

Off-farm and Non-farm Employment: A Perspective on Job Creation in Cambodia

Working Paper 26

Sarathi Acharya, Kim Sedara,
Chap Sotharith and Meach Yady



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CAMBODIA DEVELOPMENT RESOURCE INSTITUTE
in collaboration with the Cambodian Institute for Cooperation and Peace

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**Cambodia Development Resource Institute
in collaboration with the Cambodian Institute for Cooperation and Peace
Phnom Penh, February 2003**

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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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Contents

Abstract	i
Abbreviations	iii
Acknowledgement	v
 Chapter One: Introduction	 1
 Chapter Two: The History of Off-farm and Non-farm Activities	 3
2.1 Early History	3
2.2 After the Angkor Period	3
2.3 The French Colonial Period (mid-19th Century to Mid-20th Century)	4
2.4 From 1953 until the 1980s	5
2.5 Summary	6
 Chapter Three: Occupation Diversification in the 1990s	 7
3.1 Analysis of the Distribution of the Workforce, 1997–2000	7
3.2 Comparison: SES 1997 and SES 1999	10
3.3 Distribution of Activities as Seen from the Census of 1998	11
3.4 Spatial Distribution of Non-farm Employment	13
3.5 Summary	17
 Chapter Four: A Profile of Specific Rural Industries in Cambodia	 19
4.1 Rice Milling	19
4.2 Rural Electrification	20
4.3 Fishing and Fish Processing	21
4.4 Pottery	22
4.6 Silk Making	24
4.7 Loom-made Cotton	24
4.8 Handicraft	25
4.9 Summary	26
 Chapter Five: Economic and Financial Characteristics of Select Rural Industries	 27
5.1 The Sample	27
5.2 Employment and Earnings	29
5.3 Capital Outlay	31
5.4 Production and Productivity	34
5.5 Profits and Profitability	36
5.6 Productivity and Scale	37
5.7 Summary	38
 Chapter Six: Marketing and Market Chains	 39
6.1 Markets and Prices	39
6.2 Forward and Backward Linkages	41
6.3 Summary	47
 Chapter Seven: Policy and Market Initiatives	 49
7.1 A Select Listing of Initiatives	49
7.2 Summary	52

Chapter Eight: Conclusions and Recommendations	53
8.1 Sectoral Development	53
8.2 Marketing	54
8.3 Technology and Human Capital	54
8.4 Business Development Services and Supply-side Strengthening	55
8.5 Finance	56
 References.....	59
List of CDRI Working Paper	63

List of Figures and Tables

List of Figures

Figure 3.1	Proportion of Male Workers in Non-primary Sectors, District Level, 1998.....	14
Figure 3.2	Proportion of Female Workers in Non-primary Sectors, District Level, 1998	14
Figure 6.1	Forward and Backward Linkages in Fishing Operations	42
Figure 6.2	Forward and Backward Linkages in Silk Production	43
Figure 6.3	Forward and Backward Linkages in Cotton Loom Products	44
Figure 6.4	Forward and Backward Linkages in Pottery	45
Figure 6.5	Forward and Backward Linkages of Marble Handicraft	46
Figure 6.6	Forward and Backward Linkages in Brick Making.....	47

List of Tables

Table 3.1	Percentage Distribution of Workers, two-digit Industrial Classification for 1997, 1998, 1999 and 2000.....	9
Table 3.2	Employment and Employment Change by Industry Groups, Rural Areas 1997–99.....	10
Table 3.3	Employment in Specific Industry Groups: 1998	12
Table 3.4	Average Percentage Employment in 17 Sectors: Mean and Coefficient of Variation	15
Table 3.5	Proportion of Employment by 15 Major Industrial Categories in Each Province	16
Table 5.1	Sample Details	28
Table 5.2	Distribution of Owning Households by Land Holding	28
Table 5.3	Extent of Earnings Obtained from Non-farm Activity (distribution of enterprises by industry).....	28
Table 5.4	Number of Years Since the Enterprise Began Operation (distribution of enterprises by industry).....	29
Table 5.5	Number of Total Workers (distribution of enterprises by industry).....	29
Table 5.6	Average Percentage of Hired Workers, Work Availability and Average Wage (by industry).....	31
Table 5.7	Source of Skill Acquisition for Workers (distribution of enterprises by industry)	31
Table 5.8	Size of Fixed Capital (distribution of enterprises by industry)	32
Table 5.9	How Capital Equipment is Acquired (distribution of enterprises by industry)....	33
Table 5.10	Capital-Labour Ratios (by industry)	34
Table 5.11	Distribution of Enterprises by Size of Production, Average Production, and Average Value Added.....	35
Table 5.12	Output-Labour, Value Added Labour, and Capital-Output Ratios	36
Table 5.13	Profitability Ratios (figures in riel).....	37
Table 6.1	How Products Are Marketed.	39
Table 6.2	Perception as to Who Controls the Price	39
Table 6.3	Whether Input Suppliers are also the Output Buyers, and Whether Costs of Output Payment are Adjusted to Input Supply	40
Table 6.4	Timing of Payment by Distribution of Households.....	41

Abstract

In rural Cambodia, options to maintain sustainable livelihoods have been limited to subsistence agriculture for reasons that are largely historical. Efforts to modernise the economy during the 1950s and 1960s bore some fruit, but the real impact was restricted to a few urban areas. During the 1980s and 1990s, some activities fanned out into the rural areas, and some existing ones like fishing, became more formalised. Nevertheless, to date, the rural non-farm economy has yet to grow to a magnitude that can make an impact on the structure of rural employment. This study arises from the imperative to create more and diversified jobs in the transitional economy of Cambodia, with a view to alleviate poverty, unemployment and underemployment.

Published by the Development Analysis Network in March 2003, this working paper comprises the Cambodian chapter from a volume of country studies under the title *Off-farm and Non-farm Employment in Southeast Asian Transitional Economies and Thailand*. In Chapter 2, this paper traces the historical and factual basis of different non-farm and off-farm activities that have existed in the country. Chapter 3 examines the existing data as obtained from secondary sources to paint a picture of contemporary non-agricultural activities. Chapter 4 details the status of rural industries in Cambodia as collated from field studies conducted here, and supplemented by existing literature on specific industries. Chapter 5 presents a discussion on financial and economic parameters, based on surveys of 276 enterprises in seven industrial groups. Chapter 6 discusses the market linkages of these enterprises. Chapter 7 presents a synopsis of existing policies, including those on training. Concluding remarks are made in Chapter 8.

It is hoped that this publication will be of useful reference to policy analysts and decision-makers both inside and outside the government and that it will be of particular use to those advocating for, or working with, non-farm and off-farm activities in Cambodia.

Phnom Penh, February 2002
Eva Mysliwiec,
Director
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Abbreviations

ACLEDA	Association of Cambodian Local Economic Development Agencies
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BDS	Business Development Services
CARERE	Cambodia Area Rehabilitation and Regeneration
EDC	Entrepreneurship Development of Cambodia
GDP	gross domestic product
ILO	International Labour Organisation
KOC	Kingdom of Cambodia
LFS	Labour Force Survey
MPDF	The Mekong Project Development Facility
REE	Rural Electrical Enterprises
NGO	non-governmental organisation
PRASAC	Support Programme for the Agriculture Sector in Cambodia
PRSP	poverty reduction strategy paper
SEATE	South East Asian Transitional Economy
SEDP	Socio-economic Development Plan
SES	socio-economic survey
SME	small and medium size enterprise
UNTAC	United Nations Transitional Authority in Cambodia
WTO	World Trade Organisation

Cambodian Words

<i>Chareibop</i>	: a kind of robe made of silk for traditional ceremonies
<i>Chhang</i>	: a cooking pot
<i>Hol</i>	: a kind of cloth made of silk for making clothes with a dyed flower pattern
<i>Krom Samaki</i>	: solidarity groups formed during the 1980s as a form of collective farming.
<i>Kroma</i>	: a <i>kroma</i> is traditionally made of cotton, silk, or a mixture of both. It is a common cloth used widely for multiple purposes.
<i>Kronat</i>	: cloth
<i>Loh ut krom hun</i>	: a cooperative-brick kiln
<i>Loh ut krussa</i>	: a family-brick kiln
<i>Phamuong</i>	: a kind of cloth made of silk for making clothes with a dyed plain pattern
<i>Sarong</i>	: a kind of robe made of silk with a dyed square pattern

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Chapter One

Introduction

At the time when the Cambodian economy opened-up in the early 1990s, Cambodians were principally engaged in subsistence agriculture and its allied activities which included forestry and fishing. The majority of the workforce still works in rice fields in the wet season and they engage in fishing or timber collection in the dry season. As a very large proportion of the population is concentrated in areas around the Tonle Sap and the Mekong river basins, most people have access to fish resources. In the uplands, people have historically relied on forest resources in addition to wet season cultivation, though forest resources are important for communities elsewhere in the country as well.

After the restoration of peace in 1992–93, the economy grew rapidly in double digits between 1992–97, and reasonably well between 1998 and 2001, with the average growth rate exceeding 5–6 percent *per annum* for the decade ending in 2001. There has been some significant diversification in the production base, with over 200 garment factories set up through the 1990s. Some noteworthy investments in hotels, construction activities and the communications sector have also been recorded. Cambodia has successfully joined ASEAN, and is well on its way to join the WTO by 2005. Tourists visiting Cambodia have increased in number each year, despite the recent slowdown in the international economy. Major cities have become bigger, and their infrastructure facilities have been developed. The three centres that have expanded the most are Phnom Penh, Sihanoukville and Siem Reap.

Nevertheless, a major problem that continues to plague the economy is the rather narrow occupational base. Despite the rapid growth mentioned above, jobs created outside subsistence agriculture have remained few. The country's total labour force in 2001 has been estimated at 5.63 million. Out of these, 4.35 million (77.26 percent) are engaged in agriculture. The size of the formal sector labour force (*i.e.* where wages are regulated) is only about 5 percent of the total workforce, or about 0.28 million. This picture has been virtually unchanged through the 1990s. Of about 200,000 joining the labour force each year, only about 15,000 get formal sector jobs; the rest have to accommodate themselves in the informal sectors, essentially subsistence agriculture. It is not surprising that an annual growth in the national income of over 6 percent per year (1993–99 average) reduced poverty by a mere 3 percent through this whole period.¹ The task of extending decent working conditions to the existing and emerging workforce is certainly a significant challenge.

Cambodia presently faces several problems that inhibit it from addressing rural poverty and unemployment. First, new economic activities are not growing in a way or at a scale that

¹ For every 10 percent growth in the national income, poverty reduced by a mere 1.4 percent (Acharya 2001).

can affect the employment structure.² Wherever jobs are being created, they are almost exclusively in urban areas.³ Next, local savings are not large or stable enough to finance and sustain activities outside agriculture. The alternative is foreign capital, but this cannot become the exclusive engine of growth. Third, investments, whether local or foreign, require adequate infrastructure and trained local human resources, at reasonable prices. Last, there is the issue of weak governance, which needs considerable development. All these problems indicate the need to hasten a reform process, and to initiate or support activities that have a high employment potential, are regionally dispersed and require relatively small doses of capital to flourish.

One of the proposals currently in vogue in international forums is to upscale activities in the informal sectors in rural as well as urban areas.⁴

Diversification of occupations in rural areas has many advantages, and there is extensive literature that elaborates these gains (Saith 1992; Islam 1983). However, up-scaling informal rural sector activities (off-farm and non-farm activities), requires their identification, strengthening their technological economic base, and the creation of market channels.

This paper is written in the spirit of identifying the problem, in the sense that it tries to identify the size and shape of off-farm and non-farm activities rather than suggest ways to upscale them *per se*. This is because there are no recent surveys or establishment censuses, conducted in Cambodia.⁵ Comprehensive sector reports on activities other than large-scale manufacturing and tourism have yet to be undertaken. There is a paramount need to conduct a detailed establishment census and, in a small way, this paper is a precursor to this. In Chapter 2 this paper will attempt to trace the historical and factual basis of different non-farm and off-farm activities that have existed in the country. Chapter 3 examines the existing data as obtained from secondary sources to paint a picture of contemporary non-agricultural activities. Chapter 4 details the status of rural industries in Cambodia as collated from field studies conducted here, and supplemented by existing literature on specific industries. Chapter 5 presents a discussion on financial and economic parameters, based on surveys of 276 enterprises in seven industrial groups. Chapter 6 discusses the market linkages of these enterprises. Chapter 7 presents a synopsis of existing policies, including those on training. Concluding remarks are made in Chapter 8.

² The garment industry has created the largest number of formal sector jobs. Between 1993 and 2001, about 200,000 jobs were created, but this employment is only a little over 3 percent of the employed workforce. The wage bill is not high enough to radically influence rural expenditure structure.

³ In contrast, over 80 percent of the population resides in rural areas (RGC 1999). Jobs are therefore not being created where there is need.

⁴ The International Labour Organisation has led the debate. See ILO (1999); ILO (2000); ILO (2001)

⁵ The last countrywide Establishment Census was conducted in 1995. In that, only the relatively larger establishments were covered. Not much is known about the recent survey being conducted by the Ministry of Planning with assistance from Asian Development Bank (ADB) other than the fact that it also concentrates on relatively large establishments in urban areas.

Chapter Two

The History of Off-farm and Non-farm Activities

2.1 Early History

Cambodian society traditionally possessed a vast array of skills in civil engineering, earth moving, water harvesting and transportation well over a thousand years ago, as is witnessed from the ruins of Angkor (Rooney 2000). There is also adequate evidence to suggest that the society had mastered the technology of metal smelting and moulding coins, human shapes and utensils as early as the first millennium of the Christian era. Transportation methods, which could move bulk cargo, particularly very large stone boulders and water, were developed, which facilitated the construction of Angkor and its mammoth structures. Additionally, the architecture of Angkor suggests that the early Khmers, possessed knowledge of astronomy, geometry and other branches of mathematics. It is not clear whether they actually used these skills for developing non-farm activities, but the little evidence that exists, suggests that the skills were almost exclusively devoted to construction of temples and its fortifications in addition to building large civil engineering works for water transportation. Further, given the fact that the medieval Khmer kingdoms spanned well beyond the present boundaries, the skills were perhaps put to use for making weapons, mass transport equipment, food processing and harnessing draught animals.

2.2 After the Angkor Period

Not much is known about Cambodian history between the fall of Angkor in the 14th century and the 19th century. Chandler (1993) and Tarling (1999) suggest that in the early-mid 19th century, Cambodia was ravaged by famine, and invading armies. As a result, it became less populous.⁶ People predominantly lived in rural areas and earned their living through rice farming. Ethnic minorities such as the Chinese, Sino-Khmer and Chams managed marketing, non-rice garden farming, weaving, and commercial fisheries (Willmott 1977). Accounts of trade in the 19th century suggest that international trade was restricted to such agro-based and animal-based commodities as ivory, pepper, cardamom, hides and wood, and this was in small quantities.⁷ Perpetual wars, natural disasters, and population movements appear to have taken their toll in the form of deskilling the society and reducing it to subsistence farmers. To quote Chandler on Cambodia in the early-mid 19th century,

“Unlike Burma and Laos, its soils contained fewer gems or precious metal. Unlike Siam its manufacturing, trade, and commerce were underdeveloped, and finished goods, like

⁶ These sources maintain that the population of Cambodia in the 1840s did not exceed one million.

⁷ The geopolitics of that time did not permit trade to expand, which otherwise might have brought in newer development options in the country. *In effect*, Cambodia was cut-off from the rest of the world.

brassware, porcelain, and firearms, came from abroad. Unlike Vietnam, its communications were poor and internal markets underdeveloped... Cambodia had a subsistence economy; most of its people spent most of their time in growing rice.”(pp. 100-101)

The seat of governance in the 19th century was at Udong (30 km north of Phnom Penh). The kingdom, however, extended little beyond the city. Farmers paid taxes irregularly, often on demand or coercion, and seldom interacted with people outside their villages. The population in urban areas were constituted mainly of merchants (almost exclusively of foreign origin), the army and royalty. In this sense, it is safe to conclude that there was no noteworthy state patronage to art, culture, or institutions of learning, which might have provided the necessary encouragement for non-farm activities to evolve as has been found in many other Asian countries.

Much of the remarkable technological prowess of the Angkor era was lost in the mists of time. By the 19th century, perhaps only in the Kompong areas⁸ did communities retain some skills in inland navigation, boat making, fish processing, some food processing, and spinning and weaving, in addition to growing rice. Beyond this, little else existed.

2.3 The French Colonial Period (mid-19th Century to Mid-20th Century)

Unlike in most other colonies, the French did not maintain detailed records of the social and economic events in this country (Chandler 1993). In fact, apart from Vietnam, the French maintained few records on its other Southeast Asian colonies. What exists are some records on agricultural exports, taxes and revenues and budgets. To quote Chandler again;

"On rare occasions when French writers looked at Cambodia's economy, they related it to the rest of Indochina, particularly in terms of export crops and colonial initiatives, like public works," (pp. 139)

Written accounts of French travellers in the 1850s, 1860s and 1870s suggest that in the area known as Kompong Cham today, the cotton crop was extensively cultivated (de Carne 2000; Mouhot 2000).⁹ Records also suggest that cotton processing ginning, spinning and weaving were not alien to Cambodians. As will be seen below, cotton was grown in Cambodia until as late as 1950. It appears that cotton cultivation was discontinued as late the 1970s, though official records are not explicit on this point. While much of the cotton in later periods may have been grown for export to neighbouring countries, people's skills in spinning and weaving methods surely survived. Remnants of cotton processing can also be observed today, in the form of handlooms and semi-automatic looms in the same areas: Kompong Cham, Takeo and Prey Veng provinces. Ironically, these weaving operations today use imported yarn; the cultivation of cotton crop has not revived.

Fishing activities were commercialised well over a century back. The Crown rented out large aquatic areas for a year or two to contractors, who in turn hired workers or sublet their catchment areas to locals for fishing. The French modelled their taxation system on the same system of leasing out fishing areas. Not all landed fish could be marketed fresh, and a considerable amount was dried, salted, or fermented. Petillot (1911) estimated that in 1909 about 50,000 tonnes of dried or salted fish were exported. Later estimates, for the 1920s and 1930s, show that about 25,000 tonnes of dried fish were shipped out of Cambodia. Given that dried fish weighs a third of the fresh fish, this corresponds to 75,000 tonnes of fish. Estimates for the 1940s suggest that annual production could then have been in the range of 120,000

⁸ Kompong areas were distinct from the hinterland — they were situated on water banks and residents here were engaged in trade and transport (Acharya and Chan 2001).

⁹ These books were originally published in French in the 19th century. References quoted here are English translations, now brought out.

tonnes (van Zalinge, Nao, Touch and Deap 2000). Despite the richness of the resource, neither the French nor the Crown kept a systematic record of fish catch or its export. Further, the consolidation and modernisation of the industry was never on the agenda.

However, during the French colonial period there was a significant growth in urbanisation, and the establishment of transportation and communication systems in addition to electrification. Railways and metalled roads came into existence. A number of Cambodians travelled to France for higher education, as well. All this provided a basis for the modernisation of at least the capital city, Phnom Penh, and a few other towns: particularly, Sihanoukville and Battambang, Kompong Cham and Siem Reap.

There are no simple explanations to the low evolution of non-farm activities in Cambodia. In most societies, non-farm activities have emerged because of higher agricultural productivity, which permitted the release of labour from farming operations, and at the same time financed these operations. In Cambodia, agricultural productivity was never very high. The *extensive* (or swidden) nature of agriculture, excessive taxation of agricultural products, and the politically nebulous situation, did not permit land or labour productivity to grow. Low agricultural productivity forced all in the community to work the land for subsistence. There was therefore, neither impetus nor resource to promote or support non-agricultural activities. Additionally, the non-availability of technologies for want of state patronage contributed to this *status quo*.

2.4 From 1953 until the 1980s

By the 1940s, the country had acquired a small industrial base. A government report produced in 1958 says that before 1955, there were 369 small and medium industries operating in Cambodia. In 1958, the number exceeded a thousand: 985 new enterprises were created between 1955–58 alone. These included, an assembly facility for Two-Horse-Power Citroen cars (producing 720 units a year), a plant for assembling motorcycles, two scooter factories, an assembly plant for sewing machines, six aerated water plants, 11 soap factories, six mechanised weaving factories, two paper mills, one sugar mill, two chemical plants, and one food canning factory (KOC 1958). Data from a five-year plan drawn up for the period (1960–64) also show that the country at that time was producing such products as cotton, jute, rubber, plywood, silk and paint, and planned to produce steel during the 1960s (KOC 1960). The period 1953–64 has been characterised as one where private investment was taking roots, though steel production could never materialise (Sok and Acharya 2002). In terms of human capital, a medical college and some technical training institutions were set up under the aegis of the government.

This list may appear impressive, given that the 1930s and 1940s reveal no such production or training capacities. Almost all of these activities, however, were located in urban areas – principally Phnom Penh, and to a limited extent, Sihanoukville. It is also true that a very large majority of the people continued to live in rural areas and earned their living through subsistence agriculture. The available census of that time, *The Census of Cambodia 1962*, does not provide an occupational distribution of the workforce. However, data on the rural-urban distribution of the population from the census (revealing greater than 80 percent rural population) and electricity generation in the late fifties (less than 10 megawatts, mainly in Phnom Penh) (KOC 1960), suggest that rural industrialisation or occupational diversification was minimal at best, limited to fishing, fish processing, some agro-processing, non-mechanised weaving, and the like.

Turmoil began in the late 1960s, with Cambodia increasingly falling under the shadow of the Indo-China War on the one hand, and on the other economic stagnation originating from policies extant at that time. The period from 1970 to 1990 has often been referred to as one where there was turbulence and civil war. During 1975–79, the Khmer Rouge period,

almost all non-rice activities were brought to a standstill. Very large numbers in the population were separated from their skills during the huge and tumultuous population relocation and reassignment of work.

After 1980, some activities under the cooperative sector (the *Krom Samaki*, typically rice milling and other food processing) began to re-emerge (Rozemuller 1998), in addition to a nascent private sector that began to grow in urban and semi-urban centres. Some cotton processing activities (perhaps along with the revival of cotton cultivation) were initiated in Kompong Cham in the 1980s with Soviet aid, but the insecure situation did not permit the endeavour to take root; they were soon discontinued. By 1985, there was widespread street vending, petty marketing, and some light consumer goods manufacturing, though again concentrated in urban and semi-urban areas. Large-scale industrialisation only began in the 1990s (Sok and Acharya 2002).

2.5 Summary

Historically, Cambodia does not have much to draw upon in terms of occupational diversification. For one, the gains made in the earlier civilisation were lost, and second, the small gains made during the early-mid 20th century were lost during the turbulent decades of the 1970 and 80s.

Chapter Three

Occupation Diversification in the 1990s

Some information on the diversification of industrial activities can be deciphered from two of the four large-scale surveys launched in the 1990s. The two earlier Socio-Economic Surveys (SES) of 1993 and SES of 1996 could not be used since data on industrial distribution of activities were not tabulated. Detailed two or three-digit data on industrial distribution of the workforce can be obtained from the SES of 1997, the Census of Cambodia 1998 and the SES of 1999. Next, it is possible to obtain a two-digit level industrial classification of workers from the Labour Force Survey of 2000. However, given the limited sample sizes of the SES of 1997 and 1999 (about 6,000 households), it is best if data from them are not disaggregated beyond a two-digit classification, or regionally. For a three-digit or regional analysis, the Census of Cambodia is the only reliable source.

A word about the definition of rural and urban also needs to be mentioned. In international parlance, an area is classified as urban if it simultaneously meets certain criteria: population density (greater than 500 persons/square kilometre), population size (more than 5,000 persons), and occupational base (higher than 75 percent non-agricultural). All other areas are classified as rural. In Cambodia, an administrative definition is used instead, according to which a district in which the administrative headquarters are located is urban, and all other areas are classified as rural. Next, four cities, namely Phnom Penh, Sihanoukville, Kep and Pailin, are classified as urban, despite the fact that large parts of the last three are essentially rural.

Keeping in view this anomaly of definitions on the one hand, and the reality that Cambodia is predominantly an agrarian economy on the other, the analysis in this section is not restricted to areas defined as ‘rural’ alone; instead, a substantial part of the analysis is based on grouped (rural and urban) data.

3.1 Analysis of the Distribution of the Workforce, 1997–2000

Table 3.1 presents data on industrial classification of the workforce in Cambodia at four points of time, 1997, 1998, 1999 and 2000. This table is drawn up for the whole country as well as for rural areas (figures for rural areas are shown in the lower section of the table). A very large proportion of workers — more than 70 percent — are concentrated in the agricultural sector for the country as a whole; for rural areas, the figure is even higher, between 75–80 percent. The only other industrial groups that show some visible concentration of activities (more than 1 percent of total employment) are fishing, food processing, construction, retailing (sales and services), transport activities (land and water), education and public administration. All industry groups, whose share in the workforce was less than 1 percent over the four years, are grouped together under ‘others’.

Next, data suggests a gender-specific clustering of workers in many industry groups: there are more female workers in food processing, apparel industry and retailing, while in fishing, transport and public administration, there are more male workers. In jobs where heavy labour or extensive travel is required — fishing, construction, transport — there is more male labour.

There is not much difference between rural and urban areas in the distribution of workers by industry groups, when seen at a two-digit disaggregate level (except in rural areas where a larger proportion of workers are engaged in agriculture and some industry groups are virtually non-existent). Therefore, occupational diversification is rather small in rural areas as per these data. There is a higher concentration of female workers in agriculture than male. As elsewhere in developing countries, the main reason is the relatively low occupational and geographic mobility of female workers. Consequently, female workers are concentrated in higher numbers in relatively low productivity options.

A comparison of the occupational trends across different years is problematic because of non-comparability of data. The total number of workers, was 4.2 million for the SES-1997, it was 4.8 million for the Census of 1998, 5.6 million for the SES-1999 and 5.2 million for the Labour Survey of 2000. The data are not exactly comparable across the years, one of the reasons being the different coverage.¹⁰ Further, each survey has had its own definitions and instruction manuals, which were not necessarily synchronised with the other. Third, for 1997, 1999 and 2000, data were drawn from sample surveys while the 1998 data are census based. Data from the sample surveys might have some small sample biases at the disaggregated level. Fourth, in the sample surveys, the workers covered belong to 10 years and above age groups while in the census all workers aged 5 years and above have been covered, further contributing to incomparability. Last, the industrial classification of workers in the Labour Survey is not as meticulous in the other surveys (where jobs are classified as being primary, secondary, etc.). This is yet another point of incomparability.

¹⁰ The SES-1997 left out at least three large provinces in the north-west for security reasons. The Census claims to have covered over 90 percent of the country. SES-1999 seems to have covered over 95 percent of the country. Coverage details of the Labour Force Survey of 2000 are not known.

Table 3.1 Percentage Distribution of Workers, two-digit Industrial Classification for 1997, 1998, 1999 and 2000

Industry Group	SECS 1997			Census 1998			SECS 1999			LF 2000		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
01. Agriculture, Hunting & Related Service Activities	70.03	66.08	73.74	75.57	69.00	81.80	72.31	68.46	75.83	70.09	67.07	72.88
02. Forestry, Logging & Related Service Activities	0.70	0.85	0.56	0.14	0.20	0.08	1.63	1.99	1.30	0.85	0.93	0.76
05. Fishing, Operation of Fish Hatcheries, Farm				1.47	2.00	0.89	2.10	3.31	0.99	2.79	4.42	1.28
15. Manufacture of Food Prods & Beverages	1.16	1.41	0.93	0.34	0.40	0.25	1.22	1.26	1.18	1.53	1.56	1.51
17. Manufacture of Textile	1.07	0.43	1.67	0.27	0.00	0.46	1.15	0.48	1.77	0.88	0.49	1.25
18. Manufacture of Wearing Apparel	0.84	0.22	1.43	1.09	0.30	1.83	1.98	0.60	3.23	3.45	0.70	6.01
20. Manufacture of wood and wood Products	1.39	1.81	1.00	0.35	0.50	0.13	0.27	0.53	0.03	0.05	0.10	0.01
45. Construction	1.69	3.01	0.46	0.93	1.60	0.23	1.40	2.56	0.34	1.32	2.40	0.32
50. Sale, Maintenance & Repair of Motor Vehicle	2.42	3.60	1.31	0.53	0.90	0.13	0.29	0.50	0.09	0.49	0.79	0.21
52. Retail Trade, Except of Motor Vehicle	9.19	4.56	13.54	6.23	3.50	8.75	7.05	3.33	10.45	7.17	3.84	10.25
60. Land Transport, Transport via Pipelines	1.59	3.17	0.11	2.22	4.10	0.42	1.59	3.30	0.04	1.85	3.73	0.11
75. Public Administration & Defence	3.24	5.79	0.84	4.54	8.50	0.75	3.21	6.11	0.57	2.79	5.28	0.48
80. Education	1.37	1.86	0.92	1.66	2.20	1.10	1.53	2.21	0.91	1.66	2.27	1.09
95. Private Households With Employed Persons	1.19	1.24	1.15	0.21	0.20	0.25	0.63	0.66	0.60	0.64	0.68	0.60
Others	4.12	5.97	2.34	4.45	6.54	2.93	3.64	4.70	2.67	4.44	5.74	3.24
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(Rural)												
01. Agriculture, Hunting & Related Service Activities	79.96	76.70	82.91	82.76	77.30	87.63	77.74	74.53	80.63	75.85	73.29	78.17
02. Forestry, Logging & Related Service Activities	0.75	0.93	0.59	0.11	0.10	0.07	1.76	2.17	1.38	0.86	0.96	0.77
05. Fishing, Operation of Fish Hatcheries, Farm				1.47	2.00	0.89	2.10	3.31	0.99	2.79	4.42	1.28
15. Manufacture of Food Prods & Beverages	1.03	1.37	0.72	0.26	0.30	0.19	1.34	1.24	1.03	1.53	1.57	1.49
17. Manufacture of Textile	1.20	0.52	1.80	0.29	0.00	0.49	1.20	0.46	1.86	0.97	0.56	1.34
18. Manufacture of Wearing Apparel	0.47	0.10	0.79	0.83	0.20	1.80	1.73	0.51	2.82	3.36	0.64	5.82
20. Manufacture of wood and wood Products	1.50	1.87	1.16	0.31	0.50	0.12	0.24	0.48	0.02	0.05	0.09	0.01
45. Construction	1.26	2.20	0.41	0.54	1.00	0.12	1.19	2.24	0.25	1.03	1.86	0.27
50. Sale, Maintenance & Repair of Motor Vehicle	1.82	2.84	0.90	0.30	0.50	0.07	0.17	0.33	0.04	0.30	0.46	0.16
52. Retail Trade, Except of Motor Vehicle	5.38	2.82	7.71	1.17	2.40	5.74	5.48	2.71	7.95	5.01	2.84	6.99
60. Land Transport, Transport via Pipelines	0.87	1.75	0.06	0.57	2.90	0.36	1.17	2.43	0.03	1.31	2.66	0.08
75. Public Administration & Defence	1.32	2.66	0.11	3.01	6.00	0.29	1.98	4.00	0.18	1.90	3.74	0.21
80. Education	1.10	1.66	0.58	1.42	2.00	0.81	1.32	2.00	0.71	1.44	2.08	0.84
95. Private Households With Employed Persons	0.94	0.90	0.97	0.09	0.00	0.10	0.44	0.43	0.45	0.61	0.71	0.52
Others	2.40	3.68	1.29	6.87	4.80	1.32	2.14	3.16	1.66	2.99	4.12	2.05
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3.2 Comparison: SES 1997 and SES 1999

It is believed that the two Socio-Economic Surveys of 1997 and 1999 could be somewhat more comparable than the other data sources since the samples were drawn from the same master sample prepared in 1993.¹¹ Effort is therefore made here to compare the absolute changes in the extent of employment in rural areas, by broad industry groups, disaggregated to a two-digit level, between 1997 and 1999 (Table 3.2).

Table 3.2 Employment and Employment Change by Industry Groups, Rural Areas 1997–99

Industry group	Workers 1997	Workers 1999	Change (%)
01. Agriculture, Hunting & Related Service Activities	2,770,703	3,815,151	38
02. Forestry, Logging & Related Service Activities	25,918	86,239	233
05. Fishing, Operation of Fish Hatcheries, Farm		102,994	
10. Mining of Coal and Lignite	201		
11. Extraction of Crude Petroleum & Nat Gas		1,163	
13. Mining of Metal Ores	300		
14. Other Mining and Quarrying	8,996	1,148	-87
15. Manufacture of Food Prods & Beverages	35,741	55,647	56
16. Manufacture of Tobacco Products	1,843	2,393	30
17. Manufacture of Textile	41,443	58,888	42
18. Manufacture of Wearing Apparel	16,138	85,118	427
19. Tanning and Dressing of Leather			
20. Manufacture of wood and wood Products	51,979	11,667	-78
22. Publishing, Printing & Reproduction of Recorded Media	477	1,283	169
23. Manufacture of Coke & Refined Petroleum Product	411		-
24. Manufacture of chemical and Chemical Product		845	
25. Manufacture of Rubber & Plastic Product	201		
26. Manufacture of Non-Metallic Mineral Product	2,399	8,961	274
27. Manufacture of Basic Metals	9,295		
28. Manufacture of Fabricated Metal Prod Excl. Machinery	1,150	6,332	451
29. Manufacture of Machinery and Equipment, N . E . C	859	1,603	87
32. Manufacture of Radio, Television & Comm. Equipment	1,961		
35. Manufacture of Transportation Equipment	874		
36. Manufacture of Furniture, Manufacture, N E C	913	3,201	251
40. Electricity, Gas, Steam & Hot Water Supply	350	1,130	223
41. Collection, Purification & Dist, of Water		651	
45. Construction	43,619	58,383	34
50. Sale, Maintenance & Repair of Motor Vehicle	63,140	8,549	-86
51. Whole Sale Trade & Commission Trade	3,714	1,294	-65
52. Retail Trade, Except of Motor Vehicle	186,522	268,735	44
55. Hotels and Restaurants	1,128	7,926	603
60. Land Transport, Transport via Pipelines	30,052	57,279	91
61. Water Transport	5,195	1,881	-64
62. Air Transport		6,260	
63. Supporting & Auxiliary Transport Activity	13,298	14,559	9
64. Post Telecommunication		2,072	
65. Financial Intermediation, Excl. Insurance	1,598	1,849	16
66. Insurance & Pension Funding		236	
67. Activities Auxiliary To Financial Intermediation	392	511	30
70. Real Estate Activities		446	
71. Renting Machinery Equipment W/O operator	1,215	719	-41
72. Computer & Related Activities	453		
74. Other Business Activities	1,394	3,234	132
75. Public Administration & Defence	45,727	97,404	113
80. Education	38,079	64,858	70
85. Health & Social Work	12,165	16,224	33
90. Sewage & Refuse Disposal, Sanitation	833	2,238	169
91. Activities of Membership Organisation, NEC	2,273	2,477	9
92. Recreational, Cultural & Sporting Goods	3,737	5,592	50
93. Other Service Activities	4,282	10,544	146
95. Private Households With Employed Persons	32,438	21,625	-33
99. Extra- Territorial, Organisations & Bodies	1,702	7,960	368
Total	3,465,112	4,907,269	43

¹¹ A new Master Sample has been prepared from the Census of 1998. It is however yet to be put to use.

Data in the last row of Table 3.2 show the total number of workers in the two years. In 1997, rural workers were estimated at about 3.4 million while in 1999 they were estimated at about 4.9 million. This increase of 1.5 million, equivalent to about 43 percent of the rural working population, is improbable within two years. There has not been that large-scale an influx into Cambodia, either from urban areas or from overseas to justify this difference. Clearly, the coverage of the two surveys leaves much to explain. Perhaps the multipliers (weights) used in one or both the sample surveys were incorrect, since none of these made use of the Master Sample drawn from the Census; instead they relied on the listing drawn up by UNTAC in 1993.

However, a bias in the population count, if *systematic* across industries, could still permit limited comparison. While it is impossible to determine whether the bias is systematic, some comparison is made under the assumption that *it is* systematic.

In the production sphere, a notable increase in employment (more than 100 percent) is observed in fishing, apparel industry, non-metallic mineral products, metal fabrication, furniture manufacture, electricity generation, and printing activities. Hotels and restaurants, sanitation related activities, and public services, exhibited a similar expansion in the services sector. In contrast, sectors that faced contraction (as seen from employment data) are mining and quarrying, wood and wood products, sale and maintenance of motor vehicles, wholesale trade, water transport, renting machinery and domestic employment. In the former, apparel is clearly a favoured industry in the Cambodian context — it grew very rapidly during that period even in rural areas. Non-metallic mineral products (*e.g.* limestone) were in demand because of the expansion in the construction industry, and electricity, hotels, printing, furniture, and similar activities accompany a modernisation process. Since the economy grew by 5–6 percent during the late 1990s, this increase in demand is not unrealistic. Activities in wood and wood products exhibit a contraction, probably because of stricter government control over logging. Road transport appears to be replacing water transport — increased import of motor vehicles bear evidence to the fact that road transport is expanding fast. Lastly, as the development process expands, the number of domestic workers will decrease.

Overall, this listing is useful in identifying activities that have exhibited the potential to grow and those that have not. Not much more could be deciphered from these data.

3.3 Distribution of Activities as Seen from the Census of 1998

The census, by the very definition, provides a more detailed classification of activities than the sample surveys. A three-digit disaggregation of workers, obtained from the Census of Cambodia 1998, is presented in Table 3.3. This table shows the frequency distribution of workers in *select* industry groups, based on the relative importance of each activity, as seen from Tables 3.1 and 3.2, and based on activities that could *possibly* flourish in Cambodia's rural environment. The data are presented separately for the whole of Cambodia and specifically for rural areas.¹²

In 1998, the total size of employment in the country was about 4.8 million, and in rural areas, it was about 4.1 million. The industrial groups listed in Table 3.3 constitute only about 14 percent of the total employment for the country, and about 10 percent in rural areas. These are but small proportions, which indicate the nascent character of non-farm activities in Cambodia.

¹² See Acharya and Mitra (2000) for identification of important rural activities.

Table 3.3 Employment in Specific Industry Groups: 1998

Industry	Description	All Cambodia		Rural Cambodia	
		Employment	Percent	Employment	Percent
050	Fishing, fish hatcheries and fish farms; service activities incidental to fishing	71,079	10.39	56,857	13.42
141,142	Other mining and quarrying	5,535	0.81	3,648	0.86
151	Production, processing of meat, fish, fruit, vegetables, oils and fats	4,750	0.69	2,797	0.66
152	Manufacture of dairy products	35	0.01	24	0.01
153	Grain mill products, starches and starch products, and prepared animals feeds	4,565	0.67	3,769	0.90
154	Manufacture of other food products	2,672	0.39	1,579	0.37
155	Manufacture of beverages	4,291	0.63	2,785	0.66
160	Manufacture of tobacco products	1,501	0.22	1,044	0.25
171	Spinning, weaving and finishing of textiles	11,583	1.69	10,808	2.55
172	Manufacture of other textiles	1,457	0.21	1,192	0.28
173	Manufacture of knitted and crocheted fabrics and articles	67	0.01	34	0.01
181	Manufacture of wearing apparel; except fur apparel	52,818	7.72	34,766	8.21
182	Dressing and dyeing of fur; manufacture of articles of fur	14	0.00	11	0.00
191	Tanning and dressing of leather, luggage, handbags, saddles and harness	358	0.05	165	0.04
192	Manufacture of footwear	752	0.11	352	0.08
201	Saw-milling and wood products	9,454	1.38	7,026	1.66
202	Manufacture of products of wood, cork, straw and plaiting materials	7,415	1.08	5,727	1.35
210	Manufacture of paper and paper products	440	0.06	285	0.07
251	Manufacture of rubber products	2,009	0.29	1,663	0.39
269	Manufacture of non-metallic mineral products not elsewhere classified	7,143	1.04	5,482	1.29
361	Manufacture of furniture	8,981	1.31	5,436	1.28
371	Recycling of metal waste and scrap	180	0.03	125	0.03
401	Production, collection and distribution of electricity	2,651	0.39	1,229	0.29
451	Site preparation	1,303	0.19	514	0.12
452	Building of complete constructions or parts thereof; civil engineering	31,197	4.56	16,530	3.90
453	Building installation	7,906	1.16	3,535	0.83
454	Building completion	620	0.09	214	0.05
455	Renting of construction or demolition equipment with operator	4,255	0.62	1,930	0.46
502	Maintenance and repair of motor vehicles	10,719	1.57	5,271	1.24
504	Sale, maintenance and repair of motorcycles and related parts and accessories	9,206	1.35	4,920	1.16
505	Retail sale of automotive fuel	3,030	0.44	1,499	0.35
512	Sale of agricultural raw materials, live animals, food, beverages and tobacco	2,820	0.41	1,585	0.37
514	Wholesale of non-agricultural intermediate products, waste and scrap	2,267	0.33	1,009	0.24
521	Non-specialised retail trade	2,296	0.34	1,226	0.29
522	Retail sale of food, beverages and tobacco in specialised stores	2,144	0.31	955	0.25
525	Retail trade not in stores	280,840	41.06	165,240	39.01
526	Repair of personal and household goods	1,974	0.29	1,021	0.24
551	Hotels; camping sites and other provision of short-stay accommodation	4,172	0.61	931	0.22
552	Restaurants, bars and canteens	10,388	1.52	3,863	0.91
602	Other land transport	106,774	15.61	65,068	15.36
612	Inland water transport	2,336	0.34	1,455	0.34
	Total	683,997	100	423,570	100

Since agriculture is not included in this table, the percentage frequency of other activities shows up much more prominently here than in Tables 3.1 and 3.2. In addition, being a three-digit classification, many more activities appear in this table than in the earlier tables.

Figures here suggest that despite leaving agriculture out, up to two-thirds of the jobs are still in rural areas. Next, there appears to be a strong correlation between the spread of employment across activities in rural areas and all areas (correlation coefficient: 0.90), meaning that the spread of non-farm activities is similar in both rural and all areas (at least in this list of activities).

The industry groups found to be prominent in terms of the proportion of jobs, are, fishing and fish processing, mining, food processing, non-metallic minerals, spinning and weaving, apparel, furniture manufacture, saw milling and wood processing, grain mills, building and construction, retail trade, maintenance of motor vehicles, maintenance of motorcycles, and land transport. Each of these, perhaps other than saw milling, is an important activity and could have the potential to provide increased employment in the future. A caveat: there appears to be an undercount of employment in both water transport and fishing and fish processing activities in the census. Each of these is far more evident in reality than what these data suggest. Since a census, like any other large survey, uses the 'principal activity' criterion for classifying a worker by his/her activity status, some of the activities that are seasonal or part-time, fail to get full recognition.

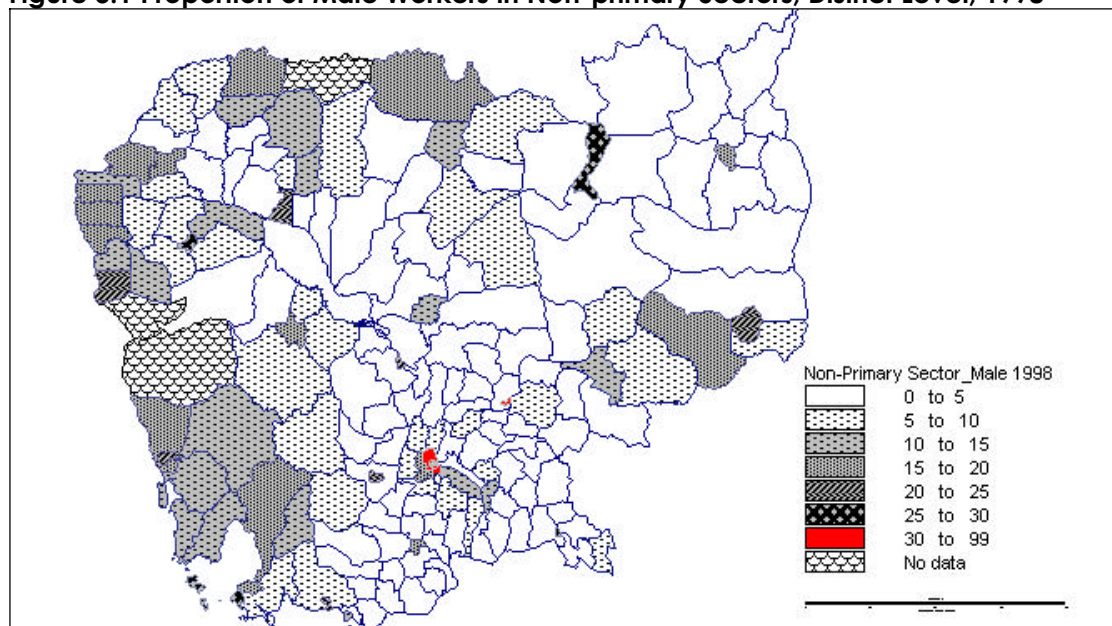
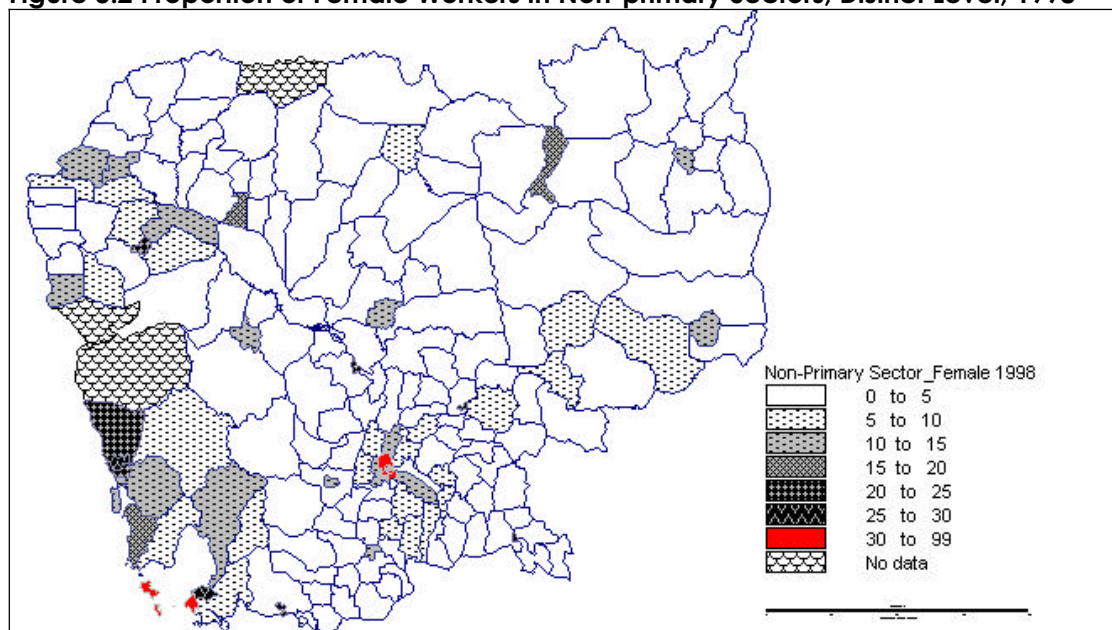
3.4 Spatial Distribution of Non-farm Employment

To examine regional variations in the extent of non-farm employment, non-agricultural employment as a proportion of total employment for each of the 186 districts in the country is calculated and plotted on maps; these can be seen in Figures 3.1 and 3.2. These maps have been drawn without distinction between rural and non-rural areas, as the present (administrative) definition of rural and non-rural areas categorises whole districts as being either rural or urban.¹³ The band within which the proportion of non-farm employment varies between the districts is small. However, within this small spectrum there are notable variations. Districts in Phnom Penh and the western and northwestern provinces show relatively more non-farm employment, while elsewhere non-farm employment is less. Additionally, there are some districts around Phnom Penh, the Tonle Sap Lake, and a few districts in the central parts of the northeast and in the north, where there is some non-farm work. In most of the northeast and large parts of the Mekong Plains region, non-farm employment is less than 5 percent of the total. A possible reason is that in areas where there are large arable lands available, people have not moved away from agriculture.

There are more male workers compared to female in non-farm work almost everywhere. As stated earlier, the most plausible reason for this is the lower occupational and geographic mobility of women compared to men.

To obtain a statistical estimate of the variation in non-farm work, the mean and standard deviation of non-farm employment, for male and female workers, were calculated (from district level data). The mean values of the percentage of non-farm employment are 27.33 percent (male) and 17.60 percent (female). However, the corresponding values of the standard deviation are 22.64 and 23.50, which are very high compared to the mean values; there is not much of a central tendency. This large regional variation in occupational diversification speaks of the diversity present in the country, distinct from the conventional wisdom, which suggests that there is little other than paddy cultivation in Cambodia's hinterland.

¹³ Since outside a few cities like Phnom Penh, Sihanoukville and Siem Reap, almost all of the country exhibits a rural characteristic, an aggregate mapping is quite representative of the rural areas.

Figure 3.1 Proportion of Male Workers in Non-primary Sectors, District Level, 1998**Figure 3.2 Proportion of Female Workers in Non-primary Sectors, District Level, 1998**

To follow up the regional variation further, employment data at the provincial level are disaggregated by 17 sectors (Tables 3.4 and 3.5).¹⁴ The reason for creating these tables is to explore the extent of inter-regional variation in non-farm activities for each of the 17 major industry groups. As earlier, these data pertain to the complete country and not rural areas alone. The mean and standard deviations of the percentage of employment, in each of these sectors, are presented in Table 3.4. The generic data are presented in Table 3.5.

¹⁴ These 17 sectors have been classified in the Census of Cambodia, following the international classification of industries.

Table 3.4 Average Percentage Employment in 17 Sectors: Mean and Coefficient of Variation

	Sector	Mean	Std. Deviation	Coefficient of variation (%)
1.	Agriculture and allied activities	73.64	19.51	26.49
2.	Fishing and related activities	2.11	3.51	166.35
3.	Mining	0.39	0.95	243.59
4.	Manufacture	2.13	1.74	81.89
5.	Electricity, water and gas	0.05	0.12	240.00
6.	Construction	0.90	1.15	127.78
7.	Wholesale trade	6.82	5.32	78.01
8.	Hotels and restaurants	0.27	0.51	188.89
9.	Transport	2.49	2.53	101.61
10.	Financial services	0.02	0.05	250.00
11.	Real estate	0.05	0.07	140.00
12.	Public administration and defence	6.42	5.16	80.37
13.	Education	1.45	0.53	36.55
14.	Health	0.52	0.38	90.48
15.	Community services	1.29	0.97	75.19
16.	Private employment	0.18	0.33	183.33
17.	Employment in extra-territorial organisations	0.17	0.23	135.29

In only seven out of the 17 sectors, the coefficient of variation (of the proportion employment in different sectors) is less than 100 percent; in just one is it less than 30 percent. There is, therefore, large variation across regions, which also suggests the possibility of each area possessing some comparative advantage in one activity or another.

Table 3.5 Proportion of Employment by 15 Major Industrial Categories in Each Province

Province	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Banteay Meanchey	75	0.39	0.39	2.04	0.02	0.66	7.73	0.16	5.60	0.00	0.03	4.17	1.44	0.56	1.78
Battambang	69	1.62	0.12	2.73	0.04	1.15	9.58	0.18	3.41	0.01	0.07	7.11	1.93	0.71	1.76
Kompong Cham	84	0.98	0.04	2.18	0.03	0.50	5.20	0.07	1.38	0.01	0.03	2.03	1.55	0.36	1.12
Kompong Chhnang	81	4.40	0.03	1.34	0.01	0.30	5.38	0.06	1.28	0.01	0.03	3.13	1.35	0.37	1.19
Kompong Speu	89	0.03	0.06	0.80	0.01	0.21	2.81	0.06	0.81	0.00	0.02	3.05	1.35	0.29	0.96
Kompong Thom	84	1.70	0.06	1.37	0.01	0.32	4.28	0.10	1.09	0.01	0.03	3.10	1.61	0.37	1.19
Kampot	86	1.31	0.35	1.01	0.01	0.30	3.54	0.06	1.08	0.01	0.03	2.87	1.69	0.36	1.02
Kandal	74	2.12	0.08	5.03	0.06	1.02	6.93	0.22	2.42	0.01	0.04	3.40	1.79	0.44	1.69
Koh Kong	36	16.00	0.08	5.40	0.06	1.74	14.81	0.57	8.83	0.03	0.08	10.04	0.80	0.63	2.95
Katie	77	1.60	0.07	3.17	0.01	0.94	6.72	0.16	3.69	0.00	0.03	3.28	1.79	0.49	1.27
Mondul Kiri	75	0.12	3.25	0.85	0.01	0.80	4.61	0.12	0.93	-	0.10	9.93	0.85	0.76	1.93
Phnom Penh	9	0.87	0.14	-	0.54	5.24	26.12	2.35	8.56	0.24	0.38	16.08	3.22	2.21	8.03
Preah Vihear	83	0.16	0.09	0.77	-	0.15	2.29	0.06	0.42	0.00	0.02	10.06	1.23	0.31	0.85
Prey Veng	90	0.55	0.08	0.93	0.01	0.21	3.56	0.02	0.80	0.01	0.02	1.64	1.41	0.27	0.66
Pursat	79	3.45	0.07	1.71	0.04	0.23	6.32	0.09	1.39	0.03	0.02	4.01	1.59	0.49	1.33
Rattanakiri	88	0.07	0.12	0.92	0.01	0.30	3.01	0.06	0.66	0.01	0.05	4.53	0.59	0.43	0.64
Siem Reap	80	2.21	0.10	1.27	0.04	1.01	5.05	0.30	1.37	0.01	0.05	5.25	1.18	0.34	1.51
Kompong Som	42	8.68	0.16	7.41	0.26	3.47	14.86	1.32	7.76	0.06	0.10	7.75	1.84	0.74	3.25
Stung Treng	79	0.33	0.01	1.66	0.01	0.74	5.56	0.14	2.08	0.02	0.02	7.41	1.23	0.62	1.03
Svay Rieng	90	0.03	0.01	0.62	0.01	0.20	3.27	0.05	0.62	0.03	0.02	1.98	1.51	0.30	0.89
Takeo	90	0.12	0.01	1.50	0.01	0.21	2.51	0.04	0.67	0.01	0.02	1.86	1.72	0.28	1.03
Uddar Meanchey	79	0.04	0.01	0.95	0.02	0.09	2.39	0.05	0.61	-	0.01	14.18	1.14	0.32	1.07
Kep	77	4.54	0.48	0.80	0.01	0.87	5.37	0.07	1.41	0.02	0.02	5.98	1.20	0.31	1.21
Pailin	49	0.03	3.77	3.67	0.01	0.87	11.76	0.25	3.00	0.01	0.04	23.02	0.48	0.58	0.73
Total	76	1.47	0.12	3.10	0.07	0.93	6.90	0.30	2.34	0.03	0.06	4.54	1.66	0.54	1.78

Note: C1 and C2 refer to the different industry groups as in Table 3.5.

There are 15 groups here and not 17, since Groups 16 and 17 have been merged with group 15.

3.5 Summary

The analysis in this section supports the earlier finding in Chapter 2 that occupational diversification away from agriculture is small in Cambodia. In addition, much of the occupational diversification is in the natural resource-based sectors, and the classical link between '*high-agricultural productivity*' and '*non-agricultural growth*' is yet to be established in the country. While some changes have occurred in the 1990s, these have been small. It is however, impossible to estimate the extent of change over time, since none of the macro level databases are fully comparable with each other. Next, there are large regional variations; both across districts and across provinces, in the extent and nature of jobs people take up outside farm work. These statistics leads one to believe that even if off-farm and non-farm activities are few, they could well reflect an extensive variety.

Chapter Four

A Profile of Specific Rural Industries in Cambodia¹⁵

Cambodian authorities conducted the last countrywide Establishment Census in 1995.¹⁶ According to that survey, there were only 829 business establishments at that time; 94 percent of which were in manufacturing. However, that census surveyed only those businesses that employed 10 or more workers. Next, the survey carried a strong bias towards manufacturing activities located in urban areas. Last, as much has changed in the seven years since 1995, inferences drawn from the survey today would be of limited relevance. Considering these limitations, findings from that survey are not used here to profile rural industries or non-farm activities.

Analysis in the previous section suggests some prominent sectors in terms of magnitude or growth. In this section, an attempt is made to draw up select industry studies *within those industry-groups*. In this section, profiles of non-farm activities for which data was available — or gathered — are presented.

4.1 Rice Milling

Rice processing as an activity has existed for a long time in Cambodia, though it was never a prominent *industry*, since much of the paddy has historically been domestically processed for domestic consumption only. Its origin in recent years can be traced to its revival under the *Krom Samaki* in the 1980s. When a market economy took root in 1993, rice milling as an industry became more visible. The number of factories also grew; in fact, the growth of the industry during 1993–2001 is believed to be higher than the growth in rice production. In the early 2000s, it is estimated that there were 400 rice mills operating in the country in addition to an estimated 1,000 smaller, village-level commercial units. There are many more household operated mills as well, but they are not enumerated here as they fall within the domain of the household.

The two main zones where commercial rice-milling units have been installed are in the west (principally Battambang and Banteay Meanchey), and the southeast (principally Prey Veng, Takeo, Svay Rieng and Kandal), which are also the main rice producing areas. Most mill machinery is of Chinese, Russian or Vietnamese make, powered by old, often inefficient diesel engines, which keep productivity low. One of the disadvantages that Cambodian rice

¹⁵ Other than rice milling and rural electricity generation, the findings in this section are based on primary surveys conducted for this study. Information from existing studies supplements the primary data in all cases.

¹⁶ A countrywide Establishment Census was carried out in 2001–02, whose results are not expected before 2003. It is not yet known what its coverage is likely to be.

millers face is that they buy diesel in US dollars and market their products in riels, baht or dong. They lose out because of downward currency fluctuations in baht and dong. Some paddy-stock is still exported to neighbouring countries for processing, since foreign mills have the technology to outcompete local mills. This is a loss of value added and employment to the country.

There are two modes of operation for rice mills in Cambodia: custom milling and market milling. In the former, millers operate on an order basis from customers, and in return, they keep the bran and husk rather than charge a cash fee. The smaller mills (with a capacity greater than 500 kgs per hour and more than \$5,000 fixed capital) mainly carry out custom operations. They function seasonally, up to a maximum of six months in a year. The larger mills (with a capacity greater than 500 kgs per hour and some having more than \$30,000 in fixed capital) generally operate round the year. They buy paddy from their own village as well as from neighbouring villages when the prices are favourable, process the paddy, and market the rice locally and in the cities. In rare cases, sales in international markets have also been recorded. With rising commercialisation in the rice sector, the former mode of operation is facing stagnation while the latter is gaining ground.

Almost all rice mills are family owned and operated, without any professional staff. Spouses and relatives form the main workers, but in any case, the total number employed in an enterprise is between five and ten. Many mills do not even keep financial accounts and other details such as data on inventory, inputs and outputs. The whole sector also faces an acute shortage of working capital, a major problem. Although the larger mills do get some money from institutional sources, smaller mills do not, and more than 60 percent of mills have never borrowed any money. Some other difficulties are capacity utilisation and marketing (EDC 2001a).¹⁷ The annual rate of return on capital has been estimated at 5–20 percent; the bigger and newer mills have higher yields than the smaller, older ones (EDC 2001a).

Rice milling is an important forward link for paddy production, the most important agricultural crop. However, its direct employment potential is largely seasonal, and is not particularly high, though spin-offs in transportation and storage may be large.

4.2 Rural Electrification

Currently, Cambodia has no more than 15 percent of households connected to an electricity grid (260,000 households from 1998 data). Isolated grids connect about 180,000 households, while the other 80,000 households are served through localised generators and rechargeable batteries, which are provided by small-scale rural electric enterprises (REE), operating on a commercial basis. A large part of this activity is located in the northwestern provinces.

There are two kinds of enterprises presently in operation: enterprises that generate and distribute power, and enterprises that recharge batteries. Some dual-operation enterprises also exist. Most units are old, Chinese or Russian made diesel operated generators, which are inefficient and repeatedly breakdown. Maintenance is also conducted less frequently than the equipment requires: an overhaul required after 4,000–5,000 hours of operation is rarely carried out.

The average value of assets for each enterprise is estimated at about \$17,633, employing five persons (three full-time, two part-time). The average cost of power is about \$0.30–0.45 per kWh, which is rather high, especially compared to costs around \$0.10 in large-scale systems in other countries. The power is transmitted through ungauged wires, pegged on wooden poles. There is significant transmission loss (greater than 30 percent) as the poles tend not to be repaired until they collapse. Customers are charged a fixed rate that

¹⁷ Interviews with EDC Staff were useful in eliciting information.

rarely exceeds \$1–2 a month for 1–2 kWh of power and considering the quality of service customers would not pay more. Fee collection itself is not 100 percent. The revenue base is therefore weak and this is the main reason for not replacing the older equipment. The annual rate of return on equity is only about 5 percent (EDC 2001b; EDC 2001c).

The average number of customers served per enterprise is 192. The service is localised, mainly meant for domestic lighting purposes. Households get power for about four hours each day. Only about 7 percent of REEs offer more than just domestic lighting services.

A typical entrepreneur is a high school certificate holder. Few have obtained technical training, and though some have received short-term training, most learn the technical details of the equipment and transmission through the equipment suppliers. Employees are mainly locally recruited and then trained on the job.

While this is a government recognised (though not regulated) industry and about half of the suppliers are licensed, entrepreneurs do not report receiving any support from the state because of the licensing weaknesses. While only 10 percent of the REE reported obtaining credit from financial institutions, another 40 percent borrow from private sources. Not one has received technical support from institutional sources.

Rural electrification is vital to the modernisation of Cambodia. However, small-scale industrialisation of the kind in evidence is unlikely to be a long-term option for the country, given the low *per capita* generation of power, the rudimentary technology, and the high costs. The employment potential is also low. Nevertheless, despite these shortcomings, the industry is likely to survive for many more years, as alternative, centralised means of electricity provision are yet not available.

4.3 Fishing and Fish Processing

Fishing and fish processing are among the oldest off-farm activities in Cambodia. Although it would be usual to consider this activity within the category of agriculture and allied activities, it is classified separately in Cambodia because of its importance to the economy. Even though many believe that the catch for personal use (and that which escapes enumeration) are considerable, production is still estimated anywhere between 290,000–430,000 tonnes annually, and valued between \$100–200 million (McKenney and Prom 2002).¹⁸ This is about 7 percent of GDP.

Cambodia's fisheries economy is mainly in the inland despite the country having a coastline. The primary sources of fish are the inland water bodies like the Tonle Sap Lake and river, and the Mekong River and its multitude of tributaries. Fishing is largely carried out in basin areas, as fishing is sparse in the central plateau region (Chan and Acharya 2002). Fishing is largely a seasonal activity, carried out after the harvesting of the wet season crop, though in recent years there are many who fish all round the year.

The technology for fishing is largely conventional, with fisherpersons simply sailing out in boats to catch fish using nets. Boats can be large or small, mechanised and/or oar-driven. Modern, seafaring boats like the ones owned by the Taiwanese or Koreans, have not yet been launched in inland Cambodia. As most fish is marketed fresh, marketing and transport facilities assume a central position with respect to profits. Currently, fishing is still a low labour productivity activity and a majority of anglers do not earn much more than subsistence.

Fish processing is an ancient practice in Cambodia with people processing fish to make the product available off-season. Fish is dried, salted (or pickled), smoked and fermented.¹⁹

¹⁸ This large variation in estimates indicates the poor quality of the database.

¹⁹ Additionally, fish sauce making is now emerging as an important industry.

Each of these processes is carried out in cottage or home-based industries, though, not exclusively by the same households who catch fish. The technology used for fish processing in the villages is fully traditional, though modern plants to process fish have been established in some cities. Processed fish is marketed locally, as well as in the cities, and some of it is exported.

Fishing tends not to be an exclusive activity. Farmers, who sow a rice crop in the wet season, fish in the dry season. Those farmers, whose lands are inundated in the wet season, sow a rice crop in the dry season and fish in the wet season. Calculated from the production data given above and the employment figures given in Table 3.3, labour productivity yields a figure of \$2,500–3,000 per worker. This is highly unrealistic and the only explanation lies in the fact that a lot more people are engaged in this activity than the macro data would suggest. In fact, macro data probably only identify those workers who spend a majority of their time fishing and not those who fish in addition to farming. Additionally, the marketing chain probably absorbs a large portion of the value added, denying producers the full value of their catch. This aspect is discussed in Chapter 6.

Fishing lots (large water areas) are leased out to private contractors. The contractors, who hold contracts for one to three years, either exclusively fish the areas themselves, or sublet parts of the water to smaller fishers. Although this system has yielded revenues to the state, there has been little introduction of more modern scientific efforts to fully harness the potential of fishing. To an extent, this implies that centralised efforts to manage this natural resource have only assisted in rent seeking. However, in recognition of the need to provide better food security to the local communities, 56 percent of the one million hectares of fishing lots have been released for open access fishing since 2001.

4.4 Pottery

Archaeological research can often interpret the extent of a civilisation from the remains of pottery made in the past. Indeed, Khmer pottery is perhaps as old as the Khmer culture itself. In Cambodia, pottery remains most prevalent in areas where the ancient civilisation existed: the banks of the Tonle Sap, in the provinces of Kompong Chhnang and Kompong Thom.²⁰ The province name Kompong Chhnang has been derived from the Khmer word *Chhnang*, which means, in this context, an earthen made cooking vessel (Tin 2000). Cambodia manufactures both glazed and clay-fired pottery.

The production system consists of digging and transporting the clay to households, breaking up the lumps of clay, powdering it and removing impurities, mixing water and earth in right proportions to the clay, and then moulding the clay-earth-water paste into the desired object, using instruments made out of wood and cloth. The vessels or objects are finally fired using firewood. Pottery is exclusively a household business: there are no factories. Both men and women dig the clay, collect firewood; and transport the clay to their house, where they prepare the paste. Women then mould the paste into pottery, and the family/community does the firing. The art of making pottery is passed on from mother to daughter.

Interestingly, this traditional form of labour intensive pottery making does not make use of the potter's wheel, so common in most other parts of Asia. Instead, women spend long periods shaping the edges and corners (Cort and Leedom 2000). This reduces precision and takes a longer time. With the introduction of modern technologies, from aid initiated in 1999 from a German NGO, a foot-paddled rotation machine and a high-temperature furnace had been introduced in the areas where this research was conducted in Kompong Chhnang. This has helped raise labour productivity and invoked much interest among local potters.

²⁰ Pottery is also made in Kompong Speu and Takeo where fine quality clay is available.

Pottery is not a full-time activity and almost all potters farm, only making pottery in the farming off-seasons. Earnings are generally not much more than subsistence, and a team of two generally earns about 70,000 riels, or \$18, per month (Tin 2000).²¹ This being a part-time activity, villagers maintain that any income is a welcome supplement. Potters are generally of minimal education and sometimes illiterate. Additionally, none have received vocational education on pottery making, other than that provided by an NGO.

Products are marketed in the nearby provinces, as well as in Phnom Penh. Although a challenge from imported plastics is slowly emerging, a vast array of products, from ornamental vessels to water storage jars and cooking utensils, are still in high demand from the village communities. However, the local nature of markets, and breakages during transport keep the sector's earnings low.

4.5 Brick Making

Brick making is a new industry in Cambodia. As late as the 1950s, the number of brick kilns did not exceed a dozen. By the end of the 1990s, however, there were about 600 brick making units in the country (RGC 1997).²² Most factories are located in Kompong Cham, Kandal, Kompong Thom and more than 60 percent are located in Phnom Penh. The sizes of factories vary greatly; the smaller factories could produce 200,000 pieces each year, while the larger ones could have 30 times this capacity. Factories produce varied products: hollow bricks, solid bricks and roof tiles, though the largest selling item is the hollow brick. Most factories are of smaller size, using only one extruder²³ (Rozemuller 1999).

Many factories are family owned kilns (*loh ut krussa*). They are usually small, mainly engage family labour, and supply bricks to nearby villages. The larger factories (*loh ut krom hun*) are regular enterprises that have a larger catchment area. While the smaller family run business are stagnating, the larger enterprises are growing. Bricks are usually marketed to large construction sites, intermediaries/retailers who market the product in urban or other areas, or directly to customers. In each case, the price obtained by the producers is not very different due to their significant market influence.

A typical Cambodian brick factory has a fixed capital outlay of \$8,500, and usually employs 15–20 persons (Rozemuller 1999).²⁴ The jobs created are mostly of the unskilled and semi-skilled type. Labour costs constitute about a third of the total cost, after fuel, which is about 40 percent of the total cost. Bricks are manufactured round the year, though demand is partially seasonal, since a larger number of people build houses in the dry season. Workers, therefore, tend to get jobs only seasonally and not necessarily round the year.

Cambodian brick makers face stiff competition from factories in neighbouring countries. For one, the clay is mixed in a superior fashion in those countries, making their products better. Next, the extruders are bigger and prime movers more efficient.²⁵ Last, the brick is fired better in neighbouring countries since they use coal, compared to the firewood or rice husk used in Cambodia, which do not generate as much heat. It is widely believed that Cambodian made bricks are cheap and good, and can be efficiently used for making one or two-storey buildings; for taller structures, however, they are not strong enough.

²¹ The survey conducted for this research in 2002, did indicate somewhat higher earnings than the mid-1990s survey undertaken by Tin.

²² Official figures showed 446 licensed brick factories in 1997; the rest were unlicensed units.

²³ An extruder is a machine that moulds bricks out of clay. Other than the extruder, Cambodian factories have few machines.

²⁴ Talks with EDA staff and CDRI's earlier studies were helpful in getting some insights (see also Sok and Acharya 2002).

²⁵ Cambodian factories deploy old diesel engines, in contrast to the more efficient electric motors used in other countries.

4.6 Silk Making

Silk weaving is an ancient technology in Cambodia. In the earliest days, cocoon rearing, reeling and yarn production were all carried out within the country and associated with weaving. Today, however, only weaving and dyeing are carried out here. Up to 98 percent of yarn is imported from Vietnam and only about 2 percent is made in Banteay Meanchey province. Weaving is primarily a household level activity, carried out by women, and the knowledge is passed on from mother to daughter. The three specific jobs Cambodian workers undertake are yarn preparation, dyeing and weaving. The looms are wooden, locally made traditional hand-operated machines, prepared by local carpenters, while the dyes are imported from Thailand.

There are five kinds of merchandise produced: *Sarongs*, *Phamuong* and *Kronat*, *Chareibop*, *Hols* and *Kromas*. Each of these products finds a market within the country, mainly in Phnom Penh, and to a limited extent in Siem Reap. Part of the produce was earlier exported to Thailand, but not since the 1997 financial crash in that country. In fact, cheap imports now coming from Thailand have put a lot of pressure on local production. To make matters worse, synthetic fabric from neighbouring countries further cuts into the market for silk products.

It is estimated that there are about 10,000 weavers, mostly working in Takeo (55 percent), Kandal (31 percent), Prey Veng and Kompong Cham (11 percent). The number of weavers is growing at about 4–5 percent each year (Victor-Pujebet and Peyre 2001). Weaving activity engages workers for about 10 months each year, and workers earn about 4,000–6,000 riels for a nine-hour day.

The yarn is imported from Vietnam through intermediaries, who then route the material to the weavers. Traders mainly control the product market, and they advance credit to weavers at interest rates of 3–4 percent each month. This stranglehold exercised by traders discourages innovations in production.

Cambodian silk, manufactured through a traditional cottage industry, is not valued very highly. The product quality is uneven from one batch to another and poor quality of both dyes and yarn further lends to poor quality output. This, coupled with low labour productivity resulting from low technology looms, and the low training of workers, has not permitted the industry to flourish. Further, the value added for the industry (and Cambodia) is further curtailed since almost all the yarn is imported.

4.7 Loom-made Cotton

The handloom cotton spinning and weaving industry existed in Cambodia earlier than the 1970s, but has subsequently faded out. Cotton ginning and spinning activities virtually vanished after farmers stopped growing cotton. Yarn is now imported from Vietnam and woven into fabric here. Villages in the provinces of Kompong Cham, Kandal and Prey Veng engage in handloom and power loom weaving. Power loom weaving has been introduced in villages in Kandal province where entrepreneurs have been able to access electric power for the last five to seven years.

Village carpenters make both handlooms and power looms locally. Carpenters previously learned how to fit electric motors to run the looms through training received from Vietnam. With handlooms, the productivity is low: a worker produces no more than 10–12 *kromas* a day; but power loom production can be 35–40 *kromas* a day. Almost all weavers are young women, aged between 18 and 28. In Kompong Cham, a large number of workers are locals from the Cham community, while elsewhere workers include a number of migrants from Prey Veng and Svay Rieng. The average earning for one hired worker is about 2,700–3,000 riels for a day's work. In addition, three meals and accommodation are provided.

Markets for the main products are steadily growing: the *kroma* for example, which is only manufactured in this decentralised sector, presently has no competition from larger factories in neighbouring countries. Since a *kroma* lasts for no more than three or four months, the replacement demand is large. The markets are largely competitive with no monopoly buyers. Most merchants come from Phnom Penh to procure the product. The markets are not seasonal and production takes place round the year.

Cotton weaving is labour intensive and can therefore provide significant employment. However, there is little in the form of product diversification or improvement, so value added is low and activity is localised. Power looms have a future but traditional handlooms may not survive.

4.8 Handicraft

There are several kinds of handicraft manufactured in Cambodia. Most designs follow the Angkor architectural forms, which have a high appeal in the tourist market. A few are made from straw or rattan, some from clay, others from marble, yet others from sandstone and still others from metal (lost-wax casting as well as metal carving). This art, which has survived despite the years of turmoil, thrives because of the high skills and dedication of the artisans. The Faculty of Fine Arts at the Royal University has now begun activities to revive and improve this ancient art in some products, though the impact of this research in the transfer of knowledge to workers has not yet been fully realised.

Marble handicraft manufacture is concentrated in the provinces of Pursat, Kandal, Siem Reap, and Phnom Penh.²⁶ The latter two are the main markets while Pursat is a source of the marble stone. Most activity is carried out at the household level, very often in addition to farming. Workers learn the art from their parents and mentors. Handicraft making is a household activity, conducted within the home, though in recent years some affluent families have set up relatively larger production facilities. They hire workers, at times from within their own family. Traditional techniques use no more than hammers, chisels and similar such equipment. Modern methods, which make use of power chisels, power saws and power sanders, are now gaining ground. Under the new technologies, both capital intensity and labour productivity are higher.

There is no gender-specificity in the work: this survey found that both male and female workers are engaged in the industry. The earnings of hired workers, though, are little above subsistence.

While modern methods are developing in terms of stone cutting and chiselling, workers in marble mines continue to use rudimentary means to extract the stone. Consequently, large blocks of marble are dug out of the hill, which are then broken into smaller pieces and carved into still smaller statues and much stone is wasted. Not only does the whole process jeopardise the economics of manufacturing;²⁷ there is waste of precious marble as well — a non-renewable resource.

Traders control product markets. They procure the products and market them through their networks with retailers in cities. There is a huge difference between the prices paid by final customers and those received by the craftspeople.

²⁶ In this section, only marble handicraft is discussed since this was what the fieldwork was restricted to. There is not enough secondary data or literature to write about all forms of handicraft.

²⁷ It needs to be mentioned that relatively inexpensive imports of handicraft depicting Khmer architecture from Thailand are now finding their way into Cambodia, putting pressure on prices (Sok and Acharya 2002).

4.9 Summary

The industry profiles presented in this section are not necessarily identical, as data on these activities could not be uniformly gathered. Nevertheless, the information suggests that rural non-farm activities in Cambodia, both in the traditional and modern sectors, exist and thrive, a fact not fully revealed from secondary data. With a proactive policy, they could be a source of viable employment for the rural workforce. It should be cautioned, however, that some industries like small-scale rural electricity generation or handloom cloth weaving might not be sustainable in the long-term, as electrification is essentially a centralised industry, and power looms will replace handlooms. Additionally, the current state of technology is in most cases rudimentary, and in many cases, the earnings of workers are low.

Economic and Financial Characteristics of Select Rural Industries in Cambodia

Not many studies define the economies of small rural enterprises in Cambodia.²⁸ In this section, the findings of a survey of 276 enterprises belonging to industry groups and their financial and economic variables are presented (including those household-based enterprises and households engaged in non-farm activities as self-employed workers). While collecting data, the attempt was made to treat each production entity as an enterprise, and calculate economic and financial ratios undertaken for business enterprises. Data could not be uniformly collected on all items in all the industries and tabulations are made according to the availability of data.²⁹

5.1 The Sample

The sample consists of 60 self-employed persons and enterprises engaged in fishing, 60 in fish processing, 30 in silk weaving, 30 in cotton weaving (*kroma*), 40 in potteries, 34 in marble handicraft, and 22 in brick/tile making. These are small sample cases and are not necessarily representative samples of these industries in the country. Since there is no Enterprise or Establishment Survey that could have set the groundwork for drawing samples, these studies were carried out in locations about which there was already knowledge from existing studies, government documents, market information and historical records. Additionally, the aspects of what was ‘sufficient representation’, and the resources available with the research team, had to be guiding principles in determining the sizes of the samples.³⁰

Table 5.1 presents the sample details. To cover 276 enterprises, the field inquiry was spread across 16 villages and the outskirts of two provincial towns (Battambang and Kompong Cham). The inquiry was conducted in two parts: in the first part, structured interview schedules were undertaken, and in the second, open-ended interviews were conducted to capture views on market linkages.

²⁸ Although, some very select efforts have been made to understand the internal functioning of small rural units and to suggest methods to upscale their activities. For example, there is at least one study each on silk, brick manufacture and rice milling.

²⁹ Some data in this section might not fully match with that in the previous section. The previous section also draws upon studies conducted by others, whose samples could be different.

³⁰ A sample of 60 households is usually considered large enough to represent an activity or phenomenon. In some industries, smaller samples were agreed upon because it was found information was being repeated, or in the case of brick, for example, not enough enterprises were found, even in two locations.

Table 5.1 Sample Details

Industry	Province	Villages	Sample	Total sample
Fishing	Kompong Chhnang Pursat	Chnok Trou Kompong Loung	30 30	60
Fish processing	Kompong Chhnang Pursat	Chnok Trou Kompong Loung	30 30	60
Silk weaving	Takeo	Pei and Prey Chup	30	30
Cotton weaving	Kandal	Kbal Koh	30	30
Pottery	Kompong Chhnang	Ondung, Trapang, and Krang Deimaes	40	40
Marble handicraft	Pursat	Bantay Dei, Keo Sonann Lue, Bandos Sandek, O Bankrang Kandal, Kamcheou Baydach and Kbalhong	32	34
Brick making	Battamb-ang Kompong Cham		9 13	22
Total				276

Chapter 4 discussed that the fact that many workers were engaged in activities other than the particular rural industry being studied. Table 5.2 shows that other than those households engaged in fishing and fish processing, most of the sample owned some agricultural land. Non-farm activity was clearly an additional activity in these households. However, since fishing is by far the largest activity in the rural non-farm sector, it can safely be stated that non-farm activity is not always a complement to farming.

Table 5.2 Distribution of Owning Households by Land Holding

Land holding	Fishing	Fish processing	Silk weaving	Cotton weaving	Pottery	Marble handicraft	Brick making
Yes	3	5	30	29	36	23	14
No	57	55	0	1	4	9	8
Total	60	60	30	30	40	32	22

With the exception of those engaged in pottery and marble crafts, Table 5.3 shows that, on average, all enterprises earn a great deal more than half their total income from their particular rural non-farm activity. In fact, brick kiln owners, fisherpersons and cotton weavers obtain almost all their income this way. Fish processing, being a seasonal activity, provides no more than two-thirds of total income. Potters and marble statue carvers also undertake this work on a part-time basis and earn no more than a third of their income from this non-farm work. The picture is clearly varied by enterprise type.

Table 5.3 Extent of Earnings Obtained from Non-farm Activity (distribution of enterprises by industry)

Industry	% Earnings from this activity (mean)	Standard deviation
Fishing	89.24	21.01
Fish processing	66.49	21.46
Silk weaving	61.85	21.69
Cotton weaving	75.23	21.96
Pottery	33.00	-
Marble handicraft	36.00	-
Brick making	93.00	-

Data in Table 5.4 suggests that other than fishing, most enterprises in the sample are of recent origin. At one level, this recent origin indicates the age distribution of the population but at another, it is a reflection of the rebuilding of Cambodian economy since the 1980s. It is believed that fishing was not dismantled during the 1975–79 period and did not, therefore, have to be re-established.

Table 5.4 Number of Years Since the Enterprise Began Operation (distribution of enterprises by industry)

Industry	Number of years in operation			
	Earlier than 1980	1980–1990	1991 to date	Total
Fishing	21	15	24	60
Fish processing	6	16	38	60
Silk weaving	1	24	5	30
Cotton weaving	4	13	13	30
Pottery	6	9	25	40
Marble handicraft	5	7	20	32
Brick making	-	4	18	22

5.2 Employment and Earnings

Rural non-farm activities are to an extent seasonal, particularly if they are dependent on seasonal inputs, like labour, or if the demand for output is seasonal. Employment in one season may not mean that the same numbers of workers are engaged all year-round. The numbers presented in this section have to be interpreted accordingly.

5.2.1 Size of Employment

Table 5.5 shows that an average fishing enterprise employs about 3.65 persons. In the January-March and April-June seasons, the average number of workers per enterprise is full strength, but in the July-September season it drops down to less than half this number. It climbs back to 80 percent of full strength in the October-December season. Employment wise, the majority (almost 60 percent) of the fishing enterprises are small, employing two to five workers (including hired workers). The most common method is for a father to fish together with his grown sons in a team. Single worker enterprises, and then those engaging six to ten workers follow this. Only three out of 60 enterprises employ 11–20 workers each. During the interviews a few operators were identified who owned large mechanised boats employing about 10–15 persons each. The relatively large standard deviation, compared to the mean, suggests that activities in the sample units are of a variety of sizes.

Fish processing is a household/cottage industry, engaging people seasonally (not more than two to three months when the fish catch is abundant) who then take up other activities. The average employment shown in Table 5.5 appears to be small (2.23 workers), because it is an average of on- and off-seasons. Again, like fishing, the maximum number of workers in fish processing are engaged in enterprises of the two to five workers size. Significant numbers are engaged in single-worker enterprises. There were only two enterprises with between six and ten workers each.

Table 5.5 Number of Total Workers (distribution of enterprises by industry)

Industry	One worker	2–5 workers	6–10 workers	11–20 workers	>21 workers	Total	Mean workers	Std. deviation	% Women workers
Fishing	7	35	5	3	-	60	3.65	3.13	28.51
Fish processing	23	35	2	-	-	60	2.23	2.45	54.85
Silk weaving	16	14	-	-	-	30	1.51	0.27	97.59
Cotton weaving	2	23	5	-	-	30	4.00	1.87	86.66
Pottery	27	11	-	-	-	38	1.35	0.68	N/A.
Marble handicraft	8	16	8	-	-	32	2.26	1.85	N/A.
Brick making	-	-	-	4	18	22	32.86	19.36	N/A.

N/A: not available

Although there are several silk looms concentrated in one location, the looms belong to different households and each owner qualifies to be an entrepreneur. It is not surprising that 16 out of the 30 units are one-worker outfits and the other 14 employ only two to five workers. In contrast, cotton loom weaving units are larger, and while the modal frequency of

employment in this activity is again in the two to five workers' range, there are fewer (only two) single-person enterprises. In the case of silk weaving, the average size of employment is larger at four, compared to the mean of 1.51. The magnitudes of the standard deviation in both these cases are small compared to the mean, suggesting that there is not much variation in the sizes of the units. Further, there is not much seasonal variation: both these activities are year-round.

Pottery, like fish processing, is a household enterprise, with the difference that the work is part-time, spread round the year. Most of the enterprises (27 out of 38) are one-worker outfits, and the average size of employment in a unit is only 1.35 workers, the smallest in this sample. Marble carving is also a household activity similar to pottery, though its enterprises are not as small as often believed — half the enterprises employed between two and five workers, and one-quarter between six and ten workers. Only eight enterprises out of 32 are single worker units. The average employment is 2.26.

Enterprises engaged in brick making are the largest in the sample: an average factory employs about 32 persons. These are larger than the enterprises surveyed by Rozemuller, where the average employment per factory was 15–20 workers. Only four out of the 22 units here employ between 11 and 20 workers. However, Rozemuller conducted his study in 1998, while the present study is conducted four years later. It could also be the case that this sample does not fully represent the relatively smaller units.

The last column of Table 5.5 shows that, the percentage of female workers engaged in fishing is less than a third, but that it is significant in fish processing. Next, women are mainly employed by the two weaving industries. Although the gender break up could not be discerned for three industries, there is a clear gender division of labour in at least four industries, revealed by the survey data.

5.2.2 Hired Labour and Earnings

Table 5.6 shows that 100 percent of brick workers are hired; a much higher figure than that found for all other enterprises. The range is from about 20 percent in fishing and 16 percent in marble handicrafts, to less than 3 percent in fish processing, silk and pottery. Since industries other than brick making are of a very small-scale, the proportion of hired workers is also small. In most cases, workers are mainly the owners themselves and their family members. The smaller the scale of operation, the smaller is the incidence of hired workers and vice versa.

The average wage paid for male workers is the highest in fishing and the lowest in cotton weaving (in the four industries for which data is available — also there are no hired workers in silk weaving). In fishing, the monthly wage for male workers is 153,283 riels (a full month), which comes to just over 5,000 riels a day. However, work is available for a full month only for a small period. The average number of days of work per month is only about 13, since in some months (July–September) there is no work at all. Wages of female workers in this industry are lower, at about 83 percent of the male wages. In fish processing, the wages of male workers are about 4,500 riels a day and female workers' wages are about 63 percent of male workers' wages. In the cotton weaving sector, the wages are lower still, at about 2,700 per day, though the gender wage gap is virtually zero. In short, earnings are not much higher than a dollar a day; even then, a gender gap exists.

Table 5.6 Average Percentage of Hired Workers, Work Availability and Average Wage (by industry)

Industry	%Hired workers	Average wage (month) male	Average wage (month) female	Employment (days per month) male	Employment (days per month) female
Fishing	21.71	153,283	127,500	12.9	12.9
Fish processing	1.80	137,500	86,980	23.7	23.7
Silk weaving	-	-	-	9.2	27.1
Cotton weaving	9.07	80,900	81,928	10.0	28.7
Pottery	2.50	N/A.	N/A.	N/A.	N/A.
Marble handicraft	16.00	N/A.	N/A.	N/A.	N/A.
Brick making	100	N/A.	N/A.	N/A.	N/A.

N/A: not available

5.2.3 Skill Acquisition

Table 5.7 indicates whether skills were present and how workers (including those who are self-employed) acquired skills. This table shows that irrespective of the industry, a very large majority of the workers learnt skills from their family. For both fishing and fish processing, about one-quarter of the workers learnt their skills on the job. In pottery, NGOs have played a major role in imparting skills, though their role in marble handicraft is low. In short, in most of these industries, skills are passed on from one generation to another; in some cases, NGOs have stepped in, though it is not clear whether their role has been pivotal to workers being in their present jobs.

Table 5.7 Source of Skill Acquisition for Workers (distribution of enterprises by industry)

Industry	Parent/guardian	NGO	On the job	Formal training	Total
Fishing	43	1	16	-	60
Fish processing	47	-	13	-	60
Silk weaving	30	-	-	-	60
Cotton weaving	29	-	1	-	30
Pottery	11	25	-	2	38
Marble handicraft	26	2	3	1	32
Brick making	17	2	3	-	22

The industries surveyed here are not the ones that would normally require formal training especially if technology and methods of operation are traditional. It does not imply, however, that there is no scope, or need to, upscale the technology in these sectors. The examples of the Department of Fine Arts at the Royal University intervening in the potteries and handicrafts sectors, a German NGO imparting improved technologies in pottery, or the introduction of power looms, speaks of the scope for improving product quality and productivity.

5.3 Capital Outlay

5.3.1 Size of Capital

Table 5.8 presents data on the distribution of enterprises by the size of fixed capital (excluding land, measured in riels) and the mean value of capital outlay in each industry.

The differences between the sizes of enterprises, as seen from figures on capital outlay, are much larger than those seen from employment data. For example, in the fishing industry, the smallest enterprises have a fixed capital outlay of less than 250,000 riels (about \$63), while the largest will be greater than 20 times that. The picture is similar for fish processing; the smallest capital outlay is just greater than 50,000 riels (about \$13) while the largest would be 40 times larger. The spread of capital outlay across enterprises is the least in pottery — understandably so, given the highly labour intensive methods of production — followed by

silk weaving where the technology is equally as rudimentary, then cotton weaving and finally marble handicraft. In marble handicraft, the introduction of power saws and chisels by a few entrepreneurs has raised the scope of capital application, thereby widening the inter-enterprise gap in capital outlay. Brick making has a uniformly high capital outlay with not much of a spread in terms of percentages (the proportion of the smallest sized bracket to the largest is about 1:3). This contrasts to fishing or fish processing, where the gap exceeds 1:20. The relatively small spread in capital outlay in brick making may also be because of the bias in favour of larger units in this sample.

The mean capital outlay in fishing operations is 3.9 million riels (about \$975), in fish processing 1.49 million riels (about \$373), in silk weaving 130,557 riels (about \$34), in cotton weaving 3.76 million riels (about \$940), in pottery 283,560 riels (\$72), and in marble handicraft 1.47 million riels (about \$370). Only in brick making is the average outlay much larger, at 126 million riels (about \$31,500).³¹ These figures suggest that except for brick making and even in the context of low-income countries, it is possible to initiate business enterprises in rural areas with relatively low amounts of capital, which in turn could provide remunerative jobs.

Table 5.8 Size of Fixed Capital (distribution of enterprises by industry)

Industry	Size classification (riels)	Number of enterprises	Fixed capital (mean, riels)
Fishing	<250,000	9	3.9 million
	250,000-500,000	10	
	500,000-1 million	14	
	1-1.5 million	9	
	1.5-5 million	8	
	>5 million	10	
Fish processing	<50,000	13	1.49 million
	50,000-200,000	8	
	200,000-500,000	16	
	500,000-1 million	7	
	1-2 million	7	
	>2 million	6	
Silk weaving	<50,000	6	130,557
	50,000-100,000	8	
	100,000-200,000	11	
	>200,000	5	
Cotton weaving	<1 million	4	3.76 million
	1-2 million	3	
	2-3 million	7	
	3-5 million	5	
	>5 million	11	
Pottery	<200,000	7	283,560
	200,000-300,000	12	
	>300,000	6	
Marble	<500,000	17	1.47 million
	500,000-3 million	7	
	>3 million	8	
Brick making	<70 million	5	126 million
	70-100 million	8	
	100-200 million	6	
	>200 million	3	

5.3.2 Equipment Acquisition and Maintenance

Is equipment availability a problem? Table 5.9 shows the distribution of enterprises by how capital equipment has been acquired. Before describing the data, it is important to define the titles of Columns 2 and 3 in the table. A ‘local input supplier’ is a regular local shopkeeper who sells equipment (against cash or credit), a local carpenter or equipment maker. In contrast, an ‘intermediary’ could be an equipment dealer or a trader in the final product and

³¹ Rozemuller had calculated the average capital outlay per brick factory at about \$8,000. This is surely due to the time gap between the two studies, and the bias towards larger units in this sample.

supplies inputs as a part of a larger trade link. An intermediary may not be a local person, and may come from elsewhere to supply inputs against orders. In the hierarchy of reliability, a local supplier is more reliable for the producer (s/he being a local) compared to an intermediary.

Table 5.9 How Capital Equipment is Acquired (distribution of enterprises by industry)

Industry	Local input supplier	Intermediary	Phnom Penh	Self provision	Total
Fishing	21	36	3	-	60
Fish processing	27	20	2	1	60
Silk weaving	14	15	1	-	30
Cotton weaving	19	9	2	-	30

The frequency distribution of enterprises in this table shows that local suppliers and intermediaries supply the equipment in almost similar numbers. In fishing, more intermediaries supply the equipment, while in fish processing there are more enterprises that obtain equipment from local input suppliers. In silk weaving, the suppliers are evenly divided between local suppliers and intermediaries, while in cotton weaving, a large number of entrepreneurs buy the equipment from local suppliers.

The source of equipment supply depends upon the kind of equipment. Boat makers construct boats locally, while intermediaries procure (second-hand) diesel engines from Thailand (or locally if they are Russian or Chinese made). These are then fitted on boats either by the owners themselves, or by local mechanics. For fish processing, the main equipment is pots, pans, pails, stirrers, knives and other kitchenware, which can easily be supplied by local shopkeepers. Only in bigger operations are things like freezing equipment needed. Local carpenters construct both the silk weaving and cotton weaving equipment, though there might be others in the supply chain, who procure looms to sell to the weavers. The logic of having local equipment is also linked to the possibility of getting the machines repaired locally at a small cost. Very often, the owners themselves repair their equipment. This is one of the reasons why entrepreneurs choose simple technologies even if the productivity is low.

Most producers acquire capital equipment as well as working capital through inheritance and family owned resources, followed by borrowing from relatives and friends. Few borrow from institutional sources; at least in fishing, fish processing, silk weaving and cotton weaving, the industries where answers were actively sought to credit-related questions. This finding is not new and has been found in other studies. The main reason for a lack of credit supply is the inadequate social infrastructure for loan regulation and recovery. The consequent, high interest rates inhibit borrowers from borrowing. In the process, business enterprises are not able to grow.³²

5.3.3 Capital-labour Ratios

Capital-labour ratios determine the extent of capital required for generating each job: in other words, the capital intensity of activities. Table 5.10 presents these ratios for six of the seven industries.

For both fishing and fish processing, it requires between 700,000–800,000 riels (about \$200) to create one job, a rather small amount in the present form of technology and organisation. The capital requirement for one job is even smaller for silk weaving, at between 90,000–100,000 riels (\$25–30), though the skill required for silk weaving may be higher. Cotton weaving requires more capital per worker (about 900,000 riels) since the looms are fitted with electric motors. Pottery, like silk, requires between 250,000–260,000 riels (\$65–70) for each worker, but again, requires more skill. Only in the case of brick making is the

³² Debt capital can raise the overall capital base of rural enterprises. At the individual enterprise level, market borrowing can increase leverage, thereby raising turnover. None of these presently happens.

capital requirement for creation of one job, 4.94 million riels (about \$1,250). Although this is by far the highest in this sample, it is not too large a figure when seen in the context of a larger enterprise.

Table 5.10 Capital-Labour Ratios (by industry)

Industry	Capital-labour ratios (mean, riels)	Standard deviation
Fishing	753,722	1,427,683
Fish processing	789,301	2,356,941
Silk weaving	96,850	65,547
Cotton weaving	943,517	476,845
Pottery	253,290	219,809
Brick making	4.94 million	6.44 million

The standard deviation figures are large. In three out of the six industries, they are larger than the mean values; in the other three, they are not much smaller than the mean. Such significant dispersion of the capital-labour ratios shows that there is considerable variation in the technologies put into practice. Part of the reason could lie in the valuation of capital by the respondents, but in some industries like fishing, the spectrum of technologies is truly vast.

In sum, data in this subsection suggests that there is high labour intensity in most activities, again an indicator for large potential job-creation with small capital.

5.4 Production and Productivity

5.4.1 Production and Value Added

Data on annual production from these enterprises, grouped into size brackets, can be seen in Table 5.11. Value added in this section is calculated by deducting material inputs from the value of production. The last two columns present data on the mean value added and the ratio of value added to production (in percent).

Since the scale of production in each industry is different, the size classes in Table 5.11 are drawn accordingly. In fishing operations, the production range is from less than two million riels a year (about \$500) to more than 50 million riels (\$12,500). Fish processing has a similar range, though the number of enterprises concentrated toward the higher end are larger. Silk weaving has a smaller range (from 1.7 million riels to more than 5 million riels), while cotton weaving has a range from less than 15 million riels to more than 40 million riels. The scale of operation of silk weaving is much smaller than that of cotton weaving in this sample, since cotton looms are mechanised and have a larger capacity.

The mean value of production for each fishing enterprise is about 19 million riels (\$4,890) and the value added is 12.7 million riels, yielding a value added to production ratio of 66 percent. This may appear small, given the nature of the activity, but fish culture has assumed an important place in Cambodia. Fish culture requires that anglers buy fingerlings in addition to fish feed, and undertake regular repairs of the fish cages. Each of these adds to material costs. The mean value of production in fish processing is four times higher than in fishing, though the value-added ratio is smaller at about 31 percent. This is because, in this activity, all the fish have to be procured: not everyone undertakes integrated 'fishing-fish processing' work, and even if they do, fish is still a raw material for them.

The value of production in silk weaving is modest at about 3.5 million riels (\$875) annually, while cotton is woven at a higher scale; its average annual production (per enterprise) is about 10 times higher than that of silk. The value added in silk is 54 percent of production value, while in cotton it is 23 percent. At the level of value added, the gap between

the two becomes smaller. Both silk and cotton weaving activities could have yielded higher total value added for the country if these industries were not so dependent on imported yarn.³³

The scale of production in the three earth/clay-based industries (pottery, marble handicraft and brick making) is in conjunction with their capital outlay. Pottery making yields a high value added to production ratio as its material inputs, earth or clay, are either very inexpensive (an ox-cart full of clay costs only 5,000 riels) or they are self-provided. In the case of brick making, the value added to production ratio is about 68 percent. The earth and clay are relatively inexpensive but fuel costs are substantial, and therefore the proportion of value added to production is not as high as for pottery.³⁴

Table 5.11 Distribution of Enterprises by Size of Production, Average Production, and Average Value Added.

Industry	Frequency of enterprises by size class	Mean (riels)	Value added (riels)	[(Value added)/Production]x100
Fishing (N=60)		19,252,755	12,721,252	66.07
< 2 million riels	8			
2-3 million riels	10			
3-4 million riels	8			
4-5 million riels	6			
5-7 million riels	5			
7-10 million riels	6			
10-15 million riels	5			
15-50 million riels	6			
> 50 million riels	6			
Fish processing (N=60)		86,006,841	26,868,651	31.24
< 1 million riels	8			
1-2.5 million riels	9			
2.5-4.5 million riels	8			
4.5-10 million riels	7			
10-50 million riels	10			
> 50 million riels	18			
Silk weaving (N=30)		3,501,652	1,898,329	54.21
< 1.7 million riels	6			
1.7-2.5 million riels	6			
2.5-3 million riels	7			
3-5 million riels	5			
> 5 million riels	6			
Cotton weaving (N=30)		32,634,017	7,421,425	22.74
< 15 million riels	8			
15-30 million riels	8			
30-40 million riels	7			
> 40 million riels	7			
Pottery (N=38)		3,147,782	3,061,739	97.26
Brick making (N=22)		270,355,714	183,409,316	67.84

5.4.2 Output-Labour, Value Added Labour and Capital-Output Ratios

Output-labour or value added labour-ratios are indicators of labour productivity. They indicate the capacity of a production system to yield unit incomes for the factor inputs deployed. High labour productivity ratios suggest high economic viability of enterprises, as entrepreneurs and workers can earn a decent earning, and vice versa. Capital-output ratios determine the fixed resource requirement to generate unit production. These three ratios, along with the capital-labour ratio discussed in Table 5.10, are critical in planning for investment, choosing technologies and creating jobs.

³³ In other countries, farmers rear silkworms on mulberry bushes or tussore trees. Yarn is then made from silk wool. Even in the cotton loom sector, cotton ginning, spinning and weaving are carried out together. In the process, maximum value added stays within the country.

³⁴ Pottery also uses fuel for baking. However, the quantity of heating required is low. In addition, economical, community ovens are used extensively.

Table 5.12 presents these for six out of the seven industries being studied. The first two ratios are in riels per worker, while the third is a pure number.

Table 5.12 Output-Labour, Value Added Labour, and Capital-Output Ratios

Industry	Output/labour ratio (riels/worker)	Value added/labour ratio (riels/worker)	Capital/output ratio
Fishing	3,712,397	2,361,044	0.22
Fish processing	25,827,014	10,154,218	0.19
Silk weaving	2,474,698	1,261,600	0.05
Cotton weaving	8,018,212	1,795,832	0.12
Pottery	2,819,086	2,744,000	0.08
Brick making	8,601,311	7,629,644	0.47

The pattern in labour productivity, observed in the table above, is a little puzzling: fish processing shows the highest productivity figures, followed by brick making, cotton weaving and fishing; pottery and silk weaving come last. The size of production, technology use, and labour productivity, do not necessarily follow the same ranking. The highest value added per worker is in fish processing (\$2,571), while the lowest is in silk weaving (\$320): a 1:8 difference. A more capital-intensive industry like brick making has a lower value added per worker ratio than fish processing. Silk weaving yields value-added per person not very different from subsistence, when calculated on a daily basis, *i.e.* about one dollar a day. These data suggest *per se* that scales of operation or sophistication in technology do not ensure success, and that product demand (*i.e.* product price) plays a critical role.

Capital/output ratios with values less than one, imply that capital is rotated more than once each year; *i.e.* every unit of capital is capable of generating output more than its face value each year. In most modern large industries, capital rotates only once every three to five years (capital/output ratio is 3–5). The capital/output ratios in this sample show the highest figure at 0.47 in brick making and the lowest in silk weaving and pottery, at less than 0.10 (Table 5.12). In some of these rural industries, capital is rotated several times each year; efficiency of capital use in them is, therefore, many times higher than that of modern large industries. This implies that these industries survive essentially on labour inputs; many are also starved of capital.

In summary, all the industries produce large amounts of value for their capital outlay and production. In pure financial terms therefore, these industries are highly efficient. In a market place, though, survival requires more than just being financially efficient. Scale of operation is critical for ensuring a critical minimum income, technology is critical for labour productivity, and demand is critical to keep output prices reasonably high.

5.5 Profits and Profitability

Profits, the disposable incomes of the entrepreneurs, are the final determinants of the viability of an enterprise. Here, profit is calculated as production (sale) minus the costs paid out and depreciation.³⁵ The different profit ratios calculated here are profit per unit of production, profit per unit of value added, profit per capital outlay, and profit per non-hired worker (*i.e.* profit per owner-worker). Table 5.13 contains these for six out of the seven industry groups.

This table shows that an average fishing enterprise generates an annual gross profit of 11,351,471 riels (about \$2,839), to be shared between family members of the enterprise owner. A ratio of the amount of profit to working family members, *i.e.* income per owner-worker has been calculated in the last column. For fishing operations this is about \$1,767 annually or \$4–5 per enterprise-owning member per day. The amount may actually be less than this, after those expenses that differentiate gross profits from net profits are accounted for. Next, this is the average of disparate enterprises: the smaller ones may earn much less, at

³⁵ Depreciation is calculated simply here, *i.e.* 10 percent of the value of fixed capital is deducted each year.

not much above subsistence. A fish processing enterprise generates an annual gross profit of 26,560,405 riels (about \$6,640). Gross profit per owner-worker (calculated in US dollars) is about \$3,246 annually, or about \$9 per day. For a silk weaving enterprise, gross profit is 1,885,273 riels (about \$475), for which an owner-member works receives \$315 annually, or a little less than a dollar a day. For a cotton weaving enterprise, the gross profit per enterprise is 6,309,425 riels (about \$1,580) annually, which works out at about 3,400 riels per owner-worker per day. Owners and hired workers earn similar amounts in both the weaving operations. For pottery, the annual gross profit is 3,005,748 riels (about \$751), and for brick making, it is 44,000,000 (about \$11,000). Such details could not be calculated for the other industries.

Table 5.13 Profitability Ratios (figures in riels)

Industry	Profit per enterprise (riels)	(Profit output) x100	(Profit/value added) x100	Profit/capital	Profit/(owner-worker)
Fishing	11,351,471	48.18	87.83	7.33	7,068,367
Fish processing	26,560,405	34.54	88.38	17.88	12,985,366
Silk weaving	1,885,273	52.23	98.85	14.44	1,251,915
Cotton weaving	6,309,425	19.05	82.87	2.72	1,208,319
Pottery	3,005,748	94.00	98.17	10.60	-
Brick making	44,000,000	16.27	23.27	0.35	-

Earnings per owner-worker are higher than subsistence in all industries except weaving. However, as seen earlier, the wages of hired workers are at subsistence everywhere. A possible reason is that labour market conditions determine the hired workers' earnings rather than capacity to pay. Hired workers in rural non-farm enterprises are low skilled and frequently illiterate, and overall labour market conditions are slack (*i.e.* supply is greater than demand). These factors result in low wages.

Profit per unit production (Profit/output x 100) and profit per unit value added (Profit/value added x 100) are calculated in Table 5.13. Profitability in all industries is high. It is extraordinarily high in four out of the six industries and moderately high in cotton weaving and brick making. Profit per unit of capital invested is so high in all the industries that, except for brick making, the whole of fixed capital invested can be recovered several times over in less than a year. In silk weaving and fish processing, the fixed capital can be recovered in less than a month!³⁶

5.6 Productivity and Scale

So far, the data have illustrated the high internal efficiency of small and micro enterprises, but also that the earnings of workers are not high. Both the small-scale of operations and rudimentary technology appear to be responsible for the latter. In this subsection, an assessment of the relationships of earnings and technology with the scale of operation is made.

Regression equations have been estimated to verify the relationships described above. Given the elementary nature of data here, technology is measured by the capital/output ratio (capital productivity) and earnings by value added to labour ratio. Scale is measured by the size of output. The estimated equations (using logarithmic transformation) for four industries are as follows:

Fishing:

$$\ln(\text{Value added/labour}) = 0.11 - 0.15 \ln(\text{Capital/output}) + 0.77 \ln(\text{Output})$$

(1.10)
(7.66)

R²=0.54; F = 31.80

³⁶ Such high rates of return are quite common in micro enterprises in developing countries in Asia. See ADB (1998). It is not high in brick making since brick making is not a micro industry.

Fish processing:

$$\text{Ln (Value added/labour)} = 1.23 - 4 \times 10^{-2} \text{ Ln (Capital/output)} + 0.71 \text{ Ln (Output)}$$

(0.37) (6.64)

R²=0.62; F = 42.41

Silk weaving:

$$\text{Ln (Value added/labour)} = 1.91 \times 10^{-2} - 2.24 \times 10^{-2} \text{ Ln (Capital/output)} + 0.83 \text{ Ln (Output)}$$

(0.68) (6.19)

R²=0.62; F = 20.91

Cotton weaving:

$$\text{Ln (Value added/labour)} = 2.49 - 0.26 \text{ Ln (Capital/output)} + 0.57 \text{ Ln (Output)}$$

(1.44) (4.01)

R²=0.40; F = 8.05

(Figures in brackets are the respective 't' values; 'Ln' refers to natural logarithm)

In all four equations, the coefficient of Ln (Output) is positive and statistically significant at 0.01 percent confidence.³⁷ The coefficients of Ln (Capital/output), however, are statistically not significant — perhaps this variable is not adequately able to represent technology.³⁸ The equations in general confirm that the size of incomes per worker critically depend upon the scale of operation.

5.7 Summary

The analysis in this section suggests that rural industries are disparate entities: there are vast inter-industry, intra-industry and inter-enterprise variations in their labour use, capital outlay, value added, and profitability. However, almost all of them are labour intensive and short of capital. In almost all, the turnaround cycle of capital is rather short, in some cases as little as a month. The source of capital is largely personal resources. Equipment suppliers are either local shopkeepers or intermediaries and the logic for choice of machines is the ease with which they could be repaired. With the exception of brick making, hired workers are few in number compared to workers who are engaged on their own account. Earnings of paid workers are always at subsistence, though profits in many industries (and enterprises) are higher than subsistence. This is because the labour market is slack. Despite the high technical efficiency exhibited in operations, absolute earnings are modest because of the tiny scales of operation, low output prices and rudimentary technologies.³⁹

³⁷ This positive association is not in contradiction to the findings in Table 5.11. These equations measure intra-industry, inter-enterprise associations, while data in Table 5.11 present inter-industry variations.

³⁸ An alternative specification, using capital/labour ratio to represent technology, also did not yield significantly different results.

³⁹ Technical efficiency refers to efficient use of existing means of production. This concept is different from the quality of technology, which is primitive in most cases.

Chapter Six

Marketing and Market Chains

Marketing is an important link in any business, but it probably assumes a critical position in small rural businesses in Cambodia because few rural locales are effectively integrated into larger markets. Lack of market integration affects both output disposition and input supply. Local monopoly situations often arise, and because of this, producers may not be able to obtain adequate returns for their produce. Instead, market controllers reap much of the benefits. This section presents two distinct analyses; the first on aspects of product marketing as obtained from questionnaires, and the other on market structure and its linkages to the production process, as seen from studies carried out using qualitative methods.

6.1 Markets and Prices

Table 6.1 presents data on how different industries market their products. The different categories of purchasers are the same as described in Chapter 5 earlier.

Table 6.1 How Products Are Marketed.

Industry	To local buyer	To middle person/ trader	To Phnom Penh market	To others	Total
Fishing	16	39	-	5	60
Fish processing	6	45	-	1	60
Silk weaving	4	25	-	1	30
Cotton weaving	-	5	25	-	30

This table shows that in the four industries for which data are available, the largest aggregate proportion of buyers are the intermediaries and traders, followed by local buyers (local shops). Products are directly marketed in Phnom Penh markets only in the case of woven cotton products (*kroma*). Intermediaries operate between the larger markets and producers. They may or may not be locally based, and might enjoy a localised monopoly. This aspect is discussed in the next subsection.

Table 6.2 presents data on the perception of producers, as to who controls the output prices.

Table 6.2 Perception as to Who Controls the Price

Industry	Local buyer	Intermediary /trader	Phnom Penh market	Others
Fishing	7	47	1	5
Fish processing	15	-	5	40
Silk weaving	4	25	-	1
Cotton weaving	16	-	14	

Perceptions about who controls output prices are mixed, largely according to the markets faced by each producer. In fishing, 47 out of the 60 producers felt that intermediaries

controlled prices. There could be an element of truth in this since the fish market, which is mainly one of fresh produce, is large and controlled by persons outside the local region. It is common knowledge that markets in Phnom Penh and from across the border (in Thailand) set the final product prices. In the case of fish processing, intermediaries and traders do not appear to be important. First, there is no such urgency to dispose the produce. In addition, much of the processed fish is locally consumed; only a small portion is exported to Vietnam, through cross border trade. ‘Others’ in this table, refer to miscellaneous agencies outside the present discussion; meaning that processed fish is sold through a variety of outlets outside the three options mentioned here.

Intermediaries, who supply the yarn and pick up the final product to be marketed in Phnom Penh, dominate the silk market. Finally, the cotton product (*kroma*) is marketed locally as well as in Phnom Penh. Hence, answers as to who controls the prices again reflect the prevailing market situation.

Table 6.3 Whether Input Suppliers are also the Output Buyers, and Whether Costs of Output Payment are Adjusted to Input Supply

Industry	Input supplier same as output procurer	Input supplier not same as output procurer	Input cost adjusted against output payment	Input cost not adjusted against output payment
Fishing	7	53	6	54
Fish processing	8	52	8	52
Silk weaving	22	8	11	19
Cotton weaving	6	24	16	14

This research also sought to determine whether the input suppliers also control the output market. Table 6.3, shows that in the fish and fish processing activities, only about 15 percent of the entrepreneurs find the input and output markets controlled by the same trader. This is not difficult to explain as inputs for fishing (other than diesel and fishing nets, and maybe salt for fish processing), are locally produced. The small proportion of entrepreneurs who supply produce to the input suppliers are perhaps those who borrow money and then pay back in kind. In the case of silk, those who supply yarn, also buy the silk fabric. This activity is more like captive production, where producers are virtually reduced to hired workers for the buyers (and sellers). In the case of cotton woven *kromas*, producers have found markets in Phnom Penh, either directly or through local shopkeepers. There are no intermediaries who control the output market, (see also Table 6.2).

The last two columns in Table 6.3 show responses to whether payments for outputs are adjusted against credit advanced for inputs. Most of the producers in fish related activities do not link receipts for outputs with payments for inputs. In both the weaving related activities, there is some adjustment. As indicated later, these enterprises get a lot of yarn on credit, to be paid back in the form of woven produce. Such a characteristic is against competitive market principles and may not provide full advantage to the producers.

Table 6.4 provides data on whether producers are paid on time for their products and suggests, for example, that a very large number of workers in fish related activities get payment on delivery. The same cannot be said for silk, probably because of the critical dependence of the producers on intermediaries, who in turn get their money only after the merchandise is sold in Phnom Penh. Cotton lies somewhere in-between. The stone/earth-based industries generally get all their dues on delivery of the product. Hence, it could be concluded that in most industries and enterprises, producers get payment without much delay.

Table 6.4 Timing of Payment by Distribution of Households

Industry	In advance	At product delivery	After product is sold	Excessively delayed
Fishing	3	52	3	3
Fish processing	4	51	1	4
Silk weaving	1	8	11	10
Cotton weaving	-	20	-	10
Pottery	-	36	3	1
Marble handicraft	-	30	2	-
Brick making	-	20	2	-

Finally, data collected on timed-based trends in sales suggest different patterns of growth across the industry groups. In the last four years or so, fishing has shown a decline; respondents complained that production has fallen from a base of 100 in 1998 to 65 in 2002. The fall is consistent with findings from other studies as well, though the magnitude may not tally.⁴⁰ In contrast, fish processing has progressed from a base of 100 to 128 in four years, and this could be a demand-led increase.

Silk production has hardly risen, from 100 to 111 in four years. The demand for this product has been stagnant due to stiff competition from synthetics from neighbouring countries. Sales of cotton weaving products, however, have risen rapidly from a base of 100 to 353. It is not clear at this stage, why this activity has progressed so fast. Field inquiries on the one hand suggest that there is no competition for this product from other countries. In addition, since the life span of a *kroma* is only three or four months, demand is maintained. On the other hand, the cotton *kroma* market exhibits incomprehensible behaviour: while demand appears to be rising rapidly, prices are stagnant and profits are low. Possible explanations are that the product is selling *because* it is inexpensive. Additionally, field inquiries suggest that the supply is rising very fast as well. Each year, at least 60 new power looms are being installed and the increased supply contributes to keeping prices low.

The demand for pottery has been steady while demands for marble are unsteady. Excessive competition along with high costs could be the possible causes of low sales. Last, the index of brick production has fallen from a base of 100 in 1998 to 63 in 2002. The reason for this is the lack of demand, with stiff competition from neighbouring countries that are supplying a superior product.

6.2 Forward and Backward Linkages

6.2.1 Fishing and Fish Processing

Fishing is a complicated business, involving a large number of partners in the whole production and marketing process. Boats are made locally, and this is a specialised job generally undertaken by certain minority groups. Smaller boats are simpler to make, though they are only good for shallow waters. Medium and large boats are of a more sophisticated build and are fitted with diesel engines. There is no monopoly in supply, and boats are abundantly available at short notice.

Fishing nets are made out of nylon and are imported from other countries. Previously, nets were made out of locally produced rattan, though this practise has been discontinued now. A fishing net does not last much longer than a season before it has to be replaced. This is a drain on the country's resources, as nylon fishing nets could be made within the country.

Most of the fish caught is marketed fresh; a relatively small portion is pickled, smoked, dried or salted. Fresh fish is mainly transported to either Phnom Penh or the border at Poipet for export to Thailand. Local or regionally based merchants are the main operators in this

⁴⁰ Fish production is reported to have suffered in recent years due to repeated floods and other ecological factors.

business. There are two kinds of merchants: those who procure smaller quantities from individual fisherpersons and sell the catch in a regional market where another group of merchants take over, and those who are concession-lot owners who possess the resources to market their products in Phnom Penh or Poipet. Needless to say, there are merchants in Phnom Penh and Poipet who take the merchandise further for distribution to its final users. The markets are not perfect, as the numbers of merchants are small compared to the number of producers.⁴¹ Thanks to mobile phones, the market is transparent as prices can be communicated to all locales on a daily basis.

A monopoly situation can be observed from the fact that the price of fresh fish received by the producers (and even some merchants) has not risen over the last two or three years despite an increase in demand. However, input prices for items like salt, ice and diesel have risen steadily. Cambodian traders also lose out while conducting business with their Thai counterparts, who quote prices in baht, as Cambodian merchants incur expenses in US dollars. This is especially the case as the exchange rate of the baht has recently fluctuated downwards.

Figure 6.1 Forward and Backward Linkages in Fishing Operations

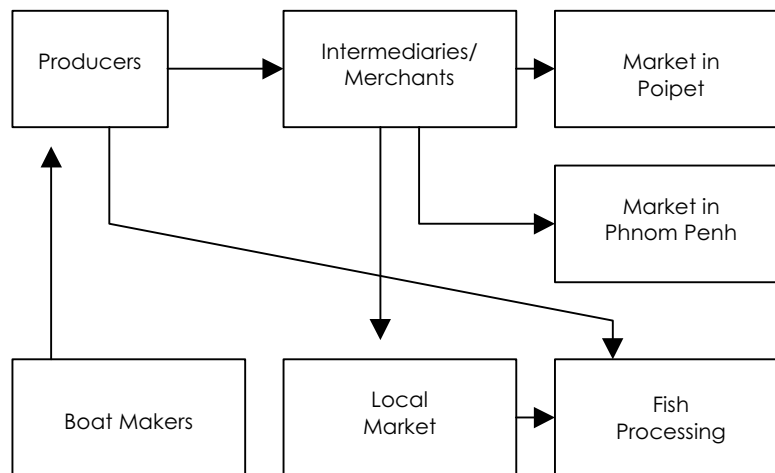


Figure 6.1 illustrates the forward and backward links of fishing operations, revealed by the field study. The price paid by intermediaries/merchants to producers is determined either by prevailing prices at the border or those in Phnom Penh, and negotiated on a daily basis. To cover the freight cost (diesel for a 30-tonne truck), road fees and check point payments, intermediaries pay 5 baht/kg to transport fish to the Poipet border.⁴² Additionally, intermediaries have to pay a licence fee of 100,000 riels per trip, telephone expenses of about 80,000 riels, and labour costs of about 400,000 riels per month for loading and unloading the fish. At the border, warehouses cost about 30,000–40,000 riels (per truck, per journey), though only the larger operators, who operate 30-tonne trucks, use this facility or it would not be economical. Smaller traders cross the border and dispose of their product at whatever price they can get. In the event that merchandise reaches the border late, after it is shut, extra expenses must be incurred to get it across. Ice for storage, costing another 50,000 riels, is required at the warehouse. A border fee of 100,000 riels, Thai customs of 500 baht/tonne and additional bribes to cross the border add to the costs. The incidence of all these expenses is

⁴¹ While the producers can produce even with a small rowing boat, traders must be of a certain size to be able to effectively store and transport the fish to faraway places. Inevitably, a monopoly-like situation will arise. This is particularly so since the product is perishable.

⁴² Transporters directly manage the entire road expense, like formal and informal fees; the shippers do not have to get involved in these dealings.

not borne by the consumers alone. In fact, consumers enjoy quite a competitive market, as producers, some intermediaries, and merchants have to bear the expenses. It is not surprising that the prices producers receive have remained stagnant.

Expenses when the merchandise is shipped to Phnom Penh are somewhat lower, since the distances are less, checkpoints fewer and informal payments usually lower. However, the final output prices are also lower in Phnom Penh compared to Poipet. Some smaller merchants offload their products in local markets for consumption or processing. Although they have less operational problems, they also earn less.

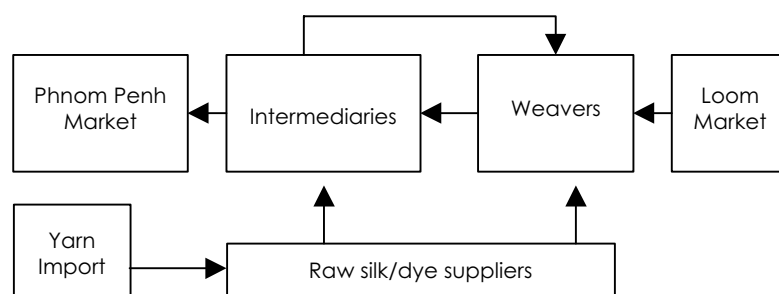
From the details given above, several factors can be identified that would help Cambodian fish producers:

- 1) If the informal payments en route were reduced;
- 2) If local traders got a better deal in the trade process, which would in turn benefit both traders and producers;
- 3) If warehousing facilities were available to all at reasonable charges so that traders do not have to sell in distress;
- 4) If trade routes (roads) are physically improved;
- 5) If trade regulation with the Thai traders was enforced.

6.2.2 Silk Production

Although silk is woven using locally made wooden machines, fabric designs and the yarn, come from 'outside' giving locals no real control over production. In addition, as there has been no introduction of modern techniques, backward economic linkages are weak and localised.⁴³

Figure 6.2 Forward and Backward Linkages in Silk Production



Up to three or four intermediaries visit each village; they supply the yarn and dye and collect the final product. In some cases, the persons who collect the final product and those who sell the yarn are the same. They also manage the transport to and from Phnom Penh markets, to bring the yarn to the producers and take the silk fabric back. The final product prices are determined by the demand and product quality. Presently, the demand is depressed because of stiff competition from silk and synthetic cloth from neighbouring countries. The prices are also depressed because Cambodian silk is seen as low quality. The rejection rate of lots is high because of defects, and this further depresses earnings.

Intermediaries supply lots of 4–5 kg of yarn to the producers, at \$16/kg if paid in cash, and at \$20/kg if advanced on credit. When yarn is advanced on credit, a condition might be that the product has to be sold back to the same supplier. The turnaround cycle is never more than a month (averaging two weeks). In a small number of cases, raw silk importers, who also

⁴³ There is a proposal being made by PRASAC to infuse modern technologies in this sector, but this is at an early conceptual stage.

import the dye, have tried to market the product directly to the producers, but this practice has yet not gained ground.⁴⁴ Producers get returns on their produce according to the quality of the product. Intermediaries market the product in Phnom Penh, where merchants from Psar Thmey, Psar O Russey, Psar Toul Tompong or Banteay Srey Silk Store control the market and prices. The transport cost to bring 20–40 kg of merchandise to Phnom Penh is about 25,000 riels (borne by intermediaries).

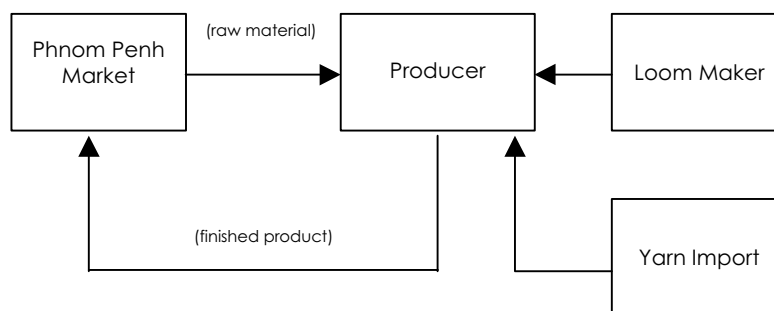
Intermediaries often obtain credit from the merchants, and since the interest rates are what they are, the real gainers in the trade chain could be the city-based merchants and not the silk intermediaries. Intermediaries also lose out when merchants delay in making payments. The product is finally sold to the consumer at prices ranging between \$20–25 a piece; merchants earn about \$2–4 a piece, the silk intermediaries' profit margin is \$1–3 a piece, while the producers gross about \$10–15 a piece.⁴⁵

It follows from the above that producers are handicapped in the market place since they control neither the input supply nor the output prices. Poorer technologies keep their productivity low, which further weakens their market position. In conclusion, the silk industry requires a thorough readjustment.

6.2.3 Cotton Looms

As mentioned earlier, cotton weaving machines are locally constructed, but all cotton yarn is imported from Vietnam and its price is externally determined.

Figure 6.3 Forward and Backward Linkages in Cotton Loom Products



Historically, producers have had direct contacts with cloth merchants in Phnom Penh. There are no intermediaries, and select owners travel to Phnom Penh to both deliver products and pick up fresh yarn for weaving. Producers spend up to 6,000 riels for each trip (motorcycle costs) to carry a load of 50 kg whether it is raw material or the finished product.

At least two factors limit the incomes of both workers and producers. First, output markets are competitive, and if the cost of production rises due to increased input prices, the incidence cannot always be passed on to the marketplace. Second, even after fitting the looms with electric motors the technology is still rudimentary. Productivity is therefore low, and the only reason why this product is surviving is because the product has no competition from elsewhere, and the prices are low – a dichotomous situation but true. The industry could get a boost if its backward linkages were strengthened.

⁴⁴ A direct marketing by importers eliminates one intermediary; therefore, the cost at which the producers receive yarn is cheaper, at \$14/kg. If this channel becomes more popular in the future, it might be of advantage to the producers.

⁴⁵ Since the producers are able to weave only about two pieces a month, their incomes are at subsistence.

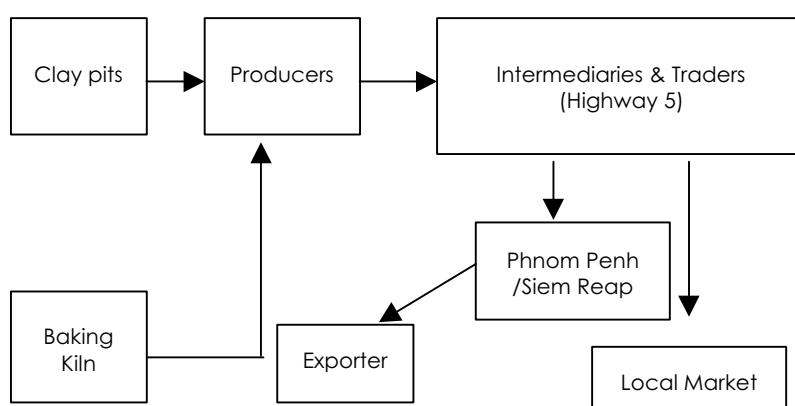
6.2.4 Pottery

As with most of the other industries studied, the forward links in pottery appear to be more critical than the backward linkages.

The main input is clay, which is inexpensive; a cart (about $\frac{1}{2}$ m³) is available for 5,000 riels (20,000 riels for delivery at home in a cart owned by the transporter), and is sufficient to make more than 250–300 pots and vessels. Often the producers themselves dig the clay and transport it.

As mentioned previously, producers mould the vessels and fire them in kilns owned by others, where they hire time. The charge for hiring kilns is 25,000 riels for one session. An additional expense of 8,000 riels has to be incurred on firewood. Producers bear all these expenses. Each firing session can fire up to 100 pots and vessels. The whole process of moulding and baking about 100 pots and vessels takes about 11 days.

Figure 6.4 Forward and Backward Linkages in Pottery



Traders and intermediaries market up to 95 percent of the product. Most traders' outlets are concentrated on Highway No. 5, which connects Kompong Chhnang with Phnom Penh. They retail the product, transport it to Phnom Penh and Siem Reap, and also export a small proportion through their links with other merchants. The breakages, which can be up to 30 percent, are borne partly by traders, though it can also be partly borne by producers through price adjustments.

Traders have recently enjoyed a tenfold increase in sales. The price paid for each product is not standardised, other than for components that are sold to locals for household use. While profits of the producers are given in Chapter 5, profits of traders could not be ascertained due to this price factor. Almost certainly, their profits appear to be higher in quantity than that of the producers (if not on unit sales), because the size of their operations is usually larger.

Technical assistance from NGOs has definitely strengthened backward linkages. Additionally, forward linkages are not too disadvantageous to the producers. However, as mentioned earlier, the scale of operation of each producer is too small to yield remunerative incomes.

6.2.5 Marble Handicraft

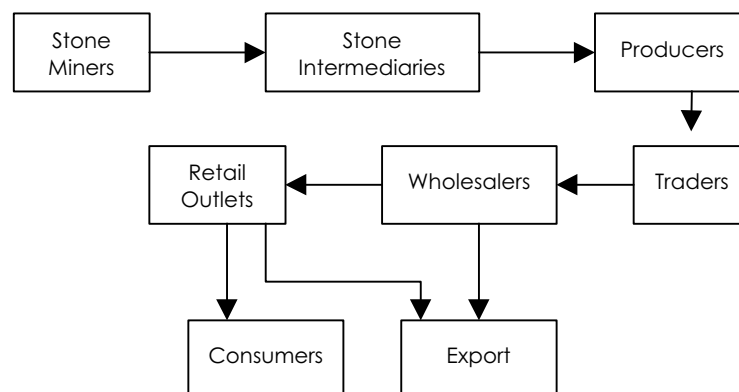
The principal backward linkage in marble handicraft is the supply of marble stone. Transporters and intermediaries form an important link in the trade chain as forward linkages include intermediaries and wholesalers in Phnom Penh, other areas in the country, and abroad. Intermediaries buy and resell the product to the final users.

Miners are local people from the mountainous area of Kravanh (Cardamom Mountain chain) some 70–80 km from the production sites in Pursat town. They extract and cut marble slabs and transport them in ox-carts to an open warehouse (an open space from where the stone slabs could be transported onwards). They dig, extract, and transport the marble for a period of one or two months to complete a full job. This only fetches them a subsistence income.

Intermediaries pick up the merchandise from the warehouses after paying the miners in accordance with the stones quality and weight.⁴⁶ The producers (carvers) buy stone from the intermediaries at prices ranging from 700–4,000 riels/kg. The intermediaries usually sell stone to producers at prices two to three times greater than that which they paid to the miners. Part of the margin is (informally) shared with government functionaries, for safe passage to Pursat.

Producers sell the handicraft to traders from Phnom Penh and Siem Reap. These traders take up to 80 percent of the total produce in volume. They have a network of wholesalers, to whom they supply; who in turn distribute the product to smaller shops, emporia, and souvenir shops. The final customers are tourists, local high-income groups, and foreign wholesalers/exporters. Traders usually have their own means of transport and they are prepared to absorb these costs. The profit margin of traders is two to three times higher than their costs, while the profit margin for wholesalers will be a further two or three times higher than that. It can be seen how the products value multiplies up to six times between leaving the producer's hands and reaching those of the customer.

Figure 6.5 Forward and Backward Linkages of Marble Handicraft



Once again, it is the traders and wholesalers, rather than the producers, who control the business. Both stone miners and statue makers earn small amounts and have little control over the market. While many producers have now enhanced their productivity with power drills and chisels, they do not earn very high incomes for lack of market control.

6.2.6 Brick Making

The backward links in brick making include supplies from clay sellers, rice husk suppliers (*i.e.* rice mill owners) and transporters. The forward linkage includes intermediaries, traders and transporters.

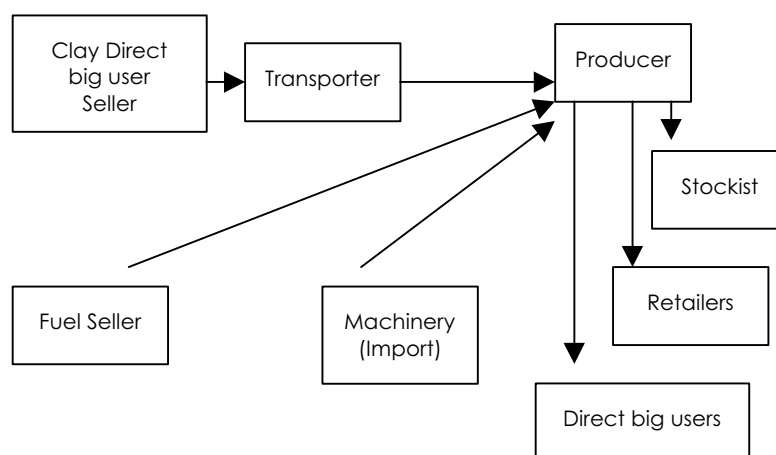
Brick making machinery is imported from Vietnam. This machinery may not be the best in the trade, but is preferred since it is inexpensive. Next, clay suppliers often own the land plots from where clay is dug and transported to the brickyards. Workers are locally employed at subsistence wages to dig the clay and pack it in trucks. Transporters then take the clay to the brickyards. In the case of bricks, producers rather than wholesalers dominate the

⁴⁶ The most expensive stone is of a dark green colour as it resembles emerald.

market at this stage. They sell bricks on an order basis, as well as supplying wholesalers and retailers.

After the stock leaves the brickyard, traders decide the prices. The margin they get is small, though, at only about 10 riels per brick.

Figure 6.6 Forward and Backward Linkages in Brick Making



Unlike other industry owners, brick makers comprehensively control their markets. No effort is therefore made to work out the profit margins at any level other than at the production level, since they are nominal. As with any other industry, however, their productivity could improve with technological upgrades.

6.3 Summary

Typical to small producers in developing countries, small rural industries in Cambodia also suffer from a lack of control over marketing and price mechanisms. Traders and intermediaries, who possess money and a monopoly position, gain a great deal. It must be recalled, though, that traders are not a homogeneous entity. There are ‘dominant’ and ‘dependent’ traders among them. Very often, the urban-based traders who have a direct interface with the final buyers are the ones who exercise the maximum control.

Backward linkages are often quite shallow, and while producers do not suffer unequal terms of trade, low quality inputs certainly keep their productivity low. Big traders play a dominant role in forward linkages. This is compounded when those traders also become input suppliers. In such cases, producers are reduced to mere piecemeal workers. However, there are not many cases where producers are under the dual control of traders, so far, it is only evident in the silk trade.

Chapter Seven

Policy and Market Initiatives

In the last decade, there have been many schemes for promoting Cambodia's agriculture and industry during the country's development. These initiatives have been led both by the government and by international agencies, including NGOs. There has been no clear policy, however, for the promotion of small industries, rural industries or non-farm activities, other than some initiatives that a few NGOs and international agencies have undertaken. The rural non-farm sector was not mentioned in the first Socio-Economic Development Plan (SEDP, 1996–2000), nor does it appear explicitly in the second SEDP. Even the Poverty Reduction Strategy Paper (PRSP) recently prepared by the government only makes a passing remark about this sector (fishing is of course an exception).

This paper now attempts to provide an overview of some of the initiatives that could have a bearing on rural non-farm and off-farm activities.

7.1 A Select Listing of Initiatives

7.1.1 Fishing Activities

Fisheries is a major sector in Cambodia, and other than the Ministry of Agriculture, Forests and Fisheries, there are specialised agencies, like the Mekong River Commission and its national counterpart that are engaged in its development. The different schemes for its promotion include resource conservation, creating conditions for better breeding, training of officials, management of fishing lots, issues of access to fishing areas by the local communities, and international marketing (EDC 2002; McKenney and Prom 2002). While the debate on the efficiency of development activities is outside the scope of this paper, it is important to mention that existing policies are often criticised as they fail to effectively help the sector move away from a centralised control of resources to a market-led one. Even further, there is little in policy that would strengthen the production base of marine fisheries and, in contrast to fresh water fisheries, they hardly receive mention. Last, perhaps it is important to state that fish processing, packing (including freezing) and canning can add immense value under a more enabling policy environment. Unfortunately, there seems to be little evidence of movements in this direction at a policy level.

7.1.2 Private Sector Development under CARERE

The Cambodia Rehabilitation and Resettlement Programme (CARERE) was initiated in 1995 to experiment with local level development planning. CARERE was implemented in select provinces in the northwest and northeast. While its various facets included decentralised development, agricultural development and democratic decentralisation, it had a small focus on private sector development as well.

The private sector development activities of CARERE were primarily aimed at strengthening rural industries. Attempts were made to set up associations of small private manufacturing units, like rice millers, brick makers, fisherpersons and small-scale electricity manufacturers. The basic purpose of forming these associations was to impart training in business development, help form credit unions and assist in marketing. There were also some field studies conducted, which formed the basis of policy formulation for these sectors.

With the termination of the CARERE programme in 2000, its private sector development wing has now become an independent NGO, the Entrepreneurship Development of Cambodia (EDC). EDC presently focuses on promoting private sector and social capital development in rural Cambodia. It actively supports projects for private sector institution building and enterprise management, upgrading activities in rice milling, commercial fisheries, brick and tile manufacturing and renewable energy sources. However, its scale of operation is small, as it has to raise its own resources.

7.1.3 Training

Cambodia has a system of vocational training through which the state as well as NGOs have set up as many as 33 technical centres and schools. There is an extensive range of schools that might relate to industrialisation in rural areas and these include the following:

- 1) School for Industry;
- 2) Don Bosco Training Centre, Phnom Penh;
- 3) Technical and Vocational Training Centre;
- 4) Centre for Vocational Training, Don Bosco, Telka;
- 5) Centre for Professional Training, Battambang;
- 6) Cambodia-Japan Friendship Centre for Vocational Education;
- 7) Vocational Training Centre, Siem Reap;
- 8) Kampot Technical Industry Training Centre; and
- 9) Enterprise Centres for Rural Youth in Prey Veng and Svay Rieng (PRASAC).

Most of these are training centres that provide generic broad-based training. Currently there is no information available which would permit an assessment of the contribution of these institutions to occupational diversification. In an interview, a training expert working in an international NGO, candidly stated that with technical training that lasts only a few weeks or months, it is difficult to transform rural youth who are often asset-less (and with no more than five or six years primary education) into fully fledged entrepreneurs. Since there is more than just technical training required for people with a farming background to become entrepreneurs, such trained persons can, at best, help raise productivity in organisations (if and where) they are engaged. It also increases their employability.⁴⁷

Don Bosco is among the more influential training centres, which offers training, primarily to orphaned children in a variety of skills like food preservation, sewing and stitching, electrical and electronic activities, mechanical engineering and printing. Their training activities are also spread across different areas of the country — Poipet, Kep, Sihanoukville, Kandal, Kompong Cham, Kompong Thom, Battambang and Takeo. So far, more than 2,000 candidates have been trained in different skills. The trainees usually get a stipend during the training period.

⁴⁷ Interview with a PRASAC training expert, September 4, 2002.

Although maybe a subjective evaluation, it does seem that many who are trained, seek paid jobs in large cities. There are no indications of the trainees either becoming small-scale entrepreneurs or reverting to rural areas.⁴⁸

7.1.4 Entrepreneurship Development

The Mekong Project Development Facility (MPDF), a project supported by the Asian Development Bank (ADB), the World Bank and several bilateral donor governments, has been functioning since 1997. Its aim is to foster the domestic private sector in the three transitional economies in South-east Asia. MPDF has conducted 128 courses and trained 1,604 Small and Medium Enterprises (SME) entrepreneurs in the region. They have also included shorter flexible training programmes, which have found high acceptability among the users (MPDF 2001). Although the MPDF has initiated activities in rural areas in Vietnam, its activities in Cambodia have not necessarily concentrated in rural areas. In addition, out of the 87 projects on Company Advisory Assistance completed in the region, only seven pertain to Cambodia.

In its Cambodia operations, other than the completed projects stated above, distance learning, training of bankers and funding of a television programme formed the highlights of 2001. In the context of rural areas, MPDF has aided the Federation of Rice Millers' Associations. It also helped establish RICENET, an Internet site on rice. One of MPDF's activities is to assist soybean milk production, an agro-based industry, though the project is not located in a rural area (MPDF 2002).

7.1.5 Micro Credit

It is well established, from both existing literature and the case studies presented here, that credit is a major constraint in all development activities in Cambodia. Private credit is restrictive and expensive, while institutional credit is in very short supply. In addition, many borrowers do not legally qualify to access credit from institutional sources.

Commercial banks find it infeasible to bank in rural areas.⁴⁹ Instead, it is widely accepted that micro credit appears to meet the needs of small rural farmers and other producers. Efforts to extend micro finance got a major boost with ACELEDA establishing itself as a major credit provider (58 percent share of the market), and then the setting up of the National Rural Development Bank for refinancing micro finance agencies. As of 2001, there were 75 micro institutions providing credit, serving about 21 percent of rural households in Cambodia (EMT 2001). However, in financial terms, only about 23 percent of need is presently being met and the estimated credit shortage is about \$120 million annually (Kang 2002). Calculations indicate that rural micro credit institutions can be financially viable if the interest rate is in excess of 48 percent; which in turn implies that the rates of return for the enterprise that is borrowing should be even higher. Earlier analysis suggests that returns to investment are indeed well in excess of 48 percent in several cases. Yet, money is not flowing into rural areas, and there are several possible reasons for this.

- a) The spread of profits might be too thin across different stakeholders, making it difficult to lend to a specific user;
- b) The risks are too high in the absence of a legal framework; and
- c) The supply is restricted.

As a result, despite \$20 million dollars from the ADB to promote micro credit, only a small portion of it has been currently utilised.

⁴⁸ Interview with expert, Don Bosco Training Centre, September 6, 2002.

⁴⁹ The Canada Bank experimented with lending money to farmers in the late 1990s, but found the venture unprofitable. It was subsequently discontinued.

7.1.6 Private Sector Initiatives

The private sector and NGOs have initiated a number of schemes for the evolution, or revival, of some activities in rural areas. Agro-processing is a good example with cassava processing initiated by one of the major industrial houses. Cassava-processing factories are set up near farm gates, and if farmers grow this crop, the produce is purchased for a guaranteed quantity and price (Sok and Acharya 2002). This type of agro-industrial integration is another form of rural industrialisation gaining ground in Cambodia.

Private sector initiatives have also begun in food processing. Examples of fish sauce production have been noted in Acharya (2002), while others include meatpacking, fruit packing and vegetable processing. However, each of these is presently at an early stage of development.

Silk promotion is yet another initiative which can improve the development of rural industry. Two such projects have an advantage due to their location in rural areas and their direct interface with farmers and rural workers. One example involved PRASAC in 2001–02, whose proposal consists of technological development, organisational and product scale-enhancement, and better product marketing (Victor-Pujebet and Peyre 2001). Technical studies conducted by PRASAC suggest that it is possible to increase the production and sale of silk, by three times over the next 10 years. UNESCO has also supported an association of women silk weavers in Phnom Chisor, Takeo province, to extend quality training in weaving and dyeing.

7.2 Summary

The few initiatives mentioned here may not cover the full spectrum of activities being undertaken in Cambodia, but they are a fair reflection of the state of public policy and activities by both the government and other agencies. It is evident that at best, the efforts are modest; and except for fishing and micro credit where there is *macro* level intervention, all other interventions appear to be at the individual and *micro* level. They attract attention because of their success, but they certainly cannot be termed as part of ‘public policy’. In brief, Cambodia really has little to show in terms of a current effort to upscale rural non-farm activities and enterprises.

Conclusions and Recommendations

For reasons that are very largely historical, Cambodia has had few livelihoods in rural areas other than subsistence agriculture. Efforts to modernise the economy during the 1950s and 1960s bore some fruit, but the real impact was restricted to a few urban areas. During the 1980s and 1990s, some activities fanned out into the rural areas, and some existing ones like fishing, became more formalised. Nevertheless, to date, the rural non-farm economy has yet to grow to a magnitude that can make an impact on the structure of rural employment.

In addition to analysing secondary data, this study presents results from field inquiries carried out on seven rural industries and activities. To recap, these activities were fishing, fish processing, silk weaving, loom cloth weaving, pottery, marble handicraft and brick making. In almost all cases, the internal functioning of the enterprises was found to be efficient. However, the enterprises suffer from poor, obsolete technologies, inadequate training and exposure of workers to modern methods, lack of finance, limited marketing channels and rather small scales of operation that yield insufficient incomes. Not only are marketing channels inefficient as well as expensive, they frequently put the producers at a *disadvantage*. In addition, subsistence and family-oriented styles of business operation, keep productivity low. Last, the two most quoted obstacles to the promotion of local business, in Cambodia, namely poor infrastructure and dollarisation of the currency, appear to be present here as well.

To date, public policies focussing on non-farm operations have been few and isolated at best. However useful the sporadic attempts have been so far, they do not constitute the critical minimum incentive for rural development.

Promotion of rural non-farm activities requires a national effort towards rural industrialisation. The focus should be to move rural industry operations away from subsistence towards market-oriented forms, with full participation from the private sector. Aspects like an enabling macroeconomic framework, infrastructure development and good governance form a prerequisite to such a policy. Some would even argue that growth of a non-farm economy (which is facilitated by demand from the farm sector) should be closely tied to modernisation of the agricultural sector, or else the attempt would be less than successful. Such a ‘puritan’ view is not necessarily subscribed to here.

It is beyond the scope of this paper to provide a blueprint for the growth of the non-farm sector in a development-planning framework. Consequently, recommendations made are restricted to discussing a few issues that emerge from the field study.

8.1 Sectoral Development

In rural non-farm business, some important activities concern the natural resource sectors like fishing, forestry and water resources. Each of these, directly or indirectly affects non-farm activities and/or employment. While the need for a comprehensive policy has often been

voiced, and although the government has established a policy framework for each of these, with assistance from external agencies, the task is far from complete. A comprehensive natural resources policy framework and implementation mechanism — including technical, legal, administrative, and jurisdictional aspects — will have to be put in place, sooner rather than later. This point is not pursued in detail here as it finds extensive discussion elsewhere.⁵⁰

8.2 Marketing

Marketing of products is facilitated by an appropriate physical and social infrastructure being in place, and an effective legal and administrative system. This could be a general statement for all products and services.

Having stated this, the context of rural industries and activities has to be viewed less generally. Some products and services are consumed locally in the rural sector itself, while others find outside markets. Either for those products that are marketed very locally or 'outside', efficient and low cost channels need to be established, to enable products to be cost effective and marketed on time. Fish and fish products, other resource-based industries, rural-based water transport services, and agro-based products are prominent here. Many products are locally consumed; but these products are often the ones that face competition from urban or internationally made products. Typical examples are of earthenware used for domestic purposes and of cotton handlooms. Some of these local products could face stiff competition from metal and plastic products and imported fabrics, and might eventually lose out in the end. For such products, a smooth transition to another product or process (or a process upgrade) will have to be planned.

In some countries, rural industry marketing corporations have been set up to market products like handicrafts, custom-made silks, and artistic pieces, for example. There is a need for research to find out the economic feasibility of such an approach in Cambodia. However, unless the approach becomes self-sustaining in a reasonable period, it may not survive.

Product standardisation, quality control and packaging are an important component of marketing. Some countries have set up institutions to aid product standardisation, which certify the quality of the product for a price. Similarly, packaging has become an industry unto itself, and specialised institutions have been set up to evolve new packaging methods. To what extent such approaches could be suitable for Cambodia, is another priority need for research.⁵¹

8.3 Technology and Human Capital

Facts and recommendations, with respect to upgrading human capital and technology transfer for rural enterprises, are presented below:

- 1) There is a lack of personnel with good basic education. Therefore, few personnel can be directly trained into activities consistent with specific business or technical requirements. This needs to be addressed, particularly in rural schools.
- 2) Presently, there is a shortage of skilled personnel in mid-level technical vocations. Technical schools (especially if spread across the country) that can impart these skills, after eight years or more general schooling, would go a long way toward bridging this gap.

⁵⁰ Useful references are minutes of Donors Meetings on Natural Resources, in addition to reports prepared by the MAFF, MRC and several bilateral and multilateral donor agencies.

⁵¹ The most celebrated example of product standardisation, quality control and brand establishment is that of Delft Pottery. In the 19th century, when faced with stiff competition from Chinese-made porcelain, the Dutch crafts persons worked hard to exact better standards and establish a brand of its own. They succeeded in portraying their product as superior to the Chinese product. Today, Delft pottery is an industry, producing some of the best porcelain in the world.

- 3) Business acumen is limited to a few, sometimes specifically with certain ethnic groups for historical reasons. This is usual in other countries as well, but the problem needs address. Both full-time and mid-career business schools, which can provide short courses in entrepreneurship, finance and specific aspects of technology management, can be helpful in bridging the knowledge gap in business. For the rural non-affluent sections of the society, some NGOs have introduced a new concept called 'group entrepreneurship' (Bogart and Das 1989). Such approaches need serious examination in the Cambodian context.
- 4) The high cost of training in Cambodia is a concern. Unless technical and professional education is subsidised, the system would screen out a very large majority that are unable to pay. State support is essential here, if not in the form of low fees, then through generous scholarships. Often, both are required. Lessons from other low-income but highly literate countries like Sri Lanka, China, and Vietnam can be useful. Low cost training, including community-based training can also be instructive (World Bank 1994; ILO 1994).
- 5) Transfer of technology is critical to establishing a sound technological base, and while there is no unique formula for achieving this, one approach is to set up a tripartite organisation (employers, workers and the government) under the umbrella of the Asian Productivity Organisation (APO) located in Tokyo. Many countries in Asia have national productivity councils that share and disseminate technologies nationally as well through international transfer protocols. Some also have branches specialised in addressing rural problems. It is worth considering establishing a national council in Cambodia.

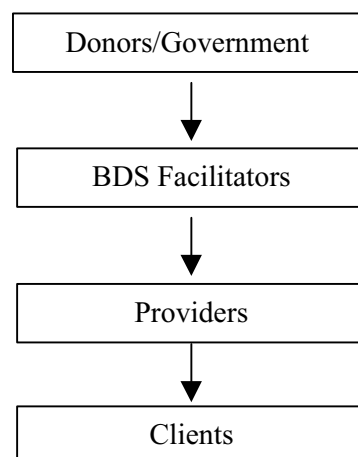
8.4 Business Development Services and Supply-side Strengthening

All businesses require services: this could be with regards to finance, markets, inputs, technologies, costs, and a range of other issues. In industrialised countries, such services are available in colleges, professional magazines and Internet sites, and provided through a number of consultancy agencies. Some items have a price but many are free. For many less developed countries, a business environment has to be created initially, if necessary with external assistance, before the market begins to provide business services. Supply-side strengthening, therefore, is an important policy measure.⁵² One such approach is establishing Business Development Services (BDS).

BDS include training, consultancy and advisory services, marketing assistance, information, technology development and transfer, and business link promotion. BDS can be both, operational and strategic. Required operational services are provided on a day-to-day basis, while strategic services are required for medium to long-term business planning and expansion. BDS can be individual service-specific as well as for a group of services; this decision would depend upon the market being served (ILO 2001).

The different actors in a BDS are private enterprises (the clients), facilitators (consultants, policy advisors), providers (product certifiers, technology suppliers, troubleshooters, trainers) and donors and governments. The relationship between the different agents is somewhat as follows:

⁵² Supply-side strengthening is not an anti-market policy. The US Government practiced it as well, though in a different form, in the 1980s.



Clients seek services on demand and for a price, providers are also demand-driven private agencies that work for a profit, while donors, NGOs or governments support facilitators in the initial stages of development, but finally, facilitators too become market-driven. Sometimes even banks take up the role of facilitators. In some countries, special banks, known as 'development banks', have taken up the task of carrying out these services. The World Bank (2001) and ILO (2001) provide many examples of variants of BDS.

There are a number of other services that can be provided by the government and donors to promote the private sector — providing they are not direct subsidies or cash concessions. These could include training (in country or abroad), establishment of industry or technology parks, and construction of common-use facilities (deep freezers for small fisherpersons) or common design centres (for small garment manufacturers). Help can even be provided in organising business associations. In a developing country, the provision of services under the 'infant industry argument' is a perfectly legitimate activity. However, the potential risk of BDS becoming supply driven has to be avoided.

8.5 Finance

Literature, as well as the field studies carried out here, suggests that people in Cambodia conduct business with their own savings, and borrowings from relatives and friends. This needs to change. To strengthen institutional lending, however, a number of preconditions would need to be put in place.

- 1) Transparency and market information require business support institutions — independent actuary authorities, statutory audits, business law firms, and credit rating agencies — whose authority is internationally recognised and respected. Cambodia lacks most of these, and it is not clear from the existing documents whether each of these is receiving attention. These institutions are not necessarily created on the initiative of the private sector alone; a lot of state support and partnership with the government are essential for their establishment.
- 2) Banks in Cambodia typically resemble banks elsewhere in the developed world: they have their main offices (often their only offices) in the capital city, they deal with large sums of money, and they work in low risk environments. In reality, the concept of risk has never been institutionally defined in Cambodia and this aspect needs more research. Next, questions such as; what are the demands for credit from rural enterprises, rural retail marketing systems, decentralised business enterprises and trading; what is the seasonality of credit demand; and what is the capacity of different borrowers to pay back, have no clear answers. Clearly, the supply side of the financial system needs major policy support.

- 3) While not fully reflected in the case studies in this survey, a large number of economic activities do get credit — and pay interest rates of 60–120 percent annually. This is evidence that credit institutions can do profitable business with a much larger part of the population than at present. Banks presently do not have the expertise or experience to effectively negotiate with the ‘small’ or the decentralised. They are equipped to handle large sized loans and a few customers, and not a large number of customers wanting smaller quantities of loan. In dealing with small customers their transaction costs tend to rise, as a result, they shy away. It requires a different approach to bank with the small and decentralised, a management style yet to become popular, but needed in Cambodia.
- 4) For very small businesses, recent experiences elsewhere in the developing world reveal that while individual small operators may not qualify for credit, their credibility rises if they are formed into groups (Hulme and Mosley 1996; Tilakaratna 1996). Credit groups (or associations), composed of small borrowers often begin as savings groups, and as their credibility as savers gets established, they also qualify to apply for group loans — in quantities that banks can manage to administer at lower costs — and distribute the amounts among themselves according to each member’s need (ADB 1998). There are no concessions on interest rates or payback periods; the interest rates are at par with the prime lending rates, or even higher. This approach has become popular in many countries, as the repayment rate of loans is generally in the range 90 percent or more. To make such a system operate nationally requires both organisation and regulation. Strengthening local governments — the commune councils in this case, which can act as regulatory authorities — as well as industry associations can be one step in this direction. Considerable training and innovations for this purpose would also be a prerequisite. One of the major challenges would be to steer funds from the formal banking sector into micro finance and similar decentralised banking outlets. The establishment of the Rural Development Bank is a step in this direction, but much more needs to be done.⁵³

⁵³ There is some debate on problems with development banks as they have accumulated large non-performing assets in some countries. Nevertheless, the concept should not be rejected outright.

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Off-farm and Non-farm Employment: A Perspective on Job Creation in Cambodia

There is now growing agreement that neither modern large industry nor the agricultural sector alone, have been, or will be, able to serve the purpose of rural job creation at the same pace as the rise in demand for jobs. In this regard, the impressive growth of small and medium rural industries in Japan, South Korea and Taiwan earlier, and more recently in China, has created immense interest in the possibilities of promoting non-farm and off-farm activities in many other Asian countries.

This study arises from the imperative to create more and diversified jobs in the transitional economy of Cambodia, with a view to alleviate poverty, unemployment and underemployment. It comprises the Cambodian chapter from a volume of country studies published by the Development Analysis Network in March 2003 under the title *Off-farm and Non-farm Employment in Southeast Asian Transitional Economies and Thailand*.

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