SOCIAL, ECONOMIC AND HEALTH IMPACT OF THE COMMUNITY BASED INTEGRATED RURAL DEVELOPMENT (CBIRD) PROJECT: AN EVALUATION REPORT

COMMUNITY BASED INTEGRATED RURAL DEVELOPMENT (CBIRD) EVALUATION PROJECT

INSTITUTE FOR POPULATION AND SOCIAL RESEARCH
MAHIDOL UNIVERSITY
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PREFACE

The Community Based Integrated Rural Development Project (CBIRD) implemented by the Population and Community Development Association (PDA) is a four-year project supported by Canadian International Development Agency (CIDA). It commenced activities at Nang Rong District, Burirum Province in 1984. The objectives are to improve quality of life of the rural community and to attack its poverty. The activities conducted by the PDA between 1984 and 1986 included giving training in income generating activities of the people, supporting careers of the villagers for the purpose of an increase of their income, improving health and sanitation, and establishing the mothers' clubs, and fund development through drug funds, rice funds, fertilizer funds, etc.

The CBIRD Evaluation Project (CEP) was set by the Institute for Population and Social Research (IPSR), Mahidol University in January 1984 to conduct an evaluative study of the CBIRD's activities. According to the time schedule, there are three phases of the CEP's implementation. The first phase of the evaluative study - the baseline survey-was undertaken in April 1984, and its report was issued in October 1984. The mid-interval survey, the second phase, was conducted in 1986 and the last phase - the impact survey was implemented in 1988 and its results are presented in this report.

It is hoped that the evaluation of the CBIRD project by the Impact Survey here would be beneficial to the policy makers, development agencies in general and PDA in particular, including the funding agencies and other academicians inside and outside Thailand.

The CBIRD Evaluation Project by IPSR was conducted with the financial support from the International Development Research Centre (IDRC). We wish to express our great appreciation for this most important assistance, especially to such helpful persons as Dr. Jingjai Hanchanlash, Dr. H. Dean Nielsen and Dr. Somsak Boonyawiroj. In addition, we would like to acknowledge the great help and collaboration from the following individuals and organizations including Canadian International Development Agency, Governor of Burirum Province, Nang Rong District Officer, Kamnan, Phuyaiban and population of Nang Rong District. Special thanks are due to present and former personnel of Population and Community Development Association, including Khun Tavatchai Traitongyoo, Khun Pairojana Sornjitti, Khun Paveen Payabwipapong, Khun Vilas Techo, Khun Sophon Siriwong, Khun Rachitta Na-Pattalung, Khun Boonkit Gongthongluk, Khun Dhanai Sunthakul and PDA staff at the CBIRD Center in Nang Rong. The achievement of this four-year project is of course, due to IPSR staff and associated investigators from Mahidol University. I would like to congratulate all of them,

especially our former Director, Dr. Pramote Prasartkul who is also the Director of CEP whose leadership and competence has brought about this great success.

This Impact Survey Report marks the end of the successful four-year effort of the CBIRD Evaluation Project. The activities of CBIRD which aim to improve the quality of life of the villagers do not end. The task of CBIRD still carries on and is becoming more and more sophisticated in order to be able to tackle the poverty problems at a higher strategic level. Many tasks of the evaluation team also remain. Beyond this Impact Survey Report, later and accelerated changes of the socio-economic situation in response to CBIRD, due to the time lag as well as further inputs, are likely to be manifest the near future. We hope that the complete knowledge on the impact of the development project such as CBIRD will be again gathered and presented to the development agencies and interested intellectuals. As this report will show, learning experience and understanding of the factors leading to success, are one of the most important and crucial issues of the development program.

Aphichat Chamratrithirong, Ph.D.
Director
Institute for Population and Social Research
Mahidol University
August, 1988

PROJECT PERSONNEL

(Names are in alphabetical order)

PROJECT ADMINISTRATION

Director	Pramote Prasartkul
Deputy Director	Aphichat Chamratrithirong
Co-ordinators	Buppha Sirirassamee
	Kanchana Tangchonlatip
Treasurers	Aurapan Hunchangsith
	Chutakan Atitananan

PRINCIPLE INVESTIGATORS

Population and Sociology	Aphichat Chamratrithirong
Economics and Agriculture	Boonlert Leoprapai
Health and Nutrition	Yawarat Porapakkham *
Anthropology	Chai Podhisita

DATA COLLECTION

Research Methodology	Aphichat Chamratrithirong
	Boonlert Leoprapai
	Chai Podhisita
	Pramote Prasartkul
	Varachai Thongthai
	Yawarat Porapakkham*
Field Organizers	Buppha Sirirassamee
	Kanchana Tangchonlatip
	Kulwaradda Singha
	Varachai Thongthai
	Yothin Saweangdee

Field Supervisors	Kanchana Tangchonlatip
	Koramas Wuttisuk
	Mali Leunanonchai
	Panee Vong-ek
	Pimonpan Isarabhakdi
	Sirinan Saiprasert
	Sureeporn Punpueng

DATA PROCESSING

	Orapen Buravisit
	Somjai Pramanpol *
	Sureeporn Punpueng

PUBLICATION

Editor	Boonlert Leoprapai
Assistant Editors	Buppha Sirirassamee
	Kanchana Tangchonlatip
	Kerry Richter
	Kulwaradda Singha
Contributors	
Economics and Agriculture	Boonlert Leoprapai
Population and Sociology	Aphichat Chamratrithirong
	Chai Podhisita
	Pramote Prasartkul
Health and Nutrition	Mandhana Pradipasen *
	Rattanaporn Charoenpong *
	Somjai Pramanpol*
	Yawarat Porapakkham*
Anthropology	Chai Podhisita
	Kulwaradda Singha
	Yothin Saweangdee

* Faculty of Public Health, Mahidol University

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EXECUTIVE SUMMARY

1. INTRODUCTION

This report presents findings of the impact study which is the third phase of the evaluation of the Community Based Integrated Rural Development (CBIRD) project. The research used in this evaluative study utilized a "before-after" design involving three phases of study. These phases are the baseline, the mid-interval and the impact study. In each phase of the study, several data collection techniques and research methodologies were utilized to obtain the needed data, such as the census, sample survey, focus group discussion, anthropological study, physical examination and health surveillance. For the purpose of comparison and measurement of the impact of development efforts, data were collected for 10 other villages in addition to the 40 villages selected for implementing development activities. In this type of social action program, it is not desirable or ethical, let alone possible, to prevent the spill-over effects from the target villages to non-target villages in the same area. Consequently, instead of labelling them as "experimental" and "control" villages as have usually been done in this type of evaluative study, they are called project and non-project villages.

The CBIRD project began implementing its development activities in 1984 and has continued up until the present. Its main objectives are to (1) create an increase in household income through the introduction of income generating activities by improving skills and productive capacity of the villagers in terms of agriculture, livestock raising and home industry; and (2) to raise environmental standards and improve health for the general population by introducing more sanitary facilities, increasing year-round availability of clean water and nutritious food, promoting better

health practice and family planning services. A summary of the findings on the impact of the CBIRD project on various aspects of the economic and social life of rural villagers in Nang Rong District, Burirum Province during the four-year period from 1984 to 1988 follows.

2. SUMMARY OF FINDINGS

2.1 Though not directly resulting from CBIRD development activities, a change in the economic and social infrastructure in the rural area where the project and non-project villages are located was observed. Over 90 percent of the project villages are now accessible by either paved or gravel approach road where the corresponding percentage four years ago was only 75. Bus services linking villages and villages with the town center is now available to about 95 percent of the project villages. Electricity is now available to about 65 and 60 percent of the project and non-project villages respectively, a substantial change during the period of four years. A similar degree of change in the percentage of villages having more than 50 percent of households using electricity during the corresponding period was also observed. One of the consequences of the availability and the use of electricity is the increasing percentage of households in these villages possessing certain consumer durable goods and productive equipment, such as television sets and water pumps.

2.2 An improvement in the area of household sanitation in the project and non-project villages was also observed. The percentage of households having access to clean water sources increased substantially during the four-year period. Another noticeable change was the percentage of households having sanitary latrines: a slightly more than three-fold and two-fold increase in the project and non-

project villages respectively. It should be mentioned here that the sanitation improvement in the area covered by the CBIRD project was due primarily to the government's development efforts. Nevertheless, technical and financial assistance to rural households in the form of certain sanitary facilities, such as the rainwater storage tank, giant (large) jar and sanitary latrine, are also one of CBIRD promoted activities.

2.3 Another change which is highly visible was the increase in the number of community development groups, such as the rice and fertilizer funds and the mothers' club, in the project and non-project villages. The extent of change was greater in the project villages than in the non-project villages due primarily to the fact that these groups to perform certain economic and social functions had been promoted by the CBIRD project. The rice and fertilizer funds, for example, were found in 65 percent of project villages and not at all in the non-project villages.

2.4 One of the important changes in the area is the changing pattern of employment opportunities. A substantial increase in the percentage of households having members employed as factory workers is an indication of changing economic structure in the project and non-project villages.

2.5 Against the background of social and economic changes in village profiles, described in 2.1 to 2.4 above, the economic, social, health and nutritional impact of the CBIRD project was assessed.

2.6 An assessment of the economic impact of the CBIRD project showed that there was a change in the percentage of households having one or more members engaging in various types of economic activities. There also emerged a number of farm and non-farm income generating activities which had never been

practiced by villagers prior to the introduction of the CBIRD project. The introduction of farm and non-farm technology and the provision of management, marketing and financial assistance which aims to increase production, create new income generating activities and increase villagers' income in the project villages also benefited villagers in the non-project villages to a certain extent. The training in marketing to villagers showed that they were more skillful in marketing products at appropriate marketing outlets which resulted in a decrease in the percentage of households reported as having marketing problems. Another impact of the CBIRD income generating activities is that there emerged a trend of moving away from a subsistence to a modern economy among households in project villages. The percentage of households reporting being indebted decreased. Villagers were able to borrow from the formal credit institutions which charge relatively low interest rates. The CBIRD project also provides supplier credit at no interest. A higher percentage of households in the project villages also reported that borrowing was for productive investment. The positive impact of CBIRD was also shown in terms of a higher percentage of households now possessing durable goods and productive equipment than before. The most direct and composite impact of the CBIRD project, measured in terms of the increase in household gross income, also showed that average household gross income did increase, although the extent of increase was not as great as expected, due to several uncontrollable factors. One fact which should be observed here is that had there been no CBIRD project, the average household income in the project villages would have decreased. A decrease in an average household gross income was indeed experienced by households in the non- project villages.

2.7 An assessment of the social impact of the CBIRD project, made in various terms such as the extent of villagers' participation in

project activities, and the villagers' adoption of new agricultural technology showed that households in the project villages participate in the CBIRD activities at different levels. Levels of participation varied from moderate to high, depending on the type of activity. Households in the non-project villages can also participate in the CBIRD training on different income generating activities provided, they show strong interest. Such diffusion of the CBIRD development ideas was shown in terms of the presence of development groups in the non-project villages, although they have been promoted primarily by the CBIRD project. The adoption of the CBIRD agricultural technology also showed the varying degree of adoption after receiving the training. The percentage of adoption was higher for income generating activities which are relatively familiar to villagers and those requiring smaller cash investment. There was also evidence of the diffusion of CBIRD ideas and technology among households within each project village and among households between the project and non-project villages. The last social impact which was assessed was the change in household use of home made products. There was indeed a change, arising primarily from the fact that an increase in household products led to the improvement in the level of household consumption.

2.8 An improvement in the health and nutritional status of villagers in the project and non- project villages, measured in various terms did indeed occur. The extent of improvement tend to be, though not always, greater in the project villages than the non-project villages, which also received health development inputs from other government and private sources. The level of contraceptive practice among married women aged 15-49 years in the project and non-project villages was the same, i.e. about 68 percent. An increasing percentage of women in the project and non-project villages received contraceptive services from the government hospital, the maternal

and child health center and the tambon health center. Concurrent with the increasing level of contraceptive practice was a corresponding decline in fertility. The percentage of pregnant women attending the antenatal care clinic increased noticeably, from about 60 percent to 88 percent of pregnant woman in the project villages and, from about 58 percent to about 74 percent of pregnant women in the non-project villages. There was also a change in the percentage of women delivering their children at a more sophisticated health service unit such as a hospital or health center. The percentage of women having the birth of the last child attended by trained health personnel also increased. The percentage of children under 5 years of age receiving a complete dose of DPT and BCG vaccination increased substantially. The extent of change was greater in the project villages where CBIRD inputs were provided than in the non-project villages. Knowledge and practice on nutrition among mother and children under 5 years of age improved considerably. The extent of improvement was again greater in the project villages than in the non-project villages.

2.9 An assessment of opinions of persons directly and indirectly involved with the CBIRD project, such as local villagers who participated in either income or non-income generating activities, government development officials and community leaders, showed favorable opinions on the CBIRD project. The prevailing view was that certain activities which do not require substantial investment and credit may be continued by villages after the termination of CBIRD support. The only less favorable opinion expressed by a certain proportion of those who were interviewed was that certain CBIRD income generating activities may not have benefited the poor households. Reasons given were that the CBIRD project has specified certain financial qualifications which villagers must have before they are eligible for participation. All non-

income generating activities and a certain number of income generating activities which do not entail a large amount of financial investment and a high degree of risk such as duck or native chicken raising and a number of home industries were, however, viewed as benefiting the poor households.

3. CONCLUSIONS AND RECOMMENDATIONS

The fact that villagers' participation in CBIRD promoted income and non-income generating activities is voluntary, as well as differences in villagers interest and availability of resources may have resulted in the different levels of participation. Moreover, the timing which villagers participate in one or more activities also varies. Certain activities require a certain period of time lag before bearing fruit. An evaluation of the economic, social, health and nutritional impact of the CBIRD project has to take this fact into account. Despite a number of constraints, it could be concluded that the implementation of the CBIRD project has benefited a certain percentage of households in the project villages. The benefits may have even extended to households in the non-project villages through a diffusion process. However, the CBIRD model of integrated rural development has just gradually developed towards a more solid ground. Further, with an increasing degree of acceptance of the CBIRD project among villagers and with more experience accumulated by CBIRD's field staff, it is strongly recommended that the CBIRD project should be continued in the same area for a certain period of time. Other recommendations for future implementation of the project are presented below:

(a) The CBIRD project should expand its areal coverage to all villages in the district to enable more villages to participate and benefit from the project activities. This is in line with the natural

diffusion process found in this study. Such an expansion of areal coverage would not overly tax CBIRD resources since the participation is on a voluntary basis and based on the interest of villagers themselves.

(b) In the promotion of income generating activities, emphasis should be placed on activities which could attract a larger number of households to participate. This could be achieved by strengthening villagers' groups to perform certain economic functions such as the fertilizer fund, or sericulture group.

(c) In addition to the provision of skills and knowledge in production, more attention should be paid to the marketing aspect. This could be achieved by strengthening not only training in marketing but also by making an effort to increase the marketing outlet for products.

(d) One of the several measures for improving marketing outlet and increasing the value of villagers' products is the introduction of agro-industry. This industry is recommended because most of villagers' outputs come from agricultural activities.

(e) Since the cooperation between PDA and the government sector is evidently successful in terms of the cooperation of manpower and technological resources during the CBIRD project period, it is recommended that this pattern of coordination of private and government sectors be used as a model for other development agencies.

Social, Economic and Health Impact of the Community Based Integrated Rural Development (CBIRD) Project : An Evaluation Report

CHAPTER 1
INTRODUCTION

1. GENESIS OF THE STUDY

Thailand, like other developing countries, has an important problem concerning the living conditions of the rural people for which it needs an effective strategy. Most of agricultural families are poor and have low income because they have less capacity to increase their production due to small land holding, low level of saving for investment and lack of appropriate technology. Furthermore, a number of rural poor families are also indebted. The rural farming communities of the Northeastern region of Thailand have long been regarded as the most problematic area causing the greatest national concern. Five factors have been identified as having the most influence upon perpetuating poverty in the region to be the poorest area of the country. They are: lack of income generating opportunities, rapid population growth, low crop yields, inadequate health services and poor sanitary conditions and environment.

Since 1984, the Population and Community Development Association (PDA) has been implementing a project called, "The Community Based Integrated Rural Development (CBIRD)". The project covers 40 villages of Nang Rong District, Burirum Province. The CBIRD has two main objectives. They are: 1) to create an increase in income through the introduction of income generating activities by improving skills and productive capacity of the villagers in terms of agriculture livestock raising and home industry; and 2) to raise environmental standards and improve health for general population by introducing more sanitary facilities, increasing year-round availability of clean water and nutritious foods, promoting better health care practices and family planning services.

The ultimate goal of most rural development projects is, generally speaking, to induce positive and desirable changes in the rural life. These include, but are not limited to, changes in social, economic and health aspects. A sound development project, therefore, should be able to result in improved socio- economic and health conditions in the rural community. As for the CBIRD project this goal is considered the most important; it is clearly addressed in the project objectives and translated into action programs by means of integration of several activities believed to be significantly affecting standard of living of the target population. These programs were implemented during the project period, 1984-1988.

Throughout the project period of 5 years, the residents of 40 villages have received the following three major inputs: 1) technical assistance and complementary support services by giving education and training of necessary skills for farm, non-farm and marketing activities including knowledge about health and nutrition with consultation and supervision services available throughout the process of each activity; 2) financial assistance by providing "in kind" supply of equipment and raw materials on "no interest basis"; and 3) marketing assistance by acting as a buying agent of farm produce at guaranteed prices. The CBIRD implementation procedures involve the introduction of various activities in the target areas on voluntary basis. Villagers are encouraged to choose an activity or activities which they are willing to participate. The project activities are arranged in six different categories as follows.

(a) ***Animal Husbandry*** The component is introduced with the purposes of: 1) increasing supplementary agricultural income from non-crop sources; 2) providing dry season employment oppor- tunities; and 3) improving the protein availability in the villages.

Livestock to be included in this component are pigs, commercial chickens, fish, native chickens, ducks and geese.

(b) ***Crop Production*** CBIRD will assist villagers to improve their farming skills to increase rice yield and to grow supplementary crops for income generation and home consumption.

Activities included in crop production component are fruit growing, vegetable gardening and tree growing.

(c) ***Environmental Sanitation*** The component is aimed to create preventive health impact.

The component consists of activities such as constructing and making village ponds, village wells, rain water catchment, latrine, economic stoves and biogas.

(d) ***Home Industries*** CBIRD will support the development of small-scale home and cottage industries to increase villagers' income and productive use of time especially during the dry season.

Activities to be supported are sericulture and weaving, cotton weaving, clothes making, food processing and preservation and other home industries.

(e) ***Open Box Component*** This component is in the form of reserved funds being set aside to support additional activities initiated by the villagers themselves.

Activities that are likely to be put in this component include the establishment of co-operatives, fair price stores, storage facilities, cottage industries, rice and buffalo banks.

(f) ***Health and Nutrition*** This component is designed to be under the responsibility of the Community Based Family Planning Services (CBFPS) which is also a section of PDA with their work in Nang Rong District started in 1974. CBFPS activities include health aspects of CBIRD activities, family planning, training for CBFPS volunteers and maternal and child health.

The CBIRD Evaluation Project (CEP) was conducted by the Institute for Population and Social Research (IPSR) of Mahidol University in cooperation with the Research and Evaluation Division of PDA. The evaluation covered all relevant quantitative measures of the project's impact on the social, economic, environmental, nutritional and health status. The evaluation also included qualitative studies comprising anthropological and focus group studies of the CBIRD project. Results of various evaluation components were shared with CBIRD project staff on an on-going basis, so that necessary improvements in the CBIRD design and implementation strategy could be made. CEP was funded by the International Development Research Centre (IDRC) of Canada.

2. OBJECTIVES OF CEP

The objectives of the CBIRD project are to generate income, improve environment and promote health in target villages in Nang Rong District, therefore, the evaluation effort of CEP would emphasize the following objectives:

(1) to measure changes and impact of the CBIRD project on social, economic, environmental and, health and nutritional aspects;

(2) to evaluate periodically the process of implementation in order to supply feedback for PDA for the remodification of the program activities/strategies;

(3) to study the feasibility, efficiency and effectiveness of different CBIRD strategies and models.

The major issues addressed in this report are:

. change in household income;
. change in community's environmental sanitation;
. change in the health and nutritional status of the villagers;
. change in household expenditure pattern;
. spill-over effects of CBIRD activities;
. beneficiaries of the CBIRD project; and
. prospects for self-reliance.

CHAPTER 2
METHODOLOGY

1. THE CEP RESEARCH DESIGNS

1.1 Before-after Design

The design, which is known as a pretest - posttest design, was planned to be the main scheme of the evaluation program. The design was based upon actual observation of changes which occur after CBIRD development program had been introduced into the area. The changes were measured before the implementation of the development program in the areas (a pretest) and afterward (a posttest). The differences between these two events would give a rough indication of the effect of the CBIRD development activities. The measurement in the pretest phase of the study is called a baseline study and in the posttest an impact study.

1.2 Project and Non-project Villages

Sometimes the changes in the pretest and posttest study phases may be caused by extraneous factors besides those provided by the program. To separate the extraneous effects from the factors affected by CBIRD development activities, data were also collected from other 10 villages in addition to the CBIRD targeted 40 villages.

As is well known in this type of social action program, it is not desirable or ethical, let alone possible, to prevent the "spill-over" of any beneficial effects from the target villages to sorrounding villages. Consequently, instead of labelling them as "experimental" and "control" villages as has usually been done in this type of evaluative study, they were named project and non-project villages. To approximate the experimental situation, the criteria used by PDA in the selection of project villages were used to select non-project villages with the additional requirement that they should be mostly located outside the sphere of influence of the CBIRD activities. It was expected that when comparing the results from pretest and posttest, the non-project villages should show a change that was attributed to the extraneous factors, while the change in project villages should show larger extent of change caused by the CBIRD activities and other extraneous factors. As mentioned earlier, it was unavoidable that there were the spill-over effect from project villages to non-project villages. Then this trickle down effect would not

be discarded from the evaluative study, and at the same time the changes occured in both project and non-project villages should be investigated carefully.

2. VARIABLES IN THE STUDY

According to the major objectives of CBIRD, variables included in the investigation were those relating to measuring the extent of attaining the increase in household income, environmental improvement and health improvement. Other relevant variables from anthropological studies were also included in the investigation to provide more insight to what the evaluation tries to illustrate. The followings were the related variables:

CBIRD objectives	Related variables
1. Income generation.	1. Income from animal raising. 2. Income from agricultural crops. 3. Income from home industry. 4. Surplus from production for own consumption. 5. Utilization of credit extension system for income raising purpose.
2. Environmental improvement.	1. Environmental condition. 2. Utilization of credit extension system for environmental improvement component.
3. Health and nutritional improvement.	1. General health status. 2. Nutritional status. 3. Health care utilization and practice. 4. Family planning.

CEP variables were based on data and information collected by both quantitative and qualitative studies. The quantitative study collected the data through surveys and censuses, while the insightful information was obtained by the qualitative study through anthropological study, focus group interview and other appropriate data collection techniques. The research variables were the follows.

2.1 Survey Variables

2.1.1 Socio-economic and demographic status, economic activities engaged by household members (household income, indebtedness of household, household property, occupation status, land holding, educational attainment, home consumption, self-reliance, the spill-over of the development project, community participation, marital status, duration of marriage, age, sex and number of living and dead children and migration).

2.1.2 Health (maternal and child health care, mortality).

2.1.3 Fertility and family planning (fertility pattern, knowledge and practice of contraception).

2.2 Anthropological and Community Profile Studies Variables

2.2.1 Basic information of village demographic, social and economic structure (population profile, transportation facilities, roads, education facilities, health service, water supply irregation structure, market, infrastructure, social and political activities).

2.2.2 Community development and community/people participation status.

2.2.3 Farm and non-farm activities (experience in participation).

2.2.4 Attitudes or opinions of the people who are directy and indirectly concerned with the CBIRD program i.e. villagers, local merchants, CBIRD staff and government officials.

3. CEP THREE MAIN PHASES

From the research design and the variables of the study mentioned above, the CEP operation was divided into three main phases, that is, the baseline study, the mid-interval study and the impact study.

3.1 The Baseline Study

This phase of study, in addition to collect the benchmark data to be used as bases for measuring changes and impact, also aimed to supply data to PDA for the formulation of appropriate strategies and activities for each village. A comunity profile study, using a community level questionnaire module, was conducted concurrently with a household survey, an anthropological study and a health survey. Details of the baseline study are in the report entitled **A Demographic, Socio-economic and Health Profile of a Rural Community in Nang Rong : A Baseline Report,** published by IPSR.

3.2 The Mid-interval Study

The survey measured the knowledge, attitudes and satisfaction of the villagers with regard to the CBIRD project. The people participation in the project and the problem encountered in their participation was also investigated. Data from this phase of study were used by PDA to make necessary adjustment or modification of its strategies and program operation. Details of the survey are in **The Mid-interval Survey Report,** published by IPSR.

3.3 The Impact Study

The impact study conducted in 1988, four years after the initiation of the CBIRD operation. In this phase, all studies conducted during the baseline phase, were carried out. The followings were the details of the survey.

3.3.1 *Objective of the impact study* The objective was to measure impact of CBIRD program in the project and non-project villages by assessing changes in socio-economic, environmental, health and nutritional related conditions and practices.

The major issues mentioned in Chapter 1 were focused in the study as the indicators to measure the impact of CBIRD development program.

3.3.2 *Methodology* As the impact study was planned to be the posttest measurement in the evaluative process, the methodology in this phase was similar to the baseline study (which is defined as pretest) in order to obtain comparable information. Some additional questions were added to obtain necessary information for assessing the impact of the CBIRD activities.

Therefore, in this phase all studies conducted during the baseline phase i.e. the household census, the sample survey, a health and nutritional survey, community profile study and anthropological study were carried out.

a) *The household census* The household census using Form A[1] questionnaire was carried out with the additional information on the the number of children everborn alive, the sources of support (CBIRD or others) of the household economic and non-economic activities.

The household census enumerated approximately 2,593 households in the 40 project villages and 634 households in the 10 non-project villages, about 55.0 percent of the total households in the baseline study[2] . In the latter census, data were collected from only households with married women in child bearing age. Fifteen undergraduate students who are the residence of Nang Rong District were trained as the interviewers of the survey.

b) *The sample survey* Two surveys, socio-economic and health and family planning, were carried out in order to obtain the comparable data for examining the impact of development program.

The two surveys collected data in the same twenty villages and the same households as in the baseline phase.[3] Two surveys were described as follows:

(i) *The socio-economic survey* Respondents in the study were also heads of the sample households or spouses or any household members who were responsible to the economic well being of the households as in the baseline study. To ensure comparability, the same sample households interviewed during the baseline phase were planned to be interviewed during the impact phase. To follow the same households had some obstacles due to various factors, such as permanent and temporary migration, death and aging. If it is the case, the substitutive

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1 Form A questionnaire was the questionnaire being collected for household census in the baseline phase.

2 In the baseline phase, every household in 40 project and 10 non-project villages was interviewed, and total number of households was to 5,868.

3 Twenty villages consists of ten villages which were selected by simple random sampling from 40 CBIRD project villages and all 10 non-project villages. Thirty percent of households in the 10 sample project villages and in 10 non-project villages were selected by systematic random sampling method.

households were interviewed on the basis that they should be located near the old ones. Approximately 88 percent of the households in the baseline study were interviewed. The number of sample size in the 1988 study was slightly smaller than the baseline phase since three missing households were located far from the villages and had no neighbours. There were 419 households in project villages and 369 households in non-project villages compared to 421 households and 370 households in the baseline phase.

Contents of the questionnaire used in the latter study were mostly the same as in the former study plus the information on people participation in both CBIRD and government development activities, their attitudes, home comsumption and the self-reliance of the villagers.

(ii) *The health and family planning survey* Respondents for the survey were also married women aged between 15-49 years old in the same households interviewed by socio-economic questionnaire. The number of respondents were 587 (320 respondents in the project villages and 267 respondents in the non-project villages). The number were less than the respondents in the baseline study which were 643 respondents. The missing respondents were those who had moved out of the households and inapplicable age (over 49 years old).

Contents of the questionnaire covered the demographic characteristics, marriage and maternity history and family planning (knowledge, attitude and practice).

(iii) *The health and nutrition survey* The research design for the study was also the pre-post comparison. The studied population was from seven villages in Nang Rong District, five of which were selected from project villages with mothers' club promoted by CBIRD. The same two villages in non- project villages as in the baseline study were covered. Households with mother and at least one 1-5 years old child were interviewed by fourteen well-trained undergraduate student from the faculty of Public Health. The systematic sampling method was adopted to select the families after excluding the family with one infant younger than one year of age. Several methods of data collection ranging from interview to respondent's recording of food consumed and weighing of children were employed.

c) *The community profile study* The community profile of 40 project and 10 non-project villages was collected through group interview of the key persons in the village. Details of the questionnaire were the community information covering the infrastructure of the villages, people main occupation, products and marketing, water resources, health care, development projects and activities, etc. Data were used to compare with the data from the 1984 study. Additional questions asked were the impact of CBIRD activities in project villages.

d) *An anthropological study* The qualitative method which known as anthropological approach was carried out by the CEP anthropological team through various techniques, e.g., indepth interview, key informant interview, group discussion and note-taking. Most of the data collected by the qualitative method were based on the same issues as collected by the survey, that is, the home consumption, the benefits of CBIRD program towards the poor villagers, self-reliance and appropriateness of the CBIRD approach, including information which was unable to be investigated thoroughly by the quantitative techniques. One of the topics covered in the impact study phase was the public views on the CBIRD project.

A table summarizing the methodology, areal coverage, sample size, type of information collected during the baseline and the impact studies is presented below.

Summary of the baseline and impact study scheme

Type of study	Methodology(M), areal coverage(A), sample size(S) and type of data/information collected(D)	
	Baseline	Impact
1. Household census	M: Interview household heads using structured questionnaire.	M: Same as the baseline.
	A: 40 project villages and 10 non-project villages.	A: Same as the baseline.
	S: All households, 5,868 households.	S: Only households with married women in child bearing age.
	D: (A.1), household member on relationship to head of household, age, sex, education, occupation (primary and secondary), marital status and contraceptive practice.	D: A.1, same as the baseline.
	: (A.2), each member who is temporarily absent. In addition to information of personal characteristics, the data on previous and present occupations, reasons for moving, present place of residence, the person's intention to move back and remittance made by temporary migrants.	: A.2, same as the baseline.
	: (A.3), housing characteristics, e.g. type of living quarters, sources of water for drinking and other uses, type of cooking fuel, lighting, toilet facility, possession of durable consumer goods, agricultural land tenure, number of livestock, type of economic activity, membership in social and economic groups, household heads' perception on areas requiring improvement.	: A.3, same as the baseline with the additional questions whether some facilities or activities have received support from CBIRD or other sources.
	: (A.4), data were not collected.	: A.4, data on number of children ever born alive of married woman in household.

(Cont.)

Summary of the baseline and impact study scheme (Cont.)

Type of study	Methodology(M), areal coverage(A), sample size(S) and type of data/information collected(D)	
	Baseline	Impact
2. The socio-economic survey	M: Interviewing principal income earners under 60 years in the sample households using structured questionnaire.	M: Same as the baseline.
	A: 10 project villages selected by method of simple random sampling from the 40 project villages and all 10 non-project villages.	A: Same as the baseline.
	S: 421 households in project villages and 370 households in non-project villages, representing 30 percent of all households selected by systematic random sampling.	S: 419 households in project villages and 369 households in non-project villages. About 88 percent of sample households were the same households as in the baseline.
	D: Economic activities, income and expenditure; Indebtedness and saving; Possession of information durable household goods and production equipment; and Participation in development activities.	D: Same as the baseline with the additional on participation in CBIRD promoted income and non-income generating activities, attitudes towards the CBIRD project, use of increased income, and views on prospect of self-reliance.

(Cont.)

Summary of the baseline and impact study scheme (Cont.)

Type of study	Methodology(M), areal coverage(A), sample size(S) and type of data/information collected(D)	
	Baseline	Impact
3. The health and family planning survey	M: Interview currently married women 15-49 years old in the sample households covered by the socio-economic survey using the structured questionnaire.	M: Same as the baseline.
	A: Same as the socio-economic survey.	A: Same as the baseline.
	S: In project village, 350 women. In non-project villages, 293 women.	S: In project villages, 320 women. In non-project villages, 267 women.
	D: Selected characteristics of respondents; Marriage and maternity history; Family planning (knowledge, attitude and practice); and Maternal and child health practice.	D: Same as the baseline.
4. A health study (survey)	M: Physical examination specimen collection and laboratory investigation of children under 5 years of age.	A health study (survey) was not conducted in the impact phase.
	A: 2 project villages and 2 non-project villages randomly selected.	
	S: In project villages, 196 children. In non-project villages, 115 children.	
	D: Birth history; Vaccination history; Results of physical examination; and Results of laboratory investigation.	

(Cont.)

Summary of the baseline and impact study scheme (Cont.)

Type of study	Methodology(M), areal coverage(A), sample size(S) and type of data/information collected(D)	
	Baseline	Impact
5. Dietary survey*	M: Different data collection techniques and different group of respondents. Interview village female leaders and mothers in studied families by non-structured questionnaire; Interview mothers by structured questionnaire; Self-recording of food consumed during 7 days; Observation and participation in 24 hour dietary recall of diet intake and measure of nutrients; and Body weighing and haemoglobin of children under 5 years old in the studied family.	M: Same as the baseline.
	A: 5 villages with CBIRD promoted mothers' club in project villages and 2 villages from non-project villages.	A: Same as the baseline.
	S: In project villages, 93 families. In non-project villages, 40 families.	S: In project villages, 115 families. In non-project villages, 41 families.
	D: Food availability in village and in family; Nutrional knowledge, food habit; Child feeding patterns and pattern of family food practices; Nutrients intake by mothers and children under 5 years old and their adequacy; and Child nutritional status.	D: Same as the baseline.

(Cont.)

Summary of the baseline and impact study scheme (Cont.)

Type of study	Methodology(M), areal coverage(A), sample size(S) and type of data/information collected(D)	
	Baseline	Impact
6. A community profile study.	M: Interview village key informants using structured questionnaire.	M: Same as the baseline.
	A: 40 project villages and 10 non-project villages.	A: Same as the baseline.
	S: 40 and 10 project and non-project villages.	S: Same as the baseline.
	D: Village's economic and social infrastructure; Development groups in villages; Village's resources; and Type of economic activities.	D: Same as the baseline with additional information on the CBIRD promoted activities.

* Unlike all other studies which were conducted in 1984 for the baseline phase and 1988 in the impact phase, a dietary survey was conducted in April-May 1985 and 1988 for the baseline and impact phases respectively.

CHAPTER 3
CHANGES IN HOUSEHOLD AND VILLAGE PROFILES

This chapter describes the community changes in the CBIRD project villages during the implementation period, i.e. between 1984 and 1988. Changes will be assessed by comparing some development indicators of the project villages with those of the 10 non-project villages, and by comparing sets of data collected "before" the CBIRD project and "after" four years of the project implementation.

The data used to investigate the community changes in this chapter are as follows.

(a) ***Community Profiles*** This set of information was collected by observation and group discussion among key informants in 40 project villages and 10 non- project villages. The data were collected in 1984 before the implementation and in 1988 after four years of project implementation.

(b) ***Household Census*** In the CBIRD Evaluation Project, the household censuses were enumerated during the baseline survey in April-May 1984 and during the impact survey in April-May 1988. The baseline census was conducted in 40 project villages and 10 non-project villages. However, the study in the impact survey covered only 10 project villages and 10 non-project villages. These 10 project villages were randomly selected in accordance with the sampling design of the socio-economic and health survey.

1. CHANGES IN INFRASTRUCTURE

Changes in the infrastructure of the villages are assessed in terms of the availability of paved or gravel approach road, bus services to the town of Nang Rong and the electricity in the villages. The data in Table 3.1 show that the community infrastructure improved during the study period. Increases in the percentage of project villages having a paved or gravel approach road, bus services to town and electricity available in the villages can be clearly seen.

The percentage of households using electricity increased remarkably from 27.4 to 50.4 in the project villages and from 20.1 to 46.5 in the non-project villages. The increased use of electricity helped lead to two and a half-fold increase in the proportion of households possessing

television sets (color and black and white) in both project and non-project villages, (see Table 4.6).

Table 3.1 Percent of villages having some selected development indices

Development indices	Project villages		Non-project villages	
	Before	After	Before	After
Availability of paved or gravel approach road	75.0	92.5	100.0	100.0
Availability of bus to town	85.0	95.0	70.0	70.0
Availability of electricity in the village	42.5	65.0	30.0	60.0
Village with more than 50% of households using electricity	40.0	65.0	20.0	60.0
(Number of villages)	(40)	(40)	(10)	(10)

2. CLEAN WATER SOURCES AND SANITATION IMPROVEMENT

It is the ultimate goal of the CBIRD project to improve the quality of life of the villagers. One among many CBIRD strategies is to raise environmental standards and improve health for the general population by introducing more sanitation facilities and increasing year-round availability of clean water.

Availability of clean water and latrine facilities are assessed in Table 3.2. The data are derived from the household censuses. In general, villagers increasingly used clean water, especially rain water. The percentage of households using rain water increased from 47.6 to 77.3 in the project villages, and from 41.3 to 77.4 in the non-project villages. The increased use of rain water may be due to the campaign for "giant (large) jars" and small jars as water containers in the area during the past five years by many development organizations including the CBIRD project. It can be seen from Table 3.2 that the proportion of households having jars increased tremendously, i.e. from 20.9 to 95.4 percent in the project villages and from 17.4 to 94.5 percent in the non- project villages.

Concerning sanitation facilities, the proportion of households having latrines is assessed. Between 1984 and 1988, the percentage tripled from 15.1 to 47.7 in the project villages. The CBIRD project contributed to this significant increase as it is found that the latrine facilities in the non-project villages changed to a much lesser degree.

Table 3.2 Percent of households having clean water sources and latrine facilities, before and after the CBIRD project

Water sources and latrine facilities	Project villages		Non-project villages	
	Before[1]	After[2]	Before[3]	After[4]
Water sources				
Rain water	47.6	77.3	41.3	77.4
Underground water	34.5	54.9	25.6	48.9
Well	30.2	53.9	23.6	58.0
Reservoir, pond	27.4	28.1	22.1	16.6
River, canal	1.8	0.1	1.9	1.1
Water containers				
Cement/metal tanks	5.1	4.1	1.2	1.7
Giant jars & small jars	20.9	95.4	17.4	94.5
Latrine facilities				
Having latrine	15.1	47.7	12.6	26.8
inside house	3.5	11.5	3.8	7.9
outside house	11.6	36.2	8.8	18.9
(Number of households)	(1,188)	(679)	(1,143)	(634)

1 The data are taken from all households in the ten villages randomly selected from the 40 project villages. These are the same ten villages as in the sample survey (See Section 3.3.2, Chapter 2).

2 The data are taken from only households with ever married women aged 15-49 (who were covered in the baseline survey) in the same ten villages as in Footnote 1.

3 The data are taken from all households in the ten non-project villages.

4 The data are taken from only households with ever married women aged 15-49 (who were covered in the baseline survey) in the ten non-project villages.

3. COMMUNITY PARTICIPATION

Community development is assessed here in terms of the existence and participation of villagers in community development groups. It should be noted that the formation of group is based on community interest and participation in the group is voluntary. Concerning the existence of development groups, the data from the community profiles are shown in Table 3.3. It is found that the percentage of villages having community development groups such as rice and fertilizer funds, mothers' club, saving group, drug co-operatives, community rice storage (rice bank) and co-operative store increased remarkably. These increases can be clearly seen in the project villages and to a lesser extent in the non-project villages. It should be noted that the rice and fertilizer funds are found in 65 percent of the project villages and not at all in the non-project villages.

Concerning the villagers' participation in the community development groups, from the data in Table 3.4, it is found that a higher percentage of households in the project villages had members participating in each type of group activity. The three groups having the highest participation by household members were the drug co-operatives, rice and fertilizer funds and the community rice storage.

Table 3.3 Percent of villages having community development groups

Community development groups	Project villages		Non-project villages	
	Before	After	Before	After
Farmer group	87.5	40.0	90.0	60.0
Co-operative store	0.0	12.5	0.0	10.0
Community rice storage	17.5	45.0	30.0	10.0
Drug co-operatives	5.0	45.0	20.0	50.0
Rice & fertilizer funds	2.5	65.0	0.0	0.0
Mothers' club	42.5	82.5	40.0	60.0
Saving group	5.0	45.0	10.0	30.0
Village reading place	42.5	50.0	50.0	30.0
(Number of villages)	(40)	(40)	(10)	(10)

Table 3.4 Percent of households having member currently participating and ever participated in community development groups, 1988

Community development groups	Currently participating		Currently & ever participated	
	Project villages	Nonproject villages*	Project villages	Nonproject villages*
Farmer group	11.5	8.0	12.7	1.7
Co-operative store	13.4	3.2	14.1	3.7
Community rice storage	40.8	11.5	41.1	11.7
Drug co-operatives	48.3	31.2	49.8	34.2
Rice & fertilizer funds	47.9	20.8	n.a.	n.a.
Bank for Agriculture & Co-operatives	18.0	13.6	18.9	14.1
(Number of households)	(679)	(634)	(679)	(634)

* See Footnotes 2 and 4 in Table 3.2.

4. INCOME GENERATING ACTIVITIES

One major aim of the CBIRD project has been to increase income through the introduction and training of income generating activities, by improving the skills and productive capability of villagers. The CBIRD project has been conducting many activities to achieve this goal.

The percentage of villages having training courses in income supplementary activities which are derived from the community profile data are shown in Table 3.5. It is found that a higher proportion of project villages had training in every activity. Training in cement and brick work, vegetable gardening, animal raising and fish farming is found to have a high degree of participation.

Table 3.5 Percent of villages having training in income supplementing activities

Income supplementing activities	Project villages		Non-project villages	
	Before	After	Before	After
Cement & brick	40.0	52.5	30.0	20.0
Vegetable gardening	75.0	87.5	70.0	20.0
Animal raising	42.5	87.5	30.0	30.0
Fish farming	2.5	45.0	10.0	0.0
Sewing & weaving	60.0	22.5	40.0	20.0
Sericulture	7.5	12.5	0.0	0.0
(Number of villages)	(40)	(40)	(10)	(10)

5. CONCLUSION

During the four-year period from 1984 to 1988, the development infrastructure in terms of communication and transportation between the villages and the town, availability of electricity, clean water sources, and sanitation facilities in the CBIRD project villages have been improved. Villagers have participated more in community development group activities and in training in income generating activities. The CBIRD project is viewed to be beneficial to the community development.

Since the community development is a time consuming process which involves efforts from both villagers themselves and from various outside development agents, it might not be possible at this point to state specifically the impact of the four-year CBIRD project. However, this chapter describes some community changes as to provide the background for the evaluation of the CBIRD impact in the next chapters.

CHAPTER 4
ECONOMIC IMPACT OF THE CBIRD PROJECT

As stated in Chapter 1 of this report, one of the two main objectives of the CBIRD project is to make a permanent and quantitative improvement in the livelihood and employment opportunities for the target population. The strategy adopted for attaining the stated objective is the introduction of farm and non-farm income generating activities by providing training in areas of production, management and marketing and provision of technical and financial support to those villagers willing to participate, in an area designated as project villages.

Consequently, an assessment of the economic impact of the CBIRD project will be made by answering the following questions.

(1) Is there a change in the percentage of households engaging in income generating activities? What new income generating activities emerge as a result of the implementation of the CBIRD project in the area?
(2) Are there any spill-over effects of CBIRD activities to non-project villages?
(3) Have villagers' skills and knowledge in marketing increased?
(4) Is there any emerging trend away four subsistence towards modern market economy?
(5) Is there any changing pattern of villagers' indebtedness?
(6) Has there been any change in the percentage of households possessing durable goods?
(7) Lastly and most important of all, has the gross household income increased?

1. CHANGING PERCENTAGE OF HOUSEHOLD ENGAGING IN ECONOMIC AND EMERGENCE OF NEW ECONOMIC ACTIVITIES

As seen from data presented in Table 4.1, the percentage of household having one or more members engaging in various types of economic activities before initiating CBIRD activities and after the introduction of activities over the period of four years has changed.

Percentage of households having members engaging in rice growing activity has decreased. Such a decrease may be partly due to insufficient rain water during the last year and

Table 4.1 Percent of households reporting having members engaging in economic activities by type of economic activity

Type of economic activity	Project villages		Non-project villages	
	Before	After	Before	After
Rice farming	91.4	80.5	89.1	74.7
Cash cropping	34.3	36.8	29.8	39.3
Fruit farming	9.3	5.5	12.5	7.6
Vegetable gardening	n.a.	79.5	n.a.	72.3
Animal husbandry				
Cow	9.5	11.7	5.0	8.1
Buffalo	81.1	79.0	71.3	69.0
Pig	21.2	22.9	20.5	16.8
Duck	20.9	41.8	27.5	41.7
Chicken	91.3	91.1	73.9	91.3
Goose	0.0	2.4	0.0	1.1
Frog	0.0	0.5	0.0	0.0
Fish pond	0.8	7.9	2.9	6.0
Mushroom culture	0.0	2.6	0.0	1.9
Sericulture	0.0	9.3	0.0	4.1
Home industry				
Mat weaving	0.0	42.5	0.0	27.9
Coconut sugar making	0.0	2.9	0.0	2.4
Brick making	0.0	1.0	0.0	0.0
Iron work	0.0	0.2	0.0	0.3
Food preservation	8.3	52.0	13.6	41.5
Agricultural labourer	40.8	64.1	43.3	66.2
Factory worker	2.4	10.8	1.6	10.7
Other wage earner	24.8	26.8	21.1	26.7
Commerce	8.4	6.9	10.8	9.2
Government service	5.7	3.6	5.1	1.1
Service industry (agricultural equipment, animals rent)	0.0	4.2	0.0	3.2
(Number of households)	(419)*	(419)	(369)*	(369)

* Excluding 2 households in project villages and 1 household in non-project villages reported as not engaging in any economic activity.

partly due to the shift from traditional farming to other income generating activities. Indeed it should be noticed that there emerged a number of agricultural activities which had never been practiced by villagers before the introduction of CBIRD activities. These include some agricultural activities and a number of home industry-related activities. Fish pond operation, for example, is now practiced by about 8 percent of all households in the project villages. The corresponding percentage in 1984 was only 0.8 percent. The increase in the proportion of households having members engaging in mushroom culture, sericulture and home industries is also noticeable.

Change in the percentage of households engaging in different activities and in new economic activities in the project and non-project villages is also noticeable.

Although the last six lines in Table 4.1 are economic activities not directly related to the CBIRD project, it may be noticed that percentage of households having members engaging in different economic activities illustrate the extent of changing employment opportunities in the areas over time. A substantial increase in the percentage of households having members employed as factory workers is an indication of changing economic structure both in project and non- project villages.

2. SPILL-OVER EFFECTS OF CBIRD ACTIVITIES

One observation which should be made here is that non-project villages are, in principle, not expected to receive inputs from the CBIRD project. The implication of such observation is that one should not expect to see the emergence of some new economic activities in this area. Yet, a number of economic activities which did not exist in pre-project days are also engaged by members of households in non-project villages, although the proportion of households having members engaging in these new economic activities is lower than that of the project villages. The reason for this is that even though the area are designated project and non-project villages, it would be highly undesirable or even immoral to deny knowledge, technology and other assistance to people in an area designated as non-project villages. From the data presented in Table 4.2, it may be seen that certain proportion of households in non-project villages also reported that they had received knowledge from the CBIRD project. People in the non-project villages may also learn about CBIRD technology from their relatives or friends in the project villages. Thus, there have been some spill-over effects of CBIRD activities.

Table 4.2 Percent of households that received knowledge from the CBIRD project by type of economic activity, 1988

Type of economic activity	Project villages	Non-project villages
	Received knowledge	Received knowledge
Agricultural activity		
Rice growing	73.5	5.7
Cash cropping	n.a.	n.a.
Animal husbandry		
Cow	52.7	5.7
Buffalo	51.8	5.4
Pig	61.3	4.9
Chicken	62.0	4.4
Duck	41.1	1.6
Frog	42.0	1.4
Fish	60.9	4.3
Vegetable gardening	65.2	3.0
Mushroom culture	67.5	4.3
Sericulture	41.8	0.0
Home industry		
Mat weaving	28.2	1.1
Coconut sugar making	22.0	0.5
Brick making	30.5	1.1
Iron work	16.2	0.0
Food preservation	33.0	0.8
(Number of households)	(419)	(369)

3. SKILLS AND KNOWLEDGE IN MARKETING

One of the CBIRD strategies in trying to raise the income level of villagers is to provide training in marketing practices. It is anticipated that by educating villagers in appropriate marketing techniques, they will be able to fetch a higher price for their produce and also not be cheated by merchants, two of the major problems that were encountered by villagers in the past. From data presented in Table 4.3, it may be seen that CBIRD marketing training has been successful to a certain extent. The proportion of households stating that they had problems in selling rice and cash crops, the major agricultural produce accounting for about 70 percent of villagers' gross household income, has decreased substantially. Also, the proportion of households reporting the selling of their produce to merchants who came to the villages has decreased significantly. Such decrease may be viewed as an indication that villagers are more skillful and knowledgeable in marketing practices because selling crops at an appropriate outlet will normally fetch a higher price. The increase in skills and knowledge in marketing practice may also spread to non- project villages where a change is also highly visible. This may be viewed as another spill-over effect of CBIRD.

4. TREND AWAY FROM SUBSISTENCE TOWARDS MODERN MARKET ECONOMY

Products from existing and new economic activities mentioned in Section 1 above can either be used for home consumption or for sale. The fact that an increasing percentage of households reporting the products are sold would be an indication that villagers are moving away from subsistence to market economy. Further, quite a high proportion of households reporting that they made profit from selling their product may be viewed as another indication that CBIRD project has created some economic impact in the desirable direction. A similar trend was also observed in non- project villages although the proportion of households reporting the product for sale and having made profit from selling their product were lower than that in the project villages (data not shown).

Table 4.3 Percentage distribution of households selling rice and cash crops in the previous year by whether they had marketing problem and by selling outlet

Marketing problem and Selling outlet	Project villages		Non-project villages	
	Before	After	Before	After
Marketing problem in selling rice				
Yes	40.9	13.8	29.0	15.0
No	59.1	86.1	71.0	85.0
Total	100.0	100.0	100.0	100.0
(Number of households)	(269)	(187)	(252)	(140)
Selling outlet for rice				
Merchant in village	n.a.	46.5	n.a.	56.9
Merchant in town	n.a.	50.4	n.a.	42.3
Merchant in village and town	n.a.	1.1	n.a.	0.7
Total		100.0		100.0
(Number of households)		(185)*		(137)*
Marketing problem in selling cash crops				
Yes	33.6	22.1	28.2	17.5
No	66.4	77.9	71.8	82.5
Total	100.0	100.0	100.0	100.0
(Number of households)	(128)	(145)	(103)	(137)
Selling outlet for cash crops				
Merchant in village	48.8	44.0	35.4	31.7
Merchant in town	42.3	54.5	38.5	68.3
Merchant in village and town	8.9	1.5	26.1	0.0
Total	100.0	100.0	100.0	100.0
(Number of households)	(123)*	(134)*	(96)*	(123)*

* Excluding households whose information was not available.

Table 4.4 Percent of households in project villages engaged in individual economic activity by whether their products were sold and whether they made profit from selling produce

Type of economic activity	Product for sale		Made profit (among households selling produce)	
	Before	After	Before	After
Vegetable gardening	n.a.	13.[illegible]	n.a.	79.0
Cow husbandry	32.4	63.3	n.a.	89.6
Buffalo husbandry	3.4	22.7	n.a.	89.2
Pig husbandry	78.3	91.7	n.a.	78.4
Duck husbandry	6.1	22.3	n.a.	69.4
Goose husbandry	n.a.	50.0	n.a.	81.2
Fish pond	n.a.	13.6	n.a.	60.0
Mushroom culture	n.a.	11.8	n.a.	72.7
Sericulture	n.a.	43.6	n.a.	76.0
Mat weaving	n.a.	5.1	n.a.	91.7
Coconut sugar making	n.a.	66.7	n.a.	100.0
Food preservation	n.a.	3.2	n.a.	90.9

5. CHANGING PATTERN OF VILLAGERS' INDEBTEDNESS

The prevalence of indebtedness among rural households is considered a major economic problem. Besides being indebted, villagers are in a the disadvantaged position because they are unable to secure loan from formal credit institutions. For this reason they have to rely mostly on informal but convenient sources of credit such as merchants or neighbours which tend to charge a relatively high, and sometimes exorbitant interest rate. Since the implementation of the CBIRD project, there had been a significant decrease in the proportion of households in the project villages borrowing money. There was practically no change in the corresponding proportion in the non- project villages. The sources of loan also changed. Percentage of households borrowing money from informal sector decreased whereas the percentage of households borrowing money from formal credit institutions increased significantly in both project and non-project villages. About 18 percent of households in project villages reported having received credit from the CBIRD project.

Table 4.5 Percentage distribution of households borrowing and not borrowing by sources of loan and reasons for borrowing.

Borrowing status and sources of loan	Project villages		Non-project villages	
	Before	After	Before	After
Borrowing				
Did not borrowed	60.8	67.1	59.2	57.7
Borrowed	39.2	32.9	41.8	42.3
Total	100.0	100.0	100.0	100.0
(Number of households)	(421)	(419)	(370)	(369)
Sources of loan				
Merchant	11.7	7.5	16.4	15.5
Neighbour & other	55.1	39.9	59.0	42.7
Agricultural co-operatives	9.8	15.8	9.1	22.0
Bank for Agriculture & Co-operatives	23.4	18.4	15.5	19.8
CBIRD	0.0	18.4	0.0	0.0
Total	100.0	100.0	100.0	100.0
Reasons for borrowing				
For productive investment	46.8*	52.0	n.a.	41.8
For family living expenses	37.9*	36.2	n.a.	44.0
For education of children	0.8*	0.6	n.a.	0.4
For loan payment	0.0*	2.6	n.a.	4.7
For social functions	1.7*	1.2	n.a.	2.6
For medical treatment	2.5*	1.7	n.a.	3.5
Other	10.2*	1.1	n.a.	0.4
Don't know/ no answer	0.0*	4.6	n.a.	2.6
Total	100.0	100.0		100.0
(Number of households)	n.a.	(138)	n.a.	(156)

* Percent here refers to households in both project and non-project villages. Data are from Sivaporn Pokpong's a special study report entitled, *Factors Affecting the Household Indebtedness: A Case Study in Nangrong District.* Institute for Population and Social Research, Mahidol University, December 1985.

Another noticeable change is the increase in the proportion of households reported having borrowed money for productive investment in the project villages. Therefore, it can be stated that the implementation of the CBIRD project has improved the indebtedness situation of rural households especially in project villages, (Table 4.5).

6. CHANGE IN THE PERCENTAGE OF HOUSEHOLDS POSSESSING DURABLE GOODS

When asked how they spend their earned money, about one-fifth of households in project and non-project villages reported that money earned from selling rice and cash crops was used for productive investment. About one-eighth of households reported that money earned from other income generating activities was used for productive investment. Quite a high percentage of households also reported that money earned from selling the major products and from other income generating activities was used for purchasing necessary items for the family. Consequently, one indicator which may be used to measure whether villagers are economically better off is the percentage of households possessing durable goods of material.

As seen from data presented in Table 4.6, percentage of households possessing durable goods, both for consumption and productive activities, had indeed increased. The percentage of households possessing E-tan (locally made truck)* increased from 1.4 percent in pre-project day to about 2.6 percent of all households at the time of the survey.

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* E-tan is a loosely made truck which is used for tilling land and for transportation purpose.

Table 4.6 Percent of households possessing durable goods of material by type

Items of material	Project villages		Non-project villages	
	Before	After	Before	After
Electric iron	4.1	14.1	4.5	11.1
Radio	62.5	65.1	69.8	66.1
Radio-cum-tape recorder	4.3	18.1	5.4	14.9
Black and white T.V.	7.0	18.6	7.6	18.4
Color T.V.	2.1	7.4	1.4	4.3
Stereo Set	0.0	1.7	0.0	2.7
Video	0.0	0.0	0.0	0.5
Electric cooking pot	3.3	20.1	5.8	18.0
Refrigerator	1.5	5.3	0.5	3.0
Electric stove	0.2	0.2	0.3	0.0
Gas stove	1.4	3.3	0.6	1.6
Sewing machine	6.7	8.1	9.0	10.3
Electric fan	n.a.	29.1	n.a.	23.9
Bicycle	52.9	74.2	56.8	73.2
Motor cycle	7.7	11.7	8.2	15.0
E-tan (locally made truck)	1.4	2.6	1.1	2.4
Walking tractor	2.9	8.1	0.3	8.4
Scales (for crop weighing)	0.0	3.1	0.0	3.0
Water pump	6.0	7.8	3.0	3.3
Cart of carrying water	43.5	64.9	47.3	62.9
Automobile (sedan)	0.2	0.5	0.0	0.3
Pick-up truck	2.4	1.9	0.8	1.4
(Number of households)	(421)	(419)	(370)	(369)

7. INCREASE IN GROSS HOUSEHOLD INCOME

From the analysis of the economic impact of the CBIRD project made above, one would expect to see a substantial increase in the average gross household income especially in project villages. The average household income in project villages did increase from about 18,965 bahts to 20,905 bahts, representing an increase of 10.2 percent. However, when an average annual inflation rate of about 1.9 percent during the corresponding period is taken into account, the increase in real average gross household income would be 2.4 percent over the period of four years between 1984 and 1988. Seen in this light, it may be observed that the economic impact of the CBIRD project in increasing household income is not as substantial as expected. However, when compared with the non-project villages which showed a decrease in the average gross household income from about 20,132 bahts to about 19,117 bahts (a decline of about 5.5 percent), it may also be observed that without the CBIRD project, income in project villages may have even decreased.

Table 4.7 Average income of households before and after the implementation of CBIRD project

Type of villages	Gross income (in baht)			Percent change
	Before	After	Change	
Project villages	18,965	20,905	+ 1,940	+ 10.2
Non-project villages	20,132	19,117	- 1,015	- 5.5

The fact that an increase the average gross income of the households in project villages did not increase to the extent expected may be due to the fact that only a certain proportion of households in project villages actually participated in CBIRD promoted income generating activities. Moreover, the area also experienced a severe drought in the resulting in the year when the income data was referred to, resulting in a decrease in the rice and cash crop production which accounts for a high proportion of gross household income. Thus, findings do not contradict earlier findings that villagers have experienced certain degree of economic benefit from the presence of the CBIRD project in the area.

CHAPTER 5
SOCIAL IMPACT OF THE CBIRD PROJECT

This chapter assesses the social impact of the CBIRD project. For this purpose it takes into consideration important issues relevant to the social implications of the project. Particularly, the following issues will be discussed:

(1) participation of the villagers in project activities;
(2) adoption of new agricultural technology ;
(3) diffusion of knowledge and activities initiated by the CBIRD project; and
(4) villagers' use of home made products. These issues are important because they indicate how widely the project is accepted and how people in project as well as non-project villages can benefit from it.

To illustrate the social impact mentioned above the survey data and qualitative data are collected for this purpose. The survey data are taken from the impact survey conducted in April - May 1988, while qualitative data are drawn from field notes and records.

1. PARTICIPATION IN PROJECT ACTIVITIES

It may be useful to understand, at the outset, the strategies employed by CBIRD in introducing development knowledge and activities to the people. Basically CBIRD may be considered as an extension unit which plays several roles. Three such roles are relevant to our interest here. First, CBIRD transfers new knowledge and technology related to farm and non-farm activities. This is done largely by training and demonstration as appropriate. Participation in the training activities is voluntary and has no cost to the people.

Second, for those who receive training but lack the fund to carry out the activities, CBIRD provides necessary credit at no interest. Villagers who take such credit are expected to pay it back after the harvest or when their activities generate income.

Third, CBIRD provides supervisory support for those who need it. At the demonstration center it has several activities and services from which the villagers can learn and seek advice.

Outside the center it has field staff who can assist when problems arise. A field worker is usually responsible for three villages.

Within the range of these three roles, participation of the villagers in CBIRD activities will be discussed. Participation in organized social and economic groups existing at the village level is shown in Table 5.1 and 5.2. These groups are mainly organized with the help of the local government supplemented and strengthened by CBIRD. The primary objectives of these activities are to facilitate village development and to provide an organized body through which the villagers can help each other.

Table 5.1 Percent of households that were aware of the existence of organized groups by type of group, 1988

Type of group	Project villages	Non-project villages
Mothers' club	84.5	52.3
Youth club	19.8	51.2
Drug fund	75.7	62.3
Rice fund	72.6	50.1
Fertilizer fund	87.4	7.0
Other	36.8	20.0
(Number of households)	(419)	(369)

As indicated in Table 5.1 many organized groups exist in both the project and non-project villages. Even the "fertilizer fund," which is organized exclusively by CBIRD without the involvement of the local government, exists in the non-project villages. This is possible because of the diffusion of the idea, which is not surprising given its relative success.

The point to be noted from Table 5.2 is that, given availability of these groups in the project as well as non-project villages, participation is generally higher in the former than in the latter. This seems to suggest that where CBIRD effort exists, people's participation in the organized groups is noticeably increased.

Table 5.2 Percent of households that had at least one member participating in organized groups among those who were aware of the existence of the groups by type of group, 1988

Type of group	Project villages	Non-project villages
Mothers' club	27.1	27.5
Youth club	28.7	25.4
Drug fund	71.8	65.7
Rice fund	66.1	55.5
Fertilizer fund	59.3	15.4
Other*	68.8	78.4

* Other groups/funds include the following: (i) funeral fund, (ii) saving group, (iii) market demonstration group, and (iv) pesticide-herbicide user fund. CBIRD does not directly involve in these groups/funds.

Another point which may be observed from Table 5.2 is that there is a relatively low level of participation in the social groups compared to those which have economic objectives and functions. That is to say, participation in the mothers' and youth clubs is lower than in the drug fund, rice bank and fertilizer fund. This implies that economic benefit is the factor motivating villagers to participate.

Table 5.3 shows the percentage of households which reported that they ever received knowledge or training on different income generating activities. The majority reported that they received such knowledge and training from CBIRD directly or indirectly. It can be seen that there were different levels of participation ranging from moderate to high. This level of participation is satisfactory. There are a few reasons why participation in training and learning sessions was not universal. First, participation was voluntary. Villagers went for training or learning sessions based on their own interest and convenience. But, the villagers' interest in a number of income generating activities depended on many things. Important among these were availability of local infrastructure necessary for carrying out the activities (a good water source is needed for fish and frog raising, for example); and then availability of resources to be invested in the activities as needed.

An interesting thing in Table 5.3 is that a small but noticeable percentage of the sample from non- project villages participated in the CBIRD training and learning sessions. How this happened is, however, understandable. CBIRD is an open development agency. Although only 40 villages are included in the project, its provision of knowledge to the wider

public is by no means limited to the project villages. From the discussions with many people in non-project villages it was found that they could always learn about new knowledge and technology from CBIRD provided that they showed strong interest or had a definite plan to start activities. This indicates the diffusion of CBIRD development ideas.

Table 5.3 Percent of households that received knowledge/training by type of activity and sources, 1988

Type ofactivity	Project villages		Non-project villages	
	From CBIRD	From all staff sources	From CBIRD staff	From all sources
Animal husbandry				
Cow	47.7	52.7	2.7	5.7
Buffalo	47.0	51.8	2.7	5.4
Pig (new breeding)	58.9	64.0	3.3	5.4
Domestic pig	53.0	58.7	3.0	4.3
Duck	62.1	64.7	2.2	3.5
Domestic chicken	64.4	69.2	2.2	3.8
Egg-laying chicken	54.4	58.7	1.6	3.5
Commercial chicken	53.5	58.5	2.2	4.3
Goose	38.7	41.0	1.1	1.6
Fish pond	57.5	60.9	2.4	4.3
Frog	39.4	42.0	1.1	1.4
Crop production				
Vegetable gardening	63.0	65.2	1.6	3.0
Mushroom culture	64.2	67.5	2.4	4.3
Growing edible plant fence	64.9	67.5	1.6	3.0
Home industry				
Coconut sugar making	19.8	22.0	0.3	0.5
Brick making	27.9	30.5	0.5	1.1
Sericulture/weaving	37.7	41.8	0.0	0.0
Mat weaving/basketry	26.3	28.2	0.5	1.1
Food preservation	30.1	32.0	0.5	0.8
(Number of households)	(419)	(419)	(369)	(369)

2. ADOPTION OF AGRICULTURAL TECHNOLOGY

Because of its strong emphasis on income generating activities, the adoption of agricultural technology by the target population is one of the most important indicators of CBIRD success. A simple assumption here is that the higher the level of adoption, the more successful the project is, and vice versa. On the basis of this assumption, an assessment of the CBIRD project can be made by examining what proportion of the villagers who were given knowledge and training, who actually carried out different income generating activities during the project period.

Table 5.4 Percent of households that carried out CBIRD promoting activities among those who received knowledge/training of the activities by type of activity, 1988

Type of group	Project villages	Non-project villages
Animal husbandry		
Cow	7.7	4.8
Buffalo	54.9	40.0
Pig (new breeding)	21.6	15.0
Domestic pig	26.4	18.8
Duck	49.1	7.7
Domestic chicken	60.7	35.7
Egg-laying chicken	7.7	0.0
Commercial chicken	11.4	6.3
Goose	10.5	0.0
Fish pond	12.9	18.8
Frog	1.7	0.0
Crop production		
Vegetable gardening	69.3	45.5
Mushroom culture	22.3	18.8
Growing edible plant fence	54.8	54.6
Home industry		
Coconut sugar making	4.4	0.0
Brick making	11.8	0.0
Sericulture/weaving	25.2	0.0
Mat weaving, basketry	52.5	50.0
Food preservation	54.1	33.3

It is shown in Table 5.4 that among the project villages the proportion who carried out income generating activities by using new knowledge and technology that they had learned is greater for those activities already familiar to the people and involving relatively smaller cash investment. An example is the raising of domestic , egg-laying and commercial chickens which there is a great difference in the level of adoption.

It is observed earlier that existing infrastructure in the rural areas where the project villages are located and available resources in the faming households are important factors affecting people's participation in the project activities. This is also true for adoption of agricultural technology. Qualitative data from several visits to the project areas suggest that some villagers could not do what they learned (i.e. carrying out activities, using new technology) simply because of nonexistence of necessary infrastructure. In villages where good water sources do not exist, raising fish (for commercial purpose) and growing vegetables in the dry season are impossible. Unstable market condition is another constraint to the practice or adoption of new technology. The business of raising pigs and commercial chickens in the project and non-project villages would have been far better had the local market price been more encouraging and stable. Nonetheless, given these constraints, many of which are beyond CBIRD and the villagers' control, adoption of new technology in a number of activities is quite satisfactory.

When comparing technological acceptance (as seen through the actual carrying out of the CBIRD activities) in the project and non-project villages, it is found that the participation in every activity is much more satisfactory in the former than in the latter. This implies the presence of CBIRD in the village does make a difference.

Finally, it may be noted, based on the qualitative data, that the people in the project villages do not just adopt new technology, but they do so quite wisely. In a number of activities, for example, use of fertilizer in the rice field, raising pig, fish and sericulture, the villagers adjust - and in some cases, adapt - the practices so that what they actually do is not exactly what they are taught by CBIRD. Rather, it is a mix of what they traditionally practice and what is a purely new way of doing things (new technology). Such an adjustment of new technology handed to the people by a development project is necessary and appropriate one.

3. DIFFUSION OF THE CBIRD IDEAS AND ACTIVITIES

Like most development projects, CBIRD began its development work in a limited area. In 1984 when the project started, it was implemented in only 40 villages, out of the total number of over 200 in Nang Rong District* . Given a limited coverage in the beginning, it would be of interest to know if there is spatial diffusion of the project ideas and activities in the neighbouring villages over the past years. This is worth knowing since such a spatial diffusion is an important indicator of the project achievement.

Earlier in this chapter, it was shown that some people in the non-project villages received knowledge or training in some CBIRD-promoted activities. This, of course, is an evidence of spatial diffusion of the CBIRD ideas. Similarly, the information in Table 5.4 above also indicates a spatial diffusion of the CBIRD - promoted activities. Thus, the survey data cited above are in support of the field observation that there is some degree of diffusion of the CBIRD ideas and activities for rural development.

The diffusion of the CBIRD ideas and activities may be considered at two levels: diffusion within each project village and diffusion from the project to non- project villages. The following discussion draws heavily upon field notes and observations and is supplemented, where possible, by some survey data.

Since CBIRD could provide knowledge and technology for many development activities to only a limited number of individuals, it appears that not every household in the project villages ever received such knowledge and technology directly from the project. This is the case because of CBIRD's limited resources and the voluntary nature of people's participation. Indeed, for some income generating activities such as raising fish, commercial chicken and cow, CBIRD selected only those who show high potential of becoming acceptors to be included in the training. At least this is what CBIRD did at the beginning stage. Once the villagers are trained, CBIRD has its preference to support, first, those clients who show high potential of success. This is necessary from the CBIRD point of view, since success or failure of the acceptors has demonstrative effects which are crucial for each activity promoted by CBIRD. It is from those villagers, who have direct contact with CBIRD through training and learning sessions, and especially those who succeeded in carrying out CBIRD - promoted activities; that diffusion takes place.

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* Later the number of villages under CBIRD responsibility became 48 due to division and inclusion of some villages.

Within a project village diffusion of the ideas and activities is made possible through imitation and the kinship network. Successful cases attract the interest of those who do not have direct contact with CBIRD. Thus, imitation and sharing of knowledge spread. In the village community where kinship ties and primary social groupings form the basis of social structure, diffusion of any innovative ideas can be highly facilitated. In this way, it was observed that mushroom culture spread from a few individuals who learned how to do it from CBIRD to most households in the same neighbourhood of Ban Kawao (a project village). Also through such sharing of knowledge many people in Ban Ma Kharm Phrong learned from each other how to vaccinate chicken. Indeed, most people who learned skills for doing income generating activities from CBIRD reported that they could teach these activities to their relatives and neighbours. The data in Table 5.5 are in support of this observation.

Table 5.5 Percent of households that had members reporting that they could teach others about what they had learned among those who received knowledge/training from CBIRD, by type of activity, 1988

Type of group	Project villages	Non-project villages
Animal husbandry		
Cow	58.4	52.4
Buffalo	65.0	60.0
Pig (new breeding)	58.2	55.0
Domestic pig	65.0	68.8
Duck	70.8	61.5
Domestic chicken	75.5	14.3
Egg-laying chicken	60.2	53.8
Commercial chicken	61.6	50.0
Goose	62.2	50.0
Fish pond	60.8	68.8
Frog	58.5	80.0
Crop production		
Vegetable gardening	78.8	90.9
Mushroom	69.3	56.3
Growing edible plant fence	85.5	81.8
Coconut sugar making	56.5	50.0
Brick making	48.4	50.0
Sericulture/weaving	57.1	0.0
Mat weaving, basketry	76.2	100.0
Food preservation	74.1	33.3

Diffusion across the village boundaries is also observed. However, in this case geographical proximity between the project and non-project villages played a facilitating role. The closer to the project village, the greater is the chance for diffusion. For example, in Ban Saba, a non-project village located between Ban Ma Kharm Phrong and Ban Kawao (both project villages), it was found that the villagers in Ban Saba learned some activities from their neighbouring (project villages). These included mushroom culture and vegetable gardening.

Perhaps it is appropriate to note here that CBIRD is not the only development organization working in this area. The local government also carries out the same task which include many activities similar to those promoted by CBIRD. Thus, it is possible that one can see similar income generating activities elsewhere as in the CBIRD project villages. Such activities may or may not be wholly attributed to the CBIRD influence. Moreover, since there is a close relationship between the CBIRD project and the local government in Nang Rong which involves exchange of ideas and knowledge, the integration of CBIRD innovative elements help to improve the local government development activities. This may be viewed as another way of diffusion of CBIRD knowledge.

4. VILLAGERS' USE OF HOME MADE PRODUCTS

For a development project which puts a strong emphasis on improvement of the income generating activities as CBIRD, improvement of consumption at the household level is a good indicator of achievement. A simple assumption in this case is that besides villagers use of own products, success of the project activities should raise the household income which, in turn, should result in improved household consumption. An assessment of the CBIRD project in this respect will help understand the extent of its achievement.

Although it may be generally true that most farm households consume what they produce, observations from the CBIRD project villages indicate that this is not always the case. The households which adopt CBIRD income generating activities tend to regard cash return to their activities as of greater significance than direct consumption of what they raise or grow. This is understandable since many of them took credit from CBIRD or elsewhere and had to repay them. Or else, they want to see cash return of the activities first; food and other things can come after that. Many people reported that for the activities that involved cash investment they wanted to at least get that cash input back, preferably with reasonable profits, other things can be purchased.

If observations are correct, it seems to suggest that consumption of the products fron CBIRD activities is largely indirect. Outputs of the activities are sold for cash to buy food and all necessities. This, however, is not to say that direct consumption of the products is absent altogether. At least the direct consumption in some households was observed. For instance, in the fish-raising households, it was reported that fish was an important part of their daily meals. This is also true for the vegetable-growing households. When a number of villagers in the project villages were asked if they felt they were eating better than in the past, the responses were largely positive. An observation of the village economy at present would confirm this fact. An increasing number of households buy food for daily consumption, instead of depending largely on food gathered from natural sources as in the past. Many villages are regularly visited by food vendors who come in their pick-up trucks loaded with several kinds of food, ranging from the locally produce to sea food which was relatively rare in the rural Northeast years ago. The villagers can buy such food as frequently as they can afford it, thus improving their food consumption. This improvement, however, is not a result of the CBIRD income generating activities only; part of it, at least, must be a result of social and economic changes currently taking place in most rural communities. Improved transportation is one, and the increasing importance of money in the rural economy is another. Nonetheless, under this circumstance of social and economic change, CBIRD does contribute to improved household consumption through raising the household income.

5. Conclusion

Since its first appearance in the project villages of Nang Rong District, CBIRD has been widely known and accepted by the people of the local area. This is seen as a relatively high participation of the people in the project activities. The participation extends even to some people in the non-project villages. Through such participation and through adoption of various project activities a large number of villagers are believed to learn new knowledge and technology in agriculture and in other aspects of the rural livelihood. The project activities also have a demonstrative effect as seen in diffusion of the ideas and practices to the non-project villages. Although it is difficult to quantify and measure this diffusion, there is an evidence to believe that it will spread more widely given the time and the ability of people to teach and learn from each other.

The project effort seems to have a fairly important effect on improvement of consumption at the household level. This is quite desirable since improved consumption is one of the best indicators of the project's achievement.

CHAPTER 6
IMPACT ON HEALTH AND NUTRITION

This chapter describes the differences or changes in health and nutritional status between the baseline and the impact surveys and between the two groups of villages. The goal of the health, population and nutrition component of CBIRD is to stimulate and supplement health development services routinely provided by local health personnel. Thus any changes that occurred did not necessarily result from the CBIRD contribution, but rather are an indication of their cooperation with the local health authorities in improving the health status of the community.

Two sources of data are used under this chapter. Section 1, 2 and 3 derived from the health and family planning survey of which the households in a sample drawn from 20 villages. The rest of the chapter are the data from the health and nutrition survey conducted in 7 villages.

1. EXTENT OF THE CBIRD CONTRIBUTION IN PROVIDING HEALTH SERVICES

The percent of households in project and non- project villages reporting that they had received CBIRD services is shown in Tables 6.1 and 6.2. With respect to health development activities as seen in Table 6.1, the main input from CBIRD was to give training or advice for health improvement and, to a certain extent, to give direct health services such as child immunization, nutritional surveillance, food supplementation and treating of ailments. Furthermore there is an indication of spill-over effect on the part of health services by CBIRD support to a small proportion of children in the non-project villages.

The major health issues on which the respondents reported receiving advice from CBIRD, ranking in priority, are: a) prevention and control of infectious diseases; b) maternal and child care; c) complete and adequate dietary intake; and d) personal hygiene and housing sanitation.

Table 6.1 Percent of households having received health services from CBIRD by type of activities, 1988

Type of activities	Project villages	Non-project villages
Receive training/advices on health improvement	73.3	1.1
Practice after being trained/advised	35.1	0.0
Able to advise the others	51.6	0.0
Receive CBIRD supported health services		
a) child immunization	41.5	0.5
b) body weighed	41.5	0.5
c) food supplementation	25.3	0.3
d) treating of ailments	33.2	0.8
(Number of households)	(419)	(369)

Note : Data are from the socio-economic survey.

Table 6.2 Percent of households (with MWRA 15-49 years) having received family planning services from CBIRD, 1988

Family planning services	Project villages	Non-project villages
Having had F.P. education	81.4	1.8
Practice after been advised	48.4	1.1
Able to advise the others	62.1	1.8
Receive free or low cost contraceptive devices	17.1	0.7
Receive F.P. referral services	8.4	0.0
(Number of households)	(322)	(271)

Note : Data are from the socio-economic survey.

For family planning services, as seen from Table 6.2, around 80 percent of respondents in the project villages received family planning education from CBIRD, while only 2 percent in the non-project villages did so. The proportion of respondents in the project villages who practiced family planning receiving after the advice, received free or low cost contraceptive devices and were referred for family planning services by CBIRD are 48, 17 and 8 percent respectively.

Table 6.3 yields data on the percent of services supported by CBIRD within the last three years as reported by the respondents during the impact survey. In general, the respondents in the project villages were reached by CBIRD to a considerable extent, especially by the nutritional surveillance of the underfives. But a certain portion of respondents in the non-project villages also received the services. This finding might be dubious with regards to the

reliability of the response. However, CBIRD has been working with the local health authority in supporting these health service activities. One sub-district health officer is responsible for a group of villages which cover both project and non-project villages. So his services were provided to both project and non- project villages. This is another example of the spill-over effect of the CBIRD project.

Table 6.3 Percent of households (with children of underfive) having experienced in nutrition related services from CBIRD, 1988

Type of service	Project villages	Non-project villages
Nutritional surveillance (body weighed)	94.0	31.7
Referring the malnourished children to the hospital	28.7	0.0
Training on nutritional knowledges*	64.3	7.3
Supplementary food or powder milk received	36.2	14.8
(Number of households)	(115)	(41)

Note : Data are from the health and nutrition survey.
* Topics included general nutrition knowledge, knowledge on infant and young children feeding, supplementary feeding and food preservation.

2. FAMILY PLANNING AND FERTILITY

2.1 Contraceptive Knowledge

Over 90 percent of respondents, married women aged 15-49 years, knew about the methods currently being provided by the National Family Planning Program (NFPP), i.e. IUD, pill, injectable contraceptives, famale sterilization, vasectomy and condom, both in project and non-project villages. There are no significant differences between the two surveys with exception of knowledge on norplant which used to be very low. The increase in percentage of MWRAs knowing about this particular method is remarkable, with a much higher level in the project villages.

2.2 Contraceptive Prevalence

The percentage of respondents currently practicing various methods of contraception are shown in Table 6.4 along with the overall level of contraceptive prevalence. It should be noted that at the time of the impact survey in 1988, the contraceptive prevalence rates in both groups of village were as high as 68 percent, which is in the range of the national CPR (CUPS, 1987) of 70%. This is a satisfactory level for achievement of the sixth Plan target.

Table 6.4 Percent of contraceptive prevalence among married women aged 15-49 years by specific method

Contraceptive method	Project villages		Non-project villages	
	Before	After	Before	After
All methods	57.7	67.9	51.9	68.0
Pill	20.0	12.7	12.3	12.0
IUD	10.6	14.0	4.8	6.4
Injectable	4.6	13.0	3.8	12.0
Female sterilization	13.4	19.4	13.7	19.9
Vasectomy	8.3	8.6	17.1	16.9
Condom	0.9	0.0	0.3	0.4
(Number of sample)	(350)	(315)	(293)	(266)

Almost all current users were concentrated among the five contraceptive methods provided by the NFPP. For those in the project villages, the pill seems to drop the most in popularity and gives way to the IUD, injectable contraceptives and female sterilization. Acceptance of vasectomy was at a similar level at 8 or 9 percent for both surveys. The most popular method among this group was female sterilization, at 19 percent of total MWRA's.

For couples in the non-project villages, in the baseline survey, vasectomy was found to be the most popular method, with a CPR of 17 percent, but there was no change in the magnitude of the rate during the impact survey. Female sterilization (14%) first in ranking among other methods in the impact survey (20%). Pill and IUD use remained unchanged over time, while there is an increase in acceptance of the injectable similar to that in the project villages.

With references to the source of contraceptive services of current users, similar patterns of change in services were found in both groups of village. The large majority of users relied on the government sources; more than half of the current users went to the Nang Rong District hospital for the services. The health centers are the second most used source of service outlets, with similar patterns for the two reference groups. The drug store was used by only 2-3 percent of current users, as well as the private clinic. The village health volunteers also play some role as service providers, about 3 percent in the project villages.

2.3 Fertility Status

Table 6.5 summarizes the changes in the cumulative and current fertility indicators in the project and non-project villages between the baseline and the impact surveys.

Table 6.5 Cumulative and current fertility among the respondents

Fertility status	Project villages		Non-project villages	
	Before	After	Before	After
Cumulative fertility				
Average number of children everborn to MWRA aged 45-49 yrs	6.5	5.7	6.8	6.8
Standardized average number of children everborn to MWRA aged 15-49 yrs	3.4	2.9	3.8	3.3
Standardized average number of living children to MWRA aged 15-49 yrs	3.0	2.8	3.4	3.1
Current fertility				
% Currently pregnant	8.3	5.7	8.9	4.9
Index of marital fertility (Ig')	0.30	0.32	0.59	0.38

Completed fertility, defined as the number of children everborn to women 45-49 years of age, reveals an average of 6.5 children which decreases to 5.7 children in the project villages, whereas an average of 6.8 children among the non-project villages was unchanged over the two time periods.

Regarding the average number of children ever- born and living children, the standardized means show a slight decrease in both groups of villages, with lower levels in the project villages. For instance the mean number of children everborn in the impact survey were 2.9 and 3.3 children for project and non-project villages respectively. The corresponding mean numbers of living children were 2.8 and 3.1 children.

The level of current fertility summarized by the index of marital fertility (Iq') and pregnancy rates was in the same range for both project and non- project villages which is consistent with the levels of contraceptive prevalence rates among the sample of the two groups (68%).

3. MATERNAL AND CHILD CARE

In order to measure maternal care health, this study examines maternal practices for their health and care during the last pregnancy. Respondents were MWRAs whose last child was under 2 years of age at the time of the survey. The prenatal (antenatal) and intranatal care characteristics are selected because they can be explored with more reliability. Child health is studied by examining the basic immunization and nutritional surveillance services provided to children from birth up to 5 years of age. Information pertaining to patterns of food intake and nutritional status of the underfives are described under later sections.

3.1 Last Pregnancy

As shown in Table 6.6, there were 106 and 75 women from project villages and 113 and 55 women from non-project villages in the baseline and impact surveys respectively. There is a consistent reduction in the number of women with children under two years of age in both groups of villages between the two surveys.

Table 6.6 Percent of respondents with the last child under 2 years of age by antenatal care status

Antenatal care status	Project villages		Non-project villages	
	Before	After	Before	After
Having attended ANC clinic	60.4	88.0	58.4	74.5
Received tetanus toxoid	51.9	74.7	49.6	69.1
(Number of sample)	(106)	(75)	(113)	(55)
Type of service outlets for antenatal care				
Hospital	57.1	60.6	57.6	65.9
Health center	33.4	37.9	30.3	33.1
Private clinic	9.5	1.5	12.1	0.0
Total	100.0	100.0	100.0	100.0
(Number of sample)	(64)	(66)	(66)	(41)

3.2 Antenatal Care (ANC)

The percent of the sample population who had ever received antenatal care by type of health service outlet and proportion having received tetanus toxoid during their pregnancies are shown in Table 6.6. Apparently, the proportion of women under study who received proper services during their prenatal periods was increased over the period of 4 years into a satisfactory level, i.e. over 75 percent of pregnant women had received antenatal care services and around 70 percent got tetanus toxoid. Hospital and health centers were the two main sources of prenatal service.

While an increasing proportion of women received services over the time period in both project and non-project villages, the percentage is higher in project villages. This is consistent with the data on the percentage that reported receiving service from CBIRD presented earlier.

3.3 Delivery

During the baseline survey, it was found that most of the sample women had delivered their babies at home (64 and 71 percent), and hospitals came second in terms of ranking (27 and 16 percent). A reduction of delivery at home by half is observed in the impact survey, for both project and non-project villages, but there was a higher proportion in non-project villages. It should be noted that more than half of the deliveries during the last two years have taken place in the hospitals and health centers (Table 6.7), again, with lesser proportion among women in the non-project villages.

Regarding birth attendants, a little over 30 percent of the sample, in both groups, had their deliveries attended by Mohtamyae or traditional birth attendant. This was a reduction of 20 percent from the time of the baseline survey. Around 60 percent of the deliveries were attended by qualified health personnel, i.e. physician, nurse and midwives, which reflects a satisfactory movement towards the goal of the health development program of Thailand.

Table 6.7 Percentage distribution of respondents with last child under 2 years of age by place of delivery and type of birth attendants

Place of delivery and type of birth attendants	Project villages		Non-project villages	
	Before	After	Before	After
Place of delivery				
Hospital	27.37	57.3	15.9	54.5
Health center	1.9	4.0	5.2	3.6
Private clinic	5.7	0.0	7.1	0.0
At home	64.1	36.0	70.8	41.8
Others	0.9	2.7	1.7	0.0
Total	100.0	100.0	100.0	100.0
Type of Birth attendants				
Physician	14.1	36.0	17.7	23.6
Nurse	10.40	24.0	4.4	29.1
Midwives	12.3	4.0	7.1	5.5
Traditional birth attendant	52.8	33.3	53.1	36.4
Relative/husband	10.4	2.7	17.7	5.4
Total	100.0	100.0	100.0	100.0
(Number of sample)	(106)	(75)	(113)	(55)

3.4 Child Care

Data on child care in this section were collected through the household survey, including information on basic immunization and nutritional surveillance of children under 5 years of age. All children of this age residing in the sample households were included in the study.

The coverage rate of DPT vaccination by single year of age (percentage of children who had received complete dose of DPT to total sample of children of the same age) and for all underfives are displayed in Table 6.8 comparing the two surveys and the two groups of villages. At the time of the impact survey, the percent coverage of DPT among children aged 4 years was as high as 85 percent in the project villages and 54 percent in the non-project villages. It is of interest to observe an increment in percent coverage of complete dose of DPT vaccine in each age and in the total group over this four-year period. In addition, higher coverage among the underfives in the project villages is an indication of the impact of the CBIRD project.

Table 6.8 Percent of children under 5 years of age received DRT and BCG vaccination by single year of age

Age of children	Project villages		Non-project villages	
	Before	After	Before	After
	Percent of children recived complete dose of DPT			
Under 1	5.9	27.8	19.0	18.8
1 - <2	29.6	73.2	21.3	54.2
2 - <3	31.6	79.3	36.7	60.0
3 - <4	19.1	50.0	22.0	48.3
4 - <5	36.1	85.0	14.9	54.3
All under fives	26.0	60.6	22.8	47.1
	Percent of children received BCG vaccination			
Under	12.4	80.6	24.1	62.5
1 - <2	46.3	75.6	29.8	58.3
2 - <3	26.3	79.3	40.8	54.3
3 - <4	27.7	52.9	32.6	55.2
4 - <5	28.0	60.0	29.8	51.4
All under fives	32.2	70.6	31.2	56.1

BCG vaccination for the prevention of tuberculosis is also examined in this study. As a routine service, the BCG vaccine should be given to every baby delivered in the hospital. Table 6.8 shows that the coverage rates for children at each single year of age were higher than 50 percent. The rate was highest among infants in the project villages (81 percent) and lowest among children 48-59 months in the non-project villages (51 percent). Thus a considerably higher percentage coverage of BCG vaccination was observed in the project villages.

Nutritional surveillance has been part of the national health program during this study period. It was apparent that 90 percent of underfives in the project villages had been weighed during the year prior to the impact survey, while the lower proportion of the corresponding group from non-project villages had done so.

4. FAMILY NUTRITIONAL KNOWLEDGE AND PRACTICES

The results described under this section are derived from the health and nutrition survey. The baseline dietary survey was conducted in 1985, one year later than the baseline survey for socio-economic, health and family planning as described earlier in Chapter 2. The changes, if any, are occurred within the three-year period.

4.1 Educational Background of Mothers and Source of Nutritional Knowledge

A majority of the mothers in the sample were still characterized by primary education. Almost 85 percent attained 4 years of formal education or less which is common for rural women in Thailand. When asked about sources of knowledge on food and nutrition apart from what they had learned from schools, the mass media, radio and government documents are the three main sources mentioned. Apparently, there was an increase in the proportion of mothers under study who received nutritional knowledge through the mass and educational media in both groups of villages over this three-year period but at a low level of not more than 30 percent. Television is more often mentioned as a source of knowledge among the project village women at the time of the impact survey.

Table 6.9 Percent of mothers who ever received nutritional knowledge by type of mass media

Mass media	Project villages		Non-project villages	
	Before	After	Before	After
Radio	15.0	33.9	37.5	29.2
Television	4.3	20.9	2.5	9.8
Official documents	2.2	23.5	10.0	26.9

At the time of the baseline survey (1985) only 4 percent of mothers said that they had attended a training session on food and nutrition. This proportion among the project villages sample increased to 64 percent, with CBIRD mentioned as their resource (Table 6.3). This reflects one of CBIRD inputs in these 5 project villages, i.e. training of mothers on maternal and child care and nutritional knowledge.

4.2 Knowledge on Food and Nutrition

The questionnaire consisted of 2 parts, one on general nutritional knowledge and one on knowledge of feeding infants and young children. Scores are given on each item of the questionnaire, the total score of each set is calculated and then rated as "good", "acceptable", and "unacceptable". A classification of mothers under study according to these ratings on nutritional knowledge is given in Table 6.10.

The proportions of mothers rated as "good" on general nutritional knowledge was on the level of around 65 percent for both groups of village and did not change much over time. Furthermore a decrease in this proportion in non-project villages was observed.

Table 6.10 Nutritional knowledge of mothers under study

Level of nutritional knowledge	Project villages		Non-project villages	
	Before	After	Before	After
Rated as good on general nutrition knowledge	64.5	66.2	65.0	58.5
Rated as high level on infant & young children feeding knowledge	10.8	22.6	7.5	12.2
Rated as an unacceptable on infant & young children feeding knowledge	4.3	0.9	12.5	2.4

With reference to specific knowledge on the feeding of infants and young children, an increase in the proportion of mothers rated high and a decrease in the proportion rated as unacceptable were observed in both groups, although mothers in the project villages scored higher.

4.3 Supplementary Feeding

This section discusses the practice of mothers regarding supplementary food given to infants apart from breast milk or breast milk substitute. An appropriate age when a particular food should be given is recommended by the Ministry of Public Health. Table 6.11 presents the findings on percent of infants who were given supplementary food too early or too late as compared to what is recommended. The data indicated an increase in the proportion of infants being given appropriate supplementation in both groups of villages but more among project villages, especially for rice, ripe banana and fruits, up to 60 percent.

Table 6.11 Percent of infants having had an appropriate supplementary food (Vs. Thai Recommended Practices) by type of food

Type of food	Project villages		Non-project villages	
	Before	After	Before	After
Rice/starch	27.5	55.6	2.6	24.4
Riped banana	35.2	60.8	12.8	53.7
Fruits	16.5	60.9	17.9	46.3
Eggs	13.2	24.4	20.5	17.1
Fish	3.3	20.8	12.8	12.2
Other animal meat	5.5	18.3	12.8	2.4
inappropriate - too early				
Rice/starch	64.9	41.7	92.3	63.4
Riped banana	34.1	28.7	30.7	21.9
Fruits	13.2	18.2	12.8	12.2
inappropriate - too late				
Eggs	81.3	63.4	71.8	65.9
Fish	92.3	70.5	74.6	70.7
Other animal meat	83.5	73.0	76.9	78.1
Vegetables	78.0	51.4	66.7	58.6

Note : Thai Recommended Practices:
3-6 months : ground rice or starch, riped banana
4-6 months : fruits, eggs
5-6 months : fish, vegetables
7-8 months : animal meat

A reduction in the proportion of infants given rice and ripe banana too early are observed, but this is not the case for fruits. The proportion given eggs, fish, meat and vegetables too late has decreased, but still is at relatively high levels that could be corrected through further education of mothers on infant feeding practices.

4.4 Food Restriction when Taken Ill

In rural areas, there prevails the belief that one should refrain from eating particular types of food when taken ill. This is believed to accelerate recovery, especially for infants and

young children. By this practice, children may be depleted from essential nutrients. Data on Table 6.12 reveals that such practices still prevail among the Nang Rong population.

Among the list of foods restricted for children when they are ill, animal meat is the most significant one. It is apparent that the proportion of mothers who reported restricting animal meat decreased in both groups of villages, to a satisfactory level among those in the project villages. The proportion restricting fats and vegetables followed a similar pattern, but there was not much difference for fruits.

Table 6.12 Percent of mothers reported of restriction on particular type of food when their children were taken ill

Type of restricted food	Project villages		Non-project villages	
	Before	After	Before	After
Animal meat	28.6	7.0	64.1	22.0
Rice/starch	4.4	0.9	12.8	0.0
Vegetables	25.3	2.6	25.6	4.9
Fruits	30.8	21.8	35.9	29.3
Fats	11.0	2.6	23.1	9.8
Ice	11.0	6.1	23.1	4.9

In conclusion, over the three-year period the data have shown an improvement in nutritional knowledge, specifically the feeding of infant and young children. Some changes in practices in an appropriate direction such as on infant's supplementary feeding and food restriction were observed and were more pronounced among mothers in the project villages.

4.5 Food Consumption and Adequacy

The foods consumed by children in the sample were measured by the 24-hour dietary recall methodology[1] . Data are expressed in terms of average intake of the individual. Mean weights of nutrients intake are then compared to the Thai: RDA level[2], the degree of adequacy is classified into 4 levels as follows:

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1 "The 24-hour dietary recall" is a special method of collection, in detail, the history of food consumption during the past 24-hours. The technique is highly complicated but explained elswhere (Pradipasen, M. et. al, Nangrong Dietary Survey, IPSR publication No. 95, 1985).

2 The RDA stands for "Thailand Recommended Daily Dietary Allowances".

a) adequate, an amount of intake is equal to or more than 100 percent of the RDA;
b) acceptable, an amount of intake is in the range of 75-99 percent of the RDA;
c) low, an amount of intake is 50-74 percent of the RDA; and
d) deficient, an amount of intake is lower than 50 percent of the RDA.

Table 6.13 demonstrates the percentage distribution of the underfives who received acceptable (75 percent an above as compared to RDA) dietary intakes by each nutrients. Fats, appear to have been consumed at low level eventhough the proportion of the under-fives in the sample of 1988 survey with a deficient intake of fats has been reduced in both groups of villages. Protein and carbohydrate intakes were in a satisfactory direction.

Table 6.13 Percent of the underfives with acceptable dietary intake of each nutrients (75% and above as compared to RDA)

Nutrients	Project villages		Non-project villages	
	Before	After	Before	After
Energy	43.1	46.1	17.5	50.9
Protein	66.7	84.3	62.5	85.3
Fats	20.4	34.8	27.5	41.5
Carbohydrate	44.1	53.1	27.5	39.0
Calcium	0.0	13.1	7.5	17.1
Iron	78.5	72.1	75.0	68.3
Vit A	69.9	82.6	72.5	85.4
Vit B1	50.6	38.2	25.0	56.1
Vit B2	31.2	18.3	27.5	21.9
Niacin	36.6	27.0	12.5	9.7
Vit C	51.6	63.5	37.5	39.0

The majority of children in the sample were calcium deficit (90 percent) at time of 1985 survey but this proportion has been decreased to around 60 percent in 1988 on the contrary. Iron intakes are at adequate levels for three-fourth of the children and the proportion of with deficient intake was in the range of 10 percent.

With reference to vitamin intake, vitamin A is the first in ranking in terms of adequacy of intake in both groups of villages. More than half of the children received deficient intake of vitamin B1, B2 and Niacin during the 1988 survey, with only vitamin C seeming to be consumed at higher levels especially in non-project villages.

5. NUTRITIONAL STATUS OF THE UNDERFIVES

Nutritional status of the underfives was measured by prevalence of protein-caloric malnutrition, which is assessed by the growth monitoring record, the weight by age criteria based on Gomez's classification to detect the prevalence of the PCM. Table 6.14 shows the nutritional status of the sample children.

Table 6.14 Nutritional status of the underfives

Nutritional status	Project villages		Non-project villages	
	Before	After	Before	After
PCM (Protein-caloric malnutrition)				
Normal	37.7	48.2	45.2	39.0
1	43.9	43.9	42.6	58.5
2	18.4	7.9	12.2	2.4
3	0.0	0.0	0.0	0.0

The prevalence of malnutrition among these children was found to be decreasing in both groups of village over this three-year period. In the impact survey, the proportion of 2 PCM has been reduced to 2 percent in the non-project villages, though the 1 PCM has increased by 15 percent. The project village seems to be better off in terms of having a greater proportion of normal children, and for the 1 PCM and reduction in the prevalence of 2 PCM.

Considering the level of adequate energy and protein intake with the prevalence of PCM among the underfives in our study, changes in the proportion of acceptable intakes during the study period appear to be consistent with the changes in prevalence of malnutrition in the two groups of villages.

6. CONCLUSION

It is worth to note that the variables selected for study the impact of CBIRD are all factors mediating the project inputs and the health status of the population. Women and young children are selected as the target population because of their sensitivities to change and of course, their higher health risks.

A change in knowledges and practices of these selected variables is observed during the study period of the CBIRD project in both groups of village, but more pronounced among sample in the project villages.

Such variables are family planning practices and fertility status, antenatal care, and basic immunization among the underfives. Improvement in nutritional knowledge of mothers is observed, which reflects in a change in practices in appropriate direction, i.e. on infant's supplementary feeding and food restriction. Reduction in proportion of malnourished children is appear to be consistent with the improved level of adequate intake of total energy, protein and fats.

Improvement in health status of the population needs a longer period of time and more inputs. As expected, in this study, the pattern of illness has not changed in both groups of village, eventhough the improved patterns of utilization of health care services have been observed and they are in accordance with government health policy.

However, an impetus of CBIRD implementation on health and nutrition activities appears to be in an appropriate approach, of which should be recommended for future rural development program, until the goal of HFA be acheived.

CHAPTER 7
PUBLIC VIEWS ON THE CBIRD PROJECT

The view of the public towards the CBIRD project are discussed in this chapter. This study of public attitudes has focused on six groups of people. These target groups are:

(1) local villagers;
(2) official persons;
(3) local merchants;
(4) community leaders;
(5) CBIRD field workers; and
(6) village key informants.

The local villagers interviewed were those who either presently or previously participated in any CBIRD activities, regardless of their socio-economic status. Official persons, the second group interviewed are from the government sector. The third target group interviewed was merchants in the district market. They were chosen to investigate because of their influence on the pricing and marketing of goods produced by CBIRD activities. The fourth group interviewed was community leaders. This include members of village or district committee and heads of villages. The fifth group interviewed was CBIRD field workers. Key informants from several project and non-project villages were the final group interviewed.

The aim of this study can be divided into four categories:

(1) to get the aggregate picture of changes in the local villagers' consumption patterns;
(2) to investigate the effectiveness of the program on the well-being of the villagers, including the most disadvantaged group of poor people;
(3) to determine the self-reliance potential among villagers; and
(4) to study the appropriateness of the CBIRD approach.

Indepth interviews, focus group discussions and participant observation were used as the tools to collect the information used in this study. The interviews were conducted in the same time period as the quantitative questionnaire survey was taking place. Households were selected on the basis of their participation in the CBIRD activities. Most of the respondents have been involved or participated in at least one CBIRD project. Villages selected for the study include;

Nong Plong, Nong Yai, Tung Mon, Hua Sapan, Khok Pet, Ma Kharm Phrong, Khan Luang, Khok Makar, Nong Pa-ong, Kawao, Sa Dao and Nong Talumpuk. Even though these are all project villages, it is important to understand that the attitudes and information presented in this chapter may not be representative of all villagers. In any case, the conclusions presented in this chapter may be used as a guideline for future projects or research studies.

1. LOCAL VILLAGERS

Villagers interviewed in the study are involved either in the cash generating projects or non-cash generating projects of the CBIRD program. The main source of this information is the household heads and their spouses. Target households consist of both self-sustaining families and poor families. Indepth interviews are the main technique used in the study.

Self-sustaining families include i) the rich households (economically better off households based on villagers' standard) and ii) the subsistence level households. Even though rich households represent only a very small group of people in this survey, their existence is needed to use as a comparative index both in terms of the attitude and economic survival strategy study. The subsistence level households, on the other hand, represent the majority of the villagers. They are households that make a subsistence level of income. They are the most active participants in the CBIRD program.

The results of the study show that both the rich and subsistence level households express the same positive attitudes towards the CBIRD program. They believed that, during the past few years, CBIRD officials have been successful in setting up somewhat stronger basic economic activities among villagers. It is apparent that some subsistence level households have been greatly affected by the program since they have gained a certain increase in their income level. It is also found that rich families are more likely to be involved in the training programs, such as crop improvement training programs, rather than participating in the cash generating projects. One possible explanation for this is that rich households are able to operate their cash generating activities without the help of the CBIRD credit system. Technological advice seems to be more needed among this group of villagers.

It is noted that most successful subsistence level households possess some basic assets either in form of land (rice field), cash, or building assets such as a small rice mill. These households are more likely to take the risk in a CBIRD investment since they have assets to insure them against any business failure. Many of them are involved in the cash generating projects such as pig raising and fish raising. Most of them express satisfaction in the project.

Complaints are also found mostly on the topics of technology adjustment, unstable market price, shortage of demand and the high cost of livestock food. Nevertheless, it seems that they enjoy the benefits received from these activities, since most of the respondents indicate the determination to continue their cash generating activities.

One strong remarkable thing that needs to be pointed out is that most villagers which are successful in the CBIRD program tend to share one distinguishing characteristic. Most of them have a great understanding of economic "cash flow". They know how to make their time and energy productive. These are the group of people that generate quite a large amount of money from the program and intend to expand their economic activities in the future. They believe that their activities could be continued even in the absence of the CBIRD program.

A good illustration of this point comes from a middle aged woman who has been involved in CBIRD pig raising activity.

Interviewer : Where did you get the money to buy these pigs?

Respondent : I used the earnings from my last pig sales.

Interviewer : And how do you feed them? Where do you get the food or the money to buy food?

Respondent : I have a vegetable garden. I took the money from selling those vegetable to buy food for the pigs. For the first bag I paid cash. Then I signed *(informal Thai loaning system)* for the second bag of food. And then I will sell some more vegetable, pay for the second bag and sign my name for the third bag. Using this system, I will never be in trouble.

Interviewer : Why did you decide to raise pigs?

Respondent : I couldn't stand doing nothing. I have vegetables left over. Instead of throwing them away I can feed them to the pigs. You see, pigs are my bank account.

Interviewer : What do you mean by that?

Respondent : Well, it's easy. I spent some money buying pigs. I raised them with left over vegetable and some special pig food that I bought on credit. And when I sold these pigs I got quite a large amount of money.

Interviewer : And if CBIRD withdraws, would you continue this pig raising activity?

Respondent : That's for sure.

It is the intention of this study to see whether the CBIRD projects have affected any spending and consumption patterns among villagers. The majority of the answers gathered by the qualitative team have indicated apart from the money used for investment, that most of the money generated from the program was spent in 3 different ways:

(1) food;
(2) children's education; and
(3) household items.

Many respondents said they spend most of their money on food. These include meat, rice, salt, pepper and fish sauce which are part of the Northeastern daily diet. Others invest the money mainly on their children's education. This includes expenditure on tuition and fees, school uniforms and texts. Some reported their spending on other household items, such as furniture, jewelry or tape players. Very few spent the money on outside entertainment. However, it is interesting to note that very few respondents show determination to keep these CBIRD earnings for savings. Almost all of them spent the money to satisfy basic needs, but some used extra earnings to buy unneeded items. More strategies may be needed to encourage this group of people to utilize their money more effectively.

Among the most disadvantaged group of people in the rural Northeast are the poorest villagers. They are households that barely survive on a daily basis. They possess either a very small amount of land or no land at all. Most of them derive their income from wage labour. The majority of them are in the older age groups. They are a group of people that lack: (a) time; (b) manpower; and (c) basic assets.

Since most of them are involved in labour- intensive work, very few of them could join the CBIRD activities. And among those who participated the majority of them chose to be involved in the small animal raising projects such as chicken and duck raising. This is because these projects demand less time and less cash investment. Even though this group of villagers bear a greater risk in terms of business failure than the other group since they lack any financial security, they still show strong positive attitudes towards the CBIRD program. They believe that the projects have, to some extent, increased their living standard. They have more opportunities to consume meat, eggs and vegetables. Moreover, they believe that the CBIRD program has been very helpful to them in terms of providing agricultural education and technology. However, it is quite apparent that the absence of CBIRD projects will have great impact on them. This is because most poor villagers who participated in the program still cannot totally sustain themselves. Without the support from CBIRD in both financial and

market resources, this group of households may not be able to continue their economic activities. The barriers they confront are too strong to overcome in a short time period.

It is possible to conclude that the CBIRD program has been successful to a certain degree since most of the households, regardless of their economic status and the type of projects they are involved in, have expressed very positive attitudes towards the program. Most of the villagers seem to receive a certain kind of benefit from the CBIRD activities, either in the form of a higher living standard, better food consumption or new technology. However, it is quite obvious that part of the villagers' success also depends on their individual readiness in terms of manpower and financial assets. The success of most villagers requires a combination of all these elements.

2. OFFICIAL PERSONS

In order to evaluate the viewpoint of public officials of the CBIRD program, the local development officer, the district agricultural officials, the district animal officer, the district fishery officer, the manager of the Bank for Agriculture and Co-operatives, the agricultural co-operative officer for Nang Rong, the deputy district officer for development, the head of the government sericulture project and the health center officer were interviewed.

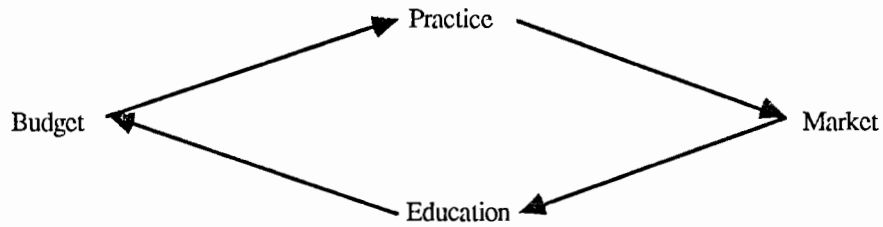
It was found that those officials who have coordinated with CBIRD had a very favorable view of the program. They said that in the past they were the only agencies working on agricultural development and that CBIRD has greatly supported them in their activities. They feel that CBIRD is able to be more effective than the government programs for the following reasons:

(1) CBIRD field workers are only responsible for a few villages while government officials are responsible for many;
(2) CBIRD has more funding available for their project; and
(3) CBIRD has many more vehicles and other equipment available.

Officials in Nang Rong indicated that they have coordinated with CBIRD on every CBIRD activity, due to the government policy on cooperation with non- governmental organization (NGO's). For example, if CBIRD is promoting chicken raising in a village, they will invite the government officials to the training session, and government officials will help to supervise the project. Another example is the CBIRD fish raising project: the CBIRD field

workers will contract with another agency to dig the pond and then contact the district fishery officer to obtain the fish.

All of the officials felt that the CBIRD model is a good one. CBIRD allows farmers to begin a vegetable or animal raising project by extending credit, which is repaid when they receive a profit. In the past the government attempted a similar program, but only for a short time period and only for one project at a time. Farmers were often unable to pay back the credit extended to them if that project was not immediately successful. The CBIRD cycle, as pictured below, contains all the elements necessary for success:



CBIRD has expertise for education, has resources, is able to aid farmers in practicing new activities, and also coordinates with the market. Government projects usually involve only education.

The one negative criticism that these officials have is that they feel that CBIRD seems to be more of a business project than a development project. Poor people are unable to take advantage of the CBIRD projects because they do not have land or other resources and are afraid to take the risk of taking credit from CBIRD. The officials feel that CBIRD should donate some projects designed for these poor people.

When asked about the self-reliance of the villagers, these government officials said that it depends on the activity. Some activities may fail when the CBIRD program ends because of a lack of credit. Others, especially when started with government coordination, will continue to succeed. They felt that the rice store and community fertilizer fund would be able to continue because villagers realize the utility of the projects.

The government officials agree that both subsistence level people and better off people receive benefit from CBIRD. The poor benefit from the "food for work* "activity and from

* "Food for work" is a program initiated and sponsored by CBIRD in which the villagers who work for the community will be paid with a package of food.

receiving CBIRD training in the village, even if they are unable to participate in the activity. They are unable to join in the saving fund project, even though they would like to join, due to a lack of funds.

3. LOCAL MERCHANTS

To study the local merchants' opinion of the CBIRD program, the vegetable merchant, the owner of the food shops, the fertilizer merchant, the rice mill merchant, the chemical (pesticide and herbicide) merchant, the seed merchant, animal buyers and sellers and the merchant who sells agricultural equipment were interviewed.

It was found that some of these key informants did not know in detail about CBIRD activities because they had not had contact with CBIRD field workers, but everyone had heard of CBIRD. Others know a great deal about the projects, including that CBIRD extends credit and promotes household income producing activities. These informants felt that the credit model was very beneficial to promote community welfare. Though they have a favorable impression of CBIRD, they said that sometimes people's lack of experience with the new activities caused them to produce low-quality products. This had the effect of lowering prices for these goods and some merchants were reluctant to buy CBIRD products. They felt that CBIRD needs to pay more attention to the market and to promoting high quality products.

Many of these merchants, such as the chemical merchant, also extend credit to farmers. The only difference is that merchants are interested in a higher price and CBIRD is interested in promoting farmers' income. Merchants who have good knowledge of CBIRD are favorable toward the program because they feel it is needed by the people in the community. CBIRD is effective at coordinating the farmers and the merchants. In the past these informants had attended seminars at the CBIRD center and felt that CBIRD's efforts to bring together farmers and merchants had a positive effect. CBIRD helped the farmers to understand how the market functions, how prices are set and the importance of quality control.

These merchants felt that CBIRD is effective at promoting development because they have the following resources:

(1) financial resources;
(2) expertise in agriculture;
(3) good supervisory system;
(4) equipment;
(5) agricultural technology; and
(6) training facilities.

The informants felt that the participation of merchants in the CBIRD program was fairly low. This is because merchants are concerned mainly with the quality and price of goods and not with the source of the goods i.e. CBIRD. From 1983 until 1987, the market for agricultural goods has not changed. They feel that CBIRD has not had a major impact on the agricultural market. This is because many CBIRD activities are short term. They had heard of the fertilizer fund that the CBIRD promotes, and felt that in some ways CBIRD is competing unfairly with the merchants. They are afraid that CBIRD will not allow them to sell fertilizer to the fertilizer co-operative, and that farmers will buy from CBIRD instead of from the merchants.

4. COMMUNITY LEADERS

In order to analyze the opinion of village leaders of the CBIRD program, the village headman from each village, the head of the village committee and the village health volunteer from several villages were interviewed. In general their view of the CBIRD program was very favorable. All of them felt that the rice store and fertilizer fund project have been very successful. Compared to the time before CBIRD, the standard of living in the villages has been raised. Roads are better maintained, sanitation is better and some households have a higher income. CBIRD workers promoted road maintenance through the "food for work" program. Water quality is better because CBIRD provides giant jars, with lids for storage. Households who have been successful with the CBIRD projects now have higher incomes than in the past. The village leaders felt that the vegetable raising projects and sericulture projects were very successful. They felt that CBIRD has also helped the poorest families by allowing them to participate in some projects such as cow raising. But they felt the success of the poor people depended on their personal characteristics: those who worked hard and had potential had benefited from CBIRD.

Village leaders felt that these activities could continue when the CBIRD program ends because government officials would continue to be involved. Even if supervision of activities is changed, people can continue to get help from the CBIRD center. Village volunteers could continue to coordinate between the villagers and the CBIRD center. Projects which have co-operatives, such as the vegetable co-operative and chemical co-operative will continue because they benefit everyone.

5. CBIRD FIELD WORKERS

CBIRD field workers were also interviewed to get their comments about the success of the program. They said that at first CBIRD selected the better off and subsistence people to participate in the CBIRD projects. This is because, even though CBIRD extended credit to start the projects, people needed resources of their own to continue them. More recently CBIRD has been helping the poorest people to participate in small projects such as duck raising. The field workers feel that they are more effective in helping poor people than the government officials, since they are able to extend credit to them. The poorest people, without land or equipment, can benefit by renting buffaloes or other equipment to use. Programs such as the fertilizer fund benefit everyone and so does the market co-operative.

However, the field workers felt that CBIRD had not been as successful as it could have been because of the severe drought in the Northeast. Many of the activities they are promoting are new to Nang Rong, such as fish raising, frog raising, and commercial chicken raising. These programs involve equipment and technology that farmers do not have experience with. For this reason it will take some time for these programs to be a success. At the same time many of the CBIRD field workers are inexperienced and feel they need time to learn how to be effective.

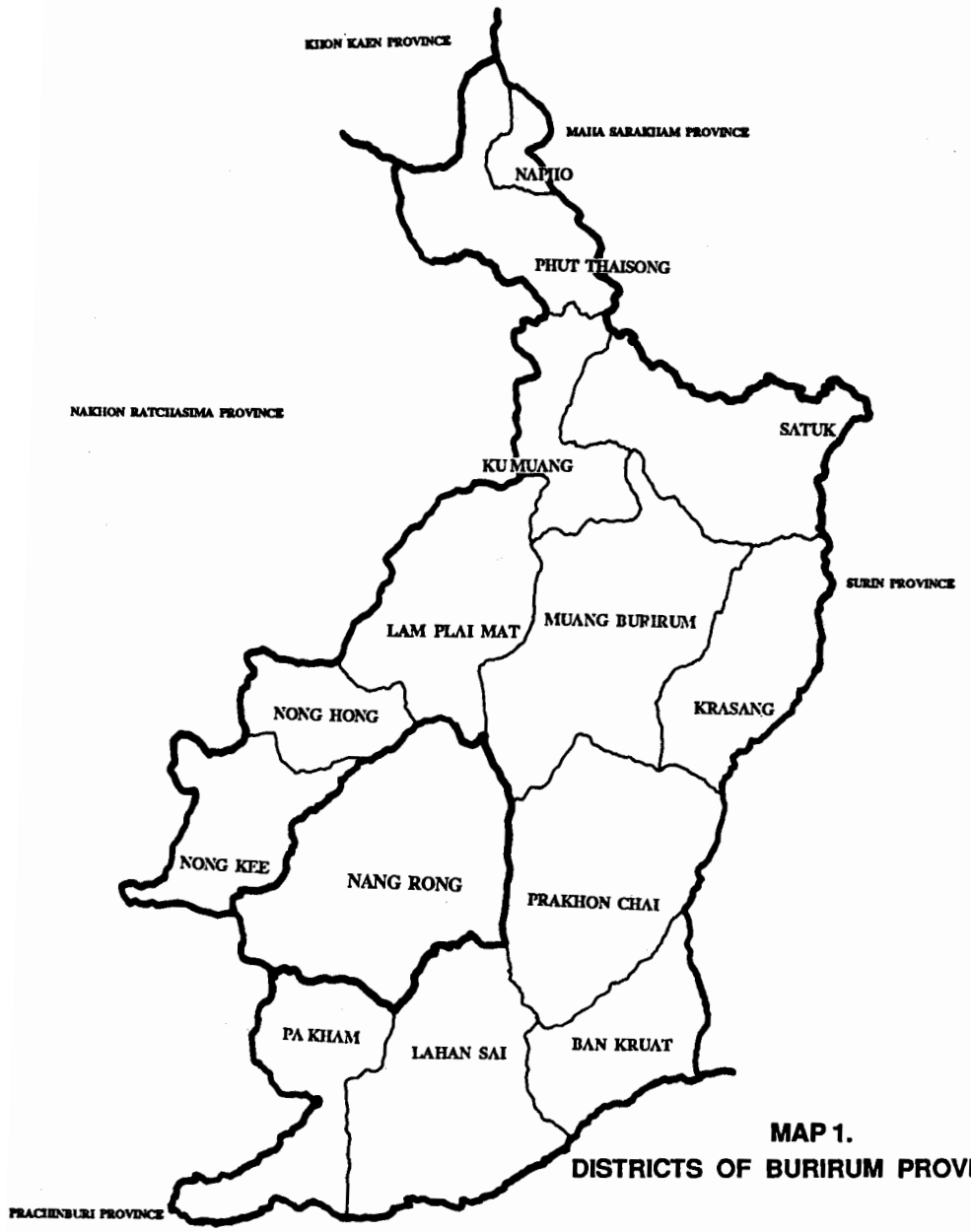
The field workers feel that projects that included a co-operative will continue to be successful if the villagers accept them. Some activities such as pig, chicken and vegetable raising, have also had a problem in marketing because of poor quality. The field workers feel that this is also due to a lack of experience. Additionally, it has been difficult for CBIRD to break into the market in Nang Rong, which is controlled by some influential people. CBIRD products are new and do not fit into the market cycle. In general though CBIRD field workers were positive about the CBIRD programs, they felt that they need more time to be successful.

6. VILLAGE KEY INFORMANTS

Key informants in 40 project villages and 10 non-project villages were asked to rank the CBIRD activities in terms of their usefulness. Rice and fertilizer fund related activities were ranked the highest as having the high community benefit and high participation. Supplementary occupation, "food for work program" and health related activities were not found by the key informants to be high in terms of community benefit although they were ranked highest in terms of having high benefit for the poor. Only small percentage of key informants was of the opinion that other CBIRD development activities benefited the poor although some of them were considered to have high benefit to the community.

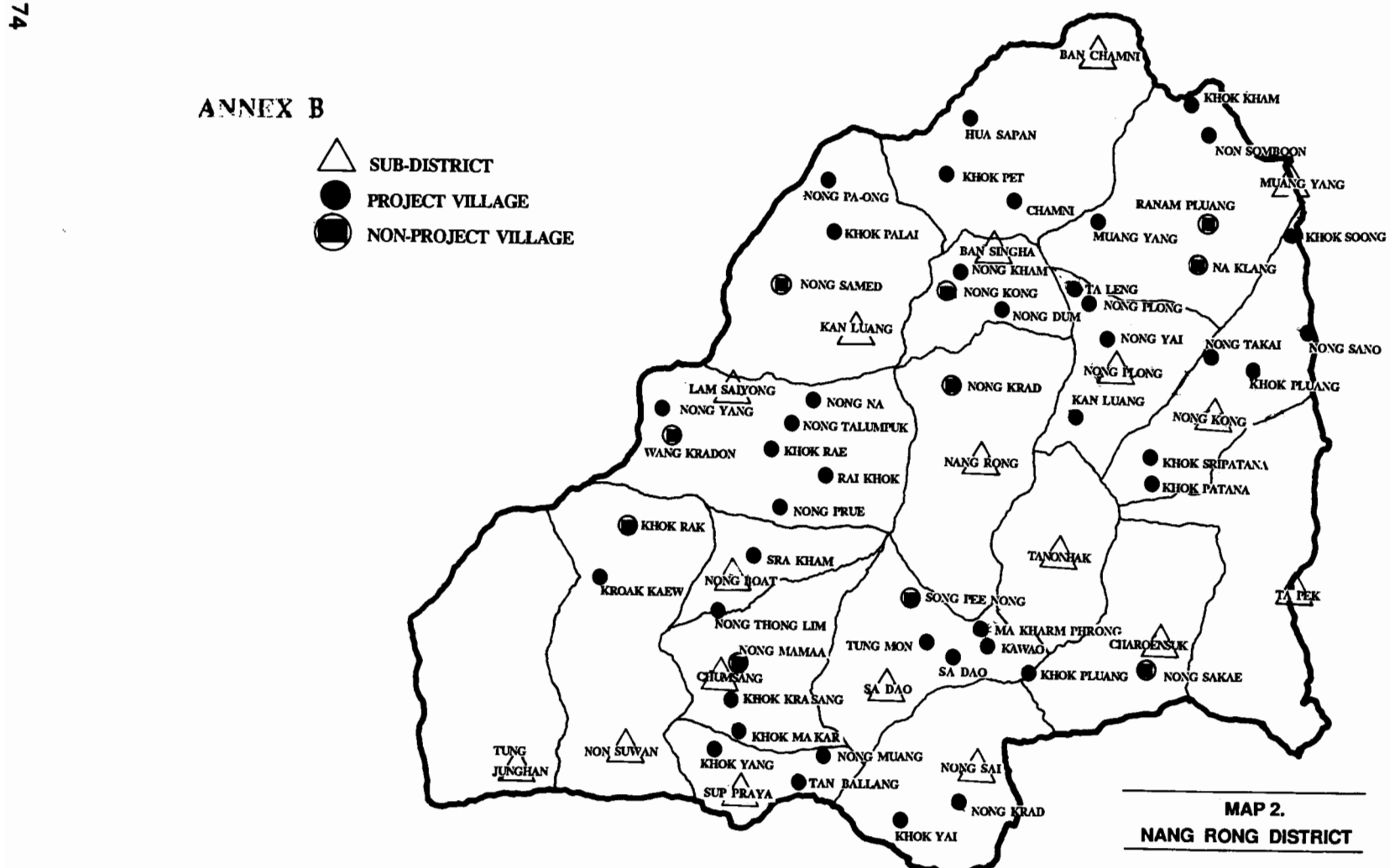
ANNEX

ANNEX A



MAP 1.
DISTRICTS OF BURIRUM PROVINCE

ANNEX B



MAP 2.
NANG RONG DISTRICT

ANNEX. C List of sub-districts and villages in project and non-project areas.

Sub-district	Project villages	Non-project villages
Chamni	Hua Sapan Khok Pet Chamni*	
Kan Luang	Khok Palai Nong Pa-ong* (Nong Bon)+	Nong Samed*
Ban Singha	Nong Kham (Nong Khlon)+ Nong Dum (Nong Tha-ying)+	Nong Kong*
Muang Yang	Non Somboon*# Khok Kham# Muang Yang	Na Klang*# Ranam Pluang*#
Nong Plong	Nong Yai* Nong Plong Ta Leng Kan Luang	
Nong Kong	Nong Takai Khok Pluang (Nong Pluang)+ Khok Patana Khok Sripatana Nong Sano* Khok Soong	
Lam Saiyong	Khok Rae (Nong Talumpuk)#+ Rai Khok Nong Prue Muu 7# (Muu 8)#+ Nong Yang* Nong Na	Wang Kradon*
Nong Boat	Sra Kham Nong Thong Lim (Lim Thong)+	
Chum Sang	Khok Krasang Khok Makar*	Nong Mamaa*

(Cont.)

Sub-district	Project villages	Non-project villages
Sup Praya	Nong Muang Tan Ballang Khok Yang	
Sa Dao	Sa Dao Tung Mon Khok Pluang* Ma Kharm Phrong*# Kawao	Song Pee Nong*
Nong Sai	Khok Yai Nong Krad	
Non Suwan	Kroak Kaew*	Khok Rak*
Charoensuk		Nong Sakae*
Nang Rong		Nong Krad*

* Villages conducted the impact survey
\# Villages conducted the health nutritional survey.
\+ New village separated from the former one.

ANNEX D. TIMETABLE OF CEP ACTIVITIES AND REPORTS