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Importance of Agricultural Growth for Poverty Reduction: The Indonesian Case

Tulus Tambunan*

Abstract

Although poverty is generally recognised as a highly multidimensional phenomenon, in the Indonesian context, poverty has been mainly an agricultural or a rural phenomenon. This has of course an important policy implication for Indonesia for poverty alleviation. This study examines the importance of agricultural growth for poverty reduction in Indonesia. It shows that: (i) agriculture is still the biggest employment-generating sector in the country; (ii) the vast majority of poor families are in agriculture, consisting mainly of the marginal farmers and agricultural labourers; (iii) the decomposition of changes in poverty into main sectors shows that the output growth in agriculture appears to have the strongest effect on the change in poverty; (iv) in rural areas, increase in rice production per hectare (as the main important agricultural production in Indonesia) and agricultural nominal wage are two main important channels through which agricultural growth affects poverty, particularly in the rural areas.

1.0 Introduction

In the beginning of the 'new order' (NO) regime in 1966, the average Indonesian earned only roughly US\$50 a year; about 60 per cent of adult Indonesian could not read or write; and close to 65 per cent of the country's population lived in absolute poverty. Facing this condition, the new order government launched five-year economic development plans, with the first plan started in 1969, and made several crucial economic policies in the 1970s and 1980s, including liberalisation in investment, capital account, banking and trade.

During this NO era (1966-1998), agriculture and industry were two priority sectors. The main reason to include agriculture as a priority sector in the national economic development was twofold. First, it was related to national food self-sufficient policy, especially in rice. Since Indonesia is a huge populated country and rice is the main food, sustainable rice growth is indeed very crucial. Second, agriculture was (and it is still) the largest sector in creating employment. National statistics show that in 2003 about 60 per cent of Indonesian total workforce worked in rural areas and the largest part of rural workers is found in the agricultural sector. Rapid and sustained growth in this sector was seen as the most effective way for poverty reduction in Indonesia. The implementation of this agricultural growth-led poverty reduction policy was accompanied with other poverty reduction special designed measures, including labour intensive (particularly for unskilled workers) projects (such as construction of village roads and technical irrigations); more access to primary education and health-care facilities for the poor families with government subsidies; development of backward villages through *Inpres Desa Tertinggal*

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(IDT) programme under the Presidential Instruction for development of isolated/under-developed villages; and development of micro- and small-sized enterprises.

Rapid growth in these two sectors together had resulted in rapid and sustained economic growth during the 1980s up to 1997, just before the Asian financial crisis occurred, and accompanied with the above mentioned special poverty reduction designed measures, the poverty incidence (people living under current official poverty line as percentage of total population) also declined substantially.

2.0 Objectives and Justification

The key objective of this study is to examine the importance of agricultural growth for poverty reduction in Indonesia. It addresses a simple but very important policy-question: Does the output growth in agriculture really matter for poverty reduction in Indonesia? This study has an important implication for poverty alleviation policy. As shown in this study the majority of workforce in Indonesia still finds employment in rural areas, and the largest part of rural workers is found in the agricultural sector. It means obviously that agricultural growth should be the main focus of national poverty alleviation policy.

3.0 Data Sources and Method of Investigation

To answer the above research question, methodologically, the study is conducted in the following stages. First, it starts with a brief survey of literature on the importance of agriculture in poverty reduction in less developed countries (LDCs). Second, it analyses recent data on poverty-related aspects of agricultural development in Indonesia such as the importance of the sector for employment creation and household incomes. Third, it conducts simple regression analyses in subsequent two steps: (i) changes in poverty are decomposed into changes in output in three big sectors (based on employment share), namely agriculture, industry, and service; and (ii) the statistical relationship between rural poverty, as an independent variable, and the following explanatory variables, i.e. agricultural nominal wage, average rice production per hectare, and rural consumption price index, are examined.

The analysis uses secondary data from a variety of sources. Data on poverty are from the National Social and Economic Survey (widely known as SUSENAS), which is an annual cross-sectional survey of households by the National Agency for Statistics (BPS). Poverty rate is measured by the head-count index, which is the percentage of the population for whom consumption expenditure is less than the national poverty line. The line is constructed with the cost-of-basic-needs approach. Data for other items such as gross domestic product (GDP), output/value added and labour force/employment by sector are from Statistical Year Book of Indonesia (SI), the National Agricultural Census (NAC), and the National Labour Survey (NLS). SI and NLS are published annually and NCA per 10 years, all by BPS. This study also uses data from the Food and Agricultural Organisation (FAO) of the United Nations, and primary data from a small field survey.

4.0 Role of the Agricultural Sector in Poverty Reduction: A Brief Literature Survey

There are some who suggest that poverty can be fought indirectly but effectively through policies that support the trickle down mechanism of economic growth. The assumption here is that by investing in urban areas and the industrial sector, benefits will eventually filter down to the rural areas and therefore reach most of the poor. Evidence in many developing countries, however, does not seem to support this notion. Benefits of urban-led development do not appear to have trickled down to the rural areas. For instance, a study by Ravallion and Datt (1996a,b) shows that while urban income growth translates into urban poverty reduction, it does not contribute to rural poverty reduction, so at the national level, the impact is relatively small.

This implies that in countries dominated by rural economy or agriculture such as Indonesia, India and China, the growth centre must be in the rural areas or started from agriculture. The assumption here is that rural development, including development of agriculture, has important positive effects on overall development. Improving income in agriculture and hence in rural areas in general necessarily spills over to improvement of income in urban areas. Many studies¹ indeed show that in many developing countries, the largest growth in poverty reduction has occurred as a result of agricultural growth. The implication of this evidence is that agricultural growth is generally pro-poor. In addition, in many studies it has been shown that improving farm production helps spur non-farm activities in the rural areas. Such non-farm activities are very crucial to insulating rural families from poverty. This implies that the role of agricultural growth on poverty reduction is not only in the form of its direct effects on employment creation or income increases in the sector, but also through its indirect (or linkages) effects on output growth in labour-intensive non-farm activities such as food and beverages industries.²

Many factors have been said to be very important in determining the effects of agricultural growth on poverty reduction. Three of these factors are the availability or distribution of land, technology reflected by e.g. modern irrigated land and use of fabricated fertilisers, modern seed, and tractor, and human resource reflected by educated farmers (Fan and Hazell 1999). Many studies on the supply response to price changes in agriculture suggest that farmers are quite responsive to price incentives, when they have access to these mentioned factors and other necessary complementary inputs.³

There are, however, some authors who have different conclusions. The question of how much do poor people share in the gains from higher growth of output or productivity in agriculture has been the subject of debates. In contrast to the opinions of Saith (1981) and Singh (1990) who claims that rapid agricultural growth has benefited the poor, many others such as Gaiha (1995) concludes that acceleration in agricultural growth by itself is unlikely to make a dent in rural poverty. Even, recently, some authors started to doubt on whether development of agriculture is still crucial as a policy instrument to fight poverty.

¹ See e.g., Rangarajan (1982), Saith (1990), Singh (1990), Matsuyama (1992), Binswanger and Von Brown (1993), Lipton and Ravallion (1995), Ravallion and Datt (1996a,b, 1999), Timmer (1988, 1997), Wichmann (1997), Kanwar (2000), Irz and Roe (2000), Thirtle and Irz, (2001), and Bourguignon and Morrison (1998).

² See for instance, Johnston and Mellor (1961), Mellor (1995, 2000), and Sarris (2001).

³ See e.g. Bond (1983), Schiff and Montenegro (1997) and McKay, et al.(1997).

Dorward (2001) and Dorward et al. (2002), for instance, argue that reliance on pro-poor agricultural growth as the main weapon against rural poverty today faces more difficult challenges than those faced in the green revolution areas in the latter part of the 20th century, due to a number of features that together increase risk and uncertainty and raise costs and/or lower returns to agricultural investment. Many of these difficulties are endogenous to today's poor rural areas, others result from broader processes of global change, but some are the direct result of policies supporting world trade liberalisation and withdrawal of the state. A review of literature on the green revolutions suggests that state interventions in agricultural markets were widely used and important in supporting sometimes short periods of critical market and technological development in the process of rural growth. But, such interventions now in the era of globalisation and world trade liberalisation have become unpopular.⁴

5.0 The Indonesian Experience with the Green Revolution: A Brief Review

Recognising the importance of development and growth in agriculture for food security (or self-sufficiency in food production) and poverty alleviation, in early 1970s the NO government started a big programme to intensify or to modernise the agricultural sector, known as the green revolution. The process was marked by the introduction of new, often called 'modern' inputs (e.g. manufactured fertilisers, seeds and pesticides), new/high-yield technologies, and new methods of production/farming, and massive public investments in rural areas.

It is generally believed that among many factors, massive public investments in rural areas during the green revolution period in many fields such as improvement in human capital, development of market centres and grain storages, expansion of modern irrigation system in crop land, adoption of new technologies, mechanised production process and improved modern inputs in agriculture, and development/improvement of basic infrastructure such as roads, bridges, transport and telecommunication facilities that link rural households, farmers and non-agricultural producers to wider market opportunities, had played a substantial role in generating output growth in agriculture, and, hence, in the large reduction of rural poverty in Indonesia.

Irrigation crop land, the use of modern inputs and agricultural output are often used as success indicators of the green revolution. It is generally expected that the green revolution will result, from the input side, in the expansion of (technical) irrigated crop land and the increase in the use of modern inputs, and, from the output side, in the increase in agricultural output or productivity.

⁴ The Green Revolution in developing countries has received much attention in the literature. From the 1970s and 1980s, see Lipton and Longhurst (1989) for a valuable review of the literature. For 1990s onwards, see for instance Hazell and Ramasamy (1991); Singh (2001); Kuhnlen (1996); Howard and Kelly (1999); Mittal and Rosset (2000); Borlaug (2000a,b); Shah and Strong (2000); Sharma (2000); Shiva (1991); and Niazi (2004).

5.1 Irrigation and use of modern inputs

Historical data from the National Statistics Agency (BPS) on agricultural land use and use of fertilisers and other inputs in Indonesia are generally unreliable. BPS data from the 1970s and earlier are not fully comparable with more recent data⁵. But, this is not only the Indonesian problem. Also in many other parts of Asia and Africa, national agricultural statistics are being constantly revised and improved, which creates the comparability problem. Therefore, many previous studies also use data from FAO⁶. But, the FAO figures are also problematic since they are derived, partly, from national statistics, and, partly, own estimations. FAO database on land use in agriculture in Indonesia differs markedly from the BPS estimates. The BPS data show that agricultural crop land in Indonesia expanded from 17 million hectares (ha) before the green revolution to more than 37 million ha in the 1990s. The FAO data, on the other hand, show that total agricultural land use increased from 38.4 million ha in 1970 to 44.88 million ha in 2002, or arable land from about 18 million ha in 1970 to 20.5 million ha in 2002. The irrigated part of agricultural land in Indonesia in the period 1960s-70s on average per year was 10 per cent, and ever reached 11 per cent in the 1980s.

Table 1: Average Annual Quantity and Growth Rate of Crop Land and Modern Input Use in Agriculture

	<i>Quantity</i>				<i>Growth rate (% per year)</i>			
	<i>1961- 1965</i>	<i>1971- 1975</i>	<i>1981- 1985</i>	<i>1991- 1995</i>	<i>1961- 2000</i>	<i>1961- 1967</i>	<i>1968- 1992</i>	<i>1993- 2000</i>
Crop land (million ha)	17.6	18.9	26.0	32.2	2.0	0.3	2.3	2.1
Irrigated crop land (million ha)	2.4	2.7	3.3	4.6	1.8	1.4	2.3	0.3
Fabricated fertiliser (million tonnes)	0.1	0.4	1.7	2.5	10.6	1.7	16.0	0.1
Machinery (million horsepower)	0.1	0.2	0.2	0.6	11.5	7.5	14.3	5.9
Fertiliser/crop land (kg/ha)	6.9	22.7	64.0	76.3	8.5	1.3	13.6	-2.0

Source: Fuglie (2004) (data are from BPS and FAO).

Using data from BPS and FAO (FAOSTAT), Fuglie (2004) provides a breakdown of land and modern inputs used for agriculture in Indonesia in three periods: Before the green revolution in the 1960s, during the green revolution in the 1970s and 1980s and after in the 1990s. As can be seen in Table 1, in the 1960s, crop land expanded annually, and during the green revolution period the growth rate increased to 2.3 per cent per year, and after that in the period 1992-2000 about 2.1 per cent per year. Before the green revolution started, irrigated land expanded by 1.4 per cent per year and during the green

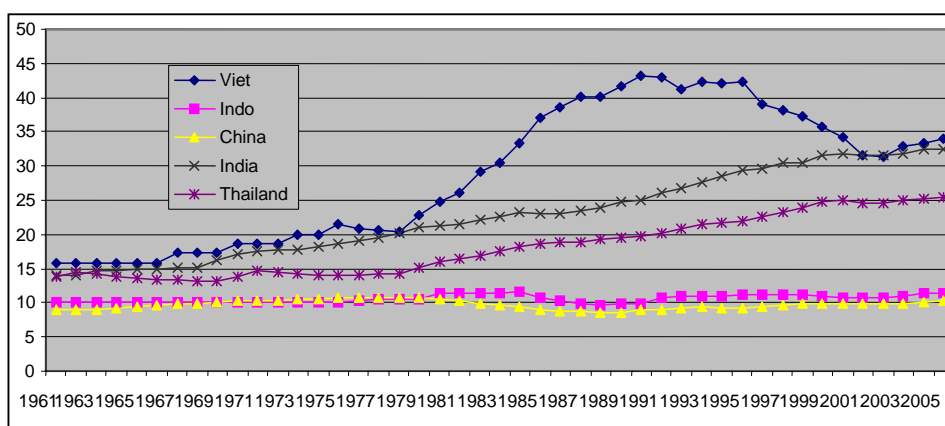
⁵ Only since the 1980s, BPS has published reasonably good estimates of land use for agriculture, divided in irrigated and non-irrigated. See further Booth (1993) and Fuglie (2004) for a more detail discussion of agricultural land use statistics in Indonesia.

⁶ See for instance Fuglie (2004), Arnade (1998), Suhariyanto (2001), and Mundlak et al. (2002).

revolution period it increased by more than half to 2.3 per cent per year, but after that it fell significantly to 0.3 per year. The use of modern inputs was also very intensive during the green revolution. The average annual growth rate in the use of fabricated fertiliser measured in kg/ha increased markedly from 1.7 per cent in the 1960s to 16 per cent in the 1970s-1980s, leading to the increase of fertiliser use per crop land from 1.3 per cent to 13.6 per cent on average per year during the same period, respectively. The use of machinery, measured in terms of horsepower available from tractors and threshers used in agriculture, also increased from 7.5 per cent per year before to 14.3 per cent per year during the green revolution.

To get some idea about the relative position of Indonesia in this matter, by using FAO data from 1961 up to 2005 (most recent), this study compares Indonesia with other important agricultural based economies in the region, namely China, India, Thailand and Vietnam. As illustrated in Figure 1, agricultural land in Indonesia is slightly more technical irrigated than in China, but much less than in other three countries. In Vietnam, the ratio was between 15-17 per cent in the 1960s and increased markedly to over 40 per cent in the first half of 1990s.

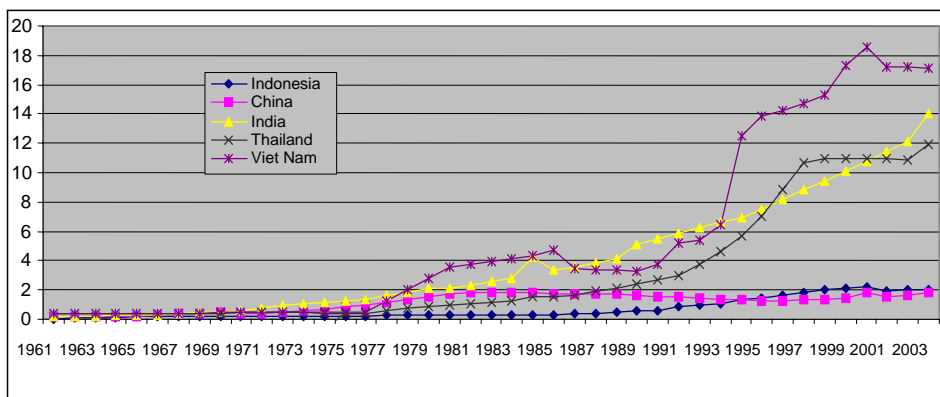
Figure 1: Technical Irrigated Land as a Percentage of Agricultural Land in Selected Asian Countries, 1961-2005



Source: FAO database (FAOSTAT).

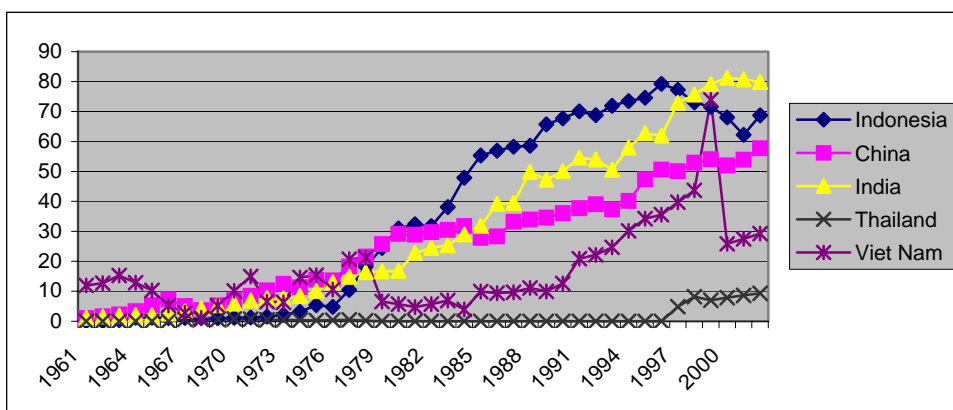
Growth in industrial inputs used in Indonesian agriculture, namely fertiliser and tractor, was very rapid, averaging more than 10 per cent annually between 1961 and 2003 (most recent FAO data). However, use of these inputs started from a very small base, and tractor (two- and four-wheel in all sizes) use per hectare in Indonesia remained small by Asian standards (Figure 2). This may suggest that agriculture in Indonesia is much less mechanised, despite government's efforts to make that happen during the green revolution period.

Figure 2: Use of Tractors per ha of Agricultural Land in Selected Asian Countries (per ha), 1961-2003



Source: FAO (FAOSTAT).

Figure 3: Use of Fabricated Fertiliser per ha in Agriculture in Selected Asian Countries, 1961-2002



Source: FAO (FAOSTAT).

Use of fabricated fertiliser, on the other hand, is quite high compared with other Asian countries (Figure 3). But, from mid-1990s, there was virtually no growth in fertiliser use, and per hectare application actually declined. The slowdown in fertiliser use can be attributed in part to farmer's rising real costs. The level of fertiliser subsidy was as high as 50 per cent from the mid-1970s to the mid-1980s, but then declined gradually (Fuglie 2004). The subsidy finally ended in 1999 as a result of the agreement between the Indonesian government and the International Monetary Fund in the crisis recovery programmes.

Why tractor use in Indonesian agriculture is relatively low compared to many other countries has never been studied seriously. To fill this knowledge gap, the author has conducted small surveys in rice production centres in Central Java and West Java. The

main aim of this survey was just to get some insight based on farmers' own opinion about the use of tractor for their production. Randomly 150 local rice farmers with age ranging from minimum 39 to maximum 63 years old were selected and interviewed. They were very young when the government started the green revolution in the early 1970s. Most of them were still at school at that time and every day after school they helped their fathers who were also farmers. About 15 per cent of them are not farmers any more for various reasons like health condition and they changed their occupations for better income. Most of them are now owners of cottage or household industries and small restaurants. The average level of education of the respondents is only primary school, but many of them did not finish it. The average size of land owned or cultivated by the respondents is less than 0.5 hectare, but many of them have land with size less than 0.1 hectare. In the literature, they are categorised as poor or marginal farmers. Rice farmers were chosen as the respondents for two main reasons. First, rice is still the most important sub-sector of agriculture, not only from the market demand-side but from the total number of farmers engaged. Second, the green revolution was aimed mainly to increase productivity in rice, not in other food crops or commercial plantations. The respondents were asked whether they ever or are still using tractor, and, if not or not anymore, what are their main reasons.

Table 2: Number of Farmers Used and not Used Tractors and Their Main Reasons: Results from a Small Survey

	<i>Number of farmers</i>
Ever used or still using tractor	20 (13.33%)
Never used tractor	130 (86.67%)
Total	150 (100.00%)
Main reasons of not used tractors	
- too expensive and too costly for maintenance	60 (46.15%)
- do not see the benefits of using tractor	39 (30.0%)
- want to maintain traditional way	31 (23.85%)
Total	130 (100.00%)

Source: Field survey.

As can be seen in Table 2, only 20 respondents ever used tractor, but no one of them was using it anymore during the survey period. The reason they gave is straightforward: no money to substitute new spare-parts or to repair it, and also the cost for petrol becomes too much for them. In their opinion, access to market and stable and reasonable prices for both output and inputs (especially fertiliser) are more important than use of tractor. Now, from the other side, the 130 respondents who never used tractor, too expensive to buy or rent a tractor is the main reason for the majority of them. As they explained, they just could not afford to purchase a tractor as well as to pay the included costs of using a tractor, such as for spare-parts, petrol, and services. Especially, since they are poor having only very small land, they have no access to credit. This is consistent with two main characteristics of agriculture in Indonesia. First, an area of particular concern in Indonesian agriculture is access to credit, especially for small size/poor farmers. Second, although rice is the most important crop and therefore was focused by the green revolution, as explained before, rice farm households are much poorer as compared to

farmers of commercial plantations such as palm oil, coconut, orange, and other fruits⁷. Probably if the survey was done on commercial crops farmers who have larger land holdings and better access to credit, the result might be much different, or at least the reason that having a tractor is too expensive may not appear as the most important one.

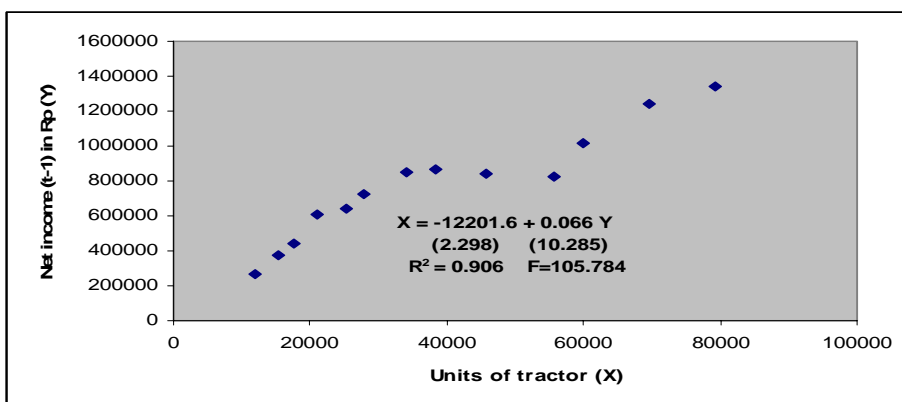
The second important reason is that many of them do not see the benefit of using a tractor. They do not believe that use of tractor will generate higher yields or they will get higher incomes than what they earn now. Moreover, even with a tractor their small cultivated lands may limit the volume of their crops that can be efficiently grown. They stated that use of good fertiliser and seed is more important than use of tractor. What is more important for them is that the government keeps price stable at a reasonable level for their output and procures cheap inputs (such as fertiliser and seed). The third reason is that they are happy with their own ways of farming (e.g. use of animal power). They do not want to change their long-traditional mode of production. In their opinion, adopting a modern production technique such as use of tractor is too sophisticated or too complex for them.

Although the above finding cannot be used to generalise the whole country, nevertheless it may give some idea about the possible main reasons for the low use of tractor in Indonesian agriculture. There are three important issues here. First, it can be said that the slow process of mechanisation in Indonesian agriculture has been related to three most important matters: (i) the reason 'too expensive' reflects a financial matter which is related, partly, to farmers' incomes and, partly, to their access to capital; (ii) the reason 'do not see direct benefit' is basically a know-how matter, and it is closely related to farmers' education; and (iii) the reason 'want to maintain traditional way' is a culture matter which is farmers' traditional way of live. Second, the finding may suggest that the proportion of farmers who adopt a modern production technique will increase with the size, wealth and education of the farmers. This is consistent with findings from many studies in other developing countries that ownership of assets such as tractors, farm implements and vehicles is more common in larger sized and wealthy farmers than in small/marginal and poor farmers⁸. This is also supported by the plot between total units of tractor used (based on FAO data) and average net incomes per farmer (Rp) for certain years in the 1980s and 1990s (based on BPS data from the National Socio-Economic Survey (SUSENAS) (Figure 4). Third, if use of tractor per hectare can be adopted as a proxy of level of technology, then the survey's finding supported by the FAO data presented in Figure 2 may suggest that the green revolution during the NO era has failed to introduce widely modern technologies embodied in machineries such as tractor in agriculture.

Figure 4: Plot between Total Units of Tractor and Average Net Income of Farmer (one year lag) in Indonesia, 1980s & 1990s

⁷ Especially in the last two years, owning a tractor has become more expensive for rice farmers, since all consumption prices of basic needs have increased because of the domestic subsidy reduction for oil in 2005 by more than 100 per cent, and the domestic price for oil tends to further increase following the increase of oil prices in the international market on the one hand, and, the decline of price in their output because of increased rice import, on the other hand. This has led to a significant decline in their terms of trade in the last few years.

⁸ See e.g. López et al. (1995), Feder and Feeny (1991), and Chambers and López (1987).



Source: BPS (SUSENAS) and FAO (FAOSTAT).

5.2 Human resource

Besides access to land, technology and other inputs, human resource with quality is also very important in determining the development of agriculture. Moreover, technology and high qualified human resource are two complementary factors in production process in any sector, including agriculture. The impact of a new machine or production tool on output growth in agriculture will be insignificant if farmers or agricultural workers do not know how to use it properly. The findings shown in Table 2 might be different if the respondents are highly educated. At least the proportion of those whose main reason of not using tractor is 'do not see the benefit of using a tractor' might be smaller if most of them do understand about the need to modernise their way of production to improve their productivity.

As in other developing countries, the quality of human resources in Indonesian agriculture is very low compared to those in other sectors. Based on the most recent National Agricultural Census (NAC) 2003⁹, Table 3 shows that more than 50 per cent of

Table 3: Percentages of Farmers by Level of Education in Indonesia, 2003

Level of education	Java	Outside Java	Indonesia
No education	34.44	28.83	31.62
Only primary	48.07	41.93	44.98
Secondary	15.80	27.56	21.71
Tertiary	1.69	1.68	1.69
Total	100.00	100.00	100.00

Source: BPS (NAC 2003).

⁹ NAC is conducted in every 10th year; next survey will be in 2013.

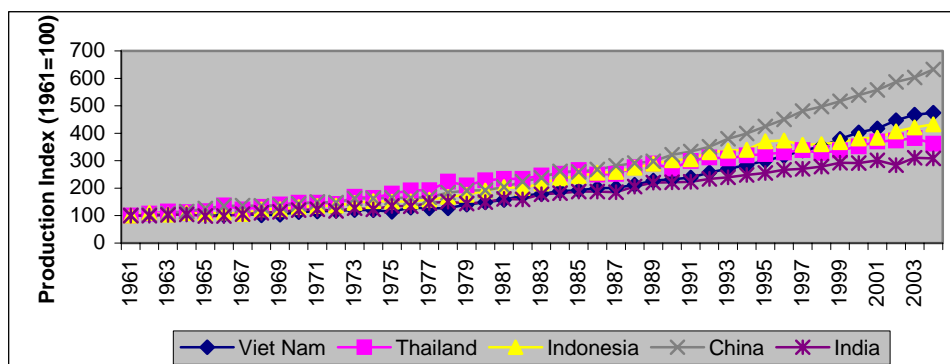
farmers are from the category of not formally educated and have only primary education diploma. This low education level of farmers is expected to influence the capability of Indonesian farmers to adopt new technologies, including the use of tractor.

5.3 Output growth

The green revolution policy emphasised maximising productivity for the two scarcest factors of production, namely land and capital. To this end, labour-intensive cropping patterns using high-yield technologies were introduced, especially in regions where land was the scarce resource relative to labour, as on Java. So, there was no trade-off between the achieved output growth and employment generation in agriculture. Obviously, the technologies used or the adopted cropping patterns were poverty reducing. In regions where land was abundant relative to labour, as in many parts of the Outer Islands, with the help of new technologies and methods of production and management, plantation crops yielded better incomes than in labour surplus regions (particularly Java and Sumatra) for both labourers and smallholders. Also, during that period varieties of rice were introduced, and they responded dramatically to greater fertiliser applications, good irrigation systems and careful agronomic management. As a result of high output growth/productivity in agriculture, the gap between rural and urban productivity did not widen too rapidly for labour migration to keep wages closely linked (Timmer 2004).

Based on FAO database, Figure 5 shows long-term developments of quantity-based indices of agricultural output (which includes rice and other food crops) in Indonesia and other countries mentioned in the previous figures. It shows that agricultural production in Indonesia started to increase significantly since the beginning of the 1970s up to the mid-1990s; especially the years of 1980s up to 1995 were exceptionally good for Indonesian agriculture, with annual growth averaging 4.6-5.2 per cent. In the last few years of the 1990s, the rate of output growth in Indonesian agriculture slowed significantly, partly caused by the crisis in 1997/98. Agricultural production in China, on the other hand, shows a remarkable good performance with its increasingly accelerated growth rate since the 1970s.

Figure 5: Long-term Developments of Agricultural Output Indices in Selected Asian Countries



Source: FAO (FAOSTAT).

6.0 Does Growth in Agriculture Matter for Poverty Reduction?

Results and Discussion

By the end of 1960s, the average Indonesian earned only roughly US\$50 a year, and over 80 per cent of the country's population lived on tiny, fragmented and scattered farms. They had little or no access either to rudimentary health care or to basic amenities of life such as safe drinking water or adequate shelter. About 60 per cent of adult Indonesian could not read or write and close to 65 per cent of the country's population lived in absolute poverty. However, with a sustained rapid economic growth during the NO era, the income per capita has increased significantly, and the percentage of population deemed as poor has declined dramatically. Data from SUSENAS show that in 1976 the national poverty rate was 40.1 per cent and steadily declined to 11.3 per cent in 1996. When the crisis occurred in 1997 and reached its climax in 1998, the poverty rate increased to 16.7 per cent and reached its peak level at 23.5 per cent in 1999. The rebound of the country's economy in 2000 has led to a drop again in poverty incidence (Table 4).

Table 4: Percentage of Population Living under Current Poverty Lines in Indonesia: 1976-2004

<i>Year</i>	<i>Poor People (%)</i>		
	<i>Urban*</i>	<i>Rural**</i>	<i>National***</i>
1976	38.8	40.4	40.1
1978	30.8	33.4	33.3
1980	29.0	28.4	28.6
1981	28.1	26.5	26.9
1984	23.1	21.2	21.6
1987	20.1	16.1	17.4
1990	16.8	14.3	15.1
1993	13.4	13.8	13.7
1996	9.7	12.3	11.3
1998	21.9	25.7	16.7
1999	19.4	26.0	23.5
2000	14.6	22.4	19.1
2001	9.8	24.8	18.4
2002	14.5	21.1	18.2
2003	13.57	20.23	17.4
2004	12.6	19.5	16.6

Note: * = percentage of urban population; ** = percentage of rural population; *** = percentage of total population.

Source: BPS (SUSENAS).

Table 4 shows that in the pre-crisis period, the poverty rate in rural areas declined faster than that in urban areas. There were at least three causes: (i) agricultural output growth that led employment in the sector and farm income to increase; (ii) employment increased in rural non-farm activities like agro-industries, trade, services and rural transportations as a result of improved rural infrastructure and rural-urban connections; and (iii) many unskilled labour, unabsorbed by the growth in agriculture and rural non-farm activities,

migrated to urban areas and worked in labour intensive manufacturing industries such as food and beverages, textile and garments, leather products, electronics and footwear, construction, transportation and services. These were boomed industries and sectors during the NO era.

The increase of rural poverty during the crisis period was partly a result of returning unemployed people from urban areas. During the crisis, many laid-off workers particularly from manufacturing industries and construction (the two sectors that mostly hit by the crisis) were reportedly leaving urban centres to return to their villages where subsistence could at least meet their basic needs. However, in the crisis situation in which poverty in both urban and rural settings was on the increase, many rural originated people who became unemployed stayed in cities and considered self-employment or do any kind of low-paid works in urban informal sector as an option (Amin 1998; Hugo 1998). So no doubt that during the crisis agriculture together with urban informal sector had played an important role as the last resort for the laid-off workers from the formal sector.

These official data on poverty from BPS are, however, not without many criticisms. Ravallion (1992), for instance, questioned the methodology used by BPS in calculating its poverty lines. He argued that the urban-rural differential of more than 50 per cent in these poverty lines for some years during the 1980s was far above actual urban-rural cost of living differences. This meant that migration of people previously living above the poverty line in rural areas to urban areas where they enjoyed a higher actual standard of living that was nevertheless below the official urban poverty line would result in an increase in national poverty rate. The methodology used by BPS to derive the poverty lines, i.e. the calorie bundle method until 1993 allowed for different calorie consumption patterns, and then the food bundle method allowed for different food consumption patterns in urban and rural areas has also been criticised by Asra and Virola (1992), Booth (1993), and Asra et al. (1997). They argued that this BPS approach results in a loss of comparability across areas. Using SUSENAS data, Asra's (1999) estimates show that the urban-rural food price differential during the period 1987-96 was 13-16 per cent, not 28-52 per cent as implied by the official BPS poverty lines. It indicates that the poverty decline during the period 1993-96 might not have been as rapid as the BPS estimates suggest. Many also questioned the real impact of the economic 1997/98 crisis on poverty. For instance, Daly and Fane (2002) argued that much of the apparent rise of poverty during the economic crisis period was mainly due to an increase in the poverty line induced by higher rate of inflation in 1998. Whereas, the measured poverty after the onset of the crisis may have slightly overstated real poverty because the anti-poverty programmes that provided benefits in kind, i.e. subsidised rice, scholarships and subsidised health care and nutrition, would not have affected the expenditure-based measures of poverty, even though they reduced real poverty, because their benefits were not included in measured expenditure¹⁰.

Table 5: Employment by Sector in Indonesia, 1990-2005 (%)

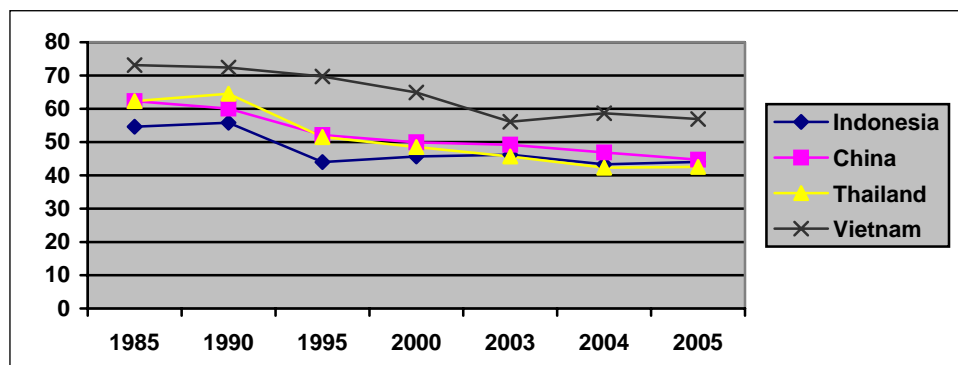
¹⁰ In addition, see more studies on the poverty impact of the crisis in Indonesia, such as ADB (2000), Suryahadi et al. (2000), Skoufias et al. (2000), and Pradhan et al. (2000). Most of the studies indicate that the poverty increase during that period might have been more rapid than the BPS estimates suggest.

Sector	1971	1980	1985	1990	1995	2000	2003	2004	2005
Agriculture	67.04	56.3	54.66	55.87	43.98	45.28	46.26	43.33	44.04
Industry	6.92	9.14	9.28	10.14	12.64	12.96	12.04	11.81	12.27
Mining	0.21	0.76	0.67	0.7	0.8	0.58	0.98	1.10	0.85
Others	25.83	33.80	35.39	33.29	42.58	41.18	40.72	43.76	42.84

Source: BPS (SAKERNAS) and ADB database.

Agriculture remains central to poverty reduction in Indonesia for two main reasons. First, although continuously declining, it remains the largest sector in terms of employment. The National Labour Survey (SAKERNAS) data show that in 1971, about 67 per cent of Indonesian total working population worked in the sector. By 2005, around 44 per cent of the working population still worked in agriculture (Table 5). In fact, during the crisis many workers who were laid off in modern sectors returned to agriculture; so between 1997 and 1998 the employment share of agriculture in Indonesia increased from 40.8 per cent to 45 per cent (Feridhanusetyawan 1999). The pattern of change in employment distribution by sector in Indonesia is also observable in other important agricultural-based economies in Southeast Asia such as China, Vietnam and Thailand, where other sectors particularly industry manufacturing, construction and services become increasingly important for employment generation (Figure 6).

Figure 6: Shares of Total Employed Workers in Agriculture in Selected Southeast Asian Countries (%): 1985-2005



Source: BPS (SI) and ADB database.

The majority of workforce in Indonesia still finds employment in rural areas. In 1990, about 75 per cent of Indonesian total workforce worked in rural areas and declined to around 59 per cent in 2005 (Table 6). The largest part of rural workers was found in the agricultural sector although the proportion has declined substantially during the pre-1997-1998 economic crisis period from 75 per cent in 1990 to 60 per cent in 1995. After the onset the crisis, however, the role of this sector in providing employment opportunities in rural areas regained its importance. In 2003, the proportion of rural workforce absorbed by the agricultural sector has increased again to 68 per cent (Table 7).

Table 6: Employment Distribution by Rural and Urban Areas in Indonesia, 1990-2005 (%)

<i>Sector</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2003</i>	<i>2005</i>
Rural	75	67	62	60	59
Urban	25	33	38	40	41

Source: BPS (SAKERNAS) and ADB database.

Table 7: Rural Employment by Sector in Indonesia, 1990-2003 (%)

<i>Sector</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2003</i>
Agriculture	70	60	66	68
Industry	9	11	10	9
Service	22	29	24	24

Source: BPS (SAKERNAS).

Consistent with the employment data, a large fraction of Indonesian households particularly in rural areas, derive their income from agriculture, either as a sole income source or in combination with other sources. Based on the Intercensal Population Survey (SUPAS) data in 1995, Table 8 shows that nationally, almost 25 per cent and 23 per cent of all households, respectively, have derived their incomes wholly and partly from the sector. In rural areas, 72.6 per cent of total households derived at least part of their incomes from the sector.

Table 8: Household Income Sources in Indonesia, 1995 (%)

<i>Income source</i>	<i>National</i>	<i>Rural</i>	<i>Urban</i>
Wholly			
- Agriculture	24.9	46.3	6.0
- Non-agriculture	52.5	27.4	84.0
Combination	22.6	26.3	10.0
- Mainly agriculture	9.9	13.2	2.6
- Mainly non-agriculture	12.7	13.1	7.4

Source: BPS (SUPAS).

Second, the agricultural sector has the highest poverty incidence compared to other sectors and contributes the largest proportion of the poor in the country. Based on SUSENAS data on distribution of poor families by main occupations/income source, Table 9 shows the distribution of poor families by sector for the period 1996-2002. Further, Table 10 shows that almost 70 per cent of the poor in rural areas work in agriculture. Even for urban poor, agriculture is very important as their main source of income. Semi-subsistence urban farming is widely believed to make an important contribution to the livelihoods of the urban poor in many developing countries¹¹. Urban

¹¹ UNDP (1996), Sanyal (1985), and Freeman (1991).

agriculture can encompass aquaculture in tanks, ponds, rivers and coastal bays; livestock (particularly microlivestock) raised in backyards, along roadsides, in poultry sheds and piggeries; orchards, street trees, and backyard trees; and vegetable and other crop production on roof tops, in backyards, in vacant tracts of land on industrial estates, along canals, on the grounds of institutions, on roadsides and in many peri-urban and urban farms (Gordon et al. 2000).

Table 9: Distribution of Poor Families by Main Occupations/Income Sources, 1996-2002 (%)

<i>Sector</i>	<i>1996</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>
Agriculture	68.5	56.7	58.4	51.7	63.0	67.4
Industry	6.7	7.4	8.7	13.8	11.9	10.3
Service	24.7	35.9	32.9	34.5	25.1	22.3

Source: BPS (SUSENAS).

Table 10: Distribution of Poor Families by Sector and Area: 2002 (%)

<i>Sector</i>	<i>Urban</i>	<i>Rural</i>
Agriculture	31.11	69.09
Forestry	0.23	1.34
Fishery	1.48	2.23
Mining	1.25	0.49
Industry	12.17	4.98
Electricity	0.10	0.02
Construction	9.67	3.63
Trade	14.06	5.00
Transportation	8.94	2.73
Finance	0.69	0.08
Services	8.14	2.40
Others	0.04	0.06

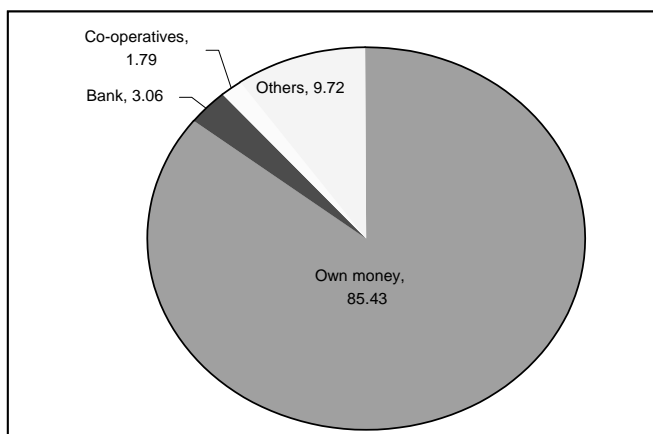
Source: BPS (SUSENAS).

The highest poverty rate in agriculture has been caused mainly by the massive structural transformation that the Indonesian economy has undergone from an economy where the agricultural sector played a dominant role in the country's GDP to an economy where the sector's contribution becomes much less important. The GDP contribution of agriculture has declined from 45 per cent in 1971 to 15 per cent in 2003. Meanwhile, the process of structural change in the labour market has been much slower due to labour absorption limitations in non-agricultural sectors relatively to the annual growth rates of new workforce. Over the same period, the proportion of agricultural employment has declined from around 67 per cent in 1971 to slightly less than 50 per cent in 2003. This has led

output per worker in agriculture to fall in relative terms compared to labour productivity in other sectors.

In addition, there are other four interrelated issues why people who have a living in agriculture tend strongly to be poorer than those in other sectors. First, the quality of human resources in agriculture is very low compared to those in other sectors. Second, generally, they have low access to formal capital. As shown by NAC 2003 data, the majority of farmers used their own money to finance their farming activities; only about 3 per cent of total farmers ever used bank credit (Figure 7). Third, their land-holding size is small. As discussed before, distribution of land is very important in determining

Figure 7: Percentage of Farmers by Source of Finance, 2003



Note: Others include money from relatives and friends.

Source: NAC 2003.

the pro-poor agricultural growth effect (Fan and Hazell 1999). The higher is the proportion of small size or marginal farmers, the lesser is the effect of output growth in agriculture on poverty reduction. Based on NAC data, Table 11 indicates that Indonesian agriculture is dominated by small farmers. In 2003 (the latest census) around 75 per cent of total farmers cultivate land with sizes less than one hectare. This proportion has increased from around 70 per cent in 1983 and 1993. Meanwhile, the proportion of the marginal farmers who owned land with sizes less than 0.1 hectare has increased substantially from 7 per cent in 1993 to 17 per cent in 2003. In Java, the total number of marginal farmers is much higher than in outside Java, namely about 68.04 per cent versus 26.48 per cent. These marginal farmers and agricultural labourers with the lowest income among all agricultural household groups have been identified as containing the majority of the poor in rural areas in Indonesia (Mason and Baptist 1996).

Table 11: Distribution of Agricultural Households by Cultivated Land Holding Size: 1983, 1993, 2003 (%)

<i>Size (ha)</i>	<i>1983</i>	<i>1993</i>	<i>2003</i>
<0.1	8.5	7.0	17.2
0.1-0.49	37.7	40.7	39.2
0.50-0.99	24.1	22.4	18.4
≥1.0	29.7	29.9	25.2

Source: BPS (NAC 1983, 1993, 2003).

No doubt that rapid and sustained conversion of agricultural land, especially in areas surrounding big cities like Jakarta, Bandung, Tangerang, Bekasi and Bogor in West Java, Semarang and Yogyakarta in Central Java, Surabaya in East Java, Medan in North Sumatera, Palembang in South Sumatera, Padang in West Sumatera, Makassar in South Sulawesi, and Manado in North Sulawesi, in the last 30 years as a consequence of population growth, rapid urbanisation, and industrialisation, has been the most responsible for the declining average size of land per farmer in Indonesia. Whereas, at the same time, total number of farm households increased at about 16 per cent during the period 1983-2003. Although no specific information is available, no doubt that difficulties in finding jobs in formal non-agricultural sectors are also attributed to this increase. Despite every year new land is available for agriculture, the rate of land conversion is higher than the rate of new added land. Recent data from the Department of Agriculture show that in the period 1999-2002 about 563,159 hectares of rice field, or on average 187,720 hectares per year, have been converted to other purposes (Table 12). This has been aggravated further by no any action from the government to prevent rich urban households from buying, sometimes with force, land from farmers, while the farmers become agricultural workers for these new owners.

Table 12: Changes in Rice Field in Indonesia, 1999-2003

<i>Region</i>	<i>Size of fixed land for rice in 1999 (million ha)</i>	<i>Size of disappeared land (000 ha)</i>	<i>Size of added new land (000 ha)</i>	<i>Size of land conversion (000 ha)</i>	<i>Percentage of conversion</i>
Java	3.38	167.2	18.1	-149.1	4.42
Outside Java	4.73	396.0	121.3	-274.7	5.81
Indonesia	8.11	563.2	139.4	-423.8	5.23

Source: BPS (NAC 2003).

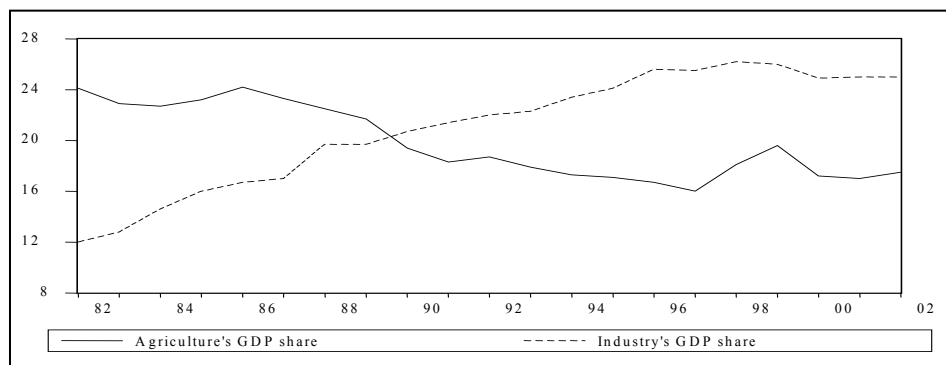
From the above evidence, although poverty is generally recognised as a highly multidimensional phenomenon, which, by implication, obtains from an array of factors¹², in the Indonesian context, poverty is mainly a rural phenomenon, and it strongly linked with the performance of agriculture.

¹² The World Development Report 2000 identifies institutional, social, economic and human factors as the major causes of poverty.

There are two main channels through which the performance of agriculture affects poverty, namely output (or productivity) growth and wage increases in the sector. With respect to the first channel, Timmer (2004), who has done a number of studies on agriculture in Indonesia in the last few years, concludes that there have been several major sources of economic growth in Indonesia since the end of 1960s, including rapid output growth in agriculture. The dominant contribution of agricultural growth, however, ended by the late 1980s and manufacturing industry took off rapidly. This was also the period when workers from agriculture (rural areas) began to move to the manufacturing sector (urban areas).

As illustrated in Figure 8, in 1986 the GDP share of agriculture started to decline and it continued until 1997; while that of industry continued to increase. In 1998 there was some improvement in agriculture's GDP share, mainly because output in the sector declined at a much smaller degree as compared to other sectors also hit severely by the crisis. On the other hand, the industry's GDP share dropped very slightly in 1997 and went up a little bit in 1998, despite the fact that its output fell by more than 10 per cent during the crisis period. This happened because its output contribution to GDP is already much larger than that of agriculture and some other sectors.

Figure 8: Lines of Development of GDP Shares of Agriculture and Industry (%)



Source: BPS (SI).

To examine the relative importance of agricultural output growth for poverty reduction, as explained before, this study decomposes the percentage changes in poverty into three big sectors based on their shares in total employment, namely industry (I), agriculture (A) and services (S). The result shows that among these three sectors, the output growth in agriculture appears to have the strongest effect on the change in poverty:

$$dP = 11.55 - 10.04dYA - 2.56dYI - 1.82dYS \quad R^2 = 0.72$$

$$(3.75)^* \quad (-2.14) \quad (-1.92) \quad (-1.19) \quad F\text{-statistic} = 11.09$$

* t-values in brackets

where dYA, dYI and dYS: the percentage growth of output (measured by gross value added) in agriculture, industry and services respectively, and dP is the percentage change in poverty rate.

The result does not mean, however, that the other two sectors are not important for the poverty reduction. Especially industry, it has already been demonstrated elsewhere that it was the rapid output growth in industry, resulting a similarly rapid growth in the demand for relatively unskilled labour (which is generally recognised as crucial for poverty reduction), that resulted in a tendency for labour to move out of agriculture and into industry, while labour earnings in the latter sector increased. However, as shown before, the employment share of agriculture is much larger than that of industry, and this gap does make a significant difference in sectoral growth effects on poverty reduction. A recent study by Sumarto and Suryahadi (2004) shows that more than half of the reduction in the overall poverty headcount index achieved at the provincial level in the period 1984-1996 attributes to output growth in agriculture. Industrial growth was only marginally significant in reducing urban poverty. This finding gets support from Ravallion and Chen's (2004) finding in China showing that about three-quarters of the overall reduction in poverty in the 1980s and 1990s in this country came from gains to the rural poor, stemming mainly from growth within rural areas. Growth in agriculture did much more to reduce poverty than growth in other sectors.

Many authors also emphasise the obvious importance of agriculture and the rural economy in the process of pro-poor growth in Indonesia. Even, Timmer (2004) concludes that if labour-intensive manufacturing had not taken off rapidly in the mid- 1980s, agriculture on the Outer Islands would probably have contributed more to pro-poor growth by offering migration opportunities from Java (Page 192).

Maybe the relation between the growth of output in agriculture and poverty rate at national level is not straightforward. Since the majority of employment in Indonesia is in rural areas, and the largest part of rural employment is in agriculture as farmers and agricultural labourers, and also the agricultural sector has the highest poverty incidence, the relations between rural poverty rate (%), as a dependent variable and average rice production per hectare (Yield; in ton) and agricultural nominal wage (Aw; in rupiah), as explanatory variables seem to be more straightforward. In other words, increases in Yield and Aw are two direct channels from which economic growth affects poverty. Further, in addition to Yield and Aw, rural consumption price index (Rcpi) is also included in the regression analysis, as rural inflation is expected to be positively correlated with rural poverty as the increase in rural consumption price index reduces agricultural (or rural) real wage.

The main reason to select rice (paddy) as a rural poverty determinant factor is twofold. First, rice is the most important food crop in Indonesia and because of that, it got the highest priority commodity during the green revolution. Second, rice is among basic food crops (including maize, cassava, sweet potatoes, peanut and soya beans) in which the majority of cultivators are poor, landless farmers; whereas most rich farmers are found in non-basic food crops such as estate crops and forestry.

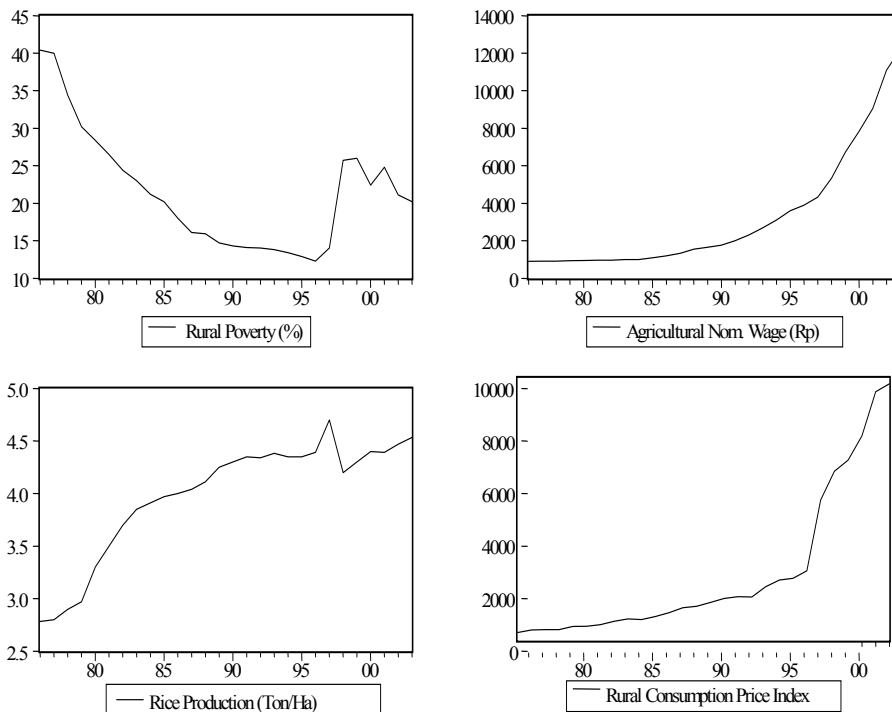
The result of regression shows that all co-efficients have the expected signs, and they are statistically significant from zero at 90 per cent confidence interval. The R^2 with 0.932 indicates that Yield, Aw and Rcpi are three most important explanatory variables in the rural poverty (RP) regression equation. The F-statistic is statistically significant with the critical point 0.01, suggesting that these three explanatory variables contribute

significantly to the linear prediction of RP based on the observed data (Figure 9). More interestingly is that the average rice production per hectare (Yield) is a far more powerful explanatory variable than the agricultural nominal wage for rural poverty reduction. There are at least two reasons for this. First, farmers as net producers (not as net consumers) may enjoy real higher incomes from their increased production while the real value of the increased wage of agricultural labourers declines due to inflation. Second, total number of farmers is much larger than total number of wage-paid agricultural labourers. The majority farmers in Indonesia are self-employed with or without some helpers from family members. In 1985 the ratio was about 2.24, and increased to 4.88 in 1989, and in 1996 and 2003 it was 4.25 and 3.23, respectively. So, given that the larger share of rural poverty is in agriculture and there are more farmers than wage-paid workers, the impact of yield increases on rural poverty is greater than that of the increased agricultural nominal wage. Moreover, it is normally that a producer increases the wage of his labourers at a lower rate than the rate of the increase of his own income.

$$\text{RP} = 82.21 - 15.998 \text{ Yield} - 0.002 \text{ Aw} + 0.004 \text{ Rcpi}$$

(3.40) (-17.48) (-2.01) (3.42) $R^2 = 0.93$ F-statistic = 110.14

Figure 9: Lines of Movement of Rural Poverty, Agricultural Nominal Wage, Average Rice Production and Rural Consumption Price Index



Source: BPS (SI, SUSENAS, NCA).

However, there are some multi-collinearity problems. It is generally expected that output per hectare (Yield) would be positively related to A_w , and the latter would also be positively related to R_{cpi} . Indeed, a reduced form of two structural equations of agricultural labour market (i.e. demand for and supply of labour in agriculture) shows that they are positively correlated with A_w , although the regression co-efficient between A_w and R_{cpi} is not significant, statistically.

$$A_w = -278.5 - 6.9 \text{ Yield} + 0.01 R_{cpi} \quad R^2 = 0.98$$

$$(-3.3)^* \quad (4.9) \quad (1.6) \quad F\text{-statistic} = 196.5$$

7.0 Conclusion

This article attempts to answer one simple but very important policy-question: how important is the growth in agriculture for poverty reduction in Indonesia. This article also reviews briefly the Indonesian experience with the green revolution since the green revolution has no doubt played an important role in development of agriculture in Indonesia, particularly in the 1970s and 1980s. The following paragraphs summarise its main findings:

First, the resulting rapid economic growth during the new order government was strongly pro-poor, and this was attributed to the combination of the labour-intensive oriented growth strategy and poverty alleviation measures. This combination may have also influenced positively income distribution in Indonesia. This experience emphasises that although economic growth is not the only determinant factor of poverty reduction, in combination with poverty alleviation measures, the growth would have greater impact than without such policies directed towards poverty reduction.

Second, agriculture remains central to the Indonesian economy for two main reasons: (i) agriculture is still the biggest employment-generating sector in Indonesia; and (ii) the vast majority of poor families in Indonesia are in agriculture, consisting mainly of the marginal farmers and agricultural labourers. This evidence suggests that in the Indonesian context, poverty is mainly a rural phenomenon, and it strongly linked with the performance of agriculture. The decomposition of changes in poverty shows that the output growth in agriculture appears to have the strongest effect on the change in poverty than in the other two big sectors in Indonesia, namely industry and service. Further, rice production and agricultural wage are also very important factors for poverty reduction, particularly in the rural areas.

Third, the green revolution in Indonesia had led the expansion of irrigated land to accelerate, and the use of modern inputs was also very intensive. All these have resulted in rapid output growth in agriculture, particularly in the 1980s up to early 1990s, suggesting that the green revolution did contribute to the reduction in poverty in Indonesia, particularly in rural areas during the new order government.

Overall, the above findings emphasise the importance of agriculture for poverty reduction in Indonesia. This implies that promoting agricultural and rural development is crucial to pro-poor growth in Indonesia.

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Community Participation in a Local Tourism Planning Process: A Case Study of Nathon Community on Samui Island, Thailand

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Abstract

Community participation as a strategy for community development in this era of booming tourism has become a major economic generating tool in many developing countries including Thailand. This paper explores various aspects of community participation in local tourism development planning on Samui Island in the South of Thailand and identifies factors associated with intensity of participation of local people in the planning process organised by the Nathon Community on Samui Island. The extent and aspects of people's participation primarily in the decision making, implementation, and monitoring and evaluation phases were examined. The case shows how community participation was conducted and organised by the local committee during those stages of the planning process and how it could be replicated in other communities. Key factors imperative for the success of the planning and implementation of local tourism activities consist of an effective local committee, active involvement of local people at various stages of the local tourism planning process, the degree of benefits and satisfaction local people derive from their participation in tourism activity.

1.0 Introduction

Tourism is regarded as a significant global industry with a potential for further growth. Many countries consider tourism as a major industry which requires appropriate development strategies to sustain it because of the effects and the consequences for the country and to the people due to tourism itself. Thus, there is a need to consider community participation as an active process to enhance local people's involvement in securing their well-being and self-reliance in the tourism boom (Oakley and Marsden 1984; Taylor 1995; Joppe 1996; Mathbor 1997; Clayton 1998; Jamieson 2001; and Zimmermann 2001). The notion of community participation in tourism planning has grown from a desire to create a tourism that is more sensitive to the problems and needs of a local community.

There is a relationship between tourism development and community dynamics. Taylor (1995) stated that the involvement of local residents is often regarded as the key to sustainable development as these same residents are expected to be part of the tourism product and to share the benefits as well as the costs. The concept of community involvement in tourism development has moved nearer to the centre of the sustainability debate (Murphy 1985 cited in Taylor 1995). He supported the establishment of the

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community as the focus for decision making and consensus so that tourism planning would become a part of the social consciousness of the destination. He encouraged community participation in the tourism planning process as the involvement of individuals within a tourism-oriented community in the decision making and implementation process with regard to manifestations of political and socioeconomic activities. According to Jamieson (2001:17), local citizen can get involved directly in the tourism planning process (via committees, workshops) and indirectly through public meetings, surveys, etc. Direct participation in tourism-related projects is also highly recommended since this creates a sense of ownership in the outcome of the process.

A new approach to community participation in tourism development is the concept of community-based tourism (CBT) which was developed as a way to overcome or minimise negative effects of tourism in a remote, rural area. The CBT was developed as a form of tourism aimed at empowering local communities to be self-reliant, use a group process for local decision making, supporting people's human rights and capabilities, and helping people to raise income and improve their standard of living on their own terms. Local knowledge, community participation, support for local capabilities and cultural exchange with tourists would help to sustain both cultural and natural resources (ESCAP 2001: 10). Zimmermann (2001: 90) confirmed that active community involvement is fundamental as the attitude of residents towards tourism is one of key elements in achieving sustainable tourism. This involvement should be done at all stages, especially at the planning stage. In contrast, Blackstock (2005: 40) had a different view in stating that the CBT lacks of the transformative intent of community development since it ensures the long-time survival of a profitable tourism industry rather than empowering local residents. He raised the issue of structural inequalities within that community that influence the local decision-making process. Wyllie (1998: 42) agreed with Blackstock expressing the viewpoint that the outcome of local decision making may depend on who is in power at the local level. There is rarely one 'community voice' as many scholars address that community action is often local class action instigated by wealthy residents (Bell and Newby 1978; Gray 1991; Tonts and Greive 2001 and O'Hare 2000).

While the growing support for the community-based approach to tourism planning is spreading, there remain the needs to consider how this technique can be developed and how the results will be shared (Reid et al. 2004:625). This paper aims to explore the patterns of community participation in a local tourism planning process and to examine the benefits gained and satisfaction of the local people after their participation. The significant factors associated with the intensity of people's participation in three key phases of the local tourism planning process are also identified in this study.

The article is organised into ten sections. Section one explains the methodology applied for the study describing the background information of Samui Island and the methodology used to select sampled households for a questionnaire survey. Section two is a profile of respondents including their social and economic characteristics. The third section explains various key concepts of community participation discussed in this article. Section four outlines the nature of community participation. A community planning process for local tourism focuses on key broad phases including decision making, implementation and monitoring and evaluation in the fifth section by incorporating the extent of local

participation from respondents in each phase. Main problems encountered in the community participation in a local tourism planning process are given in the section six. The seventh section reports the findings from respondents on their perception of the benefits gained and satisfaction level of local people on community participation for local tourism planning. The eighth section discusses the intensity of people's participation in local tourism planning process while the factors associated with their intensity are identified in the ninth section. The discussion based on major findings is presented in the tenth section, which is followed by the conclusion remarks in section eleven. This section also contains the article's recommendations on how to strengthen community participation in the three key phases of local tourism planning process.

2.0 Methodology

The study area was located on Samui Island (Koh Samui, in Thai; see Map 1), a famous tourism destination in Thailand where tourism has significant effects on the local community. Koh Samui is located in the South of Thailand. It is Thailand's third-largest island, occupying a total area of 252 sq km, and is surrounded by 52 smaller islands. At present, Samui has a total population of 42,047 people, but the local government indicates that there might be as many as 50,000 additional inhabitants actually living in this area without registration. There are 18,368 households in 39 villages in 7 Tambons (sub-districts). Prior to 1990, Koh Samui was a small community that depends on coconut production and fishing. After tourism started booming in 1990, Samui's main source of income was shifted to tourism, which brought about many changes toward modernisation as a consequence. This can be seen from the infrastructural improvements, including roads, sewage systems, hotels, and resorts. In 2003, 837,500 tourists visited Koh Samui, and there are now 298 resorts and hotels with more than 10,000 rooms available.

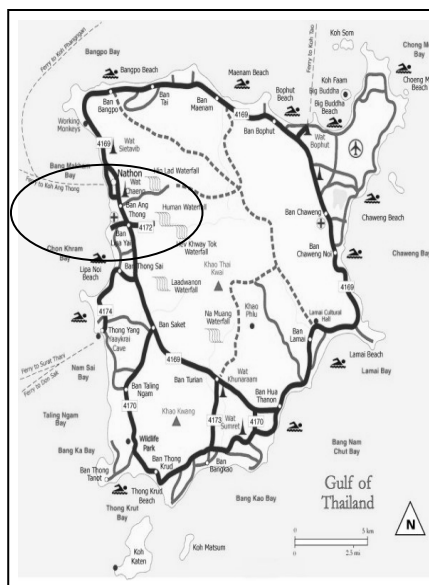
The Nathon Community Based Group (NCBG) on this island was selected for this case study. The group is located in Village 3 of Aung Thong sub-district. Nathon community is located in the centre of Koh Samui and is surrounded by government offices, banks, markets, ports and a transportation centre. Houses and buildings mainly built of wood are found along both sides of the road and run through this community. Thus the community maintains an old-time atmosphere and architectural heritage which can be promoted as a local tourist destination. The NCBG consists of committee members and villagers who join in its activities (See Maps 1 and 2 for the locations of Koh Samui and the study group.)

The research used a simple random sampling to select 70 households for a questionnaire survey to gain information about the intensity of participation in the local planning process, their perceptions in participatory planning, and factors associated with their participation. Other data collection methods applied consisted of key informant interviews, field observation and a focus group.

Map 1: Map of Thailand Showing Location of Koh Samui



Map 2: Map of Koh Samui Showing Location of Nathon Community



Source: www.directrooms.com

Both qualitative and quantitative data analyses were applied in this research. Descriptive statistics were used to describe a profile of respondents and the intensity of people's participation using social scaling of five degrees applying a weighted average index to assess the degree of benefits gained from local participation and satisfaction of respondents. The Pearson correlation co-efficient was used to find factors associated with the intensity of people's participation in three key stages of the planning process consisting of decision making, implementation, and monitoring and evaluation. The qualitative analysis was applied to examine the way and a process of community participation was initiated and organised in community planning process and interactions of key actors in local tourism development. In this respect, strengths and limitations in relation to community participation process were pinpointed.

3.0 Profile of Respondents

Of the sampled households, more than half of respondents were female (65.7%) and were in the age group ranging from 31 to 50 (60%) and with an average age of 38. The majority of respondents were married (71.4%). One-third (38.6%) of respondents received a higher level of education including vocational school, undergraduate and graduate levels. Almost all of them were Buddhists. Half of the total respondents (55.7%) were native people. More than half of them (64.3%) were engaged in trading. One-third of the respondents (39.3%) earned their household income of between 24,000-90,000 Baht per year, while the average household income for the sample was 160,696 Baht per year (1 US\$ is equivalent to 39 Baht).

4.0 Community Participation

Participation has various types and patterns. Cohen and Uphoff (1979) explained three dimensions of participation consisting of 'what', 'who', and 'how' as their basic framework. This can be used to describe and analyse a participatory strategy along the four stages of participation (i.e., decision making, implementation, monitoring and evaluation, and benefit sharing). Forms of participation can also be examined into three broad aspects including participation as contribution, organising, and empowerment (Oakley 1991 and Setty 1994:23). Participation has been described in different levels of involvement, ranging from information sharing and gathering, to consultation, negotiation, shared decision making and transfer of decision making (Jamieson 2001:13).

Community participation is an active process by which beneficiaries or client groups influence the direction and execution of a development project with a view to enhancing their well-being in terms of income, personal growth, self-reliance or other values they cherish. Community planning depends very much on a community-building approach which is based on the idea that residents must take control of their destiny and communities. Community building grows from a vision of how communities function normally, where community members create community institutions that help to achieve their aspirations as well as strengthen community fabric (Sanoff 2000).

According to Abbott (1995), community development is actually a specific form of community participation, the success of which is determined by the role of the state; and the complexity in the decision making taking place at the core of community participation process. Mathbor (1997) viewed the most important and complicated issue bearing on local-level planning to be community participation. There is no clear-cut agreement in the literature on the nature of effective community participation. Yet, the need for community participation in development and management is widely accepted and recognised. Community participation usually begins with a bottom-up approach involving major stakeholder groups. The process is initiated through a government commitment to devolve some power to the community, and the community's recognition of the need to manage local areas (Kay and Alder 1999). Community participation, somehow, is a form of grassroots democracy that people has a right to participate in decision making on the matters that directly affect their life (Setty 1994).

According to Simmons (1994), community's right to participate in the planning affecting their daily lives is now widely accepted principle, and community participation is a vivid example of the democratic process where communities and regional values determine development. The permission and approval of the local community should always be the first stage, trying to ensure that all people from a local community earn the benefit from the development.

5.0 Community Planning Process for Local Tourism

A bottom-up approach is a participatory strategy of the group to promote local tourism development. The group used a 'pinto dinner fair' as an initiative to promote community participation to mobilise local people to participate in their local tourism activity in the community. The 'pinto' is a traditional food container for carrying food; the 'pinto dinner'

meant local qualitative and quantitative data analyses were applied in this research. As 'kin kao haoh' is a local native custom on Samui in which for decades, the local people normally bring their 'pintos' full of food to have dinner with their neighbours in front of their houses. This tradition helps to preserve local customs in their community. This idea has been applied to promote local tourism drawing on the traditional culture and social relations of the local community as strength to attract tourists to participate in their custom. In addition to this activity, the community organises other activities including a Chinese New Year feast, and the community's merit-making ceremony. These activities are of interest to many local, national and international tourists who want to learn about the local culture and traditions. Moreover, the group is planning to create a pathway for walking tours along the middle of the road to promote cultural tourism featuring local architecture and the local life style.

The community planning process of the Nathon Community is simple but involves various stakeholders including the local committee, residents, and private sector businesses to play a role in various activities that are organised by this community. To activate various tasks of the group, a local committee was formed with 15 members comprising the friends, relatives, respected persons, and neighbours. The key leader of the group is a retired doctor who used to be the director of a local hospital, the Koh Samui Hospital. He enjoys a great deal of trust and respect by the local people and the local committee in the area. Other members are mostly Samui natives who have a high level of education. Therefore, they have been capable of creating systematic tasks to prepare activities, plan and produce reports (e.g., meeting reports) and a tourism calendar for the community. For their main tasks, they carry out the whole cycle of the planning process including setting goals and objectives of the group, defining tasks and assigning roles of members, writing up a proposal incorporating tourism activities, organising periodical meetings, building extensive networks to gain support from the outside community, launching public relations, implementing the designed activities, and conducting monitoring and evaluation after the implementation of the tourism activities.

The main objectives of the group are to create development activities to solicit interaction and mutual support from among local residents leading to a strong cohesion and social harmony in the community; to design tourism activities focusing on conservation of local tradition and culture and to formulate strategies for local tourism development in the community. The community planning process to be investigated in this article is divided into three broad phases including decision making, implementation, and monitoring and evaluation. Each phase is described below.

5.1 Phase 1: Decision-making phase

This phase is to develop a strategy to reach the objectives of local tourism development. In response to stipulated objectives of the community, the local committee conducted several informal meetings to draft a tentative plan and define key tasks and activities to be implemented. After that, the committee called community meetings using various means of communication including a formal letter, telephone and community radio. In the meetings, major tasks to be launched were discussed and responsibilities assigned to local leaders and people on a voluntary basis. However, those persons must be responsible and committed to the tasks assigned to them. A consensus was given by participants and the

local committee on tasks to be implemented by the community, schedule, and venues to organise activities, responsible persons and resource generation. People talked freely in the meeting to express views, ideas and gave comments and suggestions. In this phase, local people participated directly in most activities launched in this phase.

From sampled households, it was found that participation of local people was still limited. Only 10 per cent out of the total were involved in giving their inputs in this phase. Among those, 21.4 per cent identified potential problems to be faced by the community, 12.8 per cent gave their suggestions to those problems and 17.1 per cent just shared the information among each other (Table 1).

Table 1: Topics Raised in Decision-making Phase

(Multiple response)

<i>Topic</i>	<i>Percentage of Respondents (n=70)</i>
Sharing information	17.1
Identifying potential problems	21.4
Identifying needs	5.7
Prioritising problems	5.7
Providing solutions to the problems	12.8
Suggesting possible plan	10.0

In sum, key planning tasks in this phase included setting specific, realistic, and achievable goals and objectives, gathering information, analysing situations, discussing problems and needs, and defining tasks, roles and responsibilities based on the tasks assigned. Subsequently, the local committee prepared a local tourism plan incorporating schedule activities, timing and resources needed.

5.2 Phase 2: Implementation phase

After the plan was finalised by the local committee, activities defined in the first phase were prepared to be implemented. At an early stage of the implementation, the local committee called for a meeting to inform participants of their various tasks, activities and to assign specific responsibilities to persons in charge. The tasks normally included public relations and providing information to communities by distributing leaflets, invitation letters and through community broadcasting.

Another task was to organise a venue for a fair which was to be located along the middle of the road of the community. Preparation of performances in the fair was made and also arranged by local people to entertain visitors. Local people brought a variety of local foods to share together. Visitors and tourists joined the activity and tasted authentic food made locally by the people. During the fair, there were many kinds of performances and folk dances to show to tourists to promote local traditions and culture.

During this phase, the fair provided a chance of local people to meet their relatives, friends, and neighbours socially. Senior and young people in the community had a chance to get together to learn local tradition. The senior people were familiar with this 'Pinto

dinner' activity as they used to practise it in the old days. Through this fair, this old lifestyle has returned, and traditional culture and food were once again demonstrated to the young generation. This has raised awareness and preserved local culture and tradition for the young generation as well as to visitors and tourists.

From the survey findings (Table 2), it was found that almost half of the total respondents (44.2%) contributed their labour in the implementation phase while nearly half of them gave cash (40%) and provided suggestions (40%). A small percentage contributed to other aspects (9.9%), including serving as the committee to assist in the project and joining in the selling of goods in the fair.

Table 2: Type of Local Contribution in Implementation Phase

(Multiple response)

<i>Type</i>	<i>Percentage of Respondents</i>
Labour	44.2
Cash	40.0
Kind	11.4
Information	14.2
Suggestions	40.0
Others	9.9

Local people contributed their labour to help in cooking local food and setting up tables along the middle of the road to place their home-made food in the fair. Some local people helped to decorate the road with local art products such as lamps made from coconut products, which they originally kept in their house from the old days and used for this fair. Local people who had artistic skills performed local tradition such as singing local folk songs and performing a famous southern dance, called 'Manora'. Local people who engaged in these activities had provided their available time to practice the local performance to show on that day. In this fair, many suggestions were received from many local people since the start of the activity until the day the fair was held regarding the way the fair should be organised, how to promote it, and who should be responsible for the tasks assigned by the local committee.

Table 3: Reasons for Local Contribution

(Multiple response)

<i>Reasons</i>	<i>Percentage of respondents</i>
Economic benefits	14.2
Social benefits	60.0
Personal commitment	8.5
Following other villagers	10.0
Requested by local committee	30.0

Table 3 shows reasons given by sampled respondents for their contribution in the activity. More than half of the respondents (60.0%) gave their reason as social benefits. This

means that social relations and interactions within the community became stronger among various stakeholders involved in this fair. In addition, visitors learned local traditions and culture which will help the community to solicit their support on local cultural promotion and preservation in future. Another major reason given by one-third of respondents (30.0%) was in response to the request made by the local committee who organised the fair. Other reasons for participation included economic benefit (14.2%), following other villagers (10.0%) and personal commitment (8.5%) respectively.

5.3 Phase 3: Monitoring and evaluation (M&E) phase

The benefit of monitoring and evaluation is that it enhances self-education and direct learning from the community, which can help to improve community capacity (McAllister 1999). The activity was monitored and evaluated in a meeting held by the local committee with the major purpose being to assess the tasks and activities implemented in the fair and identify any problems and concerned issues. A brief survey questionnaire was prepared by the committee and distributed to local people and those concerned to gain their feedback. In this respect, local people participate indirectly in this phase. The outcome shows that the activity was effective and solicits local participation both from the native people and from visitors and tourists in promoting local tradition and culture.

The survey did not cover a whole community due to limited capacity of the local committee to carry out the survey. This approach has been chosen as the assessment in this monitoring and evaluation procedure requires a great degree of coordination and administrative efforts with other governmental and other development agencies involved. Costs are included in the training to acquire the skills for carrying out this process (Abbot 1995) which may need to be strengthened in future.

In brief, Table 4 summarises key aspects and outputs of each local tourism planning process of Nathon Community.

6.0 Problems Encountered

There were four main problems faced by Nathon Community in launching their participatory local tourism planning. Firstly, some people have no time to get involved in community participation activities due to their engagement in their job. Timothy (1999) states that local people may feel that they cannot afford the time to participate, especially in time of economic hardship. Secondly, there is still a limited degree of people's participation in decision making to design tasks and assign responsibilities and take initiatives for the community. Therefore, the local committee was overloaded for those tasks that had to be performed by them. Thirdly, the local committee and this planning group still have a small number of participants. It does not yet fully represent the whole community because some people are not aware of the activities initiated and implemented by the group. Lastly, the local committee lacks organisational and management skills as the group was started recently and is still in a formative process to initiate participatory community planning in tourism development.

Table 4: Summary of Local Tourism Planning Process and Output of Nathon Community

<i>Phase</i>	<i>Task/Activity</i>	<i>Output</i>
People's participation in decision-making phase	<p>Local committee was formed. Members of the committee mostly received higher level of education; called for informal meetings among local people using informal network/close-tie networks and cooperation with a private sector</p> <p>Informal discussion led by local committee to obtain opinion from local people</p> <p>Conducting meeting to assign responsibilities to local people</p> <p>Local committee prepared a proposal and a local plan</p>	<p>Setting specific, realistic, and achievable goals and objectives of activity based on bottom-up process</p> <p>Receiving the information and conducting situation analysis</p> <p>Discussing and prioritising problems and needs of community</p> <p>Defining tasks and roles based on people's willingness to join and assist in those tasks assigned</p> <p>A local plan specifying details consisting of tasks, activities, scheduling, sources of support and budget</p>
People's participation in implementation phase	<p>Local committee called for meetings to implement the plan</p> <p>Carrying out tasks and identifying responsible persons, including mobilisation of people and local resources and activating networking with other partners</p>	<p>Setting up a working group of local people; responsibilities assigned</p> <p>Implementing 'Pinto Dinner Fair' via sharing home-made food/local traditional performance</p>
People's participation in monitoring and evaluation (M&E) phase	<p>Conducting a meeting among local committee of the group to assess activities and tasks implemented</p> <p>Preparing a questionnaire survey by local committee and distributing it to local people to assess performance as well as identifying problems, constraints and potentials</p>	<p>Preparing an evaluation report</p> <p>Results from a questionnaire survey incorporated into the evaluation report</p>

Table 5: Degree of Benefits Gained and Satisfaction Level in Social, Economic, Institutional and Environmental Aspects from Community Participation in Local Tourism Planning

<i>Aspects</i>	<i>Benefit gained</i>		<i>Satisfaction level</i>	
	<i>WAI value</i>	<i>Assessment level</i>	<i>WAI value</i>	<i>Assessment level</i>
<i>1. Social Aspects</i>				
Awareness of changing way of life	0.70	H	0.25	S
Awareness of impacts of tourism on local life	0.64	H	0.12	S
Awareness of community rights and roles	0.64	H	0.80	S
Promotion of local tradition and culture	0.72	H	0.50	S
Preservation of local tradition and culture	0.73	H	0.50	S
Increase in the sense of belonging and responsibility toward preservation of culture and tradition	0.67	H	0.39	S
Reduction of conflicts in community	0.63	H	0.24	S
<i>2. Economic Aspects</i>				
Income generating	0.72	H	0.51	S
Creating employment opportunities	0.73	H	0.54	S
Creating group strengthening	0.68	H	0.47	S
Creating investment input	0.68	H	0.38	S
Increasing productivity	0.70	H	0.38	S
<i>3. Institutional Aspects</i>				
Improving planning and management skills	0.63	H	0.50	S
Increasing training programme and capacity building	0.64	H	0.20	S
Creating plans and strategies for local tourism development	0.61	H	0.41	S
Creating clear roles and responsibilities of local committee	0.65	H	0.20	S
Creating cooperation between local government and community	0.65	H	0.27	S
Distribution of power among community	0.64	H	0.22	S
Creating consensus building in community	0.71	H	0.57	S
<i>4. Environmental Aspects</i>				
Increasing conservation of local environment	0.80	H	0.88	S
Increasing management skills in resource utilisation	0.81	VH	0.80	S

7.0 Benefits Gained and Satisfaction Level of Local People on Community Participation for Local Tourism Planning

To assess the degree of benefits gained and the satisfaction level of local people in community participation for local tourism planning, a weighted average index was applied to five social scales. These five scales consist of ‘very low’ (0.01 to 0.20), ‘low’ (0.21 to 0.40), ‘moderate’ (0.41 to 0.60), ‘high’ (0.61 to 0.80), and ‘very high’ (0.81 to 1.00) degree of benefits gained from community participation.

To assess the satisfaction level of respondents, five social scales were assigned comprised of ‘very dissatisfied’ (-2.00 to -1.01), ‘dissatisfied’ (-1.00 to -0.01), ‘moderate’ (0.00), ‘satisfied’ (0.01 to 1.00), and ‘very satisfied’ (1.01 to 2.00).

As can be seen from Table 5, local people reported a very high degree of benefit regarding increased management skill in resource utilisation (0.81) relating to environmental aspects; all other aspects relating to social, economic and institutional benefits were rated at a high level. Likewise, local people were satisfied with the community participation in local tourism development in various social, economic, institutional and environmental aspects listed in the Table 5.

8.0 Intensity of People’s Participation in Local Tourism Planning Process

The intensity of people’s involvement in local planning process was explored in three phases consisting of decision making, implementation, and monitoring and evaluation. For those who participated in the respective phases below, their intensity of participation was assessed according to five social scales consisting of *never*, *rarely*, *often*, *occasionally*, and *always*. A weight average index (WAI) was applied to those scales as follows: *never* (0.00 to 0.20), *rarely* (0.21 to 0.40), *occasionally* (0.41 to 0.60), *often* (0.61 to 0.80), and *always* (0.81 to 1.00).

Table 6: Intensity of People’s Participation in Local Tourism Planning Process

(In percentage)

<i>Planning process</i>	<i>Always</i>	<i>Often</i>	<i>Occasionally</i>	<i>Rarely</i>	<i>Little</i>	<i>WAI value</i>	<i>Assessment level</i>
All phases	42.9	57.1	0.0	0.0	0.0	0.82	Always
Decision-making	32.9	50.0	17.1	0.0	0.0	0.83	Always
Implementation	27.1	68.6	4.3	0.0	0.0	0.84	Always
Monitoring and evaluation	11.4	64.3	24.3	0.0	0.0	0.77	Often

Note: Criteria for assessment of intensity of people’s participation are: *always* = participants who participated in activities organised in a certain planning phase more than 80 per cent; *often* is between 80 per cent to 60 per cent; *occasionally* is between 60 per cent to 40 per cent; *rarely* is between 40 per cent to 20 per cent; and *little* is less than 20 per cent.

From Table 6, more than half the respondents (57.1%) always participated in all phases of the planning process while 42.9 per cent mentioned often. For the decision-making phase, half (50%) were often involved while 32.9 per cent always participated and 17.1 per cent occasionally. Similarly to the implementation phase, more than half (68.6%) were often

involved while 27.1 per cent and 4.3 per cent always and occasionally participated. As for the monitoring and evaluation phase, more than half (64.3%) often joined while 24.3 per cent said occasionally and 11.4 per cent always participated. Overall assessment shows that local people always participated in the decision making and implementation phases (0.83 and 0.84 respectively) while they only often participated in the M&E phase. The intensity is lower than the other phases because most of the tasks in this phase were largely performed by the local committee of the community.

9.0 Factors Associated with Intensity of People's Participation in the Local Tourism Planning Process

Factors associated with the intensity of people's participation in local tourism planning process were explored applying the Pearson correlation co-efficient. Factors having statistical significances of 99 per cent and 95 per cent level of confidence are shown in Table 7, which is explained below.

Knowledge and understanding of the principles and objectives of a participation approach are key factors associated with the intensity of people's participation leading local people to participate in group meetings, identifying problems and needs and plan for their group's activities (Pantong 1996). In other studies, age, length of membership, favourable attitude towards the group, income, and perceived benefits obtained from the group were found substantially associated with the intensity of their participation. (Sirisongkram et al. 1999 and Pattarnrakha 2003). In addition, the willingness to participate in a development activity is another factor to be considered as this will be greater when the people could see immediate benefits to be obtained from a project in which they are going to participate (Gurung 1981:34).

Setty (1994) and Garrod (2003) identified certain factors inhibiting people's participation. Those factors comprise self-interest, encouragement provided by local leaders, knowledge and skills, availability of time, resource and materials, interest in welfare of community, costs-benefits of participation, quick results, gender, age, pattern of local internal communication and influence of culture and religion.

In this study, for all phases of the tourism planning process, factors that were statistically associated with the intensity of participation included household income (0.30), degree of benefits gained on capacity building (0.29), satisfaction level on creating group strengthening (0.26), degree of benefits gained on increase of management on resource utilisation (0.23) and satisfaction level on improving planning and management skills (0.22).

Specifically regarding the decision-making phase, the satisfaction level of creating group strengthening (0.32) was found to be the most important factor on the intensity of people's participation in this stage. Other significant factors consist of household income (0.27), degree of benefits gained on increase of management on resource utilisation (0.24), degree of benefits gained on capacity building (0.22), and satisfaction level on improving planning and management skills (0.22).

For the implementation phase, the satisfaction level on creating group strengthening (0.31) and degree of benefits gained on capacity building (0.30) are the most significant

factors, having the strongest association with the intensity of participation of local people. Other associated factors are household income (0.31), satisfaction level of promoting local tradition and culture (0.26), satisfaction level of improving planning and management skills (0.25) and degree of benefits gained in the increase of management skills in resource utilisation.

Regarding the M&E phase, only two factors are statistically associated with the intensity of participation. These are the satisfaction level of increasing productivity (0.25) and the degree of benefits gained in capacity building (0.24).

Table 7: Factors Associated with Intensity of People's Participation in Local Tourism Planning Process

<i>Factors</i>	<i>All phases</i>	<i>Decision-making</i>	<i>Implementation</i>	<i>Monitoring and evaluation</i>
Household income	0.33*	0.27*	0.31*	0.02
Degree of benefits gained in capacity building	0.29*	0.22*	0.30**	0.24*
Satisfaction level of creating group strengthening	0.26*	0.32**	0.31**	0.04
Degree of benefits gained in the increase of management skills in resource utilisation	0.23*	0.24*	0.22*	0.08
Satisfaction level of improving planning and management skills	0.22*	0.22*	0.25*	0.01
Satisfaction level of promoting local tradition and culture	0.03	0.02	0.26*	0.15
Satisfaction level of increasing productivity	0.19	0.06	0.15	0.25*

Note: * Significant at 0.05 confident level; **Significant at 0.01 confident level.

Among all factors, only the degree of benefits gained in capacity building was found to be associated with the intensity of people's participation in all phases of the planning process. This indicates that higher the degree of intensity of local participation in all phases of local tourism planning process the greater the capacity built on planning and organising activities as well as mobilising resources for the tourism development. As a consequence, local people were satisfied on improved planning and management skills. This factor, thus, is associated with the intensity of participation in all phases in general and decision making and implementation phases in particular.

Likewise, household income was associated with the intensity of participation in all phases and specifically in decision making and implementation stages. This means that local people who had relatively better-off income tended to participate intensively. This implies that these people had more time to be involved in planning activities than those in the low-income category, who were busy earning their living and contributed less time in planning and implementation activities.

The satisfaction level of creating group strengthening was a consequence of local people motive in forming and working as a community-based group which was operated by their organisation and management. This process is enhancing the strength of their group. The more local members were satisfied with their local action, the higher degree of intensity of participation they performed in those three phases of the planning process. Hence, their trust and confidence in their group have been built up.

Lastly, the degree of benefits gained in the increase of management skills in resource utilisation can be explained in such a way that the local committee of the group organised and managed their own local resources including natural environment, labour, local contribution and local culture and tradition and made use of those with involvement of local people by organising local tourism activity to yield viable benefits to community and local people.

10.0 Discussion

Communities that have a strong sense of identity and value of their own culture, heritage and local custom are in a good position to design a tourism product that will fit their own sense of community value and be attractive to potential tourists (Sustainable Tourism Service 2002 and Macbeth et al. 2004:510). There is a good sense of 'community spirit' among the local people in this study. Community participation in local tourism planning should be a prerequisite to sustainable tourism development (Jamieson, ed., 2001).

Certain factors contributed to the success of community participation in this study. These can be elaborated and discussed. The Nathon Community participation illustrates a flexible process of interaction by major players of the local committee. These people are well-educated and effectively organised activities that were identified through direct participation of local people, particularly in the implementation phase. Local people delegated the committee to act primarily on decision making and monitoring and evaluation. However, they participated extensively and directly in the implementation phase, which is mostly found in many development projects (Pongquan 1992; Abbott 1995; Joppe 1996; Sanoff 2000; Jamieson 2001; and Zimmermann 2001). The informal and flexible process enabled the local committee and local people to adjust the way they wanted to interact. Both parties could manage their time allocation and schedules to attend several meetings which needed strong commitment from all concerned as this is exclusively based on a voluntary basis. This has increased closer relationships and trust among people who are mostly friends, relatives and neighbours. This process seems to be attractive and has the potential to be replicable because normally participatory methods of project design and implementation require more time than standard procedures (Clayton et al. 1998; DFID 1995; IDS 1998; and World Bank 1996).

The role of local leadership is another important factor contributing to effectiveness in tourism planning (Sunalai in Jamieson, ed., 2001). Local committee members are mostly respected leaders and have a high level of education, particularly the leader who is a retired medical doctor. The local committee members in general had certain organisational skills to work with people and the private sector to solicit various kinds of support for their tourism activities. They used local networking to mobilise people, visitors and local resources to be involved in their planned activity. In this respect, leadership is essential

for community participation coordinated by the local committee. Leadership as a consequence should be viewed as collective ability to direct the participatory planning process (Garrod 2003:39). The networking process created an effective link of people to participate in tourism activities. Relationships among family members and close friends enable the creation of effective local community networks consisting of informal communication of each other leading to a strong community bond. In this case, the creation of network-ties to various groups of local people to pursue participatory development activities could enhance local capacity in finding solutions to problems, and to give everyone a chance to contribute and share their common interest (Meshack 2004). This participatory activity significantly enhanced relations between senior and young people on the day that the fair was organised. There were senior people who were familiar with this 'Pinto dinner' activity in their old days while the young generation is in the process of learning. This is a sign of 'learning by doing' to transfer local knowledge and tradition to the youngsters. According to Setty (1994:23), transfer of knowledge and skills to local people takes place during their involvement in development activities. In addition, private sector networking is made possible because the local committee is connected to local mass media to publicise their activities and raise the awareness of the community during the implementation phase.

11.0 Conclusion

This study provides another example of the way community participation can be designed and managed in the local tourism planning process that can be both effective and have the potential to develop further strengths. Local tourism in Nathon is growing with the increase in awareness and involvement of local people in their community planning. Participatory tourism planning that applies the community participation approach highlighted in this study enhances the process of empowerment to a community which unfolds over time. The success factors of local tourism organised by the NCBG are similar to those of some previous studies (Iddagoda and Dale 1997; Sharma 1997; Somboonsuke et al. 2001; Dale 2002 and Shivakoti 2003). Undeniably, effective local committees working with local people and local institutions enable people to organise tourism activities by themselves and yield viable benefits to their community.

Community participation in the local tourism planning process as applied in the Nathon Community could be replicated in other communities. This case shows that the successful design and implementation of tourism activities depend very much on the capacity-building of the local committee and their skills in leadership, organisation and management of activities. Other significant factors include the type of participation required, the degree of benefits gained and the satisfaction level of local people in those activities as a consequence of their participation. Those factors have implications for local tourism development planning, both in terms of increasing the intensity of people's participation in various phases of the tourism planning process, and in securing the future success of the implementation of tourism activities at the community level.

Certain recommendations are given to strengthen community participation in the three key phases of a local tourism planning process based on the findings from this article. Local participation should be encouraged in local people and key stakeholders involved, particularly in the decision making and monitoring and evaluation phases, as their roles

here are still rather limited except in implementation. In decision making, local committee members should solicit the intensive local participation of people and stakeholders to make their joint decision making on various planned activities. This should be followed by a clear consensus on various development activities designed by the group with the assignment of clear responsibilities to those stakeholders to ensure their commitment. This will motivate them to be involved in other phases of local tourism planning. For the implementation phase, the promotion of cultural promotion and conservation should be continued to encourage social learning, particularly in the young generation so that they can be proud of their local tradition and cultural identity. This will attract more youngsters to participate in various tourism activities and make activities more sustainable in the longer term. Regarding monitoring and evaluation, it is clear from the study that almost all activities in this phase were organised largely by the local committee members. Therefore, it is suggested that a participatory monitoring and evaluation (PM&E) approach should be applied and practised by the local people and the key stakeholders concerned with the group. This will enhance the opportunities for them to provide their feedback and constructive comments and suggestions to the local committee on the tourism activities that have been organised during the implementation phase. The problems encountered in the group and the community needs on local tourism should be clearly identified. Based on the specific recommendations given in each phase above, it is hoped that the local tourism planning process that was organised by the community in Koh Samui should become more effective and successful in future.

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Determinants of Rural Land-use Change in Prasae Watershed Area of Thailand

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Abstract

This paper analyses the land-use change in Prasae watershed area of Thailand and investigates the underlying factors using Geographic Information System (GIS) and farm-level data. Forest conversion to annual crops and subsequently to perennial crops was a typical land-use change during 1982 to 2004. The analysis suggested that variables related to land tenure, production and household resources, economic return from owned and irrigated areas, educational level, and farm income were the underlying factors of rural land-use change in the watershed area of Thailand. Hence, the government intervention to improve well-being of the rural poor while protecting the remaining forest should be sought.

1.0 Introduction

Land-use changes have been recognised as the major driver of global change through the impacts on climate, ecosystem processes, biodiversity and socioeconomic drivers (Nunes and Auge 1999:1-14). Land conversion from forest to agriculture and settlement reduces biomass and species due to habitat destruction (Walker et al. 2002:132). The other environmental consequences of these changes are soil erosion, landscape degradation and pollution of air, soil and water (UNEP 2000:72-97).

Managing natural resources and controlling environmental impacts associated with land-use change requires an understanding of underlying factors as such change is driven by biophysical factors and human activities (Fox 2002:113-130; Rasul et al. 2004:217-240; Serneels and Lambin 2001:65-81; Walker et al. 2002:131-154). Rapid population growth and increased consumer demand of food and settlement have played an important role in increasing pressure on land. Influences of market incentive, policy on commodity price and subsidisation of agricultural inputs are the major factors affecting land-use decision making (Feder et al. 1986:1-4; Turner et al. 1993:1-37). Policy on land use with the emphasis on land tenure has been increasingly recognised as productive factors for poverty eradication, social equality, sustainable agricultural production and natural resources conservation. Secure land tenure promotes investment incentives and efficient use of resources (Arnold 1983:299-311; Feder et al. 1986:1-4; Onchan 1990:63). Lack of access to land or low return per area of land governs the expansion of agriculture into forest resulting in degradation of natural resources.

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Deforestation and unsustainable land use have been well recognised in Thailand as the causes of environment and natural resource degradation. One key to control such consequences is to reduce the rate of undesirable land conversion and land use through appropriate policy intervention. As land-use decision-making process is a complex interplay of several factors, it is necessary to understand how biophysical and socioeconomic factors affect such processes resulting in different types of land-use change.

2.0 Objectives of the Study

The objectives of the study are: (i) to analyse the land-use change during 1982 to 2004; (ii) to investigate the influences of biophysical and socioeconomic factors in land-use decision making; and (iii) to suggest policy implications arising out of the study.

3.0 Materials and Methods

3.1 Selection of the study area and its socio-economic characteristics

The Prasae Watershed, covering 2,137 km² is situated in the eastern region of Thailand (Figure 1). Land-use changes in the study area are highly representative of both deforestation and land-use modification throughout Southeast Asian countries where the farmers switch from shifting cultivation to cash crops and subsequently plantation of tree crops (Long et al. 1999:133-139). A large-scale of forest conversion and adoption of perennial crops as 'tree-crop zone' has been developed in the area.

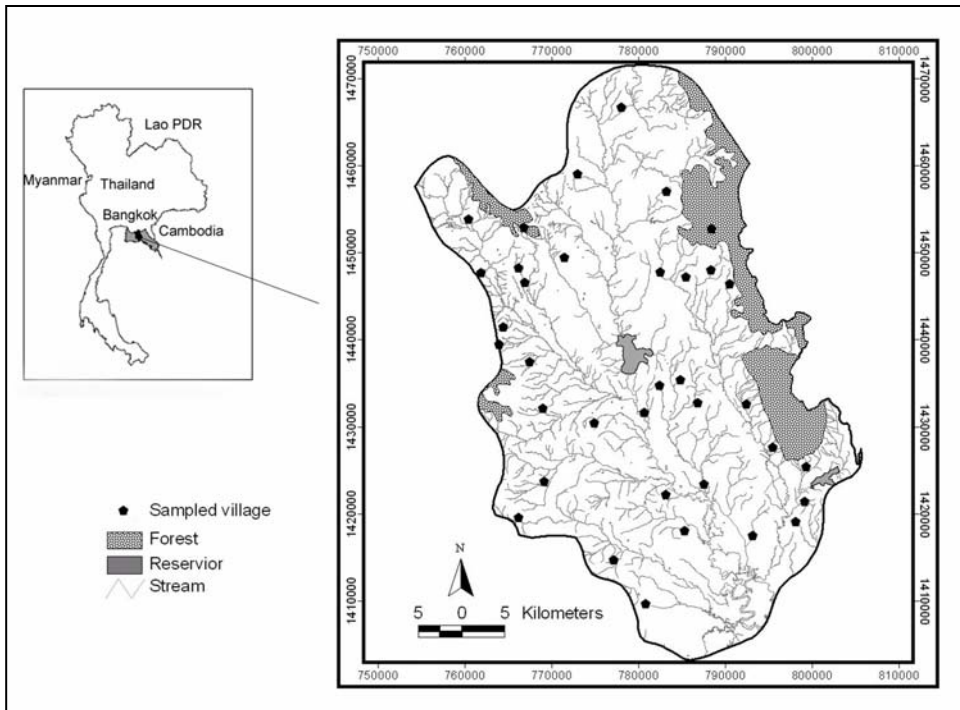
The topography of the study area consists of flat plain and upland area with an elevation ranging from 5 to 120 metres. The eastern and western parts of watershed are composed of high mountains extending from the north to south and covered with evergreen and deciduous forest forming as the head watershed area. The lower parts are filled with orchard and rubber plantation. The climate is tropical monsoon with an annual rainfall varying from 1,200 mm to 1,700 mm in the eastern part of the watershed. Sandy loam, loamy sand and clay loam are the dominant soil texture; however the texture ranges from clay to very sandy soil. Due to the large composition of sand in soil, the soil in this watershed is easily eroded and has low in fertility.

The total population is 0.08 million with an average population density of 37 persons/km². The average annual population growth during 1990-2004 was as low as 0.1 per cent. Most households in the study area are small to medium size with the average household size of four persons. Agriculture is the mainstay of the majority of households.

Majority of forest conversion occurred during the 1970s to 1980s coinciding with an increasing rate of crop cultivation (Saenjan 1999:51). The remaining forest cover in the watershed is distributed in the protected zone of Khao Chamao-Khao Wong National Park. Degraded and disturbed forests are found on sloping areas and lowland tropical forest, a rare forest type in Thailand. Mangrove forest was also converted to shrimp farm during the tiger prawn promotion during the 1990s. The current mangrove cover accounting less than one per cent of the watershed area is continuously threatened by

increasing settlement and shrimp farm expansion along the coastal area. The conversion of land use continues in lowland area where paddy and field crops are being converted to permanent fruit trees and rubber plantation.

Figure 1: Location of Sampled Villages in the Prasae Watershed, Thailand



3.2 Land-use change detection

Land use and its change were analysed using multi-temporal land-use data of 1982, 1993 and 2004. Land-use map of 1982 in hard copy format, obtained from the Land Development Department (LDD), Ministry of Agriculture and Co-operatives of Thailand, was digitised in the vector Geographic Information Systems (GIS) using Arcview 3.3TM software. Digital land-use map of 1993 interpreted from Landsat Thematic Mapper (TM) data was acquired from LDD. One scene of Landsat TM data of November 30th, 2004, procured from Geo-informatics and Space Information Technology Development Agency of Thailand, was digitally classified aided by field data using ENVI 3.4TM image processing software to prepare the land-use map of 2004. The accuracy assessment of classified image was carried out as proposed by Lillesand and Kiefer (2000), and an overall accuracy of 84 per cent was achieved.

Land-use classification of time series data were followed as suggested by Anderson et al. (1976:1-28) and land-use changes were analysed for 1982 to 1993 and 1993 to 2004, using GIS overlay techniques. In this study, land-use change refers to the changes in land

cover composition and Land-use pattern, for example, changes from forest to agriculture or from land under annual crops to perennial crops.

3.3 Socio-economic assessment

Based on the village-level database in 2005, there were 20,175 households in the study area. The sample size was determined using the technique devised by Arkin and Colton (1963: 21-22) and the application of equation gave a required sample size of 240 households.

$$n = \frac{[NZ^2 P(1-P)]}{Nd^2 + Z^2 P(1-P)}$$

Where, n = sample size, N = total number of farm households, Z = confidence level (99%), P = estimated proportion of the population included (90%) and d = Error limit (5%).

The sampling design was two stage stratified and random sampling. As the objective was to examine the determinants of land-use change, the village location map was overlaid on land-use change map to select the sample villages for household survey. There were 12 major land-use changes in the study area, which contributed to about 80 per cent of total land-use change. For each land-use change category, three villages were randomly selected to give a total of 36 villages (Figure 1). Six to seven households from each village were randomly interviewed. The purpose was to collect household information from all major kinds of land-use change in the area and examine the linkage between household characteristics and land characteristics. A structured questionnaire survey was conducted during March-June 2005 for collecting data on socioeconomic and farm characteristics. The collected data were analysed using SPSSTM software version 11. Chi-square test was used to examine the relationship between variables. The relationship between determinant factors and land use was analysed using factor analysis and multivariate regression analysis. While conducting factor analysis, factors were rotated using Varimax orthogonal rotation to get the independent factors (Hair et al. 1998:223-253). The factor analysis extracted factors, identified variables using Eigen values above one. Stepwise technique was then employed for generating regression models.

4.0 Results and Discussions

4.1 Land-use change

The agriculture has remained the dominant land use occupying about 64.2 per cent of the study area in 1982, 80.8 per cent in 1993 and 87.9 per cent in 2004 (Table 1). The significant increase was observed for perennial crops (rubber and other perennial crops e.g. orchard, oil palm, cashew nut) which increased from 10.2 per cent in 1982 to 41.8 per cent in 1993 and 57.1 per cent of the area in 2004. The area under annual crops (annual crops and paddy) decreased whereas mixed crop of annuals and perennial crops increased gradually. The proportions of forest area in different years (33.2% in 1982, 14.9% in 1993, 8.9% in 2004) indicated a substantial decrease in the forest area as a result of forest

conversion to agriculture. This exhibits an incessant transformation of land uses during the past two decades in the study area.

Table 1: Land-use Allocation in 1982, 1993 and 2004

<i>Land-use type</i>	<i>1982</i>	<i>1993</i>	<i>2004</i>
	<i>Percentage of watershed area (213,764 ha)</i>		
Forest	33.2	14.9	8.9
Agriculture	64.2	80.8	87.9
- Annual crops	38.2	14.2	7.2
- Annual crops-rubber	10.5	22.0	22.4
- Rubber	8.2	26.6	35.0
- Other perennial crops	2.0	15.2	22.1
- Paddy	5.3	1.9	0.1
- Shrimp farm	0	0.9	1.1
Urban	0.7	1.5	1.6
Water	0.3	0.7	1.0
Wetland	1.5	0.6	0.4
Other	0.1	1.5	0.2

In addition to agriculture, fish culture is the activity in the lower part of the study area. Shrimp farming has become more intensive in the past two decades because of high demand for this product. Land conversion from mangrove forest along the coastal area to shrimp farm has caused the mangrove forest degradation and water pollution.

Table 2 presents land-use change matrix for two time periods, 1982-1993 and 1993-2004. Most land conversion observed was mainly from forest to annual crops and subsequently to rubber plantation, of which deforestation was higher during the first period than the latter. Approximately 63 per cent and 48 per cent of forest in 1982 and 1993, respectively were lost to other uses specifically to the perennial crops, and mixed annual and perennial crops. In contrast, as much as 89 per cent and 74 per cent of perennial crop (rubber) in 1982 and 1993, respectively were intact; however about 4 per cent in 1982 and 22 per cent of rubber in 1993 were changed to mixed land use of annual crops and rubber. These included the young rubber fields where annual crops are intercropped for the first few years before the rubber crop attains full crown cover. These mixed fields usually are the annual crops in the process of changing to rubber or replanted rubber fields after exhausted rubber cannot be tapped for latex.

Paddy rice, a dominant subsistent crop in the area before 1970s, is grown in the lower part of the watershed but was found gradually replaced by other crops such as fruit trees and annual crops (Bundprasirichot 2000:1-10). Almost all of the rice area of 1982 was changed to other land uses, a substantial proportion of 52 per cent and 69 per cent to perennials during the first and second period, respectively.

Table 2: Land-use Change Matrix from 1982 to 2004 Shown as Percentage Change

1982	Forest	Annual crops	Annual crops-rubber	Perennial crops	Paddy	Shrimp farm	Urban	Water	Wetland	Other
<i>1993</i>										
<i>(Area change in percentage)</i>										
Forest	37.1	8.5	31.9	19.1	0	0	0.2	0.2	0	3.1
Annual crops	6.3	29.1	24.9	39.1	0	0	0	0.3	0	0.2
Annual crops-rubber	0.5	0.5	13.5	82.2	0	0	0.9	1.9	0	0.5
Perennial crops	1.3	1.5	3.9	89.4	0	0	2.7	1.0	0	0.3
Paddy	0	1.0	2.1	51.5	31.7	5.3	6.4	1.1	0	0.9
Urban	0	0	0	0	0	0	96.2	3.1	0	0.7
Water	0	0	0	0	0	28.1	0.2	39.6	20.2	12.0
Wetland	0	0	0	0	10.9	35.5	2.6	0	36.0	15.0
Other	0	0	0	41.6	58.4	0	0	0	0	0
<i>2004</i>										
<i>(Area change in percentage)</i>										
Forest	52.3	5.8	6.1	34.5	0	0	0.5	0.7	0	0.1
Annual crops	0.8	21.0	41.7	36.0	0	0	0	0.3	0	0.2
Annual crops-rubber	1.7	9.0	27.3	61.8	0	0	0	0	0	0.1
Perennial crops	1.4	2.4	21.6	74.5	0	0	0	0	0	0.1
Paddy	0	5.4	7.7	68.9	5.2	3.9	1.4	2.8	0	4.7
Shrimp farm	0	0	0	0	0	79.4	2.4	9.6	8.3	0.3
Urban	0	0	0	0	0		94.6	5.4	0	0
Water	0	0	0	0	0	21.7	1.8	76.5	0	0
Wetland	0	0	0	0	0.1	25.2	3.6	16.0	54.2	0.9
Other	1.7	18.4	24.6	52.5	0	0.5	1.9	0	0	0.4

4.2 Determinants of land-use change

Land-use decision making is determined by several factors. From field survey, following are the major factors in the study area.

4.2.1 Economic return

In the rural area, economic return is considered to be the prominent underlying factor of land-use decision making in majority of cases where land-use changes have been observed (Table 3). Although several factors affecting the economic return such as productivity or investment, the high profitability from planting perennial crops as indicated by farmers was mainly due to the high commodity price during the last 20 years. Increase in rubber price by fivefolds during 1982-2004 had a great influence on the development of large-scale rubber plantation.

Table 3: Basis of Land-use Decision Making

<i>Land-use change</i>	<i>Economic return</i>	<i>Productive resources</i>	<i>Land tenure security</i>	<i>Land quality</i>	<i>Institutional Service</i>	<i>Total</i>
(Percentage of responses for each land-use change) **						
Forest to Annual crops	25.0	0	75.0	0	0	100
Forest to Perennial crops	41.2	11.7	41.2	0	5.9	100
Annual crops to Perennial crops	52.2	17.0	17.6	8.8	4.4	100
Annual crops to mixed crops	51.1	18.4	26.5	2.0	2.0	100
Perennial to Annual crops	60.0	40.0	0	0	0	100
Perennial to mixed crops	66.7	33.3	0	0	0	100
Annual crops (no change)	35.2	61.0	1.9	1.9	0	100
Perennial crops (no change)	64.0	26.0	10.0	0	0	100

Note: ** $P < 0.01$ (Chi-square = 97.91).

4.2.2 Production resources

Availability of farm household resources is the important reason for cultivating crops as observed in the study area. These include farm size, farm labour, water availability, fertiliser, knowledge, investment and market availability. Farmers with limiting productive resources may invest in less profitable crops appropriate to their resources. For instance, small farmers with inadequate inputs adopted annual crops as they could obtain quicker income to support living.

4.2.3 Land tenure security

Lack of access to land leads to the expansion of agriculture into forest as responded by the majority (75%) of the respondents. Newly cleared forest was planted with annual crops for one to two seasons as farmers fear eviction by the authorities for encroachment and then changed to the perennial crops as they feel more secure in their use of the land. This typically is the case for those holders who do not have land documents but would claim the land documents for such acquired land based on perennial crops cultivation. In some instances, such practice leads to further encroachment of the forest as landholders, and after obtaining the land titles, they transfer the ownership to others and look for acquiring new holdings in the forest area.

4.2.4 Land quality

Land quality, such as moisture availability and erosion resistance, influences the suitability of land for specific kind of use. Regarding the land quality and environmental condition over time, the landholders perceived that there is change in rainfall distribution and more erratic compared to the past due to significant forest depletion in the area.

Similarly, soils in the area are sandy in texture and prone to erosion; farmers tend to switch from annual crops to perennial crops in order to conserve the soil by reducing soil loss.

4.2.5 Institutional service

The institutional factors are among important drivers of land-use change. The major institutional factors were identified as extension service, group membership, and training; however they showed little effect on land-use changes. In terms of the impact on the farmers' awareness, particularly cultivation practices and commodity prices, it was found that most farmers are less benefited from the extension services and training but are more benefited from learning from successful growers, neighbours and mass media, e.g. television programmes.

The formation of the farmers' group and being a member of it allow the member to borrow money based on group collateral. It also helps get government subsidies; however the new growers were not enjoying the subsidies as much as their fellow growers who are engaged in it for relatively long time.

To investigate the dominant factors affecting land-use decision making, both biophysical and socioeconomic variables were included in analysis. The land evaluation procedure was carried out following the FAO framework (FAO 1976:1-79), and land suitability for major crops in the area was obtained. Socioeconomic variables were derived from farm level data collection through survey; altogether, the 22 biophysical and socioeconomic variables were used to conduct the factor analysis. This technique is used to identify underlying variables of land-use patterns and explain the pattern of correlation within a set of observed variables (Lesschen et al. 2005:26). The factor analysis produced seven factors with variables loading on the appropriate factors which support earlier discussion on farmers' opinions. The factors were characterised as economic return, production resources, land tenure security, household resources, institutional services, settlement and land quality. The cumulative variance explained was 67 per cent (Table 4). The first factor characterised as economic return explained 19 per cent of the total variance which included variables namely, total household income, farm income and farm net return. The second factor related to production resources including irrigated area, land-holding size, farm expenditure, loan and distance to market explained 13 per cent of the total variance. The third factor included owned and titled area and explained 9 per cent of total variance. The fourth factor explained about 8 per cent of the total variance. Variables under this factor were related to household resources including household size, educational level and farm labour. The fifth factor was related to institutional services and explained about 7 per cent of the total variance including variables as extension, group membership and training. The sixth factor related to settlement including area of cultivation inside forest reserve, length of titling, age of settlement and land price explained about 6 per cent of total variance. The last factor regarding land quality and environmental perception explained 5 per cent of total variance.

Table 4: Rotated Factor Matrix of Land-use Determination Variables

Variable	Factor						
	1. <i>Econo- mic return</i>	2. <i>Production resources</i>	3. <i>Land tenure security</i>	4. <i>Household resources</i>	5. <i>Institu- tional services</i>	6. <i>Settlement</i>	7. <i>Land quality</i>
Total household income Baht/yr)	0.989						
Farm income (Baht/yr)	0.984						
Farm net return (Baht/yr)	0.980						
Irrigated area (ha)		0.877					
Total land holding (ha)		0.762	0.515				
Farm expenditure (Baht/yr)	0.493	0.706					
Amount of loan (Baht)		0.674					
Distance to market (km)		0.431					-0.391
Owned area (ha)			0.924				
Titled area (ha)			0.914				
Household size (number)				0.919			
Educational level (index) ^a				0.860			
Farm labour (number)				0.627			
Extension service (frequency/yr)					0.774		
Group membership (number)					0.672		
Training (frequency/yr)					0.515		
Cultivation inside forest (ha)						-0.645	
Length of titling (yr)						0.631	
Age of settlement (yr)						0.616	
Land price (Baht/ha)						0.381	0.335
Environmental perception (dummy) ^b							0.675
Land quality (index) ^c							0.644
Cummalative variance (%)	19.17	32.43	41.42	48.93	55.78	61.71	66.72

Note : a $\text{Educational level} = \sum Xi wi / N$

Where Xi = Individual educational level, N = Number of responses relating in each group
 Wi = Respective weights (Illiterate= 0, Primary education=0.25, Secondary education =0.5,
 High school, College undergraduate degree =0.75, Graduate degree=1.0)

^b Environmental perception: 0= with perception, 1 = without perception

^c Land quality measured as land suitability 1= not suitable, 2= marginal suitable, 3= moderately suitable, 4= highly suitable

4=

4.3 Land-use change regression model

The multivariate analysis was employed to examine the relationship for explaining underlying factors of land-use changes. Multiple linear regression has been used in several land-use prediction for continuous dependent variables (Lesschen et al. 2005:33-35; Weiss et al. 2001:1005-1027). In this study, the land-use changes obtained from the spatial analysis and household survey suggested that in majority of cases annual crops or forest land uses have changed to the perennial crops during the past two decades. Thus, the area extent of perennial crop in hectare was utilised as the dependent variable in the regression analysis. Out of 22 variables used in stepwise regression technique, only four variables were found statistically significant in estimating the total perennial planting area. Four regression models containing different number of independent variables were generated (Table 5). The variance explained by the models ranged from 63 per cent to 66 per cent with statistical significant at 0.001 level. All regression co-efficients were significant at 0.05 levels.

Table 5: Regression Estimates of Land-use Change Determinant Factors

<i>Predictor variables</i>	<i>Model</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Constant	0.946	0.861	-0.250	-0.474
Owned area (ha)	0.753	0.723	0.705	0.702
Irrigated area (ha)		0.105	0.090	0.079
Educational level (index)			0.987	0.967
Farm income (Baht/yr)				1.426E-06
R	0.795	0.802	0.806	0.810
R ²	0.632	0.643	0.650	0.655
Adjusted R ²	0.631	0.640	0.645	0.649
Significant level	<0.001	<0.001	<0.001	<0.001

Note: Dependent variable = perennial crops area (ha).

The first predictor variable included in the model was ‘owned area’ which explained 63 per cent of the variation of the predicted perennial crop area. The second variable was irrigated area followed by educational level and farm income. All models were significant although the models which included more predictor variables were slightly better than those models containing less number of variables as indicated by the adjusted R² values. For all models, all positive value of predictor co-efficients indicated that they were positively correlated with the area under perennial crops.

Security on land brings about what Brasselle et al. (2002:374) calls ‘assurance effect’ and provides incentive for investments and resources conservation. On the contrary, lack of access to land in case of landless settlers or so-called poor households encourage forest conversion to perennial crops. This practice has been seen as an easy way of acquiring land especially by some of hungry land collectors as reported elsewhere (Neef 2001:125-130). An estimation of 80 to 100 million people residing in the protected areas of

Southeast Asian countries (Poffenberger 1999:4), 1.3 million households are in Thailand (MoAC and FINNIDA 1993:1-24). The part of the problem of such ongoing practice, which even could further encourage more forest conversion, is due to the policy which has provision to issue titles of these lands acquired through forest conversion afterwards. Under these circumstances, the issue is cyclically complex as access to land drives deforestation by planting trees to claim tenure over it, and further deforestation continues to acquire additional land.

Availability of production resources, such as land quality, water, inputs, farm labour, knowledge, credit and market availability, is important in land-use decision making. Expansion of rubber and orchard in the area can be attributed to the suitable biophysical condition of the area and resource availability, particularly in lowland areas where there is irrigation facility to support fruit trees during the dry season.

Among several underlying factors, the agricultural policies and commodity prices were among major factors behind land-use decision making. Rice, a dominant subsistent crop in the area before 1970s, was replaced by commercial crops as cassava, sugarcane and fruit trees. In recent years, cultivation pattern has been shifting away from annual crops to high-value perennial tree crops, such as rubber and oil palm. The growing market of rubber, demand of palm oil for bio-diesel production and the government subsidies in these crops encouraged farmers to convert substantial portion of their land.

In addition to the economic and physical factors, improving human capabilities through education or training could lead to skill, knowledge and technological progress which are important for agricultural development (Schultz 1964:141; Lipton 1989:1553-1571). A plausible explanation is that in the standard of high education, it is easy to adopt modern agricultural technologies as found in the study area. The more educated farmers with technical skills come to intensify agricultural production with perennial crops while low-educated farmers tend to manage their land less intensively such as growing annual crops.

On the side of policymaker, to improve the well-being of rural landholder and protect the natural resources, the challenge could lie in holistic approach. Security of tenureship makes resource users to consider the long-term effects of their practices. Land tenure insecurity did constrain credit access and productivity in several countries in Asia, South America and Africa (Feder and Nishio 1999:25-43). Thus, upgrade of land titles within secure title category facilitated land investment, improvement and land-use decision. Though providing usufruct right in forest area may not be the best policy for economic incentives as it was under restriction to transfer or mortgage (Feder et al. 1988:483-501); unlimited right in the forest area may contribute to further natural resource degradation.

Land reform policy to increase tenure security of forest settlers is still open to argument whether it favours or hinders forest conservation. Providing usufruct right to forest encroachers neither reduces deforestation or increases economic incentives (Wannapinit 1987:1-143; Feder et al. 1988:483-501). Thus, policy on land reform with effective monitoring should be applied with other policies on credit, agricultural improvement, subsidy and forest management. Owners can benefit from collateral arrangement using these temporary documents for investment and land improvement. Since most land reform

areas are former degraded forest with inferior soil quality, productivity could be improved through effective extension programmes that would increase knowledge, farm productivity and prevent farmers from hunting more land for production.

Land reform activity should also consider the appropriate size of land that is adequate for a sustainable living when providing land to landless or even landholders. With the limitation of land resources, the current plot size given under land reform programme was about adequate for small farm holders. In most developing countries, majority of farmers are small farmers, and technology, subsidy or credit generally tended to favour large farmers. Hence, research and development on small-farm friendly technology, irrigation, subsidies, credit, and education based on the sufficiency philosophy could be the policy to alleviate poverty and conserve natural resources.

5.0 Conclusion

Forest conversion to annual crops and subsequently to perennial crops is a typical land-use change in the study area during 1982 to 2004. The findings of this study clearly show that land-use decision making is based on the several factors interacting to produce different types of land-use change. Variables related to land tenure, irrigated area, educational level and farm income were important driving factors of rural land-use change in Prasae watershed area of Thailand. To advance the economic well-being of rural poor and support forest conservation, the effective policy should aim to improve land tenure security and farm productivity together with necessary supporting services while protecting the remaining forest.

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Media-based Agricultural Information and Its Influence on Farm Investment Decisions in Michika Area of Adamawa State, Nigeria

A. O. Ani^{*} and S. A. Rahman^{**}

Abstract

Farmers could use agricultural information for productive investment decision if appropriate means of communication are accessible to them. A study of a sample of 100 randomly selected farmers in Michika Area of Adamawa State in Nigeria was conducted during the cropping season of year 2005 to examine the influence of media-based information on farm investment decisions. An investment decision model which examined two measures of access to information (information limit and information used) and two types of mass media (electronic and print) was applied. The model revealed that information in the electronic media was significantly related to the farm investment decision, and the nature of the relationship depends on how access to information is defined.

1.0 Introduction

Farm information is very vital in agricultural production. Demand for agricultural information has continued to increase in consonance to rapid innovation in agriculture.

Varieties of information sources are needed in disseminating farm information. For an information source to be selected for use by a farmer, it must be available and perceived by the farmer as trustworthy and qualified to offer advice (sharma 1966). Accessibility of farmers to agricultural information could be a function of factors such as socio-economic characteristics of farmers and the nature of sources of the information. According to Bogunjoko (1983), effective means of communication are functions of many complex and interesting variables such as the educational level of the farmers and the types of media used in information dissemination.

Medium through which extension messages reach farmers include individual contact methods, group contact methods and mass method. Mass media transmits information to the farmers in different patterns. There are varieties of such media, which include the electronic media (radio and television) and print media (newspapers, magazines and other periodicals such as posters and pamphlets). These means of communication are

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particularly useful in making large number of farmers to be aware of new ideas and practices or alerting them to sudden emergencies. Fajoyomi (1994) has asserted that no media can substitute for another. According to him, the print media did not and will not by any means render the conventional means useless. Mass media refers to all those communication devices such as the television, radio, magazines, newspapers and other printed materials employed to reach a large number of people quickly. Fundamentally, the mass media are message multipliers and channels, which increase the number and speed of message sent and size of the audience reached.

Mass media systems are of great importance in modern society because of their actual positive potential impact on the society. Experience reveals that news which would not have been regarded as important becomes important when reported to the people through the mass media (Yazidu 1983).

This study examines whether access to information through mass media has significantly altered farmers decision to invest in farm production. The concept of *information limit* was used which is similar to *credit limit* (Rashid et al. 2002). *Information limit* is defined as the amount of information that a farmer is able to use if needed. This is one way of measuring access to information which is different from measures of access to information such as *amount of information used* at a given point in time.

2.0 Methodology

The study was conducted in Michika Local Government Area of Adamawa State in Nigeria during the cropping season of year 2005. A random sampling technique was used to sample 100 farmers for the study. The Local Government Area is made up of 20 villages. In each village, five farmers were randomly selected giving a total of 100 farmers. Primary data were collected through the administration of structured questionnaire. The data analysis was done using an investment decision model.

2.1 Investment decision model

The study attempts two forms of decision model:

- i. The decision to use information from mass media; and
- ii. The decision to invest in farm production.

The second decision was further disaggregated. Farmers may decide to invest in farm production and then, all else, constant decide how much to invest on farm production. These decisions could be defined as propensity to invest and intensity to invest. According to Hossain (1988), the two decisions could be treated as independent. First stage decision to be estimated using a probit model (Pindyck and Rubinfeld 1976), and Tobit model (Tobin 1958), for the second stage decision.

If I^* and M^* are two latent variables determining investment in farm production and use of media – based agricultural information; and V denotes the value of the investment, the full model can be expressed with the following set of equations:

$$I_i^* = \%_0 + X_{1i} \%_1 + \%_2 M_i + U_{1i} \quad (1)$$

$$M_i^* = \beta_0 + X_{2i} \beta_1 + U_{2i} \quad (2)$$

$$V_i = \delta_0 + X_i \delta_1 + \delta_2 M_i + U_{3i} ; \text{ If } (M_i^* > 0, I_i^* > 0) \quad (3a)$$

$$= \delta_0 + X_i \delta_1 + U_{3i} ; \text{ If } (M_i^* \leq 0, I_i^* > 0) \quad (3b)$$

$$= 0 \text{ otherwise} \quad (3c)$$

Where X_i is a vector of socio economic characteristics of farmers, M_i represents media-based agricultural information in natural logarithms and U_i 's are error terms.

The analytical interest is equation 3 (a), which specified the value of investment in farm production. Estimation is carried out in two stages. In the first stage, the joint probability of using media agricultural information and investment in farm production is estimated through reduced form specifications of equations (1) and (2).

In the second stage, equation 3 (a) is estimated with inverse mills ratios included as explanatory variables. That is, the final estimating equation can be specified as:

$$E(V_i/I_i^* > 0, M_i^* > 0) = \delta_0 + X_i \delta_1 + \delta_2 M_i + E(U_{3i}/I_i^* > 0, M_i^* > 0) \quad (4)$$

Assuming the normality of U_{1i} , U_{2i} , and U_{3i} and equation (4) can be rewritten as:

$$E(V_i/I_i^* > 0, M_i^* > 0) = \delta_0 + X_i \delta_1 + \delta_2 M_i + \sigma_{13} \lambda_{1i} + \sigma_{23} \lambda_{2i} \quad (5)$$

Where λ_{1i} and λ_{2i} are inverse mills ratios (Rashid et al. 2002)

The inverse mills ratios λ_{1i} and λ_{2i} , are estimated by a bivariate probit estimation method applied to equation (1) and (2). In an intermediate step, predicted values of electronic and printed media *information used* were estimated through a generalised Tobit method (Amemiya 1986), which were used as instrument to control for the endogeneity of information in the equation determining farmers' investment decision in farm production (equation 5).

3.0 Results and Discussion

There are four sets of regression results reported. In Table 1, results of the specification of *information limit* as the measure of access to agricultural information are presented, where two columns of results were derived under the assumptions of correlated and uncorrelated error terms (in the probit equation). In other words, while the first column of the table hypothesises decisions to invest and decision to use media-based agricultural information to be interrelated, the other column treats the two decisions as independent.

Table 1: *Information Limit* as a Determinant of Farm Investment Decision among Farmers in Michika Area of Adamawa State

<i>Explanatory Variables</i>	<i>Regression</i>	<i>Results</i>
	<i>Investment decision and Information decision interacted</i>	<i>Investment decision and Information decision are independent</i>
Constant	126.334* (3.01)	114.091* (2.98)
Age	4.312 (0.95)	3.105 (1.04)
Education	2.214 (1.07)	2.060 (0.84)
Income	7.153 * (4.11)	5.972* (3.82)
Experience	2.330* (3.19)	1.875* (3.01)
Co-operative	1.172 (0.73)	1.430 (1.07)
Electronic Media	2.951* (4.62)	3.463* (4.89)
Print Media	1.648 (1.00)	1.270 (1.14)
Investment Mills ratio	- 20.555 (-1.02)	-24.630 (-1.04)
Information mills ratio	-32.741* (-4.72)	-40.635* (-3.11)
Log Likelihood	-142.18	-126.52
Adjusted R ²	0.693	0.704

Note: Asymptotic t- ratios in parentheses.

* Significant at 5 per cent level.

Source: Computed from field Survey Data (2005).

Information limit from electronic media was significant under interacted specification while that from print media was not significant at 5 per cent level. When decision to invest and decision to use information are treated independently, the magnitude of the estimated co-efficient for the *information limit* in the electronic media increased substantially, while that in print media decreased and still remain insignificant. This implies that agricultural information through the electronic media had greater influence on farm investment decision compared to the information through print media. This could be attributed to low level of education among the farmers. According to Jha and Singh (1966), the level of education is among significant factors that determine the sources of *information used* by farmers.

Use of mass media sources of information increases with increase in education (Sawhney 1967). The electronic media (Radio and Television) are the fastest, and most powerful tools being used in many countries in communicating farm information to farmers in different languages that farmers understand. Most people in Africa and indeed developing countries like Nigeria acquired their basic knowledge of the world, by using electronic media such as radio as major source of information (Yazidu 1983).

Table 2 reports the results of the specification that assumes agricultural *information used* as a measure of access to information. *Information used* in print media was insignificant but that in the electronic media remains significant. This implies that the farmers in the study area use less of print media information for farm decision since most of them could not read or write. The significance of electronic media under both specifications implies that the farmers have used that was close to their *information limit*. This is because most of the agricultural information is given to them through the electronic media in local languages. Although the primary focus of the analysis has been on the relationship between investment decision and agricultural information, the estimated parameters associated with the other explanatory variables also bear important implications. Two sets of estimates are of particular interest. First, Mills ratios (λ s) related to the agricultural information equation are significant in the *information limit* model. This implies that failure to control for selection bias would have led to inconsistent parameter estimates (Green 1993). Secondly, other socio-economic factors such as income and experience are found significant under all four specifications of the model.

Table 2: *Information Used* as a Determinant of Farm Investment Decision among Farmers in Michika Area of Adamawa State

<i>Explanatory variables</i>	<i>Regression</i>	<i>Results</i>
	<i>Investment decision and Information decision interacted</i>	<i>Investment decision and Information decision independent</i>
Constant	142.950* (3.11)	163.234* (3.74)
Age	5.712 (0.56)	4.325 (1.04)
Education	2.157 (0.77)	3.405 (1.03)
Income	4.712* (3.85)	4.089* (3.19)
Experience	3.044* (4.11)	2.985* (3.85)
Co-operative	1.942 (1.00)	1.564 (1.17)
Electronic media	3.216* (2.98)	3.485* (3.15)
Print media	1.450 (0.67)	1.678 (0.99)
Investment mills ratio	- 15.321 (-1.31)	-18.753 (-0.95)
Information mills ratio	-24.632* (-5.61)	-36.414* (-4.17)
Log Likelihood	-185.32	-149.75
Adjusted R ₂	0.724	0.750

Note: Asymptotic t- ratios in parentheses.

* Significant at 5 per cent level.

Source: Computed from field Survey Data (2005).

4.0 Conclusion

Information can be considered as a productive resource which every farmer needs for his or her farm decisions. It has great potentials for enhancing production, processing and marketing activities in the agricultural sector. There are various sources of agricultural information for farmers' use. The mass media in electronic form (radio and television) or printed form (newspapers, magazines and other periodicals) are means through which agricultural information is transmitted to large number of farmers. Such information influences farm investment decisions among farmers.

This study analyses whether access to agricultural information has significant influence on the farm investment decisions in Michika Area of Adamawa State in Nigeria. The investment decision model applied revealed that the influence of the information on the farm investment decision significantly depends on how access to information is defined. In particular, *information limit* in electronic media is found to have a positive significant influence on the farm investment decision. The relationship was insignificant with information in print media. There is the need to improve farmers' educational status for effective agricultural communication through print media.

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Perception and Attitude of Microcredit Borrowers towards Effectiveness of Agricultural Diversification and Intensification Project in Bangladesh

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Abstract

Government of Bangladesh (GoB) have made an effort to provide microcredit facility to the landless and marginal farmers in order to uplift their socioeconomic condition through Agricultural Diversification and Intensification Project. This study aims to assess whether the participants were benefited or not as a result of intervention of the project. Logit model was used to examine the influence of socioeconomic variables on the dichotomous dependent variable. The logit model results indicate that variables like year of schooling, number of training received by the borrowers, mobility of the borrowers and household size of the borrowers were significantly related with the dependent variable borrowers' betterment.

1.0 Introduction

1.1 Socio-economic background of Bangladesh

Bangladesh is one of the most densely populated countries (913 per sq km) in the world. The total population is 134.8 million, of which 69.1 million are male and 65.7 million are female. In the urban areas, total population is estimated at 31.3 million, and 103.5 million people reside in the rural areas. Overall male-female ratio is 105:100 (BBS 2006). The annual growth rate of population in 2003 was estimated at 1.43 per cent (BBS 2006), and it is expected to decline in the years to come due to strengthening of family-planning policy and awareness programmes of the government and NGOs towards birth control and health care. GDP growth rate at 1995-96 prices was 6.27 per cent in 2003/04 (BBS 2006). The per capita GDP and GNP in 2003/04 were US\$418 and US\$440 respectively. The national savings and investment reached at 25.44 and 24.02 per cent of GDP respectively. Moreover, the contribution of public as well as private sectors in national investment was about 6 per cent and 18 per cent in 2003/04, and the rate of inflation was 5.38 per cent in the same year (BBS 2006). In the fiscal year 2003/04, the amount of export earnings was US\$7603 million which increased by 16.10 per cent as compared to fiscal year 2002/03. On the other hand, in the same fiscal year, the import registered an increase of about 12.9 per cent, and the inflows of remittance registered an increase of 10.12 per cent as

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compared to preceding fiscal year, and remittance stood at US\$3.4 billion (Bangladesh Economic Review 2004).

The Poverty Reduction Strategy Programme (PRSP) is being implemented on the following strategic principles such as rapid economic growth, development of friendly agriculture, small-medium industries, rural electrification, communication, and targeted poverty alleviating programme as well as safety-net programme vis-à-vis human poverty reduction. Besides, revenue sector reforms, government expenditure management and financial reforms are some important issues that are being addressed presently. Table 1 shows the sectoral shares of GDP. From this table it can be seen that agriculture and industry are the major contributors to the economy in 2003/04. The contribution of agriculture and industry sector to the GDP was estimated at 17.97 and 16.16 per cent respectively, and the contribution of other important sectors such as wholesale and retail trade to the GDP was 13.97 per cent. Special efforts have been made in human development. In 2003/04, the allocation against social sector development under several ministries was 24 per cent of the total budgetary resources (Bangladesh Economic Review 2004). Similarly, according to Bangladesh Economic Review, 2004, agricultural credit in fiscal year 2003/04 increased by 23.5 per cent as compared to fiscal year 2002/03.

Table 1: Sectoral Shares of GDP at Constant (1995 - 96) Price (%)

<i>Activity/Sector</i>	<i>2000/01</i>	<i>2001/02</i>	<i>2002/03</i>	<i>2003/04</i>
Agriculture (crop, livestock and forestry)	19.51	18.58	18.22	17.97
Fishing	5.51	5.40	5.25	5.11
Mining and quarrying	1.07	1.07	1.09	1.11
Industry	15.59	15.76	15.97	16.16
Electricity, gas and water supply	1.46	1.51	1.54	1.59
Construction	8.08	8.41	8.63	8.83
Wholesale and retail trade	13.48	13.77	13.87	13.97
Hotel and restaurant	0.64	0.66	0.67	0.68
Transport, storage and communication	9.42	9.62	9.76	9.79
Financial intermediation	1.57	1.61	1.63	1.65
Real estate, renting and business services	8.71	8.63	8.48	8.30
Public administration and defence	2.56	2.60	2.60	2.63
Education	2.24	2.31	2.36	2.40
Health and social services	2.19	2.21	2.21	2.22
Community, social and personal service	7.96	7.87	7.72	7.59

Source: BBS 2006.

1.2 Agricultural and rural economy of Bangladesh

The rural economy of Bangladesh is mainly agriculture based and the major sub-sectors are fishery, livestock and forestry. Agriculture is the main occupation of the people in Bangladesh employing about 62.3 per cent of the total labour force (Bangladesh Economic Review 2004). Agriculture sector plays a significant contribution to the GDP

as can be seen from Table 2 which shows the share of sub-sectors of agriculture to the GDP from 1996/97-2003/04. The combined contribution of all sub-sectors (crop, livestock, forestry and fishery) of agriculture was about 22.83 per cent in 2003/04 (Bangladesh Economic Review 2004). Over the period, contribution of crop and livestock sectors to the GDP showed declining trend while fishery and forestry sectors somewhat showed a constant trend during the said period.

Table 2: Percentage Share of Sub-sectors of Agriculture to GDP (base-year 1995-96)

<i>Sub-sector</i>	<i>1996/9</i> 7	<i>1997/9</i> 8	<i>1998/9</i> 9	<i>1999/0</i> 0	<i>2000/0</i> 1	<i>2001/0</i> 2	<i>2002/0</i> 3	<i>2003/0</i> 4
Crop	15.21	14.59	14.33	14.59	14.70	13.75	13.43	12.94
Livestock	3.27	3.19	3.12	3.02	2.95	2.96	2.93	2.90
Forestry	1.91	1.89	1.90	1.88	1.87	1.88	1.86	1.84
Fishery	5.48	5.67	5.93	6.09	5.51	5.40	5.25	5.15

Source: Bangladesh Economic Review 2004.

The crop sub-sector alone contributes for 12.94 per cent of GDP in 2003/04 but it shows declining trend over the period (Bangladesh Economic Review 2004). The major crops for Bangladesh are rice, wheat, jute, sugarcane, oilseed and tobacco. In 2003/04, per acre yield of rice, wheat, jute, sugarcane, pulses, oilseeds, tobacco were 997 kg, 790 kg, 788 kg, 16 kg, 320 kg, 318 kg and 515 kg respectively (BBS 2006). Majority of the farmers in Bangladesh have no land of their own or possess a very small piece of land. Per capita cultivated land area was 0.14 acre in 2004 (BBS 2006). The fishery sector accounts for about 5 per cent of GDP and about 5.10 per cent of total export earnings. This sector provided full time employment to an estimated 1.2 million people, and the livelihood of about 12 million people indirectly depends on fishery sector as subsistent fishers, part-time fishing labours, aquaculture operators, fish traders and processors (Bangladesh Economic Review 2004). Livestock (which includes cattle, buffalo, goat and poultry) is one of the important sub-sectors of agriculture. It contributes about 2.93 per cent of GDP in 2002/03 and the growth rate of this sub-sector was about 4.51 per cent (Bangladesh Economic Review 2004). About 25 per cent of the total population is dependent on this sub-sector as full time basis for their livelihood and 50 per cent on part time basis (Bangladesh Economic Review 2004). The production of livestock and poultry is low due to lack of improved breeds, modern technology, prevalence of diseases, lack of pastures and higher input costs. The total number of cattle and poultry population was estimated at 44.4 million heads and 209 million birds respectively in 2003/04 (Bangladesh Economic Review 2004).

Bangladesh is a developing country having lower per capita income and inadequate resources. Due to low per capita income, people cannot adequately meet the basic needs like food, clothing, medical and education facilities. In Bangladesh, a person who takes in calorie less than 2123 kilo calories per day is in poverty (Bangladesh Economic Review 2003). Halder and Mosley (2004) indicated that 45 million people in Bangladesh consumed less than 2123 kilo calories per day which was below the required level (minimum requirement is 2123 kcal per day per person) of calories intake per day for a

person. The socially and economically poor people in Bangladesh generally have limited access to productive resources and human capital. Rural poor have little employment opportunity in the rural and urban areas, and they depend on agricultural activities to sustain their livelihood. They have to depend on rural elite or money-lenders for their capital needs in order to carry out their activities. These money-lenders charge a very high interest rate. Besides, they also have limited access to the institutional credit (such as commercial banks) due to inability to meet the collateral requirement. Therefore, the microcredit programme provides them with a unique opportunity to participate in the economic activities. The free collateral credit system is hoped to contribute significantly in increasing their income level and creating employment opportunity as well.

Government and NGOs have been working in order to uplift the socioeconomic status of the poor rural people by launching microcredit programmes for the last two decades. However, the poor are still in the vicious circle of poverty. According to the Bangladesh Economic Review 2004, at the national level, the rate of poverty was 49.8 per cent in 2000 as shown in Table 3. It also shows the incidence of poverty in both rural and urban areas as well. The incidence of poverty was highest in Rajshahi Division (61%), and it was found lowest in Barisal Division (39.8%), and the rate of rural and urban poverty were 53.1 per cent and 36.6 per cent respectively.

Table 3: Rate of Poverty in Bangladesh (based on latest HIES 2000)

<i>National/ Division</i>	<i>Total</i>	<i>Rural</i>	<i>Urban</i>
National Level	49.80	53.10	36.60
Barisal Division	39.80	40.00	37.90
Chittagong Division	47.70	48.40	44.00
Dhaka Division	44.80	52.90	28.20
Khulna Division	51.40	52.20	47.10
Rajshahi Division	61.00	62.80	48.10

Note: HIES = Household Income and Expenditure Survey.

Source: *Bangladesh Economic Review 2004*.

1.3 Agricultural diversification and intensification project

In the light of the essence of the Agricultural Extension Policy, Department of Agricultural Extension (DAE) adopted a microcredit project known as Agricultural Diversification and Intensification Project (ADIP) for the agricultural development. ADIP was one of the collaborative projects of Government of Bangladesh and International Fund for Agricultural Development (IFAD). The project was started on 4 December 1997 to improve the livelihood of poor people in Bangladesh under four districts namely: Tangail, Gazipur, Narsinghdi and Kishoreganj. The project was completed in June 2005.

The main purpose of ADIP was to improve the livelihood of small farmers through microcredit programme giving special attention to the landless and marginal farmers. This was done by intensifying and diversifying the crop production system and disseminating modern agricultural technology. The beneficiaries of this programme were basically rural poor, of which 85 per cent were women. The project formed 4000 groups comprising

landless group, functionally landless group (having up to 0.2 ha of land), marginal farmers group (having 0.21 to 0.6 ha of land) and small farmers group (having 0.61 to 1.0 ha of land). The specific objectives of ADIP were:

- i. to enable landless and marginal families to increase their income and improve their nutritional status through poultry and fish enterprises, agro-processing and other income-generating activities and homestead gardening; and
- ii. to enable small farmers to intensify and diversify crop production as well as pursue other rural enterprises.

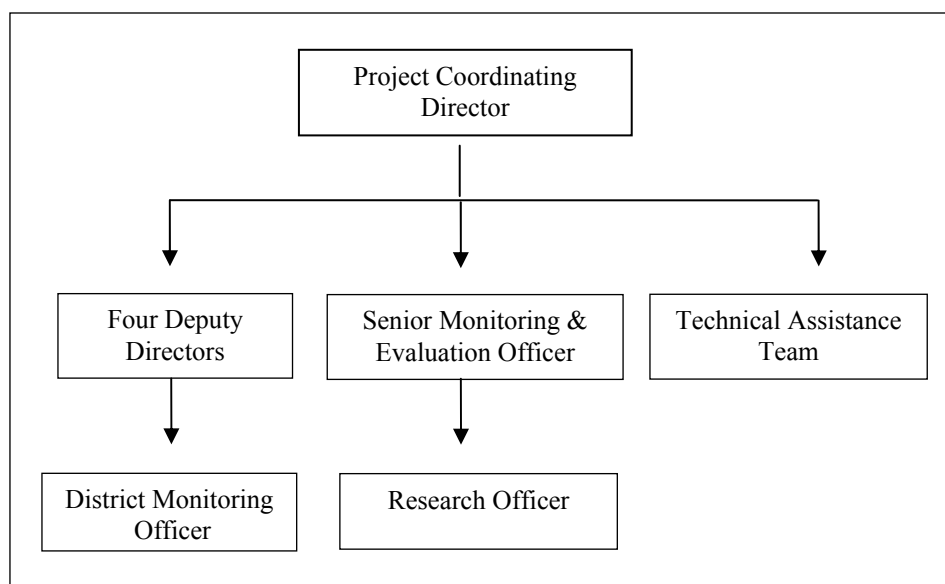
The project was composed of the following components:

1. **Agricultural and Community Development:** The primary goal of this component was to increase the income of targeted farm households. This component had been implemented by the three sub-components like research and extension, embankments and drainage schemes and community development.
2. **Rural Savings and Credit Component:** The main goal of this component was to provide credit facility to the target groups for both on-farm and off-farm activities. Short-term and medium-term loan were provided to the groups under this component. Average loan sizes were expected to start at Taka 2000 to Taka 4000 per borrower and gradually might be increased at Taka 10000 per borrower. Provision was made to provide medium-term loans for purchasing irrigation equipment and marketing ventures. Government bank such as Agrani Bank and selected NGOs were utilised by the project in order to address the specific credit needs of the different target groups.
3. **Community Infrastructure:** The prime goal of this component was to develop rural infrastructure in order to facilitate rural marketing and to create efficient communication system in the rural areas for the target groups through construction of rural roads, landing stage and rural markets.
4. **Project Management and Coordination:** The project had been operating at three levels. The overall management and coordination was carried out by Project Management Unit (PMU) based in the Department of Agricultural Extension (DAE), Dhaka. At district level, planning and coordination of field operations were undertaken and at the Thana level, fieldwork and services were implemented. The project was led by the Project Coordinating Directors (PCD) through the following key personals like the Project Director appointed by Local Government and Engineering Department (LGED); The General Manager (Operations) of Agrani Bank; Representatives of Chief Executives of the partner NGOs and the four Deputy Directors of DAE of the respective districts. PCD of the project was supported by the recruited project officials (both Administrative and Accounts Officers and Staffs) and the Technical Assistance (TA) team members based in PMU.

ADIP was established, based on the concept of building partnership among government and the various non-government organisations. There were four partners in ADIP; they were DAE, LGED, Agrani Bank and local NGOs. DAE was the lead agency, and it was made responsible for overall project planning and monitoring; LGED was assigned to

create rural infrastructure like rural markets, landing stage and rural roads; Agrani Bank was responsible for providing credit to the rural poor following the projects goals and criteria. The NGOs were responsible for implementing the activities of the project. Project management mainly consisted of 11 officials, led by PCD. Deputy Directors of DAE of each four districts was made responsible to monitor and implement the project activities under the command of Project Coordinating Director. The recruited four district Monitoring Officers were posted at district level to monitor the project activities under the command of respective Deputy Directors while the Senior Monitoring and Evaluation Officer and the Research Officer were under direct command of PCD working at PMU in the Head Office. Organogram of the project is shown in Figure 1.

Figure 1: Organogram of ADIP



The main task of ADIP was to accelerate the agricultural activity in the project areas. Thus, the major sectors of intervention of the project were crop production, poultry, livestock, fishery and small agricultural business. The project also tried to address the issue of gender disparity, creating social awareness, health care, and development of rural infrastructure. ADIP provided microcredit facility to the 70,986 borrowers during the period of 1999/00 to 2003/04. Number of borrowers, loan disbursement and borrowers' net-savings had increased due to ADIP intervention. Moreover, an excellent performance was achieved in case of loan recovery. Table 4 shows the microcredit operation from 1999/00 to 2003/04. It is observed that number of borrowers, total disbursement, net-savings of the borrowers increased over the period.

Table 4: Microcredit Operation of ADIP from 1999/00 to 2003/04

<i>Indicator</i>	<i>1999/00</i>	<i>2000/01</i>	<i>20001/02</i>	<i>20002/03</i>	<i>2003/04</i>
<i>A. Marginal & Landless Group</i>					
Number of borrowers	9727	19642	12159	8717	5181
Disbursement (lakh taka)	278.48	859.91	1400.11	1990.08	2012.94
Repayment rate	99	99	95	97	98
Net-savings (lakh taka)	48.90	116.71	163.33	260.61	282.54
<i>B. Small Farmer Group</i>					
Number of Borrowers	-	3426	3936	2983	5215
Disbursement (lakh taka)	-	140.38	235.40	728.12	621.3
Repayment rate	-	100	98	100	99
Net-savings (lakh taka)	-	28.04	31.42	83.86	47.66

Source: ADIP Annual Report of 1999/00; 2000/01; 2001/02; 2002/03 and 2003/04.

1.4 Previous studies on microcredit programmes in Bangladesh

Poor people living in the developing countries have very limited access to the institutional credit facilities that severely hamper their productive activities. Due to their inability of providing collateral, formal financial institutes like banks are rigid to provide services to the rural poor. Microcredit programmes have provided the rural poor with a unique opportunity to widen the access to the economic activity under collateral free credit system through group approach. One of the main objectives of the microcredit programmes is to increase the level of income of the participants. It also takes the effort to improve their overall livelihood. A good number of quantitative surveys were carried out in Bangladesh, in order to assess the impact of microcredit programmes launched by the NGOs. It was found that the microcredit programmes had positive impact on reducing poverty by increasing income, production, consumption and saving among the rural poor. Among these researchers were (Khandker 1996, 2000, 2003); (Rahman and Khandker 1994); (Chowdury and Bhuiya 2004); (Matin and Hulme 2003); (Halder and Mosley 2004); (Rahman 1998) and (Latif 2001).

In the rural context of Bangladesh, there persists high level of gender disparity between men and women, which ultimately hampers the overall economic development of the country. Thus, it is expected that the microcredit programmes would enhance women's socioeconomic status by increasing their mobility, decision-making ability, worth of assets, social awareness, and use of contraceptives. The following researchers- Ullah 2004; Datta 2004; Mahmud 1999; Amin et al. 1994; Hashemi et al. 1996; Zaman 2001; Latif 1994; and Pitt et al. 2003, conducted study among the Bangladeshi women and found that microcredit programmes had positive impact on women's empowerment.

In the light of the New Agricultural Extension Policy (NAEP), Government of Bangladesh has provided microcredit to the poor farmers by creating effective partnership among donor agencies such as International Fund For Agricultural Development (IFAD), World Food Programme (WFP); government organisations such as DAE, LGED and local

NGOs in order to enhance agricultural development and overall livelihood of the poor farmers. Therefore, based on the experience of ADIP, it is important to assess the performance of such collaborative programme for its smooth operation and future replication. Thus, the main focus of the study is to assess the effectiveness of the microcredit programme that has been implemented by ADIP. The specific objectives of this study are:

- i. to evaluate the effectiveness of microcredit programme based on borrowers' perspective; and
- ii. to determine the influences of socioeconomic factors in alleviating poverty of the respondent households.

2.0 Data Collection and Method

This study used primary data to gather information on borrower's socioeconomic background, loan activities and their perceptions towards project activities related to their livelihood aspects. Data were collected by using questionnaire that was divided into five sections. Section one gathers information on socioeconomic and demographic background of the borrowers. In this section, information was gathered on borrowers' age, education level, secondary occupation, household size, family members' involvement in farming and land size. Section two gathers information related to credit management. In this section, information was gathered on loan disbursement, loan repayment, and training received by the borrowers. Section three gathers information on savings, income and expenditure level of the borrowers' households. Opinions towards effectiveness of ADIP programme were also asked in section four. In this section, borrowers' opinion about fifteen issues such as family condition, mobility, social status, technical skills, gender disparity, social awareness, environmental pollution, financial management, purchasing ability of food and non-food items, farm management practices, crop diversification, ability to send children to school, planning and monitoring ability of economic activities and standard of living were collected. Five-point likert scale was used to evaluate borrowers' perception on their welfare under ADIP programme. They were asked to provide their opinion on fifteen statements related to their livelihood. Borrowers had five options for each statement that were: (i) strongly agree, (ii) agree, (iii) neutral, (iv) disagree, and (v) strongly disagree. Section five gathers information on borrowers' problems in the ADIP programme. Data were collected from those borrowers who joined the project in 2003. A comprehensive borrowers' list was collected from the project office of Sripur Thana (a lowest administrative unit) under Gazipur District of Bangladesh. The survey was conducted on the borrowers of Sripur Thana in June 2004, and 330 women borrowers were selected as sample through random sampling technique.

2.1 Model specification

The points obtained by the borrower from each fifteen statements, were summed up. The total score obtained by each borrower was divided by the highest score of seventy-five in order to create an index of acceptability in order to determine whether ADIP programme benefited the borrowers' or not. Based on the acceptability index, the borrower who received score less than seventy per cent was coded as zero otherwise coded as one. Logit model was selected in order to find out the probability level that borrowers would be

better-off due to influence of particular independent variable. In this model, the dependent variable ‘Borrowers betterment’ had two categories such as ‘borrowers were better-off under the programme’ coded as one and otherwise coded as zero. The model can be represented as follows:

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k)}} \quad (1)$$

Where P_i is a probability that $Y_i = 1$, X_1, \dots, X_k are independent variables while $\beta_1, \beta_2, \dots, \beta_k$ are co-efficients to be estimated corresponding to logistic function.

For ease of exposition, the equation (1) can be re-written as:

$$P_i = \frac{1}{1 + e^{-Z_i}} \quad (2)$$

Where $Z_i = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k$

Equation (2) represents what is known as the (cumulative) logistic distribution function (Gujarati, 1988). If P_i is the probability that borrowers better-off, then $(1 - P_i)$ is the probability that borrowers not better-off:

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \quad (3)$$

Therefore,

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} = e^{Z_i} \quad (4)$$

Taking the logarithm of (4) yields:

$$L_i = \ln \left(\frac{P_i}{1 - P_i} \right) = Z_i \quad (5)$$

Adding error term (μ) to the equation (5) yields:

$$L_i = \ln \left(\frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k + \mu \quad (6)$$

The researchers- Gofran 1996, Begum 1998 and Zaman 2001, used logit model to assess the effect of microcredit programme on loan utilisation, social awareness and women empowerment and they had found positive effects of microcredit programme. The dichotomous dependent variable for ‘Gofran 1996’ was ‘loan utilisation’ to assigned purpose; in the case of ‘Begum 1998’, the dependent variable was awareness index having

binary variable; and in ‘Zaman 2001’, the dichotomous dependent variable was ‘women’s empowerment’. In this study, the dichotomous dependent variable was ‘Borrowers betterment’ and the independent variables were borrowers’ education, number of training received by borrowers, loan amount, value of household assets, household size and mobility of the borrowers. All above said variables were incorporated in the logit model as independent variables because these variables were related to the overall living-standard of the borrowers. Thus, specifically model can be written as:

$$\ln (P_i / (1- P_i)) = \beta_0 + \beta_1 \text{ Edu} + \beta_2 \text{ Ntr} + \beta_3 \text{ Lamt} + \beta_4 \text{ Fsz} + \beta_5 \text{ Mob} + \beta_6 \text{ Ass} + \mu \quad (7)$$

Where,

P_i = Probability that borrowers were better-off

$1- P_i$ = Probability that borrowers were not better-off

β_0 = constant

Edu = Education level (years of schooling)

Ntr = Number of training received by the borrowers (number)

Lamt = Amount of credit borrowed by the borrowers (taka)

Fsz = Household size (number)

Mob = Mobility of the borrowers (frequency of visiting agricultural extension office in each month)

Ass = Value of household assets (taka)

β_i = Co-efficient to be estimated

μ = Error term

3.0 Results and Discussion

3.1 Demographic background

Age of the borrowers was categorised into five categories. Table 5 shows the distribution of borrowers as per their age. Out of 330 borrowers, majority of the borrowers were (52.72 %) in the age group of 26 to 35 years, having the mean age of 30.89 followed by 36 to 45 years age group (22.72%), 18 to 15 years group (18.79%). Few borrowers were in the 46 to 55 age group (4.56%) followed by 56 to 65 years group (1.21%). ADIP preferred to provide microcredit to the younger groups rather than the aged groups.

Table 5: Distribution of Borrowers as per Age

<i>Age category</i>	<i>Number</i>	<i>Mean age</i>
18-25	62	23.22
26-35	174	30.89
36-45	75	39.90
46-55	15	48.60
56-65	4	58.25
Total	330	-

Table 6: Distribution of Borrowers as per Educational Status

<i>Level of education</i>	<i>Number of borrowers</i>
No formal schooling	181
Primary level	112
Secondary level	28
Higher Secondary	9
Total	330

Educational status of the borrowers was on the other hand measured by no formal schooling, primary (1 to 5 years of schooling), secondary (6 to 10 years of schooling), higher secondary (11 to 12 years of schooling) and graduate. The survey results show that most of the borrowers had little education (Table 6). Majority of the borrowers (54.85%) had no formal schooling, and about 34 per cent had primary education followed by secondary level of education (8.48%). As can be seen from Table 6, few borrowers were in the higher secondary level (2.72%) and none of the borrowers were graduates.

Household refers to borrower, borrower's husband, and children of the borrower those who are living together and taking meal from the same kitchen. The household size of the borrowers was classified into three categories. The categories were: small household (category 1), medium household (category 2) and large household (category 3). Table 7 shows that majority of the borrowers (47.58%) were in category 2, followed by category 3 (46.36%). Only 20 borrowers (6.06%) were in category 1 (Table 7).

Table 7: Distribution of Borrowers as per Household Size

<i>Household size</i>	<i>Number of households</i>
Small household (1 to 2 members)	20
Medium household (3 to 4 members)	157
Large household (5 to 6 members)	153
Total	330

Table 8: Total Land Size of the Borrowers Household According to Land Category

<i>Land size (decimal)</i>	<i>Household numbers</i>	<i>Mean (decimal)</i>
1 to 49 (Category 1)	185	31.37
50 to 99 (Category 2)	107	72.91
100 to 149 (Category 3)	28	119.64
150 to 199 (Category 4)	9	170.66
200 to 249 (Category 5)	1	-
Total	330	

Note: 100 decimals = 1 acre (approximately).

Total farm size was classified into five categories as shown in Table 8. Out of the 330 borrowers, 56.06 per cent had land size between 1 to 49 decimal, and 32.42 per cent had land size between 50 to 99 decimal, followed by 100 to 149 land size group. A small proportion of borrowers (3.03 %) had land size between 150 to 249 decimal. This study results also reveal that on average, per respondents had 10.11 decimals of homestead, 34.55 decimals of own crop land, 3.45 decimals of pond, and the mean of leased-in area was 30.52 decimals while mean of the leased-out area was 18.33 decimals.

All of the borrowers were housewives. Nevertheless, they were also engaged in secondary occupation such as wage-earning (part-time job, teaching, baby sitting, sewing, crop processing, housekeeping, part-time labour), agribusiness (selling of agricultural products such as food, seeds, composts), non-agribusiness (shop-keeping, selling of cosmetics, chemicals and cloths), handicrafts (making toys, pottery, decorative pieces) and nursery (seedling of fruits, flowers and orchids). As can be seen from Table 9, majority of the borrowers were engaged in wage-earning (42.42%) while 18.49 per cent borrowers did not have any secondary occupation. Out of the 330 borrowers, 84 borrowers (25.45%) were engaged in business followed by handicraft (9.70%) and nursery (3.94%).

Table 9: Distribution of Borrowers According to Their Secondary Occupation

<i>Category</i>	<i>Number</i>	<i>Percentage</i>
Housewife (having no secondary occupation)	61	18.49
Wage-earner	140	42.42
Agribusiness	51	15.45
Non-agribusiness	33	10.00
Handicraft	32	9.70
Nursery	13	3.94
Total	330	100

3.2 Benefit derived by borrowers from ADIP intervention

The prime goal of the ADIP's credit programme was to improve the quality of living-standard of the poor borrowers. It was expected that borrowers would be benefited after participating in the microcredit programme. Borrowers had positive opinion towards ADIP for bringing changes in their living-standard in terms of income, agricultural production and expenditure level. This study shows that by participating in the ADIP programme, borrowers benefited from both qualitative and quantitative aspects. The results also show that average income, annual expenditure on clothing, health care and other expenditures (such as expenditure on social festival, transportation, fuel, electricity and irrigation) increased by 17.86, 14.86, 24.47 and 18.16 per cent respectively after joining the programme in 2003 as compared to before participating in the programme in 2002. Table 10 shows the results of paired t-test to examine the existence of significant difference in the mean performances between before and after joining the ADIP programme. All the four indicators were significant at one per cent level. The results imply that there were significant differences in the mean performances between two periods.

Table 10: Changes of Income and Expenditure due to ADIP Intervention

(In taka)

<i>Indicator</i>	<i>Mean (2003)</i>	<i>Mean (2004)</i>	<i>t-value</i>	<i>df</i>	<i>Level of significance</i>
Household income	30560.29	36020.15	34.211	329	0.000
Spending on clothing	1863.62	2140.63	44.214	329	0.000
Spending on healthcare	1325.00	1649.21	25.620	329	0.000
Other expenditures	4481.82	5295.59	45.788	329	0.000

Note: Assuming 1 USD = 68 Taka (Bangladeshi currency).

Table 11: Borrowers Opinion towards Deriving Benefits from ADIP Programme

<i>Indicators</i>	<i>Frequency</i>	<i>Increase (%)</i>	<i>Frequency</i>	<i>No increase (%)</i>
Agricultural production	291	88.18	39	11.82
Household savings	265	80.30	65	19.70
Technical skills	236	71.52	94	28.48
Expenditure on food	229	69.39	101	30.61
Awareness on nutrition	287	86.97	43	13.03
Ability to bear children education	241	73.03	89	26.97

The borrowers also showed positive opinion towards ADIP in receiving benefits. The opinion of the borrowers on agricultural production, borrowers' savings, technical skills, food expenditure, awareness towards nutritional aspect and ability of bearing children educational expenses can be seen from Table 11. Majority of the respondents agreed that microcredit programme had increased the above said indicators. The intervention in the form of credit can be treated as an important element for eradicating poverty among the rural poor.

3.3 Results of the logit model

As indicated earlier, borrowers' perception towards 'better-off' after joining the ADIP programme and the influence of socioeconomic variables on their status were analysed by using logit model. The dependent variable was dichotomous having the values one and zero indicating borrowers' better-off and not better-off respectively. The estimated result of equation 7 is shown in Table 12. Here four variables were significantly and positively related with the dependent variable, meaning that increase in those four variables would give higher likelihood for increasing their welfare. The significant variables were education, household size, mobility and number of training. It is important to examine whether the data fit the model adequately. For this purpose, Hosmer and Lameshow test of goodness of fit was conducted. The test results show the value of Chi-square was 5.334 with 8 df and it was found non-significant indicating that data fit the model well. Nagelkerke R-square of the model was 0.176 indicating that the model's predictors explain about 17 per cent of the total variation of the dependent variable. Overall accuracy of the model was about 79 per cent.

Table 12: Results of the Logit Model

<i>Variable</i>	<i>Log of odd ratio (B)</i>	<i>Standard error</i>	<i>t-value</i>	<i>Significance level</i>	<i>Odd ratio Exp (B)</i>
Constant	-6.502	1.597	16.577	0.000***	0.001
Education	0.724	0.247	8.609	0.003***	2.063
Training received	0.368	0.134	7.545	0.006***	1.444
Worth of assets	0.000	0.000	0.035	0.851	1.000
Household size	0.285	0.147	3.751	0.053**	1.329
Disbursement	0.000	0.000	0.046	0.831	1.000
Mobility	0.904	0.241	14.056	0.000***	2.468
-2 Log likelihood	301.333				
Cox & Snell R-square	0.113				
Nagelkerke R Square	0.176				
χ^2 value	5.334				
Overall accuracy	79.4				

Note: ** Significant at 5 per cent level; *** Significant at 1 per cent level.

Education (years of schooling) is such a factor that is related to human knowledge and it helps in proper planning and act accordingly with sound performance. In the model, t-value for education was 8.609, which was found significant and positively related with the dependent variable. It implies that, increase of borrowers' educational level will provide higher likelihood for uplifting their welfare. Table 12 shows that the probability of being better-off was 67.35 due to increase of one year schooling. The relationship between probability and odd ratio is presented in the footnote¹.

ADIP provided training facility on different items such as crop production, poultry and livestock rearing, fish culture, health care, legal rights, environmental pollution, gender relation, credit management and handicrafts to the rural borrowers in order to improve their skills and social awareness. In the model, t-value for training obtained by the borrowers was 7.545, which was significant and positively related with the dependent variable indicating that providing more training to the borrowers would increase the probability of borrowers' welfare. The probability of being better-off was 59.08 per cent due to increase in obtaining one additional training.

Household size is related to borrowers earning, source of earning and working ability. In the rural areas, farm activities are dominated by manual labour. Thus, household size plays a significant role in their earnings. Large household with more working members may have the advantage over small household in utilising their family labour in farm activities and other non-farm income earning activities. Since, most of the borrowers were poor and they had little ability to hire labour, they had to depend on their own family labours as it was considered cost-effective for them. The result showed that the t-value for household size was 3.751 and it was found significant. Moreover, it was positively related with the dependent variable. Therefore, the likelihood was higher for the large household

¹ Probability = odd / (1+odd).

in case of enhancing their earnings. Table 12 shows that the probability of being better-off was 57.06 per cent due to increase of one additional member in the household.

Agricultural activities (for example crop production, poultry and livestock rearing, fish culture etc.) are complex in nature and need technical knowledge in pursuing such activities. Mobility of the borrowers assists them to get to know about the agricultural technology and creates opportunity to exchange their views with others. Lack of mobility of the borrowers creates problem for them in adopting modern technology, and ultimately they fail to achieve higher earnings and outputs. For this reasons, borrowers who have cell-phones and have closed contact with the agricultural extension office are in better position to reduce intervention of middlemen in the marketing system and to obtain desired level of output as well. The results reveal that the t-value for the mobility of the borrowers was 14.056, and it was significant and positively related with the dependent variable. Table 12 shows that the probability of being better-off was 71.16 per cent due to increase of one unit of additional visit to the extension office.

4.0 Conclusion

Borrowers had positive opinion towards ADIP programme for bringing changes in their living-standard. They benefitted a lot after joining ADIP programme. The project provided them with the opportunity to perform their economic activities, in more organised way, leading them to the higher quality of life. It became possible due to providing non-formal education, training, financial and technological supports to the borrowers from the project side. ADIP played significant role in reducing poverty among the borrowers. There is an indication for the policymakers that ADIP microcredit model may be replicated in other rural areas of Bangladesh for reducing poverty. Policymakers should provide emphasis on the following implications for enhancing agricultural development and reducing poverty in the rural areas.

This study shows that increasing the educational facility for the borrowers would increase the likelihood of being better-off. The borrowers had low level of education. It hampered their economic performances. Thus, steps should be taken to provide educational facilities to the borrowers through formal and non-formal education. Setting up night schools under project management may assist borrowers to participate in the educational activities. Necessary materials (like book, pen or pencil) should be provided free of charge. Moreover, a nominal charge should be imposed on them for their education. At the same time, awareness-building and motivational programme can be undertaken in the rural areas to encourage rural people to send their family members (especially children) to the schools.

Poor borrowers are not much aware of the modern technology. They largely depend on the traditional method of farming, resulting them low level of production. They are also unaware about the social aspects of life as well. This study reveals that providing training to the borrowers would increase the likelihood of being better-off. Therefore, provision should be made to provide adequate and effective training on different aspects such as on-farm or off-farm activities, credit management, environmental pollution, legal rights, nutrition and health care etc. Training must be provided based on the borrowers' demand.

Rural people have limited earning scope due to lack of employment opportunity in the rural areas. It may consider one of the major causes of poverty for them. It is notable that household size plays positive role in increasing household income and savings on the condition that there are more earning members in the household. This study shows that households having more earning members were in advantageous position than small households with less-earning member. Thus, necessary steps should be taken to generate more employment opportunity in the rural areas by establishing small industries. Necessary financial and technological support must be provided to the rural entrepreneurs.

Mobility is important factor for enhancing economic welfare. Due to lack of mobility, borrowers fail to share their views with others, forcing them to lead a low quality of life. This study shows that increasing mobility among the borrowers would provide higher likelihood of being better-off. Thus, it is important to take proper steps to ensure linkage among borrowers, local agricultural office and other service providers.

Microcredit programme must be supported by other development programmes (such as education programme; awareness-building programme; training programme, agricultural extension programme etc.) in order to uplift the socioeconomic condition of the poor borrowers.

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Agrarian Reform and Rural Development

*Sharing Experiences from
the Philippines*



Agrarian Reform and Rural Development: Sharing Experiences from the Philippines

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Agrarian Reform in the Philippines is regarded as the success story to solve the centuries-old problem of landlessness in rural areas, through its Comprehensive Agrarian Reform Programme (CARP) initiated in 1987, and many countries can learn from its success.

This publication is the report of the Second Policy Dialogue of CIRDAP held in Manila, Philippines on 30 May 2007, where policymakers at different levels from the 14 CIRDAP member countries participated in and discussed the agenda of land reform from a Philippines perspective and addressed the issue of regional cooperation among the countries.

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Herbal Medicine as Sustainable Livelihood: A Case of Irula Tribal Women Welfare Society from Rural India

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Abstract

Medicinal plants are an important area that requires the attention of development administration, for working out suitable strategies and for strengthening rural livelihoods. A large number of people, especially the poor, in different regions including vast tracts of tribal belts depend primarily on collection, processing and commercialisation of medicinal plants for their livelihood support. It is believed that there is immense scope for employment generation in this important sector, and hence it needs to be properly promoted without much scope for external exploitation by middlemen. It is also necessary that they need to be commercialised and expand the area of cultivation of these important resources to enhance the production base. These plant species are also considered as endangered species, which need to be preserved and regenerated for the well-being of rural people especially tribals. This particular study is based on a tribal women welfare society spreading across 56 tribal habitations in Tamil Nadu State of India.

1.0 Introduction

A large number of rural enterprise activities generate employment to provide sustainable incomes to the rural families including scheduled castes (SCs) and scheduled tribes (STs), who are poorest of the poor in the Indian context.

Rural industries sector attains lot of importance in the context of liberalisation, privatisation and globalisation (LPG) as it has the capacity not only to generate employment but also to earn foreign exchange through the exports (Gangi Reddy 1998). Further, it is this sector that can strike a balance between the industrial development and environmental concern as they depend on locally available natural resources. Hence, it is considered as an important and prospective sector for sustainable development. Increasing industrial activity based on natural resources has caused large-scale depletion of raw material base for rural microenterprises. There are several attempts by different state agencies to facilitate generation and supply of raw materials for selected enterprise activities. However, availability of the same in terms of quantity, quality, cost and timeliness is the serious concern for the viability and sustainability of microenterprises in the context of increasing competition in the market.

Keeping in view of the problem of availability of raw materials and the increasing demand for natural products, it is necessary to focus the policy attention on resource generation for microenterprise promotion. Natural resource management attains lot of importance in the context of microenterprise promotion. Involving local people in the

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entire process could help in empowering the people on the one hand and improving the economy on sustainable basis on the other. Accordingly the present study is taken up in Tamil Nadu State (India) where primitive tribal groups (PTG) namely IRULAS are involved in creating an environment for empowerment of tribal women based on their indigenous knowledge and skills. The purpose of the study is to understand the process involved so as to derive certain policy implications for empowerment of tribal people, who are very rich in indigenous knowledge and skills, which are nature friendly and facilitate sustainability of rural livelihoods.

Medicinal plants are one such area that requires the attention of development administration for working out various strategies for strengthening of rural livelihoods. A large number of people, especially the poor, in different regions including tribal areas depend primarily on collection, processing and commercialisation of natural resources (medicinal plants) for their livelihood support. It is understood that there is immense scope for employment generation in this very sector as it need to be properly utilised with out much scope for exploitation by others. It is also necessary that they need to be commercialised and expand the area of cultivation of these resources to enhance the production base. These plant species are also considered as endangered species, which need to be preserved and regenerated for the well being of rural people especially tribals.

2.0 Objectives

The following are the major objectives of the present study:

- i. To study the entire process of Irulas participation in the creation of livelihood opportunities for their empowerment.
- ii. To understand different stages of enterprise management and adoption of technology for enhancing marketing of herbal medicine.
- iii. To derive certain policy implications including the institutional mechanism, indigenous knowledge and skills for strengthening natural resource base for sustainability of microenterprises as well as empowerment of tribals.

3.0 Study Area

The study area includes the entire network of Irula Tribal Women Welfare Society (ITWWS) spreading into 56 tribal habitations in and around Kancheepuram District. The focus of the study is on cultivation and processing of medicinal plants by the aboriginal people (IRULA tribes) of Tamil Nadu. Primary source of information for the study was limited to the members of ITWWS, who could establish organic links with the large number of tribal families. Irula Tribal Women Welfare Society (ITWWS) has been identified for the case study keeping in view of its significant and long standing contribution in this field for the empowerment of Irulas. Case study method has been adopted to understand various dimensions and strategies adopted for the microenterprise promotion through the cultivation, collection and processing of medicinal plants.

Primary data are collected through group discussions, participant observations, interactions with the members and staff of ITWWS, members of self-help groups (SHGs) and leaders of SHGs. Discussions were also held with different stakeholders including government officials, scholars working on herbal medicines etc.

4.0 Brief Profile of IRULA Tribes

Irulas are one of the major tribal community and semi-nomadic group. The Irula tribal people who are spread over a vast area of Northern Tamil Nadu were initially a hunter-gather group depending on the forest for their everyday needs. They are landless labourers, a very low economic group, have a low participation in politics, and follow their traditional culture.

The culture of the Chinglepet Irula tribe is the unique, special and interesting one. The Irulas were hunter-gathers, and they moved place to place for their everyday needs. Equality is very important among the Irual community in all the aspects such as: hunting, sharing, eating, singing, dancing, even in gender, and other activities. Traditionally they have been worshipping Kanniyamma (goddess), a version of Parvathi wife of Lord Shiva. They have their own Irula marriage system, which is even today they are following. They all get together and worship Kanniyamma in beach, which is called Masimagam festival. This is happening even today. Their special arts are different from others and very exciting. They have their own folk drama and dances such as: Chenjudha-attam, Theepanthattam, Kombattam, Chedi Kuchattam, Puliyattam, Silambattam, samiyattam, Irula folk songs and hunting dramas. Every year they celebrate Kanniyamma festival in their own hamlet, which is called Koolvartal. During this festival, they all do dancing and singing. During this kind of festivals, they teach all their talents to their younger generation. They have special talent that is fortune telling; in local language it is called 'Kuri solluthal'. Even today one or two people are doing this in each village. Their folk music has different sounds, which makes every body to dance.

Total population of the Irulas is about 56,000 who are spread over in Kancheepuram and Thiruvalluvar districts. This is second largest tribal community in Tamil Nadu. Irulas are not living on the hills but depended on forest for their traditional activities. Some time back they depended only on the forest. But now for all kind of social, economical and political needs, they have to interact with other sections of the society. Irulas villages are mostly situated near the forest as separate hamlets with an average population of 10 to 25 families. They are in-between the villages and forest. In all the families both wife and husband earn and look after the children. In some families both drink liquor. He or she can leave the first spouse and get married to another. The children are looked after by any one of them.

Large number of Irulas still depend on minor forest produce (MFP) for their livelihood. The rest are landless agricultural labourers who get seasonal work and are at the mercy of landlords and estate owners. Wages are often much lower than stipulated under the Minimum Wage Act. The Irula people work as landless agricultural labourers, road workers, well diggers, bonded labourers in rice mills, daily paid workers in brick industries, house workers, and forest workers. There are several cases of bonded labour both reported and unreported that have been facilitated in release of such cases by local NGOs, during the recent times, from rice mills with the support of District Government. The Wildlife (Protection) Act of 1972 includes several common and widely used species such as pond turtle (*Lissemys punctata*), thus denying the Irulas one of their few protein sources. They shift their families in search of employment. Alcoholism is a serious

problem among all *adivasi* groups as they are forced to consume commercial ‘country liquor’ (sarayam) in the absence of their traditional preparations.

The Irula *adivasi* groups have comprehensive systems of herbal medicines. But they are under severe constraints to access these species in the event of Wildlife Act. Irula *vaidyars* (traditional healer) are consulted by non-Irulas on their herbal medicines, which are used for both curative and preventive purposes. Irulas dais (midwives) are popular and in great demand in health centres.

5.0 A Brief Profile of Irula Tribal Women Welfare Society (ITWWS)

Irula Tribal Women’s Welfare Society (ITWWS) is established in 1986 to document the traditional knowledge of the Irula tribe for the empowerment of Irula women. The ITWWS initiated the forest resource protection and livelihoods development programme among the Irula tribe women by promoting traditional skills and indigenous knowledge in 56 *adivasi* villages of South India. The ITWWS promotes the Irula community’s involvement in forest regeneration and encourages them to collect non-timber forest produce in a sustainable manner.

The society is engaged in a variety of forest-based enterprises and activities including conservation, production, and sale of herbal products such as herbal teas, shampoos and medicinal preparations. The organisation has programmes involving herbal doctors and traditional medicinal practitioners in an effort to address women’s health problems. The society also provides training and forums on important socio-economic, gender and legal issues affecting the Irulas. Presently, the collection of herbal raw materials and preparation of herbal products support about 750 Irula families.

The members gather different herbal raw materials, cleaning and drying them before grinding. These end-products include herbal teas, natural shampoos and other general health herbal preparations. Around 26 products are made at present, among which 12 are sold; the rest are used at the base. In addition, natural honey, eco-friendly containers made out of palm leaves, bamboos and grasses are also sold at exhibitions and outlets. This is an example of creating and sustaining an economic opportunity of a forest-based enterprise that supports ‘dignified life for the Irula community without losing their indigenous identity’.

As a part of the forest resource protection, Society organises regular environment educational awareness programmes for the public and for school children, encouraging the youngsters to learn herbal medicinal knowledge. Also the Society ensures community participation in forest regeneration through street plays, exposure, seminars, workshops and poster campaigns. The Society distributes free seedlings to farmers and encourages them to create agro-based tree plantations.

The Irula Tribal Women’s Welfare Society (ITWWS) has organised a National conference on *indigenous people* at their campus in Thandarai village in Kancheepuram district during 9-10 December 2002. Delegates of the conference were astonished to witness the display of about 100 varieties of herbs and herbal products at the exhibition organised by the society. ITWWS was started by the people who had worked with this unique hunter-gatherer tribe for many years and their activities include documenting Irula

knowledge of medicinal plants, tree planting on private and public lands, preparing and selling herbal teas, shampoos and other natural products. Besides, the society took up several programmes for empowering Irula women through cultivation, processing and marketing of herbs and herbal products.

6.0 Discussion and Analysis

The discussion and analysis has been done on the basis of the intensive field study, keeping in view of the objectives of the present study and the significance of ITWWS in promoting cultivation, processing and marketing of medicinal plants as part of sustainable livelihood for the primitive tribal group (IRULA) of people in Tamil Nadu State.

6.1 Tribes and herbs

Traditionally people in rural areas are used to depend more on herbal medicines as part of their health management. However, the dependence on allopathic medicare has been increasing even in rural areas. Tribal population is still depends on herbal medicine for their day-to-day health problems. There are few tribes and tribal areas, where they still predominantly depend on herbal medicine. This is primarily due to their access to forest, which is the prime source of all medicinal plants.

Irula is one of the primitive tribes of Tamil Nadu State, whose primary activity is the collection of medicinal and herbal plants and snake catching. India Wild Life Protection Act 1972 has created lot of problems for the livelihood of Irula tribes. Agitation against the above act led to the formation of Irula snake catchers' society, where the Irulas are given licences to catch the snakes in and around forest areas. Further, they were put to lot of harassment both by the Forest Department and police. In order to enjoy the rights of tribal people, Irula women society has been formed in 1986. Taking the advantage of wasteland development programme, the ITWWS has been involved in the tree plantation as part of environmental education.

6.2 Irulas and ITWWS

Since then ITWWS has taken up several awareness programmes on environment, forestry, herbal medicine, conservation of indigenous knowledge and non-forest produce with the help of government and non-governmental programmes. As part of the same movement, ITWWS could acquire 14 acres of private land to develop man-made forest in a dry land. The society had an action plan for 25 years for the preservation, cultivation, collection and processing of medicinal plants as part of forestry programme as well as livelihood programmes. Irula tribes in general and women in particular are the good knowledge base for medicinal plants.

6.3 Irula women and herbal products

One of the main efforts of the Irula's women is the production of natural herbal products. A dedicated team of vaidyars from the members of the Irual tribe is involved in the processing of raw materials gathered by Irula men and women from the near by forests and other fields. There are many items are produced as first phase from soul soothing teas to natural hair-care products and general health powders; there is something to

revolutionise people's lifestyle. ITWWS has broadly categorised different herbs into three main groups. They are: a) Herbal Hair-care products; b) Herbal Teas (Yellowcassia Tea, Redrosa Tea, Mupatena Tea, Family Tea); and c) Herbal Remedies. Details of all these herbs and species are presented in Appendix-1.

6.4 Herbal products and national perspective

There are several advantages of these herbal plants and species not only for tribal people who cultivate, collect, process and use these for their well-being but also for the society at large as the best preventive and curative health management systems. The herbal medicine has been emerging as important livelihood opportunities for large number of people both in rural and urban areas. The advantages could be perceived from different angles. The following are some such aspects explained in detail:

Socially: Rural/tribal population living near the forest uses natural products as economic support for their livelihood needs. It has not only the absolute value of the natural product, but also the proportion of natural products in the income of rural people that is important. This profession promotes social life of the rural/tribal people. And also it promotes people's participation in conservation.

Environmentally: The development of natural product enterprises can alleviate threats to biodiversity by providing alternative income sources from the natural forests. People are able to use from forest collections as herbal raw materials for further processing. They are also involved in wasteland development as well as in conservation of forest and other natural resources. Management of natural resources for future generations has been the unique feature of the tribes in general and Irulas in particular.

Economically: Market growth for natural products in local and export markets generates interest in policy initiatives that support sustainable economic growth. Rural and tribal women are able to derive benefits from these products for their economic well-being. It is experienced that economic independence of the poor could assure the sustainable empowerment process.

Culturally: Important cultural aspects of tribal people is to keep up relationship with the nature (forest) that not only generates resources but also gives support to protection and promotion of their indigenous knowledge serving the wider community. The traditional culture and healing systems motivate their talents and also support them in gaining self-confidence in their overall development.

6.5 Experiences of Irulas in herbal medicine

The Irula women's SHGs federation is very active through ITWWS. It is reported that they have around 350 regular customers at Thandarai itself and around 1500 customers are attracted through their sales outlets and shops in and around Kancheepuram. Their specific customers are residing at Thirukalukundram, Mahabalipuram, Kalpakkam, Chingleper, Chennai, Tambaram, Kodaikanal, Trichy, Madurai, Salem, Kancheepuram, Bangalore, Mysore, Visakhapatnam, Hyderabad, Kolkata, Warangal, Delhi, London, France and some other areas. Continuous and increasing demand for these products has

not only facilitated their employment opportunities but also their confidence levels in strengthening the efforts of ITWWS.

It is observed that the raw materials are supplied by about 750 Irula families spread in nearly 56 villages to the Thandarai herbal processing centre. The same has become an important source of income to all these families. Traditional knowledge is recognised, tribal identity is increased, nature and organic food products are popularised, and tribal women's self-confidence is increased. It is learnt that the focus on further development of this activity would create a greater impact among the Irula tribal community on their social and economic sectors.

6.6 Supply of raw herbs

While understanding the dynamics involved in the market from the demand side, it is necessary to assess the extent of supply of medicinal plants and herbs for processing in terms of quantity, quality, cost and timeliness of the same. Following are some such aspects discussed based on the data collection and interactions with Irulas and members of ITWWS:

6.6.1 Quality of herbs

The quality of herbs must be maintained during processing into the herbal medicine form. While the traditional women do it at the individual level, they may not be very particular about maintaining quality of herbs in the formulation. However, it becomes essential in the context of processing the same medicines under the supervision of medical doctors as they can prepare the medicines scientifically. Apart from the supervision of medical doctors, the medicines are being marketed in the open market, where these products face competition as there is increasing demand for the herbal medicare.

Recognising the need for quality of herbs and plant materials, ITWWS has developed a central nursery of all medicinal plants so as to ensure proper plantation, growth and yield of medicinal value from the plants. Accordingly, the members of SHGs have not only been exposed to varieties of such species but have also been trained at ITWWS. Training is also given to all the members of SHGs and other men on the collection of seed. Quality of seed is equally important in the context of developing central nursery. ITWWS attaches lot of importance to the seed collection so that the rest of activities could easily be managed to maintain the quality of raw materials.

Further, it is observed that ITWWS is very clear about various activities that are required to ensure quality of medicinal plants. They include: a) Seed collection, b) Maintenance of nursery (green house technology), c) Cultivation and collection of plants (organised and wild), d) Harvesting, e) Processing (conversion of traditional knowledge into value addition), f) Grading and packaging, and h) Marketing (retail and network of customers). The society as well as every member of SHGs make every effort to ensure quality at every stage of the activities. Majority of them are well trained on various aspects of their life, life style, livelihood and their own potential in terms of their knowledge and wisdom.

6.6.2 *Quantity of raw herbs*

Given the context of depletion of forests and its resources during the recent past, availability of raw materials is equally important. Increasing consciousness of natural health care practices has created lot of demand for herbal medicines. Increasing demand for herbal medicines on the one hand and decreasing forest resources on the other has led to a different paradigm. Hence, there is a need to promote organised cultivation of forest based herbal species so as not only to meet the demand but also to generate employment opportunities for the rural poor, particularly tribes (Irulas) whose traditional occupation has been the collection of forest produce for their livelihood.

Accordingly, ITWWS has systematically started encouraging these Irulas, particularly women to realise the need for cultivation apart from collection from the forest areas. Cultivation of medicinal plants becomes an important economic, social and cultural activity of these women. Keeping in view of the need for this activity, ITWWS has taken up several programmes to bring awareness among these families so as to inculcate the habit of cultivating these plants as part of their livelihood support. Centuries together they have been collecting them from the forest to use them as medicine. Now they are cultivating and collecting the same as part of their income generation activity (IGA). This has been encouraged to make these plants available for further processing so as to generate both employment and value addition. There are several programmes both by governmental agencies such as DRDA and Agriculture Department and non-governmental organisations to facilitate the rural poor to take up cultivation and processing of medicinal plants.

ITWWS has attempted to converge the efforts of both government and NGO to encourage Irula women, who are organised into SHGs, to take up cultivation and processing of medicinal plants in about ten villages. ITWWS has already organised Irual women into SHGs for the last several years as part of their own development interventions. Keeping in view of the immense potential that these groups have in terms of their traditional knowledge on herbal medicines, the training by ITWWS, and organisation of SHGs, DRDA has come forward to collaborate with the efforts made by ITWWS. Accordingly, three SHGs have been identified to cover under SGSY credit cum subsidy scheme so as to not only encourage these women to take up the traditional activity as IGA but also for increasing the quantity of raw materials for processing of medicinal plants. ITWWS has promoted three SHGs in Chenneri Village who have been trained on various aspects of cultivation and processing of medicinal plants. All the three groups have been provided with the financial assistance under SGSY with the active support of ITWWS, which has already created necessary support to take up this activity on commercial lines. It is observed that the cultivation is taken up in different locations including their small farm lands, farm boundaries, forest boundaries, common lands and kitchen yards, but the processing activity is taken at ITWWS, where the necessary infrastructure and scientific advice is available.

Based on the experience gained with this limited number of SHG women involved in cultivation and processing of medicinal plants, it is proposed to have a special project under SGSY special projects. It is understood that the Ministry of Rural Development has already sanctioned the project to cover all the 26 villages, 29 SHGs and 347 members to

be covered so as to promote the entire belt of Irulas into a medicinal plant cluster. It is also proposed to create necessary training, processing and marketing infrastructure to benefit all the tribals and increase the quantity of medicinal plant materials for medicines.

6.6.3 Cost of herbs

It is observed that these Irula women have never looked at these resources as an economic proposition. Hence, the cost of raw medicinal plant materials is not a problem at all. It is also observed that all those who cultivate these materials are also involved in processing activity. An attempt is made to add value to these materials. The following is a brief account of cost of certain materials valued in these villages. The values are calculated per kilogram of materials.

Table 1: Cost of Some Materials in Villages

<i>Sl. No.</i>	<i>Name of plant materials</i>	<i>Cost per kg (Rs.)</i>
1	Tulasi	15.00
2.	Musumulu	15.00
3.	Boneshakthi	100.00
4.	Keeranelli	65.00
5.	Manja Kalisara	20.00
6.	Nannari	80.00-100.00

The materials are collected not only from all the members of SHGs but also from other villages and women who could access the forest and collect. The same rates are offered to any one who supplies the materials.

6.6.4 Timeliness in supply of raw material

It is equally important to make the materials available on time so as to extract the physical values of medicine apart from realisation of financial values to the production process. Hence, an attempt is made by ITWWS to ensure timely supply of raw materials at the processing location. Necessary training is also given to some of these women as how and when to harvest so as to realise the total value from the plants.

6.7 Marketing arrangements of the herbal products

ITWWS has got lot of experience in marketing of herbal products. Presently they are selling these herbs in their four retail shops at Mamallapuram, Vedanemmeli, Kodaikanal and Thandaria. Apart from these retail shops they are able to participate in exhibitions that are organised by DRDA, private people and through other NGOs. As part of Special project under SGSY, it is proposed to have shops in Chennai, Bangalore and New Delhi. Attempts are made to explore the opportunities for exporting these products. In order to facilitate this process, ITWWS could get the licence from Drugs Comptroller in the year 2005. This could bring lot of changes in their marketing strategies with a tie-up arrangement including TRIBES Shops and Khadi Gramodyog Bhavans apart from large number of private showrooms.

Table 2: Price List of Selected Herbal Products

<i>Name of herbal product</i>	<i>Price (Rupees per 100 gm)</i>
Mooligai haircare products	
1. Green shika/Kumalan	28.00
2. Roshika conditioner	30.00
3. Hilshika hair tonic	23.00
4. Cashika shampoo	13.00
Natural herbal teas	
1. Yellowcassia	100.00
2. Redrosa	130.00
3. Mupatena	28.00
4. Family tea	28.00
Irula herbal remedies	
1. Amardice	33.00
2. Good-bye sugar	58.00
3. Bonesakthi	80.00
4. Irulasakthi	48.00

In view of the increasing market for these products, it is necessary to exploit the opportunities available for sustainable development of rural people including tribes. While trying to identify the potential areas for exploitation it is to be kept in mind that any natural resource has got a limit. Hence, there is a need to pay attention on the regeneration of these scarce resources. There are several organisations and departments both government and non-government trying to implement several programmes and schemes not only to protect these resources but also to regenerate some of them wherever it is possible. Programmes for cultivation of medicinal plants are one such area, which is identified as one of the five priority sectors of Planning Commission. An attempt is also made to integrate various sectoral programmes and achieve the convergence of different agencies so as to derive at logical conclusion.

The present study is one such attempt to take stock of different interventions so as to identify appropriate institutional mechanisms that could make a dent in augmenting the supply of raw materials for sustainable microenterprises development. In order to draw certain broad conclusions, the experience of Irulas has been identified, which is one of the successful models, where an attempt is made to integrate the efforts of not only government but also Irulas themselves and NGOs.

6.8 Changes in the market for medicinal products

As it is important to cultivate and process the quantum of materials with certain quality to market the same without much difficulties, it is equally important to observe the changes in the market for medicinal products. Only after a thorough understanding of market and the changes taking place from time to time, it can facilitate the marketing of any products including the medicinal plants. While identifying the proper market, it is necessary to establish a trusted link between the producer and the buyer.

In order to encourage farmers to earn higher returns for their land, the research wing of Tamil Nadu Forest Department has facilitated an agreement between the farmers and the exporter of herb that is used in treating liver disorders (Warrier 2002). The department facilitated the deal to envisage the exporters buying 120 tonnes of *Phyllanthus Amarus* for Rs.27.60 lakhs from Tamil Siddhargan Herbal Growers Industrial Co-operative Society, Coimbatore. The members of this society hail from Coimbatore, Erode and Nilgiri District. Since the time the deal was agreed the farmers are able to exploit not only the immense potential that their lands have but also the potential of globalisation.

The thrust of the programme is to further improve the package of practice for the plants of economic importance. The practices already developed, along with quality seedlings, have been passed on to the farmers so that they earn from growing these plants. ITWWS is introducing a few species that could be stabilised for higher recovery. Once the species are stabilised, they will be reintroduced into the wild. They are also trying to link the growers with the programmes of the Indian Medicinal Plants Board, so that more inputs are available for the farmers.

With abundant sunshine and progressive farmers, good economic returns can be obtained from medicinal plants. Through good package of practice and selection, the concentration of active ingredients can also be improved so as to exploit the market potential. The Department of Forest has managed to improve the azadirachtin content to 10,000 parts per million, from *neem*. The average concentration is between 3,000 and 5,000 ppm. The improvement in the concentration of the active ingredient was through good selection and improved seed collection. The Tamil Nadu Government has constituted state-level medicinal plants board as recommended by the Health Ministry, to enable farmers and entrepreneurs to source funds from Centrally-sponsored schemes and to encourage the commercial cultivation of medicinal plants. The Cuddalore District Herbal Plant Growers Association is one step in that direction.

Irula herbal preparations at ITWWS are cent per cent natural, and no chemicals or preservatives taint them. They are based on knowledge passed on through generations of Irula vaidyars. Irula herbal products enable Irula women to earn a livelihood. Raw material is gathered by Irula men and women from nearby forests and scrub lands. The society has helped them to convert this traditional knowledge and skills into an economic activity by involving in processing and marketing. ITWWS could also facilitate special training for selected Irula women in adopting eco-friendly packaging technologies so as to market complete environment friendly herbal medicines

Several important herbs to cure several ailments and diseases like diabetes, piles, jaundice, stomach pain and skin diseases were grown in the ITWWS centre, and the seeds were being sold to the public and to the Forest Department. For example, the herbs *Nagalandhi* and *Sirukurinjaan* will cure snake bite and diabetes respectively, he said.

7.0 Suggestions for Conservation of Herbs and Empowerment of Irulas

The Irulas are natural, manage natural resources and lead natural life. Collection and processing of herbs has been the part of their life for centuries. Based on the experience gained from the Irulas and ITWWS, it is felt that the poor tribal people can be given a new

dimension to their way of life. It is suggested that large number of the poor and tribal people could be organised and trained to realise the inbuilt potential of their indigenous knowledge and skills that will empower them. They need to be organised, exposed and trained on certain aspects of their life, their skills, their knowledge and their access to the medicinal plants. With the help of the agency concerned, the poor can be trained in processing, packaging and marketing of several herbs and herbal products. The experience of several non-governmental organisations is proved to be successful. It is time to take up similar projects extensively as the market for these products is increasing.

The concept of SHGs needs to be strengthened with the help of proper organisational and behavioural inputs combined with certain technical skills so as to avail various support for cultivation processing and marketing of medicinal plants. There are several departments, agencies, institutions and organisations both governmental and non-governmental that are involved in research, training, consultancy and marketing of these products. However, in the absence of coordination among these institutions, ultimate objective of generating raw material base for the production of both herbal medicines and pharmaceutical formulations is not effective. Hence there is a need to establish linkages between the organisations and people's institutions at the grassroots level so as to achieve the regeneration of resources as well as employment generation.

Technology institutions need to be taken nearer to the promoting institutions and the people's institutions such as NGO, panchayat, SHGs and Co-operatives. Integrated approach towards the raw material base and the processing of herbs into value-added products can be fulfilled by integrating the efforts of technical institutions such as CIMAP, Forest Department and Agriculture University and the people's institutions. Continuous interaction between these institutions would help propagate cultivation and processing of these new species and extend necessary technical support to some of these technologies.

Network of various institutions involved in the promotion of cultivation, processing and marketing of medicinal plants would facilitate exploiting the existing potential with an integrated approach. Formation of state level medicinal plants board would help and enable the farmers and entrepreneurs to source funds from centrally sponsored schemes and to encourage commercial cultivation of medicinal plants. Federation of SHGs, formation of district-level associations federating at the state level would further speeder the pace of development of medicinal plants. Network of these intuitions would also facilitate to enter into agreements and tie-ups with government and private organisations for backward and forward linkages.

Massive aforestation and measures to conserve forest coverage would also help regenerate these resources for further exploitation. Collection of herbal seeds, nursery forming, tree planting, forest protection would help strengthen the base for processing of medicinal plants to a large extent. Every activity that is suggested would also generate lot of employment in the rural and tribal areas.

Acquisition of wastelands from government and utilising them for herbal plant cultivation can provide livelihood to the rural women. It can be strengthened by promoting technical

training and skill development through SHGs for effective utilisation of appropriate technologies for the cultivation and processing of medicinal plants.

Encouraging rural households to take up backyard cultivation of selected species of medicinal plants can supplement their earnings and enhance the production of herbal medicine.

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A Brief Account of Herbs and Their Uses for Irulas and Rural People

1) Herbal Hair-care Products

All the products are made with natural ingredients and are 100 per cent organic. The women of Irula tribe who are members of various SHGs, collect these herbal raw materials, and they are practising it over thousand years. These are not included with any chemicals or preservatives. The local brand name and the uses of the herbal products are as follows:

Greenshika/Kumalan Shampoo: This shampoo is made from different herbs. They include *Sapindus emarginatus*, *Hibiscus roas-sinensis*, *Cassia auriculata*, *Lawsonia inermis*, *Ipomoea tridentate*, *Citrus limon*, *Phyllanthus amarus*, *Eclipta Prostrata*, *Vetiveria zizanioides*, *Curuma aromatic*, *Albizia amara* and *Cyperus rotandus*. *Greenshika* is a very good shampoo for long dark hair. This shampoo will cleanse and strengthen hair and is effective against dandruff. *Greenshika* contains a gentle natural dye so that continual use will turn grey hair black.

Roshika Conditioner: The petals and leaves of the *Hibiscus roas-sinensis* (Senbaruthy) are used to produce this conditioner. *Roshika* will leave hair soft, silky and shiny.

Hilshika Hair Tonic: This tonic is made from the leaves of the *Albizia amara* (seeknan). *Hilshika* should be applied to wet hair and is effective in preventing loss of hair.

Cashika Shampoo: This shampoo should be applied to wet hair. Made from the leaves of the *Cassia auriculata* (Avaram), *Cashika* has a cooling effect on the scalp and the body. So it will revitalise as well as cleanse the hair.

2) Herbal Teas

Yellowcassia Tea: Yellow petals of *Avaram* (*Cassia auriculata*) are used for this tea. It has properties that will help to maintain a healthy heart and to regulate diabetes and to stop nausea.

Redrosa Tea: *Redrosa* is made with the petals of the *Hibiscus rosa-sinensis* (Sembaruthi). This tea can be used to cool the body if there is body heat. *Redrosa* is soothing and refreshing; it is very good for blood circulation and will stop excessive menstruation.

Mupatena Tea: The leaves and bark of the *Melothria madraspatena* (Musumusu) are used. *Mupatena* is a very good tea to use for cough, cold and flu and a good decongestant.

Family Tea: The *Ocimum tenuiflorum* (Thulasi) plant is used for Family Tea. This tea is rejuvenating and can be used to cure cold, flu and fever.

3) Herbal Remedies

Solardigest:

Plant used: *Solanum trilobatum* (Thuduvelai)

Used for: Indigestion, the common cold and an increasing appetite. One teaspoon taken with honey will be effective in curing the above.

Amardice:

Plant used: *Phyllanthus amarus* (Kizhanelli)

Used for: Jaundice, swelling of the abdomen, swelling of the heart, fever and hiccough. To cure jaundice, treat with a teaspoon in a glass of water twice a day.

Manjacova:

Plant used: Vycova indica (Manjakarisalanganni)

Used for: Jaundice. Treat with a teaspoon in a glass of water twice a day.

Nallarasar:

Plant used: Scoparia dulcis (Sakkaravembu)

Used for: Stomach Ulcer. It will cure ulcer in the stomach and will stop white discharge.

Supervembu:

Plant used: Scoparia dulcis (Sakkaravembu)

Used for: Diabetes: Taken twice a day in a glass of milk to regulate blood sugar levels.

Goodbye Sugar:

Plant used: Gymnena sylvestre (Sirukurunjan)

Used for: Diabetes. Taken, twice a day to control diabetes for minimum of 48 days.

Pedusakthi:

Plant used: Cardiospermeum helicabatum (Mudakathan)

Used for: Joint aches. Apply on joints for minimum for three days.

Resakthi:

Plant used: Centella asiatica (Vallarai)

Used for: A healthy memory and can be taken twice a day in a glass of milk.

Bonesakthi:

Plant used: Ormocarpum sennoides (Elumbotti)

Used for: Blood circulation and strengthening of bones after a fracture. This will ensure a healthy speedy recovery of a bone fracture.

Pennarasar:

Plant used: Justicia tranquebarensis (Rathapalai)

Used for: Bruising and swelling. For swelling take two teaspoons in a glass of milk twice a day. For bruising make a paste like consistency with the powder and apply on to the bruise.

Kannisakthi:

Plant used: Azadirachta Indica (Vembu)

Used for: Skincare. Used for skin infections.

Welcare:

Plant used: Pungamia Glabra (Pungam)

Used for: To stop dysentery. Two tablespoons in a glass of water will stop dysentery.

Ganasakthi:

Plant used: Cynodon Dactylon (Arugambul)

Used for: BP and take 5 tablespoons in 300 ml of water, leave this overnight and drink it in the morning.

Irulasakthi:

Plant used: Justicia Adhatoda (Adhatoda)

Used for: Asthma. Take two tablespoons in hot water once a day for three to five days.

Man-made Forest: A Case of Biodiversity

A group of *adivasis* who were blamed and changed by Government (Forest Department officials) for their hunting, could build the forest on a plot of 14 acres. This is not rural wasteland development project of spending lot of money in plantations, but a real forest of biodiversity. At the instance of Irula Tribal Women Welfare Society (ITWWS) women folk of Irula, one of the primitive tribal groups of TN started planting a variety of plants since 1990. It became the small and unique bit of forest of about 1000 varieties of tree plants, 300 varieties of medicinal plants, 40 of butterflies, 36 of birds and 12 of snakes. Since Irula tribes of good in identification and adoption of herbal medicinal species, it could become early on the part of ITWWS to motivate and orient them on these lines.

It is not just for the purpose of conservation; it is also for collection and processes of medicinal plants as part of their live birds. Irulas are good in collection of medicinal plants as part of their traditional hunting practices. They collect five leaves out of ten and leave the rest of five for further growth with a perfect understanding of biodiversity.

Fourteen acres of man-made forest has not only become a centre of biodiversity but also for all the Irula tribes of about 56 villages of this region. This is located in Pandrai, a small village near Chengalpattu Town at the distance of 14 kms in Tamil Nadu. The foundation of this forest is 28 Irula women members, who have been associated with the entire process. All the members of society are involved in all the process of activities on 15 day rotation so as to achieve real empowerment on all *adivasis* (tribals).

Practitioners' Papers

Adoption Behaviour of Mango-growers towards Pesticides in Bangladesh

M. M. I. Shah *, M. G. Mostafa** and M. M. Hossain ***

Abstract

The study was attempted to determine: i) the extent of adoption of pesticides in mango cultivation; and ii) the relationships of each of the selected characteristics of the mango-growers with their adoption behaviour of pesticides in cultivating mango. The study was conducted in Sadar Upazila of Nawabganj District and all the mango-growers of this domain were considered population. A sample of 100 mango-growers was selected at random from 12 villages of the selected area. Data were collected from the sample during 10 August to 19 September 2001. The findings revealed that majority (55%) of the mango-growers had 'very low adoption' while 28 per cent of them have 'low adoption' and the rest was not found applying pesticides to their mango plants. Only a little proportion (13-23%) of the mango-growers used pesticides as per recommended dose. Family income and innovativeness of the growers were found to have significant positive association with their adoption behaviour to the pesticides.

1.0 Introduction

Bangladesh is proud to be the native of the king fruit mango (Mukherjee 1949). It is grown in all parts of Bangladesh, particularly in the greater Rajshahi and Dinajpur districts due to the suitable climatic conditions and edaphic factors for quality mango production. It is opined that Bangladesh is a 14th mango-producing country in the world context. Bangladesh produced about 188 thousand tons of mango during the period of 2000-2001 which is almost similar to the production of consecutive last five years (Statistical Pocketbook 2001). Despite the time of commercial farming, a consistent declining trend is found in mango production over time. Insect infestation and disease attacks at the mango plants were reported to be one of the major factors affecting production index of quality mango. It is now estimated that 15362 metric ton pesticides are being used annually in the crop sector of Bangladesh (BBS 2000). Local experts (Block Supervisor working under Department of Agricultural Extension) claimed that farmers are yet to aware of adopting pesticides to the tree crops as they do in field crops. However, the pesticides, which are used by the growers, are not always recommended in terms of brand and dose. Both the actions produced undesired consequences alarming to the environment. Actually, adoption of pesticides at the growers' level is not normally a single, instantaneous act. It is a mental process, consisting of several stages, involving a period of time (Rogers 1983). However, the present study was designed to look into the following specific objectives: to study the extent of adoption of pesticides at the growers' level for mango cultivation; to ascertain the pesticides with doses used in the mango plant;

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and to explore the relationship between selected characteristics of the mango-growers and their adoption of pesticides in mango production.

2.0 Methods and Materials

The study was conducted in Sadar upazila of Nawabganj District. It is famous for varieties of quality mango production. The mango-growers of Nawabganj Sadar upazila were considered as the population of this study. A multistage sampling procedure was followed in selecting sample. The total number of such mango-growers was 246 from which a sample of 100 growers was selected at random using a Table of Random Numbers. The village-wise distribution of the growers and the sample selected are shown in Table 1. The researchers themselves collected data through personal interviews with the help of interview schedule having both open and closed form questions after rapport development from door to door visit. The entire process of collecting data took place during 10 August to 19 September 2001. Appropriate scales were developed to operationalise some of the characteristics of the mango-growers. The statistical measures such as range, mean, standard deviation, percentage used to describe both the independent and dependent variables. To find out the relationship of selected characteristics of the mango-growers with their knowledge on mango cultivation, Pearson's Product Moment Co-efficient of Correlation was used. Five-per cent (0.05) level of probability was used as the basis for rejection of any null hypothesis.

Table 1: Distribution of Population and Sample of Respondents in Selected Villages of Nawabganj Sadar Upazila

<i>Name of unions</i>	<i>Name of villages</i>	<i>Number of mango-growers</i>	<i>Number of mango-growers included in the sample</i>
Baliadanga	Noshipur	22	10
	Chalkchagru	14	7
	Palsa	12	4
	Shirumpur	14	5
	Baliadanga	25	9
	Jambaria	17	8
	Durgapur	12	3
Gobratola	Chapai Mohespur	15	7
	Gobratola	25	12
	Mohipir	22	11
Moharajpur	Moharajpur	38	16
	Krisnogabindapur	30	8
Total	12 villages	246	100

3.0 Measurement of Adoption of Pesticides

Pesticides adoption score was determined on the basis of extent of individual use of pesticides against important insects and disease pests of mango plants. For operationalising the pesticides adoption score, following 5-items 5-point rating scale was practised:

<i>Pesticides dose used</i>	<i>Weight assigned</i>
As per recommended dose	4
20% deviation (\pm) of recommended dose	3
40% deviation (\pm) of recommended dose	2
More than 40% deviation (\pm) of recommended dose	1
No use	0

Thus, the total score for the use of pesticides of a mango-grower was calculated by adding his/her scores obtained against the pesticides he/she used during last five years. Transcendentally, the score could range from 0 to 36, where zero indicates no use of pesticides and 36 indicate use of pesticides as per recommended dose.

4.0 Findings and Discussion

It is an undeniable fact that individual's behaviour is greatly influenced by his inherent characteristics. And as such it is quite likely that individual's knowledge on mango cultivation is likely to be influenced by his characteristics. Considering this view in mind, some selected characteristics of the mango-growers were ascertained and described. The basic statistical values in respect of the individual characteristics have been presented in Table 2.

Table 2: Characteristics Profile of the Mango-growers with Basic Statistical Values
(N=100)

<i>Characteristics</i>	<i>Scoring method</i>	<i>Categories</i>	<i>Grower</i>		<i>Mean</i>	<i>Standard deviation</i>
			<i>Number</i>	<i>Percentage</i>		
Age	Number of years	Young (27-35)	15	15	53.01	14.197
		Middle aged (36-50)	28	28		
		Old (>50)	57	57		
Education	Year of schooling	Illiterate (0)	5	5	7.95	5.109
		Can sign only (0.5)	21	21		
		Primary (1-5)	6	6		
		Secondary (6-10)	36	36		
		Above secondary (above 10)	32	32		
Family education	Year of schooling	Very low education (0.3-4)	14	14	7.59	2.79
		Low education (4.4-6.8)	22	22		
		Moderate education (7-9.8)	42	42		
		Higher education (above 10)	22	22		
Family size	Number of member	Small (1-4)	20	20	6.32	2.15
		Medium (5-6)	36	36		
		Large (above 6)	44	44		
Farm size	Area in hectare	Small farm (0.13-1.13)	14	14	3.159	2.178
		Medium farm (1.14-3.27)	48	48		
		Large farm (above 3.27)	38	38		
Family income	Thousand (Taka)	Low income (15.80-60)	24	24	135	101.97
		Medium income (60-100)	21	21		
		High income (above 100)	55	55		
Innovativeness	Scale of score	Low innovative (14-35)	56	56	35.02	10.425
		Moderately innovative (36-60)	42	42		
		Highly innovative (above 60)	2	2		
Cosmopoliteness	Scale of score	Low cosmopolite (<0)	33	33	10.59	2.91
		Moderately cosmopolite (10-14)	57	57		
		Highly cosmopolite (above 14)	10	10		
Extension contact	Scale of score	Low extension contact(10-15)	52	52	15.55	4.78
		Medium extension contact (16-25)	46	46		
		High extension contact (above 25)	2	2		
Organisational participation	Scale of score	Low participation (2-9)	50	50	13.38	11.791
		Medium participation(10-20)	31	31		
		High participation(above 20)	19	19		

5.0 Adoption of Pesticides

Pesticides adoption scores of the mango-growers ranged from 0 to 14, the average being 5.59 and the standard deviation 3.28 against the possible range of 0 to 24. On the basis of these scores, the mango-growers were classified into four categories: 'no adoption' (0), 'very low adoption' (up to 5), 'low adoption' (6-11) and 'medium adoption' (12-14). The distribution of the mango-growers according to their adoption of pesticides is shown in Table 3.

Table 3: Distribution of Mango-growers According to Their Extent of Adoption

<i>Categories</i>	<i>Growers</i>		<i>Mean</i>	<i>Standard deviation</i>
	<i>Number</i>	<i>Percentage</i>		
No adoption	7	7	5.59	3.28
Very low adoption	55	55		
Low adoption	28	28		
Medium adoption	10	10		

Data contained in the Table 3 indicate that majority (55%) of the mango-growers had 'very low adoption' of pesticides in their mango plants compared to 28 per cent of them having 'low adoption' and 7 per cent 'no adoption'. A proportion of 10 per cent of the mango-growers had 'medium adoption' of pesticides meaning that these growers used pesticides moderately deviating from the recommended doses. Thus, almost all the mango-growers adopted pesticide-practice to the extent of 'very low to low'.

6.0 Pesticides and Doses of Application

As regards to doses of application of pesticides, the growers used different types of pesticides at varying doses for controlling diseases and insect pests of their mango trees. The pesticides that were used by the growers were: Sevin, Ripcord, Fenfen, Cymbush, Marshal and Dithane M-45. The major pest against which their pesticides were used included: mango hopper, mango fruit fly, mango fruit weevils, anthracnose and die back. The distribution of mango-growers according to their doses of using pesticides is presented in Table 4.

The majority (79%) of the mango-growers used Sevin, 66 per cent used Ripcord, and 55 per cent Fenfen. Cymbush, Marshal and Dithane M-45 were used by comparatively less proportion of mango-growers- 38 per cent, 36 per cent, 13 per cent, respectively. The proportion of mango-growers using these pesticides as per recommended doses varied from 13 to 23 per cent of those who used pesticides (Table 4). Other used in deviation (\pm) from the recommended dose to the extent of 10 to above 25 per cent.

Table 4: Distribution of Mango-growers According to Use of Pesticides in Mango Trees

<i>Name of pesticides</i>	<i>Distribution of mango-growers using pesticides (Number and Percentage)</i>						<i>Name of important insects and diseases</i>
	<i>Recomm- ended dose</i>	<i>10%(±) deviation</i>	<i>25%(±) deviation</i>	<i>>25%(±) deviation</i>	<i>Total users</i>	<i>Non- user</i>	
1	2	3	4	5	6	7	8
Sevin	9 (11)	13 (16)	33 (42)	24 (31)	79 (100)	21	Mango hopper
Ripcord	12 (18)	9 (14)	26 (39)	19 (29)	66 (100)	34	Mango hopper
Fenfen	7 (13)	8 (15)	23 (41)	17 (31)	55 (100)	45	Mango fruit fly
Cymbush	8 (21)	5 (13)	12 (32)	13 (34)	38 (100)	62	Mango hopper
Marshal	6 (17)	9 (25)	8 (22)	13 (36)	36 (100)	64	Fruit fly
Dithane M-45	3 (23)	2 (15)	6 (46)	2 (16)	13 (100)	87	Mango hopper
							Mango fruit weevil
							Mango fruit weevil
							Anthraxnose and die back

Note: Figures in parentheses indicate percentage. Some farmers used more than one pesticide.

7.0 Association of Growers' Characteristics with Adoption of Pesticides

Past researches indicate that certain socio-economic characteristics of the farmers have significant influence on their adoption of improved farm practices. Most diffusion studies analyse only client characters as predictors of diffusion (Rogers and Shoemaker 1971). Ten characteristics of the mango-growers were taken into consideration to explore the association of each with the dependent variable i.e. adoption of pesticides in their mango plants. These persuasive characteristics of the growers viz. age, education, family education, family size, farm size, family income, innovativeness, cosmopolitaness, extension contact, and organisational participation were treated as independent variables. Summary results of the test of co-efficient between the independent and dependent variables are portrayed in Table 5.

Table 5: Correlation Co-efficients (r) between Independent and Dependent Variables (N=120)

<i>Independent variables</i>	<i>Correlation co-efficients (r) with dependent variables</i>
Age	-0.078
Education	0.131
Family education	0.118
Family size	-0.031
Farm size	0.170
Family income	0.230*
Innovativeness	0.214*
Cosmopolitaness	0.113
Extension contact	0.083
Organisational participation	-0.163

Note: * significant at 5 per cent level of probability.

The findings as described in Table 5 represent that only two variables namely, family income and innovativeness had significant association with their adoption of pesticides in mango plants.

8.0 Family Income and Adoption of Pesticides

Correlation co-efficient (r) indicates that family income of the growers had a significant positive relationship with their adoption of pesticides. This information support the findings of Hoque et al. (1988); Singh (1983); Patel and Patel (1973); Rajaguna and Satapathy (1973); and Rajendra (1973) who had stated that income alone with some other characteristics were positively correlated with the rate of adoption. Family income is the most important indicator of the economic status of a farmer. The increased income makes more capital available to them for further investment in new ideas and practices. For carrying out agricultural operations, a grower is to be financially solvent to ensure use of various production inputs. Growers having higher family income are more capable to afford costly inputs like the pesticides, and spray machines. It may be concluded that the adoption behaviour of farmers is influenced by economic factors.

9.0 Innovativeness and Adoption of Pesticides

Innovativeness of the mango-growers had a significant positive relationship with their adoption of pesticides. With regard to big farmers the variable innovativeness was significantly associated with the extent of adoption (Julina et al. 1991). Innovative growers are more dynamic, conscious and have more eagerness towards innovation. High adoption of pesticides among the innovative growers is probably due to the manifestation of their aforesaid behavioural aspects.

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Empowering Rural Women through Skill Formation Training - An Empirical Study of Swarnajayanti Gram Swarojgar Yojana in India

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Abstract

Skill formation on non-farm enterprises has been a major component in the Swarnajayanti Gram Swarojgar Yojana (SGSY). Training on various aspects has been provided to the Swarojgaris (members of the self-help groups mainly women) at the Community Development Block and also at the Gram Panchayat levels. The training programmes suffer from a number of problems ranging from coverage among Swarojgaris, duration, efficacy of such training programmes. The large number of training programmes only indicates that they have 'supply-driven and not 'demand- driven'. Nearly fifty per cent of the Swarojgaris had not been interested in obtaining any training as they may have found that these would not be economically viable. Most of the training programmes have been of farm type rather than of non-farm type. Further, problems encountered after obtaining the training has not been taken into account.

1.0 Introduction

From April 2000 the Rural Development Ministry, Government of India started a new programme called Swarnajayanti Gram Swarojgar Yojana (SGSY) wherein all other programmes had been encapsulated in one. The programme envisages formation of groups preferably with 10 women below poverty line. The members of the group, known as Swarojgaris are provided training for skill formation so that they can start their own non-farm microenterprises. But no study has been made so far in India to indicate how far the training provided has been effective among women for skill formation. If adequate skill formation has been there through training then the women would be empowered to get adequate self-employment from their non-farm microenterprises. The success of training depends on a host of factors, and if these factors had not been given due attention then possibility of any income generation would be negligible.

2.0 Review of Literature

The guidelines for formulation of special projects for skill development of rural youths under SGSY provided by the Inter-Ministerial Group (1999) had recommended that potential trade needs to be identified to give the programme a focused market orientation. Area based skill surveys and labour market scan should be undertaken for proper assessment of demand for various skills. The report had also indicated that in comparison

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to earlier attempts, selection of trade for training should be *demand-driven* instead of *supply-driven*. The beneficiaries who seriously wish to acquire skill in the identified trades and would seek employment in that trade should be considered for selection. The mid-term evaluation of the 10th Five-Year Plan (2005) has also pointed out that ‘training for skill development by the District Rural Development Agencies (DRDA) is found to be inadequate. Almost all the groups need training on improving the quality of their products’. Prior to SGSY, Training for Self-Employment of Rural Youth (TRYSEM) had been another programme of the Government of India where efforts had been made to train rural youths in various trades so that they can earn their living. But Concurrent Evaluation initiated by the Ministry of Rural Development, Government of India (2000) found out that the training programmes had not been *demand-driven*, and the trained persons did not take up occupations as they had been doubtful whether such training would substantially increase their income. In Quick Evaluation of Development of Women and Children in Rural Areas (DWCRA) (2000) initiated prior to start of SGSY, it had been found that nearly half of those received training expressed dissatisfaction with the trainers

As per report of the Comptroller and Auditor General of India’s Report (CAG), Government of India funds under the programme are to be shared between Centre and States in the ratio 75:25. The central allocation earmarked for the states was related to the incident of poverty in the states, besides additional parameters like, absorption capacity (based on past trend in utilisation of SGSY funds) and their requirements. The ministry has also set aside 15 per cent of the funds under SGSY for special project.

The funds available of DRDC had four components- (a) Central share, (b) State share (c) Miscellaneous receipts in the share accrued interest of amounts deposited of banks, and (d) Unspent balance under erstwhile programmes.

The available funds were to be utilised as subsidy on economic activities (60 per cent of SGSY allocation; 55 per cent in case of North-Eastern State), Expenditure on infrastructure (20 per cent of the allocation; 25 per cent in case of the North-Eastern State), training (10%), and creation of revolving fund (10%). But the CAG report had made severe criticism as per follows:

- i. In 26 states and union territories, adequate attention was not given to imparting training to beneficiaries by organising Basic Orientation Programmes and Skill Development Training Programmes as envisaged, though the scheme recognised that for the success and sustainability of self-employment, the required skill to successfully run the enterprise was a pre-requisite.
- ii. Per trainee expenditure exceeded the prescribed norms by Rs.35 to as much as Rs.2240 per day.

Further, Misra et al. (2001) concluded that among other problems such as, credit and marketing facilities, and lack of entrepreneurship, inadequate training has been a major problem to the Swarojagaries.

In view of the above observations, an attempt has been made to know what had been the bottlenecks in providing training to Swarojagaries and problems encountered in

assimilation of training. In view of the above, a study has been conducted in Midnapur (West) District, West Bengal.

3.0 Objectives

In view of the above, the article envisages studying the following aspects among the Swarojgaris:

- i. Extent of skill formation through training; and
- ii. Whether such type of such training programmes do commensurate with the needs and aspiration of the Swarojgaris.

4.0 Sampling Pattern

After formation of SHGs, the Swarojgaris will have to wait for minimum six months to attain Grade-I in order to be eligible for revolving fund and loan. During this time the group would be collecting individual monthly subscription from each member Rs.30.00 per month.

Midnapur (West) had been one such district, where large number of SHGs had been formed. In this district out of 29 Community Development Blocks, only four namely, Kharagpur-I, Jhargram, Chandrakona-I and Garbeta-I, had been declared as Federation Community Development Blocks. Table 1 gives the number of them as Grade-I.

Table 1: Number of Grade-I Self-Help Groups

Sl. No.	C.D. Blocks	Gram Panchayats	No. of Grade-I SHGs
1.	Kharagpur-I	1. Khelar	113
		2. Hariatra	48
		3. Barkola	14
		4. Kalaikunda	41
2.	Jhargram	1. Sapdhara	67
		2. Radhanagar	58
		3. Chandri	21
3.	Garbeta-I	1. Kadra Uttrabil	51
		2. Amkopa	55
		3. Amlagora	20
		4. Kharkusuma	25
4.	Chandrakona-I	1. Laxmipur	19
		2. Jara	24
		3. Mangrul	23
		4. Manik Kundu	128
		5. Manoharpur-I	42
		Total	749

In order to have a complete overview, all the SHGs had been studied by following Participatory Rural Appraisal (PRA) technique. Wherein, Sampadikas (General Secretaries), Koshadhakyas (Treasurers) of each group had been the subject of the exercise. During data collection through PRA technique, the passbook of banks, relevant records have also been checked to verify the accurateness of data. Table 2 gives the

number of Gram Panchayat-wise number of Grade-I SHGs and number of them covered by PRA. Many of the SHGs have not been available for collection of information for various reasons, such as coincidence of data collection with harvesting season of paddy and planting season of potato in Garbeta-I and Chandrakona-I C.D. Block. Some of the inactive SHGs had not been available also.

Table 2: Number of Grade-I SHGs Formed and Number Covered by PRA

<i>Sl. No.</i>	<i>C.D. Block/Gram Panchayats</i>	<i>Number of Grade-I SHGs</i>	<i>Number of Grade-I SHGs covered by PRA</i>
1.	<i>Kharagpur-I</i>	216	191
1.1.	Khelar	113	100
1.2.	Hariatra	48	44
1.3.	Barkola	14	13
1.4.	Kalaikunda	41	34
2.	<i>Jhargram</i>	146	83
2.1.	Sapdhora	67	35
2.2.	Rdhanagar	58	34
2.3.	Chandri	21	14
3.	<i>Garbeta-I</i>	151	69
3.1.	Kadra-Uttarbil	51	26
3.2.	Ampkopa	55	16
3.3.	Amlagora	20	8
3.4.	Kharkusuma	25	19
4.	<i>Chandrakona-I</i>	278	203
4.1.	Laxmipur	19	13
4.2.	Jara	24	12
4.3.	Mangrul	23	20
4.4.	Manik Kundu	128	87
4.5.	Manoharpur-I	42	32
4.6.	Manoharpur-II	42	39
	<i>Total</i>	791	546

5.0 Results and Discussion

The results obtained from the study has been analysed and discussed in the following sections: (a) Swarojgaries provided with training; (b) Swarojgaries provided with more than one training; (c) Duration of training; (d) Type of training obtained; (e) Training needs of Swarojgaries; (f) Training provided to fellow members by trained Swarojgaries; (g) Type of training provided by trained Swarojgaries; (h) Utilisation of training by SHGs; and (i) Reasons for non-utilisation of training inputs.

5.1 Swarojgaries provided with training

For skill development in non-farm enterprises, provision of training to the Swarojgaries has been an important component in the programme. It is expected that at least a significant portion of the Swarojgaries would be trained in different skills. But only 16.67 per cent had been provided with training. The remaining 83.33 per cent of the Swarojgaries had not been provided with any training. At the Community Development

Block level, maximum number of Swarojgaris had been provided with training in Kharagpur-I (28.49%) followed by Garbeta-I (14.62%), Jhargram (10.75%) and Chandrakona-I (7.05%). Details have been given in Table 3.

Table 3: Members Provided with Training

Sl. No.	C.D. Blocks	Number of Swarojgaris		Total
		Provided with training	Not provided with training	
1.	Kharagpur-I	247 (28.49)	620 (71.51)	867 (100.00)
2.	Chandrakona-I	58 (7.05)	764 (92.95)	822 (100.00)
3.	Garbeta-I	37 (14.62)	216 (85.38)	253 (100.00)
4.	Jhargram	33 (10.75)	274 (89.25)	307 (100.00)
	Total	375 (16.67)	1874 (83.33)	2249 (100.00)

Note: Figures in parentheses indicate percentage to total.

This part of the findings has also been similar to Concurrent Evaluation of DWCRA where it has been found that most of the states have been unable to achieve the physical targets in terms of number of youths trained.

5.2 Members provided with more than one training

It is expected that the trained Swarojgaris would be able to start their microenterprises after obtaining training if there has been no flaw in the training programme itself. On the other hand, they should not have either opted for a second or third training programme. Also from the view point of coverage, no one should have been imparted more than one training. But in reality the picture has been different.

Table 4: Members Provided with More Than One Training

Sl. No.	C.D. Blocks	Number of members provided with			Total
		One training	Two trainings	Three trainings	
1.	Kharagpur-I	217 (87.85)	27 (10.94)	3 (1.21)	247 (100.00)
2.	Chandrakona-I	58 (100.00)	-	-	58 (100.00)
3.	Garbeta-I	31 (83.48)	4 (10.81)	2 (5.41)	37 (100.00)
4.	Jhargram	28 (84.85)	5 (15.15)	-	33 (100.00)
	Total	334 (89.07)	36 (9.60)	5 (1.33)	375 (100.00)

Note: Figures in parentheses indicate percentage to total.

In all 89.07 per cent of the Swarojgaris had been provided with one training only. Whereas, 9.60 and 1.33 per cent Swarojgaris had been provided with even two and even three trainings respectively, when it has found even input for one training is difficult to be materialised at the Community Development Block level number of Swarojgaris trained had varied from 84.85 to 100.00 per cent in Jhargram and Chandrakona-I. Proportion of Swarojgaris who obtained more than one training, had been 10.94, 10.81 and 15.15 per cent in Kharagpur-I, Garbeta-I and Jhargram Community Development Blocks respectively. Swarojgaris who got three trainings had been found in Kharagpur-I and Garbeta-I by 1.21 and 5.41 per cent respectively. Details have been given in Table 4.

5.3 Duration of training

In order to impart proper skill in microenterprises training, its duration should have been an important component in the programme. If the duration is of longer, then it could be of on-the-job type. Otherwise it would have been of no use. Duration of training varied as short as from below seven days to as long as six months depending upon the type of training. Of the 397 Swarojgaris trained, a major portion (78.59%) had obtained it for below seven days. The proportion of beneficiaries who obtained training for seven days, one month, two months, three months and six months duration, had been only 6.80, 6.80, 2.52, 2.77 and 2.52 per cent respectively. In the four Community Development Blocks, duration of training had varied from one to the other. In Jhargram Community Development Block, 96.97 per cent of the Swarojgaris obtained training up to seven days followed by Chandrakona-I (94.83%), Kharagpur-I (77.86%) and Garbeta-I (47.73%). Details have been given in Table 5.

Table 5: Duration of Training

(Number of Swarojgaris)

Sl. No.	C.D. Blocks	Duration						Total
		Below 7 days	7 days	1 month	2 months	3 months	6 months	
1.	Kharagpur-I	204 (77.86)	20 (7.63)	25 (9.55)	2 (0.76)	11 (4.20)	-	262 (100.00)
2.	Chandrakona-I	55 (94.83)	2 (3.45)	1 (1.72)	-	-	-	58 (100.00)
3.	Garbeta-I	21 (47.73)	4 (9.09)	1 (2.27)	8 (18.18)	-	10 (22.73)	44 (100.00)
4.	Jhargram	32 (96.97)	1 (3.03)	-	-	-	-	33 (100.00)
	Total	312 (78.59)	27 (6.80)	27 (6.80)	10 (2.52)	11 (2.77)	10 (2.52)	397 (100.00)

Note: Figures in parentheses indicate percentage to total. As some members have trained more than one training, so the total count has increased.

5.4 Type of training obtained

The guidelines for SGSY have envisaged training on only 4-5 key identified non-farm activities in each C.D. Block/Gram Panchayat so that number of enterprises producing a

Table 6: Type of Training Obtained

(Number of Swarojgaries)

<i>Sl. No.</i>	<i>C.D. Blocks</i>	<i>Incense stick</i>	<i>Deter-gent</i>	<i>Pisci-culture</i>	<i>Tailoring</i>	<i>Dairying</i>	<i>Papad making</i>	<i>Phenyl manufac-turing</i>	<i>Chow-mein</i>	<i>Goatery</i>	<i>Sub-total</i>
1.	Kharagpur-I	18 (6.41)	22 (7.83)	39 (13.88)	21 (7.47)	145 (51.60)	5 (1.78)	3 (1.07)	5 (1.78)	4 (1.42)	262
2.	Chandrako-na-I	20 (34.48)	15 (25.86)	-	1 (1.72)	-	10 (17.24)	-	-	1 (1.72)	47
3.	Garbeta-I	6 (13.33)	1 (2.23)	9 (20.00)	-	-	-	-	-	4 (8.88)	20
4.	Jhargram	-	6 (15.79)	-	-	2 (5.26)	2 (5.26)	-	-	9 (23.68)	19
	Total	44 (10.43)	44 (10.43)	48 (11.37)	22 (5.21)	147 (34.83)	17 (4.03)	3 (0.71)	5 (1.18)	18 (4.27)	348

<i>Sl. No.</i>	<i>C.D. Blocks</i>	<i>Sub-total</i>	<i>Paddy Culti-vation</i>	<i>Integra-ted pest manage-ment (IPM)</i>	<i>Orna-mental fish</i>	<i>Poultry</i>	<i>Kitchen garden-ing</i>	<i>Doll making</i>	<i>Mat making</i>	<i>Bari making</i>	<i>Floricult-ure</i>	<i>Total</i>
1.	Kharagpur-I	262	8 (2.85)	8 (2.85)	3 (1.06)	-	-	-	-	-	-	281 (100.00)
2.	Chandrakona-I	47	-	-	-	11 (18.98)	-	-	-	-	-	58 (100.00)
3.	Garbeta-I	20	-	-	-	1 (2.23)	-	10 (22.22)	9 (20.00)	2 (4.44)	3 (6.67)	45 (100.00)
4.	Jhargram	19	-	-	-	3 (7.89)	16 (42.12)	-	-	-	-	38 (100.00)
	Total	348	8 (1.90)	8 (1.90)	3 (0.71)	15 (3.55)	16 (3.79)	10 (2.37)	9 (2.14)	2 (0.47)	3 (0.71)	422 (100.00)

Note: Figures in parentheses indicate percentage to total.

single product could be of substantial in number, Further, the organisation of training programmes should be *demand-driven* instead of *supply-driven*. Accordingly, only few training programmes' needs should be organised.

Instead at the Community Development Block level on 18 different aspects training had been provided. Of which some had been directly related to agriculture and its allied sector viz. paddy cultivation, kitchen gardening, integrated pest management, ornamental fish production, pisciculture, poultry, goatery, dairying, Training on food processing had been imparted like papad, chowmein, bari. Non-farm training programmes had been only on incense stick, detergent, phenyl, doll, mat had been on cottage industries.

Taking all the Community Development Blocks together, 34.83 per cent of the Swarojgaris had obtained training on dairying followed by pisciculture (11.37%), incense stick and detergent both had been individually at 10.43 per cent. In Kharagpur-I Community Development Block, 51.60 per cent Swarojgaris had obtained training on dairying followed by pisciculture (13.88%), detergent (7.83%), tailoring (7.47%) and Incense stick (6.41%). In Chandrakona-I Community Development Block, 34.48 per cent of the Swarojgaris had obtained training on incense stick followed by detergent (25.86%), poultry (18.98%). In Garbeta-I Community Development Block, 22.22 per cent of the Swarojgaris had been trained on doll making followed by mat making and pisciculture both at 20.00 per cent, incense stick (13.33%). In Jhargram Community Development Block, 42.12 per cent of the Swarojgaris had obtained training on kitchen gardening followed by goatery (23.68%) and detergent (15.79%). Thus from the organisation of training programme, it has been reflected that most of them has been not only on agriculture and its allied activities and also *supply-driven* in nature. Details have been given in Table 6.

5.5 Training needs of Swarojgaris

It has been envisaged earlier that most of the training programmes conducted under DWCRA had been *supply-driven* and it was not *demand-driven*.

Thus for the SGSY programme an attempt has been made to know the demand of the Swarojgaris on which they need training. The training which has so far been arranged did not satisfy the needs of the Swarojgaris in terms of the demand and number of trainings to be conducted. The trainings which had been arranged at the Community Development Block level did not choose trainees from all the Gram Panchayats. It may also be possible that all the Swarojgaris had not been able to attend the training due to some reasons. Thus an attempt had been made to elucidate the demand of the Swarojgaris first at the Community Development Block level in the following section in terms of descending order.

Considering all the Community Development Blocks together, maximum proportion of Swarojgaris expressed the demand for tailoring (21.84%) followed by dairying (15.84%), goatery (14.43%) and incense stick (12.01%). The difference in demand could also be noted in the need to introduce new types of training on embroidery (0.45%), puffed rice (2.75%), woolen garments (5.36%), sal leaf plate (4.09%), mushroom (0.27%), vermi-

Table 7: Training Needs of the Swarojgaries

(Number of Swarojgaries)

Sl. No.	C.D. Blocks	Activities on which training needed										Sub-total
		Incense stick	Detergent	Pisciculture	Tailoring	Poultry	Dairying	Papad	Goatery	Embroidery	Puffed rice	
1	Kharagpur-I	87 (11.68)	24 (3.22)	14 (1.88)	120 (16.11)	29 (3.89)	147 (19.73)	18 (2.42)	154 (19.06)	4 (0.54)	18 (2.42)	615
2	Chandrakona-I	73 (15.89)	46 (10.01)	13 (2.82)	107 (23.31)	4 (0.88)	67 (14.60)	8 (1.74)	23 (5.01)	3 (0.66)	11 (2.40)	355
3	Garbeta-I	7 (5.34)	4 (3.05)	2 (1.53)	42 (32.06)	3 (2.29)	18 (13.74)	-	22 (16.79)	-	2 (1.53)	100
4	Jhargram	21 (9.09)	5 (2.16)	-	73 (31.60)	19 (8.23)	16 (6.93)	1 (0.43)	27 (11.69)	-	12 (5.19)	174
	Total	188 (12.01)	79 (5.05)	29 (1.85)	342 (21.84)	55 (3.51)	248 (15.84)	27 (1.72)	226 (14.43)	7 (0.45)	43 (2.75)	1244

Sl. No.	C.D. Blocks	Sub-total	Activities on which training needed										Sub-total
			Woolen garment	Bamboo works	Mat industry	Piggery	Bari	Sal leaf plate	Chowmein	Mushroom	Vermicompost	Biri making	
1.	Kharagpur-I	615	57 (7.65)	12 (1.61)	6 (0.81)	4 (0.54)	9 (1.21)	26 (3.49)	4 (0.54)	3 (0.40)	1 (0.13)	1 (0.13)	738
2.	Chandrakona-I	355	13 (2.83)	21 (4.58)	-	1 (0.22)	14 (3.05)	-	-	-	-	-	404
3.	Garbeta-I	100	7 (5.34)	-	1 (0.77)	6 (4.58)	-	7 (5.34)	-	1 (0.77)	-	-	122
4.	Jhargram	174	7 (3.03)	3 (1.30)	-	7 (3.03)	-	31 (13.42)	-	-	-	3 (1.30)	225
	Total	1244	84 (5.36)	36 (2.30)	7 (0.45)	18 (1.15)	23 (1.47)	64 (4.09)	4 (0.27)	4 (0.27)	1 (0.06)	4 (0.27)	1489

Note: Figures in parentheses indicate percentage to total.

Table 7: Continued

(Number of Swarojgaries)

Sl. No.	C.D. Blocks	Sub-total	Activities on which training needed								Sub-total
			Paper packet	Food processing	Flori-culture	Jari	Candle	Potato chips	Hand loom	Butik	
1.	Kharagpur-I	738	5 (0.67)	1 (0.13)	1 (0.13)	-	-	-	-	-	745
2.	Chandra-kona-I	404	-	12 (2.61)	-	12 (2.61)	3 (0.66)	4 (0.88)	2 (0.44)	7 (1.53)	444
3.	Garbeta-I	122	-	4 (3.05)	-	-	-	3 (2.29)	1 (0.77)	-	130
4.	Jhargram	225	3 (1.30)	-	-	-	3 (1.30)	-	-	-	231
	Total	1489	8 (0.51)	17 (1.09)	1 (0.06)	12 (0.72)	6 (0.36)	7 (0.46)	3 (0.19)	7 (0.46)	1550

Sl. No.	C.D. Blocks	Sub total	Activities on which training needed				Not interested in any training	Total number of members
			Phenyl Manufactur-ing	Copper ornaments	Doll Making	Total		
1.	Kharagpur-I	745	-	-	-	745	291* (33.56)	867
2.	Chandrakona-I	444	1 (0.22)	14 (3.05)	-	459 (100.00)	456* (55.47)	822
3.	Garbeta-I	130	-	-	1 (0.76)	131 (100.00)	158* (62.45)	253
4.	Jhargram	231	-	-	-	231 (100.00)	112* (36.48)	307
	Total	1550	1 (0.06)	14 (0.89)	1 (0.06)	1566 (100.00)	1017* (45.22)	2249

Note: Figures in parentheses indicate percentage to total.

compost (0.06%) and biri (0.27%). In Kharagpur-I Community Development Block, maximum proportion of Swarojgaris expressed their opinion for dairying (19.73%) followed by goatery (19.06%), tailoring (16.11%) and incense stick (22.68%). The new 15 types of training desired had been on poultry (3.89%), embroidery (0.54%), puffed rice (2.42%), woolen garments (7.65%), bamboo works (1.61%), mat industry (0.81%), piggery (0.54%), bari (1.21%), sal leaf plate (3.49%), mushroom (0.40%), vermicompost (0.13%), biri (0.13%), paper packet (0.67%), food processing (0.13%) and floriculture (0.13%). In Chandrakona-I Community Development Block, maximum number of Swarojgaris had expressed their opinion for tailoring (23.31%) followed by incense stick (15.89%), dairying (14.60%) and detergent (10.01%). The new fourteen types of training desired by Swarojgaris had been on dairying (14.66%), embroidery (0.66%), puffed rice (2.40%), woolen garment (2.83%), bamboo works (4.50%), piggery (0.22%), bari (3.05%), food processing (2.61%), jari (2.61%), candle (0.66%), potato chips (0.88%), handloom (0.44%), butik (1.53%) and copper ornaments ((3.05%). In Garbeta-I Community Development Block, maximum need for training had been expressed on tailoring (32.06%) followed by goatery (16.79%), and dairying (13.74%). The new 12 types of training needed by the Swarojgaris had been on tailoring (32.06%), dairying (13.74%), puffed rice (1.53%), woolen garment (5.34%), mat (0.77%), piggery (4.58%), sal leaf plate (5.34%), mushroom (0.77%), food processing (3.05%), potato chips (2.27%), handloom (0.77%) and doll (0.76%). In Jhargram Community Development Block, maximum number of Swarojgaris had expressed their opinion for tailoring (31.60%), followed by sal leaf plate (13.42%), goatery (11.69%) and incense stick (9.09%). The new eight types of training desired had been on incense stick (9.09%), tailoring (36.06%), puffed rice (5.19%), woolen garments (3.03%), bamboo works (1.30%), piggery (3.30%), sal leaf plate (13.42%) and biri (1.30%).

Apart from expressing the demand for training, the Swarojgaris had also expressed their desire for not undergoing any training, and this proportion had also been a sizeable one. Taking all the Community Development Blocks together, it has been 45.22 per cent. When compared by individual Community Development Block level the proportion of Swarojgaris desired not to have any training had been 33.56, 55.46, 62.45 and 36.48 per cent in Kharagpur-I, Chandrakona-I, Garbeta-I and Jhargram respectively. The Swarojgaris had also not been sure of profitability and self-employment potential of this trainings and a meager proportion of SHGs functioning in groups. Details have been given in Table 7.

5.6 Training provided to fellow members by trained Swarojgaris

It has been well established fact that as all the Swarojgaris cannot be trained in skill development so those trained in one or the other trade should further impart training to fellow members within the group or outside the group. This type of training would not only make the training easier and would also save the precious resources of the government. In view of this, the obtained data indicates that only 2.45 per cent of the Swarojgaris had been trained by those already obtained training. Such training had been maximum at Chandrakona-I Community Development Block (3.28%) followed by Garbeta-I (2.37%), Kharagpur-I (2.08%) and the last Jhargram at 1.30 per cent only. Details have been given in Table 8.

Table 8: Trained or Taught by Any Trained Swarojgaries

(Number of Swarojgaries)

Sl. No.	C.D. Blocks	Trained or taught		Total
		Trained	Not trained	
1.	Kharagpur-I	18 (2.08)	849 (97.92)	867 (100.00)
2.	Chandrakona-I	27 (3.28)	795 (96.72)	822 (100.00)
3.	Garbeta-I	6 (2.37)	247 (97.63)	253 (100.00)
4.	Jhargram	4 (1.30)	303 (98.70)	307 (100.00)
	Total	55 (2.45)	2194 (97.55)	2249 (100.00)

Note: Figures in parentheses indicate percentage to total.

Table 9: Type of Training Provided by Trained Swarojgaries

(Number of Swarojgaries)

Sl. No.	C.D. Blocks	Type of training provided						Total
		Pisciculture	Incense stick	Chowmein	Detergent	Goatery	Papad	
1.	Kharagpur-I	2 (11.11)	5 (27.78)	1 (5.56)	10 (55.55)	-	-	18 (100.00)
2.	Chandrakona-I	-	15 (55.56)	-	9 (33.33)	-	3 (11.11)	27 (100.00)
3.	Garbeta-I	2 (33.33)	3 (50.00)	-	-	1 (16.67)	-	6 (100.00)
4.	Jhargram	-	-	-	4 (100.00)	-	-	4 (100.00)
	Total	4 (07.27)	23 (41.82)	1 (01.82)	23 (41.82)	1 (1.82)	3 (5.45)	55 (100.00)

Note: Figures in parentheses indicate percentage to total.

5.7 Type of training provided by trained Swarojgaries

Taking all the Community Development Blocks together, maximum number of trainings had been provided on incense stick and detergent both at 41.82 per cent followed by pisciculture (7.27%), papad (5.45%) and goatery and chowmein both at 1.82 per cent. In Chandrakona-I Community Development Block, though the number of trained Swarojgaries had been more but the type of training had been restricted to three only. Among the three, 55.56 per cent of Swarojgaries had been trained on incense stick, followed by detergent (33.33%) and papad (11.11%). In Kharagpur-I Community Development Block, maximum number of Swarojgaries had been trained on detergent (55.55%) followed by incense stick (27.78%), pisciculture (11.11%) and Chowmein (5.56%). In Garbeta-I Community Development Block, maximum number of Swarojgaries had been trained in incense stick (50.00%) followed by pisciculture (33.33%) and goatery

(16.67%). In Jhargram Community Development Block, all the Swarojgaris had been trained on detergent only. Details have been given in Table 9.

5.8 Utilisation of training by SHGs

When training input was analysed by SHGs, it had given a better picture on individual basis. Taking all the Community Development Blocks together, the utilisation level had been 39.38 per cent. The utilisation level had been in Jhargram Community Development Block at 42.86 per cent followed by Kharagpur-I (40.26%), Chandrakona-I (37.78%) and Garbeta-I (37.50%). Details have been given in Table 10.

Table 10: Utilisation of Training

		(Number of SHGs)		
<i>Sl. No.</i>	<i>C.D. Blocks</i>	<i>Utilisation of training</i>		<i>Total</i>
		<i>Yes</i>	<i>No</i>	
1.	Kharagpur-I	31 (40.26)	46 (59.74)	77 (100.00)
2.	Chandrakona-I	17 (37.78)	28 (62.22)	45 (100.00)
3.	Garbeta-I	9 (37.50)	15 (62.50)	24 (100.00)
4.	Jhargram	6 (42.86)	8 (57.14)	14 (100.00)
	Total	63 (39.38)	97 (60.62)	160 (100.00)

Note: Figures in parentheses indicate percentage to total. As some SHGs got more than one training, so total count has decreased.

5.9 Reasons for non-utilisation of training inputs

It had been observed that different types of training provided had not been very successful as most of the Swarojgaris had been unable to start their microenterprise due to various reasons because training on all the skills had not been uniform at all the Community Development Blocks. On interrogation with the Swarojgaris, it had been found that reasons had varied from one microenterprise to the other. So in the following section reasons for non-utilisation of training input had been ascertained for incense stick, detergent, papad, phenyl, ornamental fish, pisciculture, tailoring, dairying, paddy cultivation, doll, floriculture. The significant reasons have only been presented for not starting the microenterprises in Table 11.

The reasons for non-utilisation of training had differed from trade to trade. The Swarojgaris who obtained training for manufacturing of incense stick had not been interested in production. Non-availability of raw materials locally had been reported for trades like detergent, papad, and phenyl. For phenyl also equal number of Swarojgaris faced problem of marketing of finished products. Being housewives the Swarojgaris had been unable to procure the raw materials from nearby cities and also to market the finished products. Apart from access to city and local markets, often they have been

prevented by their male counterparts. For ornamental fish production, the problem had been scarcity of water. For production of ornamental fish, continuous flow of fresh water is required, and this is possible when there is electrical tube-well. For pisciculture and tailoring, there had been no resources like pond and no tailoring machine with the trainees. Thus before imparting training to the Swarojgaris, it would have been better to ascertain that they have necessary resources of production or it should have been arranged before hand. For dairying the Swarojgaris had just finished their training. Due to time gap in completion of training and availability of finance, a gap in production has been noticed. Training programmes like paddy cultivation, doll making and floriculture training, have been going on.

Table 11: Microenterprise-wise Reasons

Sl. No.	Micro-enterprises	Reasons				
		Not interested in production/ manufacturing	Non-availability of raw materials	Non-availability of raw materials	Non-availability of raw materials	Marketing problem
1	Incense stick	36.36	-	-	-	-
2	Detergent	-	72.97	-	-	-
3	Papad	-	-	78.94	-	-
4	Phenyl	-	-	-	50.00	50.00

Sl. No.	Micro-enterprises	Reasons				
		Scarcity of water	No. pond	No. own machine	Just obtained training	Training going on
1	Ornamental fish	40.00	-	-	-	-
2	Pisciculture	-	73.33	-	-	-
3	Tailoring	-	-	75.00	-	-
4	Dairying	-	-	-	84.00	-
5	Paddy cultivation	-	-	-	-	66.67

Sl. No.	Microenterprises	Reasons	
		Just obtained training	Training going on
1	Doll making	100.00	-
2	Floriculture	-	100.00

6.0 Summary and Conclusion

The findings of the study suggest that number of Swarojgaris trained had not met the targets, and those who obtained it did not further impart the same to their fellow Swarojgaris. As per guidelines of the Government of India, development of skill should be on non-farm microenterprises. But most of the trainings have been on farm enterprises. Number of trainings by type should have been brought down to 4-5 only. The trainings provided at the Community Development Block level had been mostly below seven-day duration. Because of shorter duration, the training programmes could not be of on-the-job type. After obtaining training, most of the Swarojgaris could not produce quality produce, and they had to close down their production unit. If the trainings had been on-the-job type of more duration, the produce could be of quality.

The training provided to the Swarojgaris had mostly been *supply-driven* instead of *demand-driven*. Reduction of number of trainings by types to 4-5 may very well be *demand-driven*. It would be duty of the Community Development Block and Gram Panchayat officials to make the Swarojgaris who have not been interested in obtaining training.

Further, the Swarojgaris being women faced immense problem in procuring raw materials that are not available locally and also in selling of the finished products. If there would have linkages with co-operative societies at the Community Development Block level, procuring of raw materials and selling of finished products would have been much easier. There has also been a time gap in getting the means of production such as land to cultivate paddy, pond to raise fish and sewing machines to produce clothes.

These bottlenecks could have been avoided if the selectors would have ensured before hand that the Swarojgaris have means of production such as land to cultivate paddy and pond to raise fish. Likewise the time gap in availability of sewing machine could be very well reduced if finance would have been available just in time.

Further, for production of ornamental fish, energisation of hand pumps had extremely been essential. If the Swarojgaris would have not been able to assimilate even one training programme, there is no point in providing them with more than one training programme.

Most of the training programmes had been provided without thinking the pros and cons of the difficulties faced by the Swarojgaris. Thus it is expected that the difficulties be taken into account before imparting the training.

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