the Philippines and Java among others, it is still possible to productively employ between 200–250 person-days per hectare of cultivated land for a carefully irrigated crop in this agro-climatic zone. Presently Cambodian agriculture absorbs much less than this number of person-days, and less productively. A study of detailed historical accounts of the successes of Asian agriculture can be a useful starting point (Ishikawa 1967; Ishikawa 1981; Hayami and Kikuchi 1984).

Can the small farmers gain from such an effort? International experience shows that small farmers, other conditions being equal, have been more efficient than the larger ones in

³³ There is a huge volume of literature on the solution of systemic problems. The classical thesis of Paul Rosenstein Rodan, written in 1943, stating that there is a "big push" necessary for low-income countries to break away from their past, is a good starting point. Gunnar Myrdal (1968) later elaborated upon a somewhat similar, and much more elaborate thought encompassing economics as well as non-economic factors in the Asian context. He also suggested approaches that required radical departures from the present. In terms of productive utilisation of surplus labour the classical thesis of Sir Arthur Lewis is as valid today as it was earlier (Lewis 1954).

the Asian context. But the question is how small is a *small farm*? Atomisation of land to sizes smaller than one to two hectares could be counter-productive. Controlling excessive land fragmentation is going to be necessary to gain the full benefits of technology and modernisation.

4.2. Efficient Market Functioning

Second, an efficient functioning of different markets that interface with the agrarian population is paramount. Markets need to be competitive in addition to being efficient.

1. A guarantee of stable and remunerative output prices for all farmers and areas is essential. This should hold for farm as well as non-farm activities. All major countries producing agricultural products do this whether they are developed or developing, and it is not impossible to devise similar mechanisms for Cambodia.
2. Input markets also need to be more competitive, whether it is for mechanical inputs or bio-chemical inputs. The argument can be extended to non-farm activities like fishing as well. Aspects such as the availability of fish feed are for example crucial. Part of the solution lies in improving the infrastructure.
3. Reforms will be incomplete without a major re-hauling of the credit market. Not only is it vital that loans are available when required, the interest rates and other loan conditions need to be fairer.
4. For the market reforms to succeed it is vital that they become neutral to the client's scale of operation.

4.3. Security of Tenure

Third, security of tenure needs strengthening. Further, it is vital to identify the boundary of private lands and commons and the jurisdiction of different stakeholders. Such an approach will help in the effective management and sustainable use of commons. Although attempts being made by the government in this direction appear to be comprehensive, a hastening of the process could perhaps help.

Can land reform presently being pursued by the government (of which security of tenure forms a component) address the problem of landlessness and land atomisation? It is possible. In a recent study, Chan *et al* (2001) it was found that there was currently enough land in the country to meet the needs of the landless on a one-off basis.

4.4. Natural Resources Management

Fourth, natural resources need better scientific management in order to ensure sustainability and high returns. The most pressing sectors here are fishery and forest resources. Proposals to set up and activate joint resource management or community resource management schemes have been floated but have not succeeded so far. Currently the schemes are inadequate in operation due to organisational, capital and skill shortages. They need urgent revival through a strengthening of these deficits.

4.5. Occupational Diversification and Human Capital Formation

Fifth, the expansion of non-farm and off-farm activities is vital since farming alone cannot bring a lasting solution to livelihoods and food security. This could be initiated through establishing decentralised growth centres, for which market chains would have to be evolved alongside the infusion of specialised skills. While some ongoing examples like fishing and fish processing also need strengthening, it may not be sufficient if restricted to them. A much more vibrant and marketable set of activities also require promotion. For this, large-scale human capital formation (education and health) as well as infrastructure creation is the need

of the hour. There are some spectacular examples of other countries that could be trailblazers for Cambodia. Such examples are Vietnam and China, and to an extent, Thailand (Johansson and Ronnås 1992; Ronnås and Bhargavi 2001; Saith 1991). Improvement in infrastructure would also play a crucial role in such an effort.

4.6. Stabilising Labour Markets

Sixth, the labour market needs stabilisation — the gap between the labour supply and demand needs to be narrowed. More jobs with improved wages are required for a greater number of days each year to increase the annual incomes of the small farmers and non-farmers and those without land or assets. In this context there is a need to provide huge safety nets for those who do not gain from agrarian modernisation in the short term — to help them tide over temporary and/or seasonal nuances — while at the same time integrating them into the emerging production systems. Such an approach could also help establish a minimum liveable wage. In this regard it also needs mention that Cambodia needs to define a minimum wage for rural areas (Acharya 1990; World Bank 1990; Dreze and Sen 1991).

Chapter Five

Conclusion

Using qualitative and anthropological approaches this paper investigates some key dynamics of the agrarian structure in Cambodia as seen from six village studies conducted over 2001 and 2002. Five major aspects are examined; (1) land distribution and landlessness, (2) land use and food availability, (3) non-farm activities (including livelihoods from natural resources), (4) product, input and money markets, and (5) labour markets and wages. The findings on each of these are summarised at the end of every section and will not be repeated in full here.

In summary the following conclusions can be made:

- a. The Cambodian rural sector faces large imbalances in the sense that the population and labour force have grown far in excess to that permissible by present resource use. This has adversely affected food security.
- b. Natural resources are under severe strain as a result of (i) different survival strategies followed by the rural people, and (ii) excessive demands from outside the agrarian sector.
- c. Land inequality has emerged in response to emerging land demands from multiple sources, for more than just subsistence farming. This has affected the livelihood of those who lose land.
- d. In a number of locales farm plots have become too small to effectively provide livelihoods, or even be subject to application of modern scientific inputs. This is resulting in low yields.
- e. Farm mechanisation has helped raise overall productivity, but the distribution of gains favours the larger farmers rather than the small.
- f. Agricultural modernisation has been helpful, but lack of irrigation has restricted the potentially beneficial impact that this should have for farmers. Lack of parity between the prices of agricultural inputs and outputs also affects farmers adversely.
- g. To an extent, all markets are less than competitive and monopoly hurts farmers.
- h. People adopt a number of coping strategies including out-migration, but poor quality human capital does not permit any appreciable rise in earnings.

Drawing from the experiences of other Asian countries, the paper suggests a number of policy prescriptions that propose a process of holistic change rather than a narrow sectoral one. These relate to agricultural modernisation and crop diversification, efficient functioning of product and factor markets, security of tenure and control of excessive land atomisation, occupational diversification and human capital, and labour market interventions to establish

safety nets and set a minimum liveable wage. A simultaneous implementation of a broad spectrum of policies will be more beneficial than a piecemeal approach.

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Appendix – Synopsis of Village Studies

1. Krasaing Village — Rice Surplus, High Landlessness and Labour Migration

1.1. The Village Setting

Krasaing is located in Tameun commune, Tmor Kol district, Battambang province. The village spreads out along the floodplain of Tonle Sap Lake about 25 km away. It has abundant fruit-trees and horticulture gardens. Its population is 228 households. The village has a school, though it has no clinic or medical practitioners. The government-run clinic at the district is dysfunctional.

In 1992, during the repatriation programme, the village received 14 returnee households. Most of them have no rice lands though some have bought homestead plots. There are 230 hectares of land under transplant-type rice and 117 hectares of land under flood-recession rice. Since the early 1990s there has been a shift from the use of animal draught-power to mechanisation for agricultural operations: the village now has three tractors and eight two-wheeled tillers (*Ko Yon*). There are 50 fishing boats, one pick-up truck, four horse-carts, three water pumps, five pump-wells, 20 ponds, and five tube wells in the village.

1.2. Incomes and Food Security

Land ownership

Due to security problems, there never was a formal land distribution in Krasaing. Elder villagers maintained that from 1979–94, they faced a shortage of cultivated land because many hectares of flooded lands were occupied by the Khmer Rouge; they cultivated only the lands that were close to the village. Villagers have owned land since 1980 with each land-owning household having roughly two hectares of rice land. After 1993–94 when peace returned, people extended their activities into the flooded areas, about 15–20 km further from the village. Since then, lands have also exchanged hands particularly in the flooded areas.

Landlessness is increasing with the population increase: there are 125 landless households, 24 of whom are widowed. Many households have had to sell rice lands because they had to meet expenses on different items, for example, health and/or to tide them over seasonal food shortages. A few have sold lands to obtain money to travel to Thailand in search of better paying jobs. Very often the wealthy, who also lend money, acquire the lands. Villagers from a neighbouring village (Rusei village) control over 100 hectares of rice land in Krasaing. People in Rusei, compared to those in Krasaing, enjoy a higher standard of living, because residents in that village are traders at the Tmor Kol market. Some also have relatives overseas who occasionally repatriate money.

Rice agriculture

Farmers maintain that flood recession rice cultivation is economical as they expend less labour and the activity provides higher yield rates. The average production is 3–3.5 tonnes per hectare. They have however, not succeeded in cultivating these low-lying lands in recent years because of flooding. In 2000 and 2001 the harvest was poor due to excessive flooding. Rice grown on uplands normally requires more fertiliser than that grown on flood lands since there is no natural nutrient left behind. They also require more labour inputs for transplanting. The average yield is 2.5–3.5 tonnes per hectare. The harvest time is December, which permits many smaller farmers, both men and women, to migrate to Thailand, to seek temporary jobs. In the period up to December, many households — particularly those landless or possessing small land holdings — face food shortages and people from these households migrate out to avoid this problem. Beside selling labour, the widowed, landless, and poor households also collect the rice seeds that spill in the fields during harvest, from which they can sustain their families for at least two months. Despite the fact that this village is surplus in rice, these people face a rice shortage for up to three months each year,

Mechanisation was introduced in 1993. One household owns two tractors, another owns one, and eight other households own a two-wheel tiller each. The more affluent people who own large rice lands also own the machinery. Most use the equipment on their own farms in addition to renting it. The same people are also intermediaries in the rice trade since they possess transportation and capital to buy rice and stock it during the harvest time, to be released later. This earns them high profits. In contrast, small farmers hire-in machines since they cannot afford to buy them and this implies an outflow of revenues, with frequent borrowing at high interest rates. The cost of operations is also high because local farmers have insufficient knowledge of mechanical engineering, there is no regular spare part supply, and diesel is expensive. These costs however, are passed on to the hirers, since the hiring rates are fixed by the machine-owners. Mechanisation therefore costs a lot to the smaller farmers and because of this their profitability is low. It appears the benefits of mechanical technology are often unequally distributed between the large and small farmers.

Some other issues that affect farm profitability are as follows:

1. The price of rice dips to 3.5 baht per kg during the harvest time and goes up to 4.1 baht during the rainy season; most farmers, particularly the small ones, sell their crop during harvest and buy food during the rainy season.
2. Interest rates on loans are high at 5–15 percent per month; many lose lands in the process of servicing the loans.
3. Since 2000, there has been serious flooding in many areas, damaging the crop.

Chamcar crops

Thirteen households own small orange plots (about 0.3 hectare each) located behind their houses. Farmers also cultivate banana, mango, jackfruit, papaya, guava and a variety of medicinal flora. Villagers complained that since 2000, many fruit trees have perished in the flooding and they have therefore earned only meagre incomes from *chamcar*. Two families that grow about 50 orange trees each, indicated that all oranges do not get sold as they keep the unsold stock for their children and the family. Bamboo grows naturally and most families in the village own a few bushes. Besides being used as a building material, young bamboo shoots are also used as food. The average income from selling fruits differs from one family to another, but is small.

Livestock

There are 13 cows and two water buffaloes in the village, mainly kept for meat production. Some farmers said that they have stopped keeping cattle because of robbery. Others feel though, that tending to large animals is tedious, particularly when machines provide much of the draught power. Pigs are sold to traders in Tmor Kol (district) market. The price of meat in Krasaing in 2001 was as follows; pork 8,000 riels per kg, beef 9,000 riels per kg, and chicken 6,000 riels per kg. Farmers maintain that whether these prices are profitable or not depends upon the price of animal feed.

Fishing and collecting edibles

Twelve households are commercial fishers. Due to the geographic position of Krasaing however, almost every household fishes for family consumption. Fishers usually spend two to three nights per outing to catch about 15–20 kg of fish, frogs, snakes/eels and birds during the fishing season. The price of fish is 3,500 riels per kg, and of frog and snake, 5,000 riels per kg. Sometimes, eels, snakes, and frogs are dried and salted, or kept alive to ship to Thailand. Many small operators indicated that they have faced a protein shortage for five years because fish products are exported to Thailand daily. Even during the fishing season they reported a difficulty in getting fish to eat. Two households buy-up all the products for export to Thailand. Over the last few years there has been a sharp decline in the availability of fish because many people have begun to use non eco-friendly equipment. In the rainy season, the landless additionally collect Morning Glory (*Tra Kuan*) which is used for both human and animal feed. This fetches between 5,000–8,000 riels a day for a group of three or four collectors.

Off-farm jobs

Several villagers migrate to Thailand for work. Additionally, the landless work as daily wage earners, traders and transport workers in the vicinity of the village. A wage of 50–60 baht a day plus one meal (about 7,000 riels) is considered good in the local environment. People also take up work in unskilled/semi-skilled activities both along the Thai border and deeper into Thailand. Those who do not possess rice lands migrate for longer periods. The average wage prevailing in Thailand was 80–100 baht per day, although many complain that they are sometimes cheated. For example, Soeun, 28, who returned from Thailand a month ago (at the end of 2001), had gone to work on the other side of the border to work on a shrimp farm. He was promised 100 baht per day, but after seven months the owner paid him for only four months. Many borrow large amounts to meet the informal costs of travelling to Thailand but not all gain the benefits.

1.3. Credit and Loans

Informal credit

Villagers are compelled to borrow from relatives, sell assets such as land and animals, and/or borrow from moneylenders when faced with financial crises or natural disasters. A group of village seniors stated that if villagers need large amounts of money, they have to borrow from moneylenders, either in the village or at Tmor Kol market. If they have good relationships and are trustworthy, the interest rate might only be 5 percent per month and the loan is made available without collateral. Poorer families though, must pay higher interest rates of 10–15 percent a month in addition to collateral — many poor households lose their collateral because of late payments or inability to pay. High interest rates generally increase the debt burden of the borrowers, which then gets them into a cycle of food shortage. There are no written records of such borrowings or the collateral used: all agreements are verbal, and this is an additional cause of conflicts. There are six moneylending households in the village.

Although small amounts of food and rice seed could be borrowed from relatives and neighbours without interest, this is only for short periods.

Formal credit (from NGOs) and rice banks

Help Age has established a rice-bank — a scheme to stabilise the price of rice and rice supply — as well as a credit scheme. However its coverage is limited. ACLEDA once tried to set up a credit project in the village but this was not successful because villagers thought that it charged a very high interest rate. The village chief reported that he did not dare to make an agreement with ACLEDA because many people complained that it charged too high an interest rate, and people might lose lands while servicing the loans. He went on to indicate that even though there is no official agreement, households in urgent need of cash still borrow from ACLEDA. He was certain that they would face a hard time in the future. This implies that formal or informal credit is better differentiated in terms of the cost of the credit, rather than the label.

2. Babaong — A Rice Surplus Village

2.1. The Village Setting

Baboang is a rice surplus village in Baboang commune, Piem Ro district, in Prey Veng province. It is located about 14 km from Neak Leaug on the Mekong. Only boats can access the village during times of serious flooding. There are 536 households including 142 female-headed households in the village. The number of households increased from 434–536 between the mid-1980s to 2001, mainly due to new marriages and a few returnees in the early 1990s.

The population increase has placed excessive demands on land: more than 20 hectares of inundated forest has been cleared since the late 1980s for farming. Now, there are no more common lands or inundated forests. The village has about 742 hectares of land: 24 hectares are residential, 23 are under water-bodies, and 695 hectares are for rice cultivation (the irrigated area is 190 hectares). About 223 hectares are wet-season rice land and 472 hectares are under receding rice. The soil is fertile owing to sediments from the Mekong.

2.2. Incomes and Food Security

People are engaged in rice production, natural resource collection and foraging, fishing, wage labour and small trading activities. Many farmers aim to produce rice for the market.

Access to land

On average, farming households occupy land plots of between one and one and a half hectares in size. Although each household received between one and two hectares in 1989, inequality in landholdings began to emerge soon after, as some households with male labour and draft animals cleared up inundated forests and converted them into farmlands. Additionally, with the advent of farm mechanisation, economies of scale began to set-in, which in turn have led to land redistribution.

A small community of Vietnamese origin has no land — they live in boats. Additionally, very few returnees from the Thai-border camps have been able to obtain land. Distress-sale/mortgaging of land for meeting urgent expenses, gambling, and prevalence of high interest rates, are other reasons for landlessness. Some small landholders have sold lands because they were unable to till them effectively, for want of adequate inputs.

Agricultural production

Modern rice farming was adopted in the early 1990s. With proper input application, yield rates can reach 3–4 tonnes per hectare. Rice cultivation is the main source of income for about

80 percent of the households. It also provides seasonal earnings to agricultural labourers (estimated at about 20 percent) and to an estimated 400 migrant labourers from neighbouring districts and provinces. A labourer can earn a daily wage of 2,500–3,000 riels (in addition to two meals) for transplanting rice seedlings and about 4,000 riels a day for harvest time activities. In contrast, a tractor owner can earn 100,000 riels for ploughing or harrowing one hectare of land, owners of a pumping machine can earn 2,500–3,000 riels per litre of fuel for renting the equipment, and the owner of a rice-threshing machine can earn one sack for 30 sacks of threshed paddy. Nevertheless nearly half the households face a rice shortage for three to six months each year due to the inequalities of ownership.

Farmers have shifted from transplant-type cultivation to other types of sowing, in order to save on the cost of hiring labour. With this new practice however, farmers obtain high yields for just two crop cycles and then the yields drop. Some farmers therefore, rotate between different farming practices to achieve optimum results. According to the village leaders, high farm-gate paddy prices (500 riels/kg) between 1997 and 1999 helped at least 20 households to build new houses or renovate them. The drop in the farm-gate price to 240 riels per kg after 1999 has adversely affected the farming community; at least 47 households have mortgaged or lost all their farmlands. At the other end of the spectrum, lands are concentrated with 10 households. It was reported that at least two households own more than 20 hectares each, and another eight own 10–15 hectares each, excluding mortgaged lands.

Farm mechanisation

The village now relies entirely on its own agricultural machinery — compared to previously when up to half of the land had to be tilled using machines hired from outside the village. There were 10 tractors and 16 two-wheel-tillers recorded in September 2001 compared to just three tractors and no two-wheel tillers prior to 1996–97. Less than 20 percent of the farmers still use animal power. Labour intensive potential has obviously fallen with mechanisation.

Livestock

In addition to cattle, people raise chicken, pigs, and ducks to augment family food supplies. Animal diseases along with lack of animal feed and increased use of machines, however, are reasons quoted for stagnation in the livestock economy. In the context of household food security, medium and small farmers are now vulnerable because when they face crisis they no longer have animals to sell.

Fishing and foraging

Those with boats — particularly mechanised boats — can fish better. More than ten households in the village are identified as commercial fisherpersons and they have large incomes from fishing. Between December and February they can catch up to 20–25 kg per night (about 50,000 riels equivalent). Until 2001, fishing fell under the system of fishing-lot concessions. The village community appreciates the abolition of the concession system in the area as it has also reduced conflicts. A group of anglers, however, maintains that they need better equipment as well as market experience to take full advantage of the opening up of the fishing lots.

Collecting firewood

There is a decline in the availability of firewood in the entire area surrounding the village. Since there is no more inundated forest, villagers have begun to uproot the inundated trees in the surrounding areas. However, as inundated-forest lands are privately controlled, permission from the owners to pull out the roots is required, which often entails sharing the wood or paying cash.

Hiring labour and migration

Some households hire out labour for land preparation, transplanting rice seedlings, harvesting, threshing, and earthworking. Exchange labour practices have given way to labour hiring since the early 1990s. Since the demand for hired labour in land tilling has reduced with farm mechanisation there are many less jobs available. Receding rice increases the demand for hired labours during the harvest, from January to April, which attracts about 400–500 seasonal in-migrants. Many among the abject poor hire out their labour in neighbouring districts during the wet season. In 2001, they pledged labour *in advance*, for a price. Out-migration is increasing, making an important contribution to household food security. Youths, both male and female, now travel longer distances rather than migrate to neighbouring districts as in the pre to mid-1990s period. Also, unlike migration patterns in 1996 and 1997, men and women out-migrate in equal numbers. At least 35 girls (16–30 age group) are reported to have left the village to work in garment factories or as waitresses in restaurants. However, only the better off among the poor can access jobs like those in garment factories (where the pay can be \$45–\$60 per person); the very poor still migrate within the neighbourhood. All this suggests that desperation for remunerative jobs has risen.

2.3. Exchange Economy

Exchange labour in rice cultivation

Most households own some rice land but many small farmers own either no oxen, or only one animal when they need a pair. At times, such households arrange to have their fields prepared through the use of exchange mechanisms. For example, a widow owning two hectares of land borrows oxen from her neighbour and in return provides labour to transplant rice seedlings. However, such exchange is reportedly diminishing since the introduction of agro-machinery and a cash economy. A group of female farmers indicated that there has been a sharp decline in the reciprocal relationships in the village, especially of exchange labour for rice cultivation. The cash economy is good for private profits of net-hirers of labour, but many poor find the shift away from reciprocity to be hurtful. There is also some land tenancy prevalent in the village.

2.4. Access to Markets

Farmers depend on selling rice, fish, chicken, pigs and *chamcar* crops to meet their family expenses. They buy agricultural inputs, for example, machinery, fertilisers, pesticides and diesel. When the price of rice fluctuates but those of inputs stay invariant or rise, farmers lose out. This is particularly the case for those who can not wait for the price of rice to increase. Most farmers sell their products at the Neak Leung market via five rice middlemen in the village. One of the richest households in the village reported that they did not set the price of rice, they just earned a percentage from the main rice dealer in Neak Leung. The price of rice in Neak Leung depends in turn on rice trading with Vietnam. They had been told that the price of rice over the last season was low because the Vietnamese traders did not come to buy rice as they were inhibited by large bribes demanded at unofficial checkpoints.

3. Trapeang Prey — A Backward, Rice Deficit Village

3.1. The Village Setting

Trapeang Prey is a small poor village in the Ksem Ksam Commune of Oudong District, Kompong Speu. The village has a population of 68 families; it was 61 in 1997. The village is about 3 km from Bat Doeung market and 35 km south of Phnom Penh. The total village land is about 37 hectares: 31 hectares of rice land and six hectares of residential land. Some people are engaged in palm sugar making. People also raise livestock: cows, pigs, and chickens, and

access common property resources to eke out a livelihood. They also hire out labour for a wage.

3.2. Food Security and Livelihood Pursuits

Access to land

The average size of a holding is 0.57 hectares, though a few better-off households own two to three hectares each. The population has been growing (an increase of seven families in five years) but as land is not, there is no more land available to be put under plough. It has been reported that land sales are occurring from the small farmers to the larger ones. Since the price of land locally is quite low — a plot of land measuring 50m² can be bought for as little as 500,000 riel or \$128 — the transaction is easy for the buyers. The numbers of landless households increased from six to ten between 1997 and 2001.

Crop agriculture

The village is deficit in rice and almost 60 percent of the population faces a rice shortage for three to five months each year. Rice productivity has not shown any improvement in the last five years. Poor quality soils, traditional rice varieties and no application of fertilisers has resulted in paddy yields of only 800–1,300 kg per hectare. Irregular rain and lack of irrigation also keeps agriculture backward. Rice is produced only for personal consumption. Respondents reported that on average, households own no more than between half and one hectare of farmland. It is therefore not possible to produce surplus. Only a few better-off households have so far cultivated cash crops, as this requires working capital that is not readily available. The number of cash crop growers is declining as cultivating cash crops is a demanding job with low returns. Lack of water, marketing risks and free-roaming animals were cited as additional problems.

Livestock

Almost all households keep cattle for draught power, and pigs and chicken for extra income. A few households started to raise ducks for eggs around 1997–98. With a cow bank initiated by World Vision, villagers previously expected each household to have draught animals at some point in the future. However, the programme yielded less than expected due to disease and lack of agricultural extension services. When farmers borrow money to invest in animal raising and the animals die, they face indebtedness. Many farmers have lost cows, pigs and chickens, almost every year recently.

Access to natural resources and firewood

Earlier in 1997, poor households could depend on the collection of wild plants. Also between February–April, farmers could provide most food for personal consumption: fish, vegetables, crabs, frogs and snails in addition to medicinal herbs and firewood. However, access to common property resources has deteriorated. Also, privatisation of commons has denied them access. Currently, collecting fish, frogs, crabs and snails (from wet rice fields), or hunting birds, has become almost impossible due to over-harvesting; a result of using ecologically harmful methods like electrical tools. Although now there is a current ban on such practices, the elderly argue that it is not an easy task to convince people to quit using illegal electrical tools, especially when more and more people become victims of poverty. They stated that people's hunger does not permit them to follow regulations.

Up to 30–40 percent of the households buy firewood. Almost all villagers stated that about five years ago they could collect firewood in the surrounding areas within a distance of 8 km, without payment. Now, during the dry season a few households who have oxcarts collect firewood from far away, spending two or three nights out in each trip. Only a few

influential households are able to access firewood from the otherwise out-of-bounds forest area. One ox-cart of firewood sells at 10,000 riels. Unlike in the mid-1990s, the poor who have no ox-carts rely heavily on collecting palm leaves and branches around the village; otherwise they buy firewood.

Palm sugar processing

An earlier study conducted on this village shows that besides rice cultivation, villagers relied principally on incomes from palm sugar processing. There were 27 households making palm sugar in 1997 (McAndrews 1998). At present, due to the disappearance of firewood, only seven households process palm sugar. There is a simple explanation for this decline. Although the cost of firewood is now twice as high as previous, the price of palm sugar has increased from only 550–750 riels per kg over the last five years. A group of palm sugar makers stated that during the last palm sugar processing season — November to April 2000/2001— they spent an average of 250,000 riels, just to buy firewood. The same amount of firewood would only cost around 130,000 riels in the mid-1990s. They stated how they sometimes bought old palm trees to use as firewood that cost around 50,000 riels each.

Hiring out labour and migration

Villagers hire out labour both inside and outside the village for rice cultivation, earthmoving, construction, and work in garment factories. Hiring out labour for rice cultivation has increased in recent times. Since the timing for transplanting is critical, hired labour is increasingly becoming popular. However, the wage rate is low and barely permits subsistence. The wage (piece-rate) for transplanting seedlings in 2001 was 1,500–2,000 riels for 40 bunches plus one midday meal, while for ploughing it was 5,000 for half a day (time rate). Wages could be paid in cash, kind or reciprocated. Some seek work in neighbouring provinces while a few have even gone up to Battambang and Pursat. They dig and carry earth in construction sites, repair the village Wat, ponds and dykes, and work in others' rice fields. A group of farmers in the village said that due to depletion of natural resources, many people look for work outside the village. They also reported that in the dry season, most workers go to work in other provinces and casual-wage work has increased in the last three years. Some workers, including women, take up construction work and masonry at the Kompong Speu provincial town and Prek Nouv town. A widow, who used to work as construction worker in a Phnom Penh suburb, explained how being a construction worker was as hard as earthmoving, the average pay being 5,000–6,000 riels per day without meals. Seven young girls are currently working in garment factories in Phnom Penh on a contract basis where the average salary is \$50–\$60 per month. Sometimes they have work for three months and then they are laid off for a few weeks.

3.3. Credit

Informal credit

Despite formal credit schemes, initiated by GRET, many households borrow from private moneylenders because formal loans have a fixed cycle of borrowing and return and the amounts borrowed also have a ceiling. This does not always suit everyone. Sometimes needy villagers get cash loans from moneylenders at Bat Doeung market at 10–20 percent interest rates per month. There was one case of interest payment being *200 riels per day* for a private cash loan of 10,000 riels. People also borrow rice from better-off households or rice traders at the Bat Doeung market. Rice loans are repayable, with interest in rice, at the time of harvest. Of course, some households have rich relatives who oblige them with inexpensive loans. There were, however, no reports of people losing lands because of lapses in payback *per se*.

Rice banks

World Vision set up a rice bank in 1997. Under the management of the Village Development Committee (VDC), the rice bank accumulated up to 7,520 kg of paddy rice in 2001. Initially there were 52 participants, though they reduced to 45 in 2001 due to a good harvest. The VDC and village chief reported that they loan out paddy rice to participants in September to tide over food shortages during the lean season. In contrast to cash, the poor appreciate loans at low interest rates (20 percent for a loan over four to five months) from the rice bank. A 100 kg rice loan taken during September must be paid back during the harvest time with 20 kg rice as interest.

4. Prek Kmeng - A Fishing and Farming Village**4.1. The Village Setting**

Prek Kmeng is located in Lvea Em district of Kandal province, about 30 km from Phnom Penh. The village is situated in an inundated area 5 km east of the Mekong; it is submerged for six months each year, during July-December. There has been almost no out-migration although there has been some in-migration. Village seniors recall that there were about 40 households during the French colonial period (prior to 1953); the number rose to about 100 in the 1960s, 213 in the early 1980s, 270 in the early 1990s and 339 in 2001.

People in Prek Kmeng have work round the year including; rice cultivation, reed cultivation, fishing, fish processing, fish raising, and firewood gathering. These diversified livelihood sources make Prek Kmeng a relatively well off village.

4.2. Food Security and Livelihood Pursuits*Rice production*

Rice cultivation is the second largest source of livelihood after fishing, though about a third of the households are landless. Rice is sown in about 137 hectares out of the 252 hectares of agricultural land. Farmers plant rice in the dry season as the water recedes. They irrigate the crop with water from rivulets and lakes using diesel pumps.

The average land holding is one hectare. Rice yields range between 3–3.5 tonnes per hectare, depending on the kind of seed sown. Between 1979–99, most rice farmers grew a local seed named Mittapheap, which took about four months to harvest. Since 1999, the majority of rice producers shifted to another seed called Sorya, which can be harvested in three months and yields one tonne more per hectare compared to Mittapheap. Labour has to be hired, so does the machinery because the six-month inundation does not permit draught animals to be kept. The total expenditure per hectare for the rice crop is about 500,000 riels. At the local price of paddy (350 riels/kg), output from one hectare can provide a gross revenue of about 1–1.4 million riels (or \$250–\$350). The net income from a hectare of land therefore comes to about \$120–\$220

Rice production in the village is reportedly not sufficient for consumption. About 10 percent of the rice-producing households produce surplus for sale, 20 percent produce sufficient amounts for personal consumption, though the remaining 70 percent are net buyers for about two to three months each year.

The area under rice cultivation has reduced compared to 10 years ago. About 40 hectares are left idle because a private pumping station on the Mekong stopped operating in 1994 after several villagers failed to pay the water fees. Another land area of around 60–150 hectares is no longer cultivable because it has become part of a lake after a road contractor blocked a drainage-canal some five years ago. A protest letter sent to the district authority is yet to be acted upon.

Other crops

Farmers grow reed used for making mats, which is exported to other provinces as well as to Vietnam. Reed cultivation has reduced in the past five years because rice has been found to be more profitable. A few households grow sesame, corn and vegetables as well. The village is a net importer of rice, vegetables and meat, though it is a net exporter of fish.

Fishing

About 90 percent of the households are engaged in fishing for both subsistence and the market and they are sensitive to restrictions imposed on access to fishing areas. In the late 1990s, fishing lot concessionaires implemented tough restrictions on fishing within the fishing lots, leading to violent conflicts between the villagers and concessionaires. However since November 2000, 57 percent of the 5,000 hectares fishing area has been released.

Income from fishing varies greatly, depending upon the season and type of fishing gear used. On average, a fisher could earn between 5,000–20,000 riels per day in addition to that needed for personal consumption. Many fishers do not sell all their fish catch, but use part as feed for the bigger fish that they raise in cages. For a full year, a household could earn between 1–2 million riels by selling fish, out of which it spends between 400,000–800,000 riels on fishing nets, which are imported from Thailand. Besides fishing nets, villagers use fish traps, lines and hooks.

Village authorities maintain that some use illegal equipment as well. Villagers, including village and commune chiefs, know who carry out these acts but do not prevent them for fear of personal revenge. For this, collective pressure is necessary and this is lacking. With 57 percent of the fishing area now released to the public, illegal fishing activities have increased. The government's policy of establishing community management of the water bodies has been slow due to the lack of both human and financial resources. In Prek Kmeng, there is no community fishery organisation to manage the community resources. This provides opportunities for some to catch as many fish as they can, using whatever means. A decreased fish stock will surely worsen people's livelihood in the not too distant future.

Fish raising in cages

Villagers raise snakefish in cages in a rivulet flowing through the village. Until a few years previously, fingerlings were caught from local waters, but now they are brought from Kompong Chhnang, as more and more households have taken up the business. It takes about 8–10 months for the fish to reach the optimum size when they are ready for sale to traders. People began to raise cage fish in 1990. By 1997, about 25 percent of households took the activity up, and by 2001, 85 percent of households were raising fish in cages. Every June, each fish raiser needs around 500,000 riels to buy fingerlings. About 90 percent of them borrow money to purchase the fingerlings. A common practice is for villagers to borrow four *Chis* of gold (about 500,000 riels) from a private moneylender in a nearby village. After selling the fish the following April (10 months later), they have to pay back six *Chis*. Out of 5,000 fingerlings initially obtained, only between 1,000–3,000 survive until the tenth month. Despite this the venture is profitable.

In the early 1990s, a kg of snakefish was worth 2,000 riels; in the late 1990s, it was 2,500 riels and between 1999 and 2001, it rose to 3,000 riels. The price increase however, has not kept up with the devaluation of the riel, which is a cause of local discontent. In 2001, a household with about 3,000 fish could gross about 5 million riels. After subtracting 0.5 million riels spent on the fingerlings, 0.3 million on interest and about 1 million riels on other purchased inputs, a net income of 3 million riels could be obtained. The business is profitable as long as fish-feed is regularly available at a reasonable price and people work very hard, including resorting to illegal practices to catch smaller fish which are used as feed for the larger ones.

Fish processing

Up to 85 percent of the households buy small fish in the peak season (January - February) and smoke them. This is a profitable business — a household can earn about 300,000 riels — although the whole family must be fully occupied in this activity for about 25 days. Smoked fish is marketed to other provinces as well as to Vietnam. Since the late 1990s, there have been less small fish available, possibly because of the extraordinarily high water levels. Fish processors have had to travel to other villages in order to buy more stock.

Other livelihood strategies

Apart from fish, people collect snails, fresh water shells, water lily, watercress, taro, bamboo reed, and firewood. These are mainly gathered by the poorer families and/or female-headed households, which number about 50–60. A female-headed household can earn about 3,000–5,000 riels per day, though a male-headed one can earn 5,000–10,000 riels for the same activities. Vegetable resources have declined since the late 1990s due to floods. However, snails and shells have increased, and this compensates for the loss.

5. Dang Kdar—A Forest and Rice Dependent Village

5.1. The Village Setting

Dang Kdar village is located in Krayea commune, Santuk district, Kompong Thom province. It is about 80 km from the main road (National Route 6) and surrounded by forests, most of which are under concession. There are about 306 households living in the village.

Origins

Under colonial rule, villages generally depended heavily on forest produce and undertook farming as a secondary activity. Although certain portions of the forests belonged to the state, villagers could secure livelihoods by cultivating rice on open lands as well as on forestland using swidden methods, collecting resins and other forest by-products, and hiring out labour to log trees for forest concessionaires. Access to the forest, despite being restricted, was sufficient to support a livelihood for a limited number of people (about 50–70 households).

During the first phase of the post independence period (1954–70), people continued with the same patterns of livelihood, though both trade and travel increased. There was no out-migration; on the contrary, some in-migrated to share the abundant natural resources. During the Khmer Rouge regime the village came under Khmer Rouge control in early 1971. Cultivation was severely disturbed or even halted, and prices of outside goods, especially salt, rose rapidly because of the war. This hardship continued between 1975–79 and ten people in the village succumbed due to the difficult living conditions. Even after 1979, villagers continued to suffer from the prolonged civil war and insecurity, as the Khmer Rouge forces were in the vicinity until 1998.

Demographic trends

The total number of households was 70 in the 1960s. After the Khmer Rouge era, in the 1980s there were about 150 households settled in the village (as recalled by villagers). By 2001, the figure had climbed to 306. Normal rice land is limited, although some forestland is converted for swidden production, a practice that is being discouraged. Villagers therefore increasingly rely on foraging in an era of reducing forest access.

In 1981, households divided the limited rice land between themselves. Each person was given 0.07 hectares regardless of age: thus a household with five members would have received only 0.35 hectares. Between 1979–93, there was no restriction on access to forests other than the presence of landmines, which villagers learned to work around. Until 1991, there was little demand for logs since this trade was not permitted. Since 1994, when two

forest concession companies (Colexim and GAT) occupied the area, villagers have faced restricted access to the forests. With a population five times larger now than in the pre-war levels and the occupational base shrinking, the standards of living are not rising.

5.2. Food Security and Livelihood Pursuits

Farming

Farming is an important, though not the largest, source of income for Dang Kdar. Farmers engage in both rice cultivation and *chamcar*. Rice is regularly cultivated on the 127 hectares of land owned by about 280 households. The quality of the soil is poor, yielding an average of only about 1.4 tonnes per hectare — enough for only about a third of rice required in the village. Ten households are reported to have purchased land from others and they produce surplus rice for sale. Another 10 households only produce sufficient rice for personal consumption. The rest buy rice. Only 30 percent of farming households could afford chemical fertilisers. *Chamcar* cultivation includes growing cashew nuts and banana on lands cleared of forest. This land does not belong to the villagers. It is presently under concession, but according to the locals has been under swidden and/or plantation cultivation for at least 50 years. More lands have opened up in response to the sharp increase in population. Fifty households now practise swidden-farming compared to 20 in the pre-war period. The concessionaires have tried to obstruct this expansion but have not fully succeeded. They are now reconciled to allowing a larger area for the villagers to carry out shifting agriculture, provided that the farms are at least 50 m away from the road. The motive is to keep the farms concealed from the public eye. In swidden, the productivity is very low compared to that in permanent rice lands. The 50 households that sow shifting rice-cultivation are among the poorest; they have little or no permanent rice land. Detailed inquiries revealed that swidden cultivation yields a gross per capita income of only about 1,000 riels per day, much less than any other unskilled activity, in which the typical daily wage is 2,500 riels. Farmers practise swidden since their aim is to ensure some rice availability.

Timber harvesting

Timber harvesting is the largest source of income in the village. Villagers benefited considerably from the anarchic logging activities between 1991–94 when the demand suddenly increased following the opening up of the economy. In 1992, 13 sawmills were installed in the village to process logs. Many workers were employed to cut down trees for the sawmill owners at 3,000–4,000 riels per cubic metre of log. A number of households used this income to build houses and/or buy motorbikes and other consumer goods.

In 1994, a large part of the forest was leased to Colexim, a partnership company of the government and a Japanese company. In 1995, another portion was contracted to GAT International. Later, yet another company called Meang Ly Heng obtained concession rights. By 1995, private trucks transporting logs or timber were forbidden in the area and the number of sawmills was reduced to two. However, until 1998, locals could still cut and transport logs in carts pulled by big buffaloes since the concession companies' guards could not patrol the whole forest. When the Khmer Rouge gave up resistance in 1998, the concession companies tightened their security. Since then the villagers have found it increasingly difficult to 'steal' the trees (as villagers themselves termed it).

A number of households, though, are still involved in illegal timber harvesting. They spend about a week to complete a 'block' job, which includes identifying a tree, felling it, clearing a path to it, and transporting it. They make a profit of 20,000–30,000 riels per job. They repeat this operation twice every month. However, they face a risk of being caught by the company patrol, in which case they must pay heavy fines. Not every household can carry out this 'illegal' logging. Households need to have at least a pair of big water buffaloes and a

cart that can carry a log (3–7 m long). A pair of buffaloes is worth about \$500, and a cart, \$250. Only about a third of the households possess these assets.

Other forest produce

About 25 households still claim to possess trees producing resins. Villagers stated that they have possessed these trees for generations. Before 1995 when the concession companies came, each of these households possessed between 300–700 trees, up to 20–30 km away from the village. At present, fewer households own trees, and each owns no more than about 50 trees. The concession companies previously wanted to cut these trees as they fell within their concession areas, but the villagers wanted to keep them. There is a clause in the government rules that many interpret as saying that resin trees are to be preserved. People, on their part, have agreed to accept 4,000–10,000 riels from the companies for each resin tree since they fear that the trees will be cut anyway. Currently, a tree could provide resin worth about 20,000 riels per year. Since people have fewer resin trees now, they rely more on collecting other forest by-products and/or resort to illegal logging.

Collecting rattan was previously quite common. Rattan is available throughout the year. Both men and women travel in groups of four or five families, deep into the forest and spend between five and ten days before returning home. In one trip, a family could collect enough rattan to earn between 20,000–50,000 riels. Villagers believe that this resource remains in plenty but the price is too low, and too many people share the benefit in the trade chain.

A number of households engage in hunting, and gathering roots and fruits from the forest. It is estimated that 40 people put traps to catch deer for sale. Groups of men, in batches of three to five, plus one or two dogs, also travel deep in the forest to catch snakes, turtles, and other animals. According to those interviewed, the number of wild animals has declined considerably while the number of people looking for them has risen. Additionally, hunters now find it increasingly difficult to evade law enforcement. Some forest products are sold in nearby markets (25 km away). Decline in the availability of these products was also reported. Trappers however, may still earn as much as 15,000 riels per day.

6. Kompong Thnaot—A Farming and Coastal Fish Dependent Village

6.1. The Village Setting

Kompong Thnaot is located about 10 km from Kampot provincial town, in Kone Sat commune, Kampot district and Kampot province. The coast, where salt farms are located, is about 2 km away. There are 402 households in the village. Among them, five are new settlers, three recent returnee households, and 53 widowed households. The population has increased by 35 percent in the last decade. The villagers were evacuated during the Khmer Rouge era and some people were sent to Koh Kong province and Takeo; those who survived returned after 1979. Rice lands were distributed in the 1980s, but each household only got an average 0.5–0.6 hectares.

Villagers subsist by rain-fed rice cultivation, *chamcar*, coastal fishing, salt mining, small business activities, and wage labour. As elsewhere, landlessness, expensive credit, insufficient jobs, lack of healthcare, and widowhood, contribute to creating food insecurity. Social stratification is an important feature, emerging from the wide wealth gap between farmers in the village: a few are rich while others are not.

The different farm assets in this village range from five rice mills, three rice distilleries, 57 fishing/rowing boats, 53 motorised boats, 18 motorised push-carts, 78 motorbikes, five bicycle pushcarts, 12 motorcycles, and two taxi-cabs.

6.2. Food Security and Livelihood Pursuits

Rice farming

The total rice land measures 150 hectares. The village does not lie in a natural disaster zone and does not face floods or droughts. The average rice yield, however, is only 800–1,200 kg per hectare because input application is low, land plots are rather small, and there is some salinity in portions of the land. Despite these factors, there is a small marketable surplus (from about four or five households), although many vulnerable families face rice shortage. The price of rice though, does not fluctuate very much compared to elsewhere in the country; un-husked rice is priced at 500 riels per kg. People get rice supplies from Takeo province to supplement their produce.

Chamcar

Most households grow vegetables and fruit trees and harvest crops in both wet and dry seasons. One green coconut fetches 200 riels and if one household has about 20–25 coconut trees, this can provide at least 80,000–100,000 riels per year. In contrast to the farm gate price of 200 riels, the price in Phnom Penh is 800 riels. Normally, middlemen come to the village to buy the produce. There are many palm trees in the village, though none in the village processes palm sugar. Many villagers reported that palm trees provide little juice because of the high salinity in the soil. Farmers additionally grow peanut, sesame, watermelon, corn, and Soya bean. This partially protects them against seasonal food shortages as well as earning some extra income. Some villagers mentioned that previously villagers only grew coconut as a fruit tree for family needs. They went on to report that villagers now also grow other crops, as the quantity of fish has declined considerably and people can no longer fully depend on fishing. To grow cash crops in a half-hectare plot, the required capital inputs are at least 100,000 riels, for fertiliser, seeds, insecticide, and irrigation. Only those who have available cash can afford to grow cash crops. Some families borrow from moneylenders at a 15 percent per month interest rate. With 100,000 riel investment, farmers can earn about 200,000 riels in peanut farming. Eighteen households grow cash crops; the rest prefer to fish because fishing fetches them a *daily* income at apparently lower risks.

Livestock

A number of villagers, especially the landless, raise animals: these are commonly cattle — for tilling land, as there are no tractors — cows, pigs, ducks and poultry. Kampot town provides the market for the livestock. After the piglets mature at about six weeks, they are taken to the market and sold at 20,000–25,000 riels a piece through traders: there are nine pig-breeders in the village. There is a cost associated with pig raising as well: good and marketable pigs have to be fed a mixture of rice-bran and chopped banana tree. There is also some risk that a pig may fall ill and die. Almost every household raises chicken and ducks.

Collecting firewood

Although natural resources have degraded due to population growth and unsustainable exploitation, households are still able to collect firewood for the family kitchen. Dead mangrove trees from the coast and the forest around the village are important sources. Firewood traders from other villages also sell firewood to Kompong Thnaot brought in by ox-cart.

Fishing

Almost every household is engaged in coastal fishing and this is the second largest source of livelihood for the village. According to the village chief, over half the households commercially fish all year round. Almost every fisher owns either a rowing boat or a small,

mechanised boat. People who own rowing boats fish near the shore where the water is about 0.8–1 m deep because of the risk of storms. Several fishing techniques are used: 1) *Chup* which is a net with a rounded bamboo frame usually used for catching small fish and shrimp; 2) *Lop* is a steel or bamboo trap, frequently used for trapping crab and squid; and 3) battery flashlights are used for catching big shrimp. All fishers are men; normally a father and son form a team. Sometimes children go fishing during the daytime to catch small crab and shell. Women stay home to process fish and crabmeat for the market. Villagers keep the small fish and crab for family consumption, and the big ones for market. All fishing tools are available at Kampot town market. The annual expenses on fishing gear can be in the range 50,000–70,000 riels.

Big shrimp sells for 10,000 riels per kg, squid 3,000 riels per kg, crab 7,000 riels per kg, regular fish 3,000 riels per kg, and shellfish 3000 riels per kg. All marine products are shipped to the Kampot market and then finally marketed in Phnom Penh. Normally fishers catch about 1–2 kg per night — small fish, crab, and shrimp. The average net income ranges between 3,500–5,000 riels per night. The village folk complain that production has dramatically declined over the last four to five years. Additionally as many persons from elsewhere now fish the area the mangrove flood forest has degraded.

Salt farming

The total salt farm area is 159 hectares, divided among eight owners, who are also the wealthiest people in the village. In 1989, when a market economy was reintroduced, salt farms were also privatised. Some, including former government officials who had the skills in this work — which they acquired when the salt lands were state-owned and they were the officials in-charge — and who also had the resources, acquired the farms. In contrast many former labourers were retrenched, and since none got pensions or were given agricultural lands, quite a few of them became poor and vulnerable.

Each salt farm plot is about 50m², enclosed by an earthen boundary. Water is mechanically pumped into the saltpan and salt is recovered after the sunlight and heat evaporates the water. During the harvest season each salt farm employs at least 15 workers, mostly women, to collect and move salt into the storage in warehouses nearby. On average, 15 hectares of land provides about 700 tonnes of salt annually. According to the salt farm owners, the price of salt has been low over the last three years because the government has allowed imports of salt from China and Vietnam. This adversely affects Cambodian salt producers' profits.

Wage labour and migration

The rise in the number of landless families has partly been responsible for the breakdown of the exchange labour system. Many female-headed households earn daily wages by digging drainage trenches for salt farms, transplanting, harvesting and earthmoving. By working as a wage labourer in a salt farm, one can earn 3,500 riels per day normally, and 7,000 riels per day at the harvest time. Although the latter only lasts for one month in the year. Migration is not common except for some that have small business activities in Kampot town. Five households have moved to Koh Kong province as fishers in a commercial fishing farm. According to the village chief all of them have relatives in that province.

Rice and money loans

Vulnerable farmers borrow when in extreme need. In turn, private moneylenders seize this opportunity and offer seasonal cash loans at interest rates in the range of 20 percent per month. The interest rates vary though, based on mutual trust between the lender and borrower. Usually, creditors require family assets or farmland for collateral. The poor landless or near landless households borrow rice. Several small rice-loan groups from Kampot town, having

relatives in the village, provide rice loans to villagers particularly during the lean months. One sack of rice borrowed (50 kg costing 20,000–25,000 riels) is returned in the form of 35,000 riels over a two to three month period. ACLEDA is the only institutional credit scheme in Kompong Thnaot. Sixty households have so far borrowed from ACLEDA at an interest rate of 4 percent per month, with collateral. Many complain that to access institutional credit they must go through a number processes, a lot of paper work, and have to become a member of a credit group. A few better-off households borrow from ACLEDA and then re-loan these amounts to the poor.

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Land, Rural Livelihoods and Food Security in Cambodia: A Perspective from Field Reconnaissance

This paper is the second of a two-part study funded by DFID and researches the changing livelihoods, land use and access to natural resources in six rural villages in Cambodia. Based on the findings of the case studies, the research reveals a difficult situation for many rural communities, with food security increasingly threatened, especially for farmers who hold small plots of land and landless labourers. It finds that rural population growth is outstripping the ability of natural resources to support the rural population and that natural resources are under increasing strain; that land inequality is increasing; that some farms are being subdivided to the point where they are no longer sustainable; and that the benefits of mechanisation are not equitably distributed. The study also considers the market for agricultural products and shows how commodity prices are subject to many external forces, including international prices, and how the prices paid for agricultural produce inadequately benefit the small farmer. As a response to these problems increasing numbers of agricultural workers are having to migrate both within Cambodia and across international borders to seek a livelihood.

The *Working Paper* also discusses the policy options relevant to the Cambodian government and international organisations. These options include modernisation and diversification of agriculture; extensive agricultural-product market reform; security of tenure; natural resource management; labour market reform and the expansion of non-farm and off-farm agricultural activities.

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