KINGDOM OF CAMBODIA
NATION RELIGION KING




TONLE SAP POVERTY REDUCTION AND SMALLHOLDER DEVELOPMENT PROJECT (TSSD)

BASELINE SURVEY

FINAL REPORT

Submitted by:
SBK Research and Development
#14, St. 185, Sangkat, Tomnob Teak
Khan Chamkar Morn, Phnom Penh, Cambodia
Phone: (855-12) 991332; (855-61) 33 888
Email: sbkresearch@online.com.kh

04 June 2014

Table of Contents

List of Annexes

List of abbreviations

A. Location abbreviations

PROVINCE CODES

BMC	Banteay Meanchey	KPT	Kompong Thom
KCM	Kompong Cham	SRP	Siem Reap

DISTRICT CODES

AKC	Angkor Chum	PCH	Prey Chor
AKT	Angkor Thum	PNK	Ponhea Kraek
BAR	Baray	PNP	Preah Net Preah
BTS	Banteay Srei	PSK	Phnom Srok
BTY	Batheay	SDN	Sandan
CGP	Cheung Prey	SNK	Sout Nikom
CKG	Chikreng	SRP	Siem Reap
DMB	Dambae	SSM	Srei Snam
KCH	Kroch Chmar	SSN	Stung Saen
KGM	Kong Meas	SSP	Serei Sophoan
KLN	Kralanh	STG	Stong
KPP	Krong Paoy Paet	STK	Santuk
KST	Kaoh Sothin	STT	Stung Trang
KSV	Kompong Svay	SVL	Svay Leu
OCR	O'Chrov	TMP	Thmar Pouk
PBL	Prasat Ballangk	VRN	Varin

COMMUNE CODES

ACL	Achar Leak	DMD	Dam Daek
BMC	Banteay Chhmar	DNP	Doun Peaeng
BML	Boeng Mealea	KAK	Kak
BTS	Banteay Stoung	KCC	Kampong Chen Cheung
BTY	Batheay	KDC	Kandaol Chrum
CBV	Chob Veari	KGS	Kaoh Pong Satv
CCH	Chong Cheach	KHV	Khvav
CGD	Chong Doung	KKC	Kouk Chak
CGP	Cheung Prey	KKD	Kouk Doung
CHK	Chhuk	KKS	Kouk Srok
CHT	Chheu Teal	KKT	Kokir Thum
CKK	Chhuk Khsach	KNP	Khnang Phnum
CLD	Chonloas Dai	KNR	Khun Ream
CLG	Chrolong	KOB	Koub
CNN	Chrouy Neang Nguon	KOK	Kouk Kakthen
CRB	Chroab	KPR	Kampong Reab
CRC	Char Chhuk	KPS	Kampong Svay
CRV	Chrey Vien	KRK	Kraek
DCK	Damrei Choan Khla	KRM	Kouk Romiet
DKD	Dang Kdar	KSD	Khnar Sanday

COMMUNE CODES cont'd ...

KSK	Kien Sangkae
KST	Kaoh Soutin
KTN	Kang Ta Noeng
KYA1	Kraya (Prasat Balang)
KYA2	Kraya (Santuk)
LGD	Leang Dai
LVK	Lvea Krang
LVR	Lveaeng Ruessei
MKK	Mkak
MNC	Mean Chey
MNG	Moung
MPG	Me Pring
NGN	Ngan
NGT	Neang Teut
NMT	Nimitt
NTA	Nam Tau
OBC	Ou Bei Choan
PAC	Preaek a Chi
PCM	Pring Chrum
PDC	Phdau Chum
PKB	Preaek Bak
PKK	Preaek Koy
PKS	Peak Snaeng
PLY	Pralay
PML	Phnum Lieb
PNL	Ponley
PNP	Preah Netr Preah
PNT	Phniet
PPL	Popel
PPT	Paoy Paet
PRC	Prey Char
PRD	Preak Dak
PRE	Prei
PRK	Pongro Kraom
PRO	Pongro
PST1	Prasat (Santuk)
PST2	Prasat (Varin)
PTH	Prey Ta Hu
PTM	Phum Thmei
PTN	Preaek Ta Nong
PYC	Paoy Char
RGK	Roung Kou
RKP	Reay Pay
RRG	Rung Roeang
RTA	Run Ta Aek
SDA	Seda
SDC	Sdaeung Chey
SDN	Sandan
SGA	Srangae
SGV	Sangvaeuy
SKM	Sa Kream
SKR	Sala Kamraeuk
SKV	Srae Khvav
SLK	Sla Kram
SMK	Sameakki
SNG	Soengh
SNL	Sranal
SNU	Snuol
SPS	Soupheas
SRC	Srah Chik
SRG1	Samraong (O'Chrov)
SRG2	Samraong (Sout Nikum)
SRK	Sour Kong
SRN	Srae Nouy
SRS	Sour Saen
SRY	Srayov
SSP	Slaeng Spean
SVL	Svay Leu
SVS	Sala Visai
TBG	Tbaeng
TKC	Tuek Chour
TLA	Tuek Thla
TPU	Ti Pou
TRB	Trab
TRE	Trea
TSB	Tuol Sambuor
TSM	Ta Siem
TSN	Tuol Snuol
VLM	Veal Mlu
VRN	Varin

B. Other abbreviations

ADB	Asian Development Bank
C/S	Commune/Sangkat
CC	Commune Council
CD	Control Domain
CPR	Common Property Resource
DFT	District Facilitation Team
DMF	Design & Monitoring Framework
DOA	District Office of Agriculture
EA	Executing Agencies
FHH	Female Headed Household
FWUG	Farmer Water User Group
HH	Household
HoH	Head of Household
IA	Implementing Agency
ICT	Information Communication Technology
IEC	Information Education Communication (materials)
IFAD	International Fund for Agriculture Development
KII	Key Informant Interview
LRP	Large Rice Producer
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoP	Ministry of Planning
MPTC	Ministry of Posts and Telecommunications
NCDDS	National Committee for Sub-National Democratic Development Secretariat
PDA	Provincial Department of Agriculture
PPMA	Provincial Project Management Advisor
PPS	Probability-proportionate-to-size
PSU	Project Support Unit
QC	Quality Control
RGC	Royal Government of Cambodia
SBK	SBK Research & Development (survey consulting firm)
SD	Sampling Design
SI	Sampling Interval
SPSS	Statistical Program for Social Science
SRS	Simple Random Sampling
TD	Target Domain
TOR	Terms of Reference
TP	Technical Proposal (for conducting the baseline survey)
TSSD	Tonle Sap Poverty Reduction and Smallholder Development project
TSTD	Tonle Sap Technology Demonstrations for Productivity Enhancement
VL	Village Leader
WG	Women's Group

List of tables and charts

TABLES

CHARTS

Executive Summary

Introduction

The Tonle Sap Poverty Reduction and Smallholder Development Project (TSSD) is a project that is being implemented over a seven year period (2010 - 2017). Some mobilization of government resources began in 2010, but the Project Consultants did not begin until July 2012. The Project is co-financed by the ADB, International Fund for Agriculture Development (IFAD) and the Government of Finland. The project will be implemented in four provinces on the eastern side of the Tonle Sap Lake (Banteay Meanchey, Siem Reap, Kampong Thom and Kampong Cham) and has a total estimated cost of USD $56 million.

The Project is implemented through two Executing Agencies (EAs) – the Ministry of Agriculture, Forestry and Fisheries (MAFF) and National Committee for Sub-National Democratic Development Secretariat (NCDDS). Within these four provinces, the project will target a total of 196 communes/sangkats located in 28 municipalities/districts (32 communes in Banteay Meanchey, 61 communes in Kampong Cham, 45 communes in Kampong Thom and 58 communes in Siem Reap). The Project is working specifically with the households that are classified as ID 2 Poor following the methodology adopted by the Ministry of Planning (MoP). The overall goal of the Project is to contribute to an improvement in the livelihood of 630,000 households in the four provinces in Tonle Sap basin by 2020.

This Baseline Survey has been designed to provide a measure of the present socio-economic and agricultural productivity status and examine the impacts of the project on agricultural productivity, income, household assets, use of inputs, cropping systems diversification, market access, income-generating activities and food security. The methodology of the survey included desk review of all relevant documents, preparing sampling design to randomly select the required number of villages and HHs for interview, development of appropriate tools to collect the required information, training of survey enumerators and supervisors, conducting the field work and preparing reports to NCDDS.

Two main tools were used for information collection:

- Individual household interviews with 2,160 households (1,680 HHs from within the proposed target districts of the TSSD project and a control group of 480 from other HHs in non-target districts of the same provinces); and
- Key Informant Interviews (KIIs) with 276 respondents comprising village & commune leaders; staff from the Provincial Departments of Agriculture (PDAs) and District Offices of Agriculture (DOAs); members of the District Facilitation Teams (DFTs); as well as some women's groups and Large Rice Producers (LRPs). The latter group was added to understand the possibilities for improved rice production which could help the project to assist the small-holder farmers.

Findings

General information

Of the 2,160 HHs interviewed, 72% of respondents were female and 36% of all HHs were female headed households (FHH). This does not mean that the percentage of FHHs in all areas is that high as the survey design was positively biased towards such HHs in that at least one third of all respondents selected were FHHs. While the majority of HHs live in close proximity to an all-weather road, almost 40% of HHs live more than five kilometers from their nearest market.

Demographics

There are a total of 9,915 persons (53% female) living in the 2,160 HHs interviewed – thus an average HH size of 4.59 persons. Age analysis of HH members shows the majority fall into the two categories of 18-45 years (42%) and 5-17 years (28%). The majority of HH members have completed only primary education (49%), with 25% of adults (28% for females) not having received any education at

all. Analysis of occupations shows that the majority of adult HH members are engaged in agriculture related occupations, followed by laboring work. There are no significant differences between the four provinces or between males and females as regards occupations. Many of the HH members who are engaged in laboring for others migrate from home for such work – an average of 26% among HH members in all provinces, with a higher number of male HH members migrating for work than females. Male migration is highest from Banteay Meanchey province at almost 50% of the adult male population. For migration outside of Cambodia, Thailand is the most common destination, particularly for HH members from Siem Reap and Banteay Meanchey provinces.

Housing and Assets owned

The vast majority of HHs own their own homes (88%), with the remainder either staying with relatives or staying in rent-free accommodation. While the majority of houses have some form of "permanent" roof, 26% of house roofs are made from local materials such as thatch, straw or bamboo – and 45% of walls are made from such local materials. Looking at total floor space (as an indicator of house size), 54% of HHs live in houses between 21 and 50 square meters, with 37% of HHs having 20m2 or less, with only 9% having house space greater than 50m2.

Many different types of assets are owned by the HHs, with the items common to most HHs being mobile phones, bicycles, TVs, motorbikes and radios but rate of ownership of assets is low – an average of only 2.69 items per HH. The average value of all assets per HH is 637,000 Riels ($159). There is strong correlation between income and asset ownership as there is a gradual increase in the percentage ownership of each asset from lower to higher income groups.

Land and main agriculture activities

The majority of HHs (90%) engage in some type of agriculture production. Livestock raising is the agriculture activity in which the largest number of HHs engage (76%), followed by rice production (67%). Less than 40% of HHs engage in fishing and less than 30% grow vegetables or fruit. Only 12% of HHs grow cash crops. Diversification of agriculture is low, with many HHs concentrating on only one or two types of these agriculture activities. Regarding gender in decision making about what activities to engage in, decisions are normally made jointly by husband and wife for all activities. Fishing is an exception where a high percentage of males decide on this activity. Where decision making is not a joint decision, more women decide on growing vegetables and fruit than men.

Land holdings among the respondent HHs are generally low, with 54% farming less than one hectare of land and another 25% with land sizes between 1 and 2 hectares. There are 17% of HHs that have no land at all and only about 5% of all HHs have 2 hectares or more. Over 80% of HHs own the land they farm, with the remainder borrowing land or engaging in crop sharing. Average land size per family is quite small, averaging 0.63 hectares per HH.

Rice production

Of the 67% of HHs who grew rice, over 90% of these grew rainy season rice only. Of the few who grew dry season rice, the majority were in Kompong Cham province. Average land size per HH for rice production was low (0.77 ha/HH). Average outputs from rice production were only about 1.5 tons per hectare for rainy season rice and almost 3 tons/hectare for dry season rice but there was a wide range of outputs among the HHs interviewed, with many getting only a few hundred kg/ha whereas a few others got six tons or more. The largest portion of rice harvested was consumed by the HHs (61%), with only 27% sold. The remainder was either kept for seed or given to other persons. Due to these low quantities of sales, income from rice per HH is low, averaging only about 300,000 Riels. As regards gender in rice production, the majority of activities are undertaken jointly by male and female HH members, with only ploughing and spraying done by more men than women. But generally the women kept any money received from selling the rice.

Cash crop production

Cash crops (excluding vegetables and fruit) are not commonly grown in many of the communes and districts surveyed. In total, only 241 (12%) of the 1,941 HHs engaged in agriculture activities grow cash crops. The highest number of HHs growing cash crops were in Kompong Thom and Kompong Cham provinces. Cassava is the most popular crop overall, followed by cashew and corn. Average outputs per hectare were almost 6 tons for cassava, 200 kg for cashew and almost 2 tons for corn. The majority of cash crops harvested were sold, yielding an average income per HH of 1.1 million Riels ($275).

Vegetable/fruit production

Of the 1,941 HHs engaged in agriculture activities only 559 HHs (29%) grew vegetables and/or fruit in the last year, with more HHs growing fruit than vegetables. While no particular vegetable stands out as being of high priority to a large percentage of HHs, fruit growing is dominated by bananas and mangos. Average outputs per HH were about 250kg of vegetables and almost 100kg of fruit. While most of the vegetables were sold rather than consumed, approximately equal portions of fruit were eaten and sold. Average income from sales of vegetables and fruit was low – only 227,000 Riels per HH for vegetables and 58,000 Riels for fruit.

Agriculture techniques

The most frequently used methods of increasing soil fertility used by HHs are manure (44%) and chemical fertilizers (43%). When asked about various IPM methods, there was relatively low knowledge of most methods and even less had used what they knew. Similarly, regarding safety measures when using chemicals, knowledge is very limited – and there is even less use of knowledge in practice.

Fishing/fish raising

Of the total 1,941 HHs engaged in agriculture activities. 764 (39%) engage in some form of fishing. Surprisingly, considering the proximity of the area surveyed to the Tonle Sap lake, very few HHs fish from this source (only a few HHs in Siem Reap province). Fishing from natural rivers, streams or sumps is the most common source of fishing. Only four of the HHs have excavated ponds. Average outputs from fishing were relatively low, averaging 154 kg per HH over the last year. HHs sold about 60% of these outputs and average income from fishing was almost 400,000 Riels per HH ($100).

Livestock production

The vast majority (76%) of HHs engage in some types of animal raising. Chickens are by far the most popular animal to raise, followed by cows and pigs. Income per HH from animal sales was higher for pigs than other animals (almost 1 million Riels per HH) but with smaller numbers of HHs engaged in pig raising, the overall average per HH was only 360,000 Riels ($90). The biggest obstacle faced by HHs raising animals was animal sickness. A possible contributing factor to this is the low number of HHs who vaccinate their animals (only 400 HHs out of the total of almost 1,500). Vaccination services were mostly provided by village livestock agents. Gender roles in livestock raising shows more work done by females (or jointly by men and women), with only housing mostly done by males.

Extension services

Very few HHs are aware of many extension services and the level of usage is even lower. The services known by most (36% of HHs) were animal health agents but only 18% had made use of them. Most HHs are generally satisfied with the services they have used to date. Only 35% of HHs knew of possible sources of information about agriculture and these HHs noted messages via mobile phones, TV and radio as the most important sources. Information they received from these sources was mainly technical information or information about where to buy agriculture inputs. Very few HHs had adopted new practices as a result of receiving this information. This issue was raised by staff of the PDAs and DOAs during the KIIs where they noted that low levels of education meant low uptake of new knowledge and lack of capital to invest in new technologies prevented HHs from putting these into practice.

Agriculture group membership

Only 94 HHs are members of some type of agriculture, animal raising or fishery group. The majority of these groups are in Siem Reap province and most of the group leaders are male. Average group size is about 15 members and most of the groups are quite new, having being formed in the last year.

Irrigation

Only 444 of the 2,160 HHs (23%) have access to some type of irrigation; with natural sources of water (rivers or streams) more frequently used than man-made irrigation schemes. These sources can irrigate over 80% of the total agriculture land of these 444 HHs and rice is the main crop they grow on this land. Only 17 of these HHs pay for their irrigation water – some pay fixed costs per year or per season and others pay by usage (either by cubic meter or an hourly rate). Most HHs have not faced any problems with irrigation but of those that have, the main problems were that the water is not always sufficient throughout the entire growing season or the water was too late at the start of the season. Only five HHs were members of Farmer Water User Groups.

Markets

Only 57% of HHs sell produce. The number of products sold is relatively low in comparison to the total number of HHs who sell products – averaging only about 1.5 items per HH The items sold by the highest number of HHs are rice, chickens/ ducks, and fish. Most HHs do not take their produce to markets themselves, the buyers come to their villages to buy their products. There was generally a high level of satisfaction with service but less so with prices obtained.

A higher percentage (67%) of HHs buy agriculture products from markets than those who sell. Items most frequently purchased are chemical fertilizers, tools & equipment and chemical pesticides. Most HHs buy directly from their nearest town or market. However for rice seeds and cows/buffalos, many HHs buy from other villagers. Piglets are often bought from sellers who come to the village. The majority of HHs are satisfied with the quality of the inputs they buy. This contrasts somewhat with information from the KIIs as respondents noted lack of quality of agriculture inputs as being a contributing factor to low agriculture production.

Non-farm income

There are four main categories of non-farm income – Small Business income, Income from Common Property Resources (CPR), Laboring income and "other" income (which includes salary from employment, remittances, etc.). All except 17 HHs had some form of non-farm income. With over 4,000 sources of income from all HHs, there was an average of almost 2 sources of income per HH. The highest number of HHs were engaged in laboring work (over 50% of all those earning non-farm income). Average income per HH from small businesses was higher than other sources of income (almost 2.5 million Riels p.a.) and the average for all non-farm income was almost 2 million Riels p.a. ($500). In total for all HHs surveyed, non-farm income contributed over 70% of all HH income, with agriculture income less than 30%.

Food security

Almost two thirds of HHs reported suffering food shortages for some periods over the last year – with 33% experiencing food shortages for over three months. The average for all HHs is just over 3 months per year. The most frequent reasons given for why HHs suffer food shortages are: they don't have enough work; they don't have land (or not enough land); and serious illness in the family that causes loss of labor income. The most common strategy in the face of food shortages is to borrow rice or food from relatives and friends but many HHs also borrow money from money lenders. It is normally the wife (or female HH member) who has to borrow the rice or money.

Savings & Credit

Only 268 HHs (12%) have family members who save money. Only 7% (159 HHs) are members of a credit/savings group and most of these groups were formed by NGO/IO projects. Approximately 24% did not take any credit in the last three years. Of those who did borrow, the majority of loans were from Banks or MFIs (39%), followed by friends/relatives or private money lenders (24% from each of these). Regarding size of loans, for smaller loans (less than 100,000 Riels), friends/relatives were the most common source; for amounts between 100,000 and 500,000 Riels, either friends or private money lenders were the preferred source but some also from MFIs; for amounts greater than 500,000, MFIs or banks were the main source of loans. Over 50% of HHs faced no problems with credit – but of the other 50%, the main problem they faced was that they feared to borrow in case they could not repay. Information from KIIs suggested a few other important issues related to credit access – such as the lack of documentation (e.g. land title) and difficulty for poor people to find someone to guarantee their loan.

Conclusions

The data shows generally similar socio-economic status between TD and CD HHs. This is logical considering HHs in both domains were chosen from among the IDPoor2 HHs in the selected villages. The data therefore provides a good basis for future comparison of change among these groups. In order to help isolate the change resulting from TSSD interventions, follow up surveys should retain the current CD HHs as much as possible because using new IDPoor2 lists for HH selection during follow up surveys would automatically exclude any HHs who had improved (or otherwise) their IDPoor status since this baseline survey was conducted. TD HHs for follow up surveys should be selected from lists of TSSD beneficiaries.

As well as establishing a baseline for future comparisons, the results from this survey can be used in the meantime by project management to help direct their inputs. The detailed Annexes attached allow assessment of data down to commune level. From this data, project management can identify specific problems within communes being targeted by the project. The full SPSS data set included with this report can allow provincial project management to conduct further analysis of any communes or villages with exceptional data that they wish to follow up on.

Data for key project indicators

The key assumptions underlying the indicators listed in the DMF (Design & Monitoring Framework) are largely supported by the data from the baseline survey. The project aimed to reduce the number of months of food shortages from three months to one month and the data shows that current average number of months of food shortages is approximately three months. Average rice yields are almost 1.5 tons per hectare for rainy season rice and almost three tons per hectare for dry season rice. While this give space to the project to achieve its aim of over 3.5 tons per hectare[1], this may be a little bit ambitious given that data collected from Large Rice Producers (LRPs) during the KIIs shows that many larger farmers do not even achieve such yields (especially for the main rainy season crop).

Current low level of income from agriculture activities other than rice (especially from cash crops, vegetables and fruit) mean that rice contributes almost 50% of agriculture income. This offers wide scope for encouraging agriculture diversification to enable the project to achieve the aim of reducing this rice dependency by 20%. However, it should be noted that challenges to such diversification could be small land sizes (or in some cases, no land) or lack of access to water for irrigation and for fishing.

The project aims to increase market access by 25%. Baseline data shows that over 40% of HHs surveyed do not sell any agriculture or non-agriculture produce. Even among those who do sell, the numbers selling each type of product is limited. Therefore there is a lot of scope to improve on these percentages.

Current participation in livelihood activities varies with higher numbers of HHs engaging in agriculture related activities compared to non-agriculture. Within the agriculture related activities the highest level of participation is in livestock raising, followed by rice production. With the exception of vegetable/fruit growing, there are lower levels of participation by FHHs compared to male headed HHs.

The baseline data shows that less than 40% of HHs in the target communes have been able to access credit from banks or MFIs. The project aims for 70% of LIG members to graduate to become eligible for such credit. As not all HHs who are eligible may actually make use of this possibility, follow up surveys will need to pay specific attention to the reasons why HHs (especially TD HHs) have not accessed any credit from banks or MFIs.

Recommendations

Based on analysis of the data, SBK would suggest that TSSD management pay particular attention to the following points:

- Land sizes are generally low (average of less than one hectare per HH) so agriculture practices should focus on intensification of the use of small plots.
- With 25% of HHs not having received any education (and females at 28%), IEC materials developed by the project should be appropriate for non-literate persons (pictorial where possible)
- As a large percentage of the IDPoor2 HHs in the target area are landless and therefore earn their living from non-agriculture activities, the TSSD project should try to invest in non-farm income generation activities (which could also help to reduce the necessity for migration)
- As a high percentage of IDPoor2 HHs (26%) migrate from their villages for work, they may be excluded from participation in decision-making sessions that could offer them alternatives to

[1] It was not specified in DMF if this is for rainy season, dry season or an average of both

migration. Therefore the project should try to arrange such meetings or workshops to coincide with times when these HHs are present in their village.

- Although a large percentage of HHs engage in livestock production, high rate of animal deaths (particularly chickens, ducks and pigs) means they gain little in income from their efforts. The project needs to promote animal vaccination as a key priority to raising the income level of these HHs.
- In spite of the fact that the target area is chosen around the rich resources of the Tonle Sap lake, very few IDPoor2 HHs seems to be able to make use of this resource. The project needs to investigate why this is the case and advocate for any policy changes necessary to ensuring better access to this resource for the poorest HHs.
- Through the KIIs, many key stakeholders in the project (such as the PDAs, DOAs, DFTs and CCs) expressed the need for further capacity building (both management and technical). The project will need to put strong emphasis on such capacity building in order to ensure the smooth running of the project.
- Although baseline and follow-up surveys can measure the wider picture of project impact, the provincial project teams should maintain detailed data on all group members in order to be able to measure more specifically the changes in socio-economic status of the members as a result of the project.

SBK team takes this opportunity to thank all those within the TSSD team for their excellent cooperation during the course of this survey. It is our hope that this project will achieve its stated objectives and help to alleviate poverty for the many IDPoor2 HHs in the selected provinces.

I. Introduction

The Tonle Sap Poverty Reduction and Smallholder Development Project (TSSD) is a project that is being implemented over a seven year period (2010 - 2017). Some mobilization of government resources began in 2010, but the Project Consultants did not begin until July 2012. The Project is co-financed by the ADB, International Fund for Agriculture Development (IFAD) and the Government of Finland.

The project will be implemented in four provinces on the eastern side of the Tonle Sap Lake (Banteay Meanchey, Siem Reap, Kampong Thom and Kampong Cham) and has a total estimated cost of USD $56 million. The Project is implemented through two Executing Agencies (EAs) – the Ministry of Agriculture, Forestry and Fisheries (MAFF) and National Committee for Sub-National Democratic Development Secretariat (NCDDS).

Moreover, the government of Cambodia through MAFF as the EA and MPTC as an Implementing Agency (IA) is implementing a Technical Assistance Project, TA 7305-Cam: Tonle Sap Technology Demonstrations for Productivity Enhancement (TSTD), with support provided by the ADB, the government of Finland; and the Republic of Korea e-Asia and Knowledge Partnership Fund, to pilot and demonstrates techniques and technologies that may be continued and further developed under TSSD. TSTD, as a Technical Assistant (TA) is innovative in nature with emphasis on piloting and demonstrating new technology and dissemination modalities and is operating in the same provinces as TSSD.

Within these four provinces, the project will target a total of 196 communes/sangkats located in 28 municipalities/districts (32 communes in Banteay Meanchey, 61 communes in Kampong Cham, 45 communes in Kampong Thom and 58 communes in Siem Reap). The selection of the communes/sangkats is based on poverty incidence, agricultural development potential, donor interventions (synergizing and complementing without overlapping), and geographic focus. The Project will focus on 16 Pilot Communes/Sangkats in 2012 and then expand into an additional 88 communes/sangkats in 2013 and encompass the remaining 92 communes/sangkats in 2014. The Project is working specifically with the households that are classified as ID 2 Poor following the methodology adopted by the Ministry of Planning (MoP).

The overall goal of the Project is to contribute to an improvement in the livelihood of 630,000 households in the four provinces in Tonle Sap basin by 2020. The project will achieve this goal through the following outcomes/outputs:

- Improved rural infrastructure to support agricultural production, market access and quality of life in rural communities;
- Improved capacity of smallholder farmers to increase agricultural productivity;
- Improved agricultural policy environment;
- Improved availability and access to quality seeds;
- Increased access to agricultural information and market data;
- Effective Project Management.

The project is expected to benefit about 630,000 households (or about 2.5 million people) in 196 communes in these four provinces through investments, training and capacity building, and livelihood field demonstrations and follow-ups. The majority of households in the project communes involved in agricultural production have less than 3.0 hectares of usable agricultural land. Those with 1.0 hectares or less are considered resource-poor smallholders, and they are the focus of the Project.

Direct project benefits will include

(i) incremental gains from higher yields and productivity of crops and other agricultural products through the adoption of appropriate inputs, such as high-quality seeds, appropriately managed land, fertilizers, water, better crop management, and improved extension services;

(ii) higher gross margins from improved market access and crop diversification; and higher market prices with reduced risk of food poisoning, particularly in the production of livestock, aquaculture, and vegetables resulting from better postharvest phyto-sanitary management;
(iii) greater access to formal rural financial services for smallholders involved in livelihood improvement groups, which will gain knowledge and graduate to being rated creditworthy; and
(iv) better incremental asset accumulation through more alternative livelihood opportunities and risk diversification, higher gross margins from increased productivity, and greater access to markets and affordable finance.

Additional benefits from better infrastructure, such as rural roads, markets, village-level storage, on-farm irrigation, and water supply and sanitation, will accrue to the communities. The infrastructure will help improve productivity, strengthen market links, reduce the risk of waterborne diseases, and improve product quality after harvest. Costs and time savings from an improvement in rural water supply and sanitation will be significant as the majority of the selected communes do not have adequate access to safe water and appropriate sanitation.

The Project will have three components:
(i) Component 1: Commune Development through a commune block grant with the following three subcomponents: (a) improving rural infrastructure supporting agricultural productivity; (b) improving capacity of smallholder farmers; (c) strengthened commune project management capacity;
(ii) Component 2: Enabling Environment for Agriculture Productivity and Diversification with the following subcomponents: (a) improving agricultural policy environment; (b) increasing availability of and access to quality seeds; and (c) increasing access to agricultural information and market data; and
(iii) Component 3: Effective Project Management. The Effective Project Management component will enable the completion of project activities on time and within the agreed budget.

II. Objectives & methodology of the Baseline Survey

The Baseline Survey has been designed to provide a measure of the present socio-economic and agricultural productivity status and examine the impacts of the project on agricultural productivity, income, household assets, use of inputs, cropping systems diversification, market access, income-generating activities and food security.

The objective of the survey is to identify the baseline data of the selected farmers and communes of the TSSD in the areas of:
(i) the agricultural production and productivity of farmers;
(ii) the Rural ICT or extension information; and
(iii) socio-economic and agricultural productivity status in the survey communes.
These data will later be later used by TSSD to determine the Project achievements or impacts.

Methodology

The methodology of the survey included desk review of all relevant documents, preparing sampling design to randomly select the required number of villages and HHs for interview, development of appropriate tools to collect the required information, training of survey enumerators and supervisors, conducting the field work and preparing reports to NCDDS.

Following the signing of the contract on 16th October 2013 between SBK and NCDDS, the following steps were carried out:
a) Staff recruitment
b) Development of survey questionnaire

c) Sampling design
d) Training of survey team and pre-testing tools
e) Conducting the field survey
f) Data processing

These steps are briefly explained in the following paragraphs. For full details, refer to the following reports previously submitted to the NCDDS:

1. Inception Report – submitted in November 2013
2. Training and pre-testing report – submitted in January 2014
3. Interim Report (Field work) – submitted in March 2014

a) Staff recruitment

SBK recruited and prepared letters of consent and contracts for all the key consultants and experts required to implement the project as set out in the technical proposal. The four provincial coordinators, four field supervisors, and 16 enumerators were also recruited for the collection and recording of the survey data.

b) Developing the survey tools

Two tools were developed for information collection – a questionnaire for use at HH level and guiding questions for Key Informant Interviews (KIIs). First drafts of these tools were made after studying the documents provided by the TSSD management, namely the Project Description and the DMF (Design and Monitoring Framework). These drafts were then emailed to the TSSD team for comments, which were then incorporated into the second draft. The second draft was then shared by the TSSD team with the project donors and discussed at a meeting at ADB office in February 2014. Comments from this meeting were then incorporated into the final draft tools which were used for the training and pre-testing. Some minor changes suggested by participants during the training and pre-testing resulted in the final versions which are attached as Annex 4 (HH questionnaire in English), Annex 5 (HH questionnaire in Khmer), Annex 6 (KII guiding questions in English) and Annex 7 (KII guiding questions in Khmer).

c) Sampling design

According to the approved technical proposal for the baseline survey, 2,160 HHs were selected for HH interviews and 240 informants selected for the KIIs. However, following discussion with TSSD team, 36 additional KIIs were added to collect information from large-scale rice producers to get a picture of best rice growing situations in the target areas. Therefore a total of 276 key informants were selected as per the following categories:

- 56 commune council members (1 each from 2 separate CCs in each target district)
- 84 village leaders (3 from each target district of the project)
- 28 staff from District Offices of Agriculture (1 from each target district)
- 8 staff from the Provincial Departments of Agriculture (2 from each target province)
- 28 members of the District Facilitation Teams (1 from each target district)
- 36 women's groups (1 from each of the 28 TD district and 1 from each of the 8 selected CD communes) and
- 36 Large rice producers

For the HH interviews, the sampling process was done in three stages, first commune selection, then village selection within these communes and finally, HH selection within the selected villages. In order to ensure that the survey covered a large area of the target domain, four communes were randomly selected from each target district, meaning that 112 communes were chosen from 28 target districts. The control domain covered districts and communes which were situated in the same four provinces as the target domain but were excluded from the project. Firstly, 4 districts were randomly selected from which 2 communes were randomly chosen within these districts. From within each chosen commune for TD group, one village was selected commune according to the proportion to population size (PPS) method. For the CD group, four villages were randomly selected within each commune, in total thirty-two villages. Therefore the total number of villages selected was 144 (112 TD and 36 CD).

For HH level, 15 eligible households were surveyed within each village, a total of 2,160 HHs. The main criteria for participants were that they should belong to ID2 poor households. In addition, a third of the households sampled were female headed in order to ensure that the TSSD was addressing social factors affecting gender related poverty in rural areas. This meant that at least five out of fifteen

households were FHHs (could be more as additional FHHs could also be randomly selected from remaining IDPoor2 HHs). The sampling framework for the HH selection is summarized in the table below:

Strata	TREATED DOMAIN	CONTROL DOMAIN
Provinces	• **4 Project Provinces**	• **4 Project Provinces**
Disctricts/ Municipalities	• **28 targeted districts/ municipalities**	• **4 districts** (not being targeted for the project)
Commune /Sangkats Clusters	• **112 C/S** randomly selected from targeted 196 Communes uder 28 Disctricts of four provinces (one per district).	• **8 C/S** randomly selected from 4 disctricts (not targeted) of four provinces. (two communes per district. one district from each province)
Village Enumeration Areas (EAs)	• **112 Villages** randomly selected from the previousely selected 28 communes (4 villages per commune)	• **32 Villages** randomly selected from the previousely selected 8 communes (4 villages per commune)
Households (HHs)	• **15 ID2 Poor HHs** randomly selected from each village. (half of those HHs landholdings less than 0.5 hactares)	• **15 ID2 Poor HHs** randomly selected from each village. (half of those HHs landholdings less than 0.5 hactares)
Respondents/ Key Informants	• **1,680 Farmers** of the project. (One third of respondents being FHHs)	• **480 Farmers** and their children under 5yrs.(One third of respondents being FHHs)
Total Sample size	**2,160** for HH interview	

Maps showing the location of all villages selected via the above sampling process are included in Annex 1a and the list of village names is shown in Annex 1b.

d) Training of survey team and pre-testing tools

Although all the supervisors and enumerators appointed for this survey have already extensive experience in carryout out such work, each survey has its own specific characteristics. Therefore a manual was prepared to guide the team to carry out this survey to a professional standard. The training took place from the 23rd to 27th December at SBK training center in Phnom Penh, attended by all enumerators, field supervisors and experts. During the course of the training some minor adjustments were made to the survey tools. At the end of the training all enumerators and supervisors were confident in using the tools. Pre-testing of the HH questionnaire was conducted for one day in Kopal village of Sandaek commune, Batheay district of Kompong Cham province on the 26th December. As a result of the pre-testing only some additional minor changes were required to the HH questionnaire. It was not felt necessary to pre-test the key informant interview (KII) tools as these would be used only by the field coordinators and supervisors who are already highly experienced in using such tools.

e) Conducting the field survey

Although the training and pre-testing had already been conducted in December, the field work was delayed after discussion with TSSD team in order to allow time for further consultations with donors on the survey process. Therefore the field work only started in mid-February 2014, following refresher training for the field teams and a new round of pre-testing in Phnum Del village, Tang Krang commune, in Batheay district of Kompong Cham province.

Field data collection was completed according to the time frame planned (one month). The main constraint faced in field during baseline data collection was the difficulty in meeting respondents as some IDPoor2 are away from their house for long period of time or migrated to neighboring countries for job; therefore our team needed to replace those respondents. Another constraint was that some old age single households broke into new HH, with their small house living near to their son/daughter in order to get IDPoor2 certificate and when our team conduct interviews they have no answer to many of our questions as they are not economically active.

f) Data processing

Following the field data collection, SBK recruited two teams of data entry clerks. All those selected had experience of entering at least 2-3 previous surveys of a similar nature and were already highly familiar with the use of SPSS tools. These teams worked sequentially, with Team 1 completing all the data entry before Team 2 repeated the same process. In order to support the checking and data entry, a team of Quality Controllers (QCs) were also recruited to assist the Data Manager. After the final data set had been completed following the double entry checking, this was sent to the Survey Coordinator for additional checking. Checks on this data set showed that the data entry process was generally very clean in that all questions that should have been answered, were indeed answered. However a check on the reasonableness of the data highlighted a few instances where the information did not fall within expected ranges. Where double checking with the questionnaires showed that the information was entered correctly, the Data Manager called the relevant respondents by telephone (as telephone numbers of all respondents had been recorded by the enumerators) to re-check their responses. This resulted in a number of changes to the questionnaires which were noted by the Data Manager on the questionnaire forms.

Validity of the data

Before presenting the findings in the next chapter it is important to consider the validity of the data as credible representation of the entire population – or whether any form of weighting needs to be applied. In general, if all the questions received responses, the results can be confidently applied to the entire population as the sample size was designed to ensure such confidence level.

In fact it was possible to interview the required number of respondents and all questions were answered. However, there is a potential issue with "item low response" – whereby, although all respondents answered, the number of positive responses was limited. An example of this is cash crop growing, where only 12% of the sample size grew such crops. The data acquired could therefore have limitations in future comparisons. Similar situations were encountered regarding group membership in relation to all types of groups (e.g. only 94 HHs were members of agriculture groups and only one HH was a member of a marketing group). These low numbers mean that the data has limited relevance to the entire population.

Nevertheless, we do not consider that such issues require any specific weighting or other adjustment at this stage (and in fact the number of responses may accurately reflect the overall situation in these provinces whereby perhaps the land is not suitable for cash crops) but if there is a significant change in the numbers of responses in future follow up surveys, then some weighting may need to be applied to allow appropriate comparisons to enable measurement of change.

Possible unequal selection probabilities that could suggest the need for weighting were practically eliminated as the probability proportion to size (PPS) was applied in the sampling frames down to commune level, and simple random sampling within villages ensured that all HHs in the village who met the selection criteria had equal probability of being selected so they can be considered representative of the entire population.

Therefore we maintain that the planned confidence level of 99% has been achieved.

III. Findings

This section discusses the results obtained from the analysis of the data for each of the main sections of the HH questionnaire. Reference to correlation or otherwise with information obtained through the Key Informant Interviews (KIIs) is noted under each relevant section. Tables and charts are used to illustrate key points where appropriate. The full data tables and charts comparing target and control domains (TD and CD) as well as analysis of each question for provincial, district and commune level for TD are included as Annexes (refer to list in Table of Contents for access to relevant data sets) and the detailed KII report is included as Annex 3.

III.1 General Information

Of the 2,160 HHs interviewed, 72% of respondents were female and 36% of HHs were female headed households (FHH) as shown in Table 1.1. This does not mean that the percentage of FHHs in all areas is that high as the survey design was positively biased towards such HHs in that at least one third of all respondents selected were FHHs. The resulting percentage is higher than one third as other FHHs not specifically selected had a probability of being selected during random sampling of IDPoor2 HHs remaining after the one third FHHs had been extracted. There were a number of villages where the number of FHHs was less than five (in two cases, there were no FHHs on the IDPoor2 list). In such cases a higher number of FHH was selected in the next village to compensate.

TABLE 1.1 – Gender of Heads of Household (# and % of HHs)

Gender of HoH (# HHs)	BMC	KCM	KPT	SRP	Total	TD	CD	Total
Male	283	361	307	425	1,376	1,080	296	1,376
Female	137	239	173	235	784	600	184	784
	420	**600**	**480**	**660**	**2,160**	**1,680**	**480**	**2,160**

Gender of HoH (% of HHs)	BMC	KCM	KPT	SRP	Total	TD	CD	Total
Male	67%	60%	64%	64%	64%	64%	62%	64%
Female	33%	40%	36%	36%	36%	36%	38%	36%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

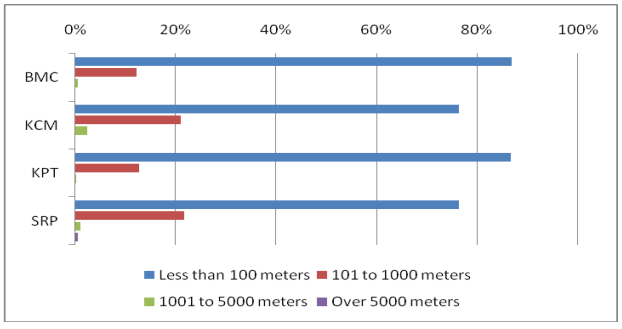
As can be seen from the table above, there are relatively little differences between provinces or between the two domains, although there is a slightly higher number of FHH respondents in Kompong Cham and slightly less in Banteay Meanchey.

The majority of HHs live close to an all-weather road as shown in Table 1.2 (numbers) and Chart 1.1 (percentage of HHs). Only just over 1% of HHs, most of them in Kompong Cham province, live more than one kilometer from a road. There were no significant differences between TD and CD HHs.

TABLE 1.2 – Distance to nearest road (# HHs)

	BMC	KCM	KPT	SRP	Total
Less than 100 meters	365	458	416	504	1,743
101 to 1000 meters	52	127	62	144	385
1001 to 5000 meters	3	15	2	8	28
Over 5000 meters	0	0	0	4	4
	420	**600**	**480**	**660**	**2,160**

CHART 1.1 – Distance to nearest road (% of HHs)

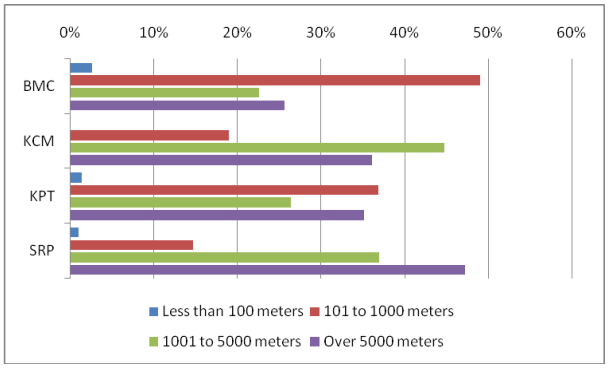


Although most HHs live close to a road, there are a number of HHs far from a market. Table 1.3 (in numbers of HHs) and Chart 1.2 (as % of all HHs) shows that almost 40% of HHs travel over five kilometers to their nearest market.

TABLE 1.3 – Distance to nearest market (# HHs)

	BMC	KCM	KPT	SRP	Total
Less than 100 meters	11	0	7	7	25
101 to 1000 meters	206	114	177	97	594
1001 to 5000 meters	95	269	127	244	735
Over 5000 meters	108	217	169	312	806
	420	**600**	**480**	**660**	**2,160**

CHART 1.2 – Distance to nearest market (% of HHs)



Within the group of HHs over five kilometers, there are a few communes where a number of HHs gave responses which were significantly higher than others. These are:

- BMC: Phnom Srok district, Nam Tau commune — 130 to 140 km's
- KPT: Prasat Balang district, Sa Kream commune — 60 km's
- SRP: Angkor Chum district, Kouk Doung commune — 50 km's
- SRP: Svay Leu district, Ta Siem commune — 50 km's
- SRP: Varin district, Prasat & Srae Noy communes — both 50 km's
- SRP: Srey Snam district, Prei commune — 45 km's

Double checking by supervisors with these families revealed that there are only small shops with limited goods in their villages and communes so they normally travel to the provincial markets.

III.2 Demographics

There are a total of 9,915 persons living in the 2,160 HHs interviewed – thus an average HH size of 4.59 persons. This average differs slightly per province, with Banteay Meanchey having a higher average of 4.84 members per HH, Kompong Cham averaging 4.55 and Kompong Thom and Siem Reap both with the lowest of 4.52 members per HH. The distribution of people per relationship to the household head does not vary much from province to province, nor between TD and CD HHs. The total HH membership is shown in Table 2.1 below:

TABLE 2.1 – Household members (# persons)

	BMC	KCM	KPT	SRP	Total	TD	CD
Household head	420	600	480	660	2,160	1,680	480
Spouse	280	419	323	423	1,445	1,123	322
Son, daughter	976	1,380	1,138	1,562	5,056	3,927	1,129
Father/ mother	27	46	22	46	141	109	32
Other relatives	330	282	207	294	1,113	858	255
	2,033	**2,727**	**2,170**	**2,985**	**9,915**	**7,697**	**2,218**
Average persons per HH	4.84	4.55	4.52	4.52	4.59	4.58	4.62

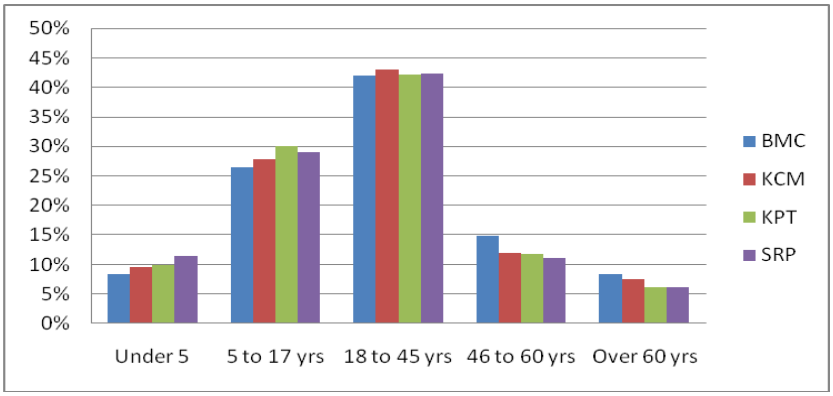
The **gender** breakdown of HH members is in line with the overall trend in Cambodia, with slightly higher numbers of females to males. The overall % is 53% female and 47% male with only slight differences between provinces (Table 2.2). Age analysis of HH members shows the majority fall into the two categories of 18-45 years (42%) and 5-17 years (28%). The spread of ages is quite similar between all provinces (Chart 2.1)

TABLE 2.2 – Gender of HH members (# and % by province)

	BMC	KCM	KPT	SRP	Total	TD	CD
Male	985	1,285	1,025	1,399	4,694	3,664	1,030
Female	1,048	1,442	1,145	1,586	5,221	4,033	1,188
	2,033	**2,727**	**2,170**	**2,985**	**9,915**	**7,697**	**2,218**

	BMC	KCM	KPT	SRP	Total	TD	CD
Male	48%	47%	47%	47%	47%	48%	46%
Female	52%	53%	53%	53%	53%	52%	54%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

CHART 2.1 – Age analysis of HH members (% of persons)



Analysis of the **education** levels of HH members show that the majority of those educated have completed only primary education (49%), with only 3% having completed upper secondary school level. 25% of adults have not received any education at all – with the highest rate of 32% in Siem Reap province. Breakdown by gender shows slightly higher % of females who have not received any

education compared to males (28% compared to 21%). Breakdown between domains shows that there are slightly higher numbers of persons among the TD HHs who have not received any education (26%) compared to the CD HHs (22%) – see Table 2.3.

TABLE 2.3 – Education levels of HH members (# and % of members)

# HH members	BMC	KCM	KPT	SRP	Total	Male	Female	TD	CD
None	515	574	412	949	2,450	971	1,479	1,967	483
Underage	122	263	238	229	852	431	421	653	199
Kindergarden	85	82	28	117	312	136	176	214	98
Primary	919	1,439	1,137	1,319	4,814	2,384	2,430	3,794	1,020
Lower Secondary	297	292	284	266	1,139	570	569	808	331
Upper Secondary	78	73	55	101	307	176	131	232	75
Technical/Vocational	2	0	5	2	9	5	4	6	3
University	15	4	11	2	32	21	11	23	9
Totals	**2,033**	**2,727**	**2,170**	**2,985**	**9,915**	**4,694**	**5,221**	**7,697**	**2,218**

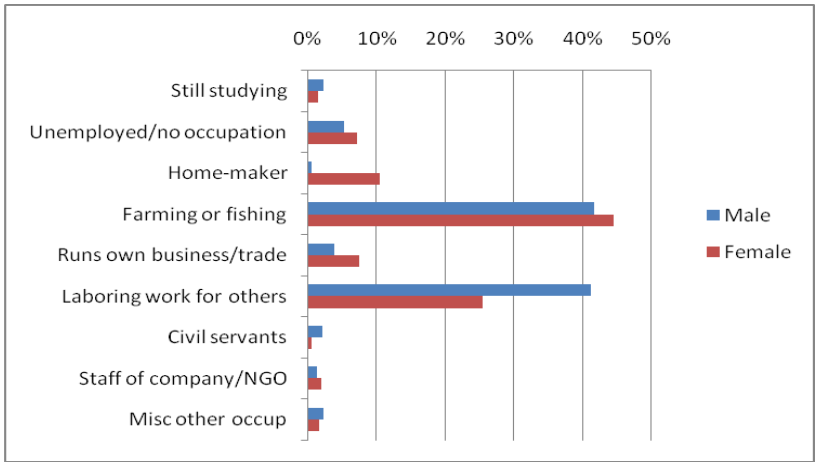
As % of totals	BMC	KCM	KPT	SRP	Total	Male	Female	TD	CD
None	25%	21%	19%	32%	25%	21%	28%	26%	22%
Underage	6%	10%	11%	8%	9%	9%	8%	8%	9%
Kindergarden	4%	3%	1%	4%	3%	3%	3%	3%	4%
Primary	45%	53%	52%	44%	49%	51%	47%	49%	46%
Lower Secondary	15%	11%	13%	9%	11%	12%	11%	10%	15%
Upper Secondary	4%	3%	3%	3%	3%	4%	3%	3%	3%
Technical/Vocational	0%	0%	0%	0%	0%	0%	0%	0%	0%
University	1%	0%	1%	0%	0%	0%	0%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The HH members are engaged in a variety of **occupations**. Although this question was answered for all HH members, we only take the data for over 18 years of age to identify the occupations of adult HH members in order to avoid distortion of data from high numbers of underage or school going HH members. The occupations of the adult members are shown in Table 2.4 below and Chart 2.2 shows the same data in percentage terms by gender.

TABLE 2.4 – Occupations of adult HH members

	BMC	KCM	KPT	SRP	Total	TD	CD	Total
Still studying	26	18	31	32	107	80	27	107
Unemployed/no occupation	66	127	75	113	381	292	89	381
Home-maker	57	72	98	131	358	277	81	358
Farming or fishing	560	694	572	814	2,640	2,122	518	2,640
Runs own business/trade	127	55	69	100	351	232	119	351
Laboring work for others	440	691	398	459	1,988	1,536	452	1,988
Civil servants	21	6	15	29	71	61	10	71
Staff of company/NGO	18	2	37	44	101	78	23	101
Misc other occup	9	42	8	54	113	89	24	113
	1,324	**1,707**	**1,303**	**1,776**	**6,110**	**4,767**	**1,343**	**6,110**

CHART 2.2 – Occupations of adult HH members (% by gender)



From the table above we can see that the majority of adult HH members are engaged in agriculture related occupations, followed by laboring work. There are no significant differences between the four provinces or between males and females, although as expected a higher percentage of females are occupied in the home than males and a higher percentage of males engage in laboring work. There are no significant differences between TD and CD HHs.

Many of the HH members who are engaged in laboring for others migrate from home for such work. Table 2.5 below shows an average of 26% among HH members in all provinces, with a higher number of male HH members migrating for work than females. Male migration is highest from Banteay Meanchey province at almost 50% of the adult male population.

TABLE 2.5 – Number and % of HH members who migrate for work

	BMC	KCM	KPT	SRP	Total
Male	300	252	194	233	979
Female	157	195	142	133	627
	457	**447**	**336**	**366**	**1,606**

As % of adult HH members

	BMC	KCM	KPT	SRP	Total
Male	48%	32%	33%	30%	35%
Female	22%	21%	20%	13%	19%
	35%	**26%**	**26%**	**21%**	**26%**

While many of the HH members who migrate move to other places in Cambodia for work, a large number of people also migrate to other countries, notably Thailand. As would be expected the highest numbers of people who migrate to Thailand are from Banteay Meanchey and Siem Reap provinces (see Charts 2.3 and 2.4 below). Migrants from Kompong Cham and Kompong Thom either go to work in Phnom Penh or other places in Cambodia.

CHART 2.3 – Where male HH members migrate to (% of male migrants)

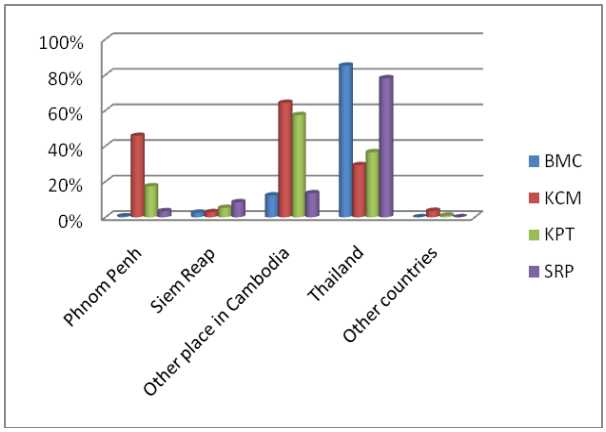
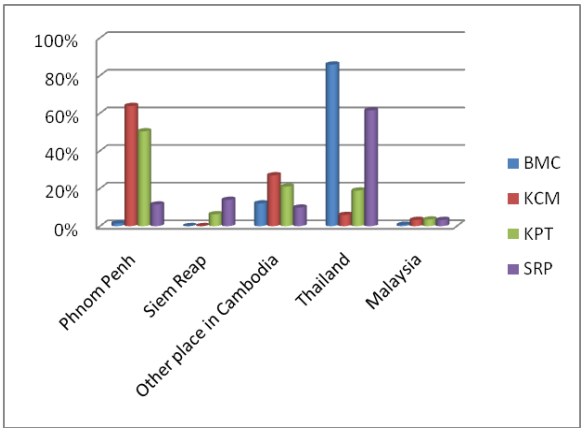


CHART 2.4 – Where female HH members migrate to (% of female migrants)



Looking at the duration for which HH members migrate, while about 40% migrate for three months or less and about 60% for six months or less, 25% of females and 19% of males migrate for 12 months at a time (Table 2.6 overleaf).

TABLE 2.6 – Length of time HH members migrate for

	MALES						FEMALES					
	BMC	**KCM**	**KPT**	**SRP**	**Total**	**%**	**BMC**	**KCM**	**KPT**	**SRP**	**Total**	**%**
1 month	23	29	20	36	108	**16%**	20	18	14	15	67	**12%**
2 months	22	17	15	23	77	**11%**	10	12	9	14	45	**8%**
3 months	31	18	24	19	92	**13%**	21	9	16	17	63	**12%**
4 months	14	9	5	14	42	**6%**	9	6	14	9	38	**7%**
5 months	28	9	6	15	58	**8%**	10	4	7	10	31	**6%**
6 months	29	24	14	14	81	**12%**	30	20	22	15	87	**16%**
7 months	7	5	1	8	21	**3%**	5	3	3	6	17	**3%**
8 months	2	5	2	6	15	**2%**	1	2	2	2	7	**1%**
9 months	2	2	4	5	13	**2%**	0	0	3	2	5	**1%**
10 months	6	8	4	11	29	**4%**	7	6	5	7	25	**5%**
11 months	3	19	1	1	24	**3%**	3	19	0	1	23	**4%**
12 months	25	48	33	28	134	**19%**	24	47	38	21	130	**24%**
	192	**193**	**129**	**180**	**694**	**100%**	**140**	**146**	**133**	**119**	**538**	**100%**

Information received from key informants through the KIIs corroborates the data presented above from the HH survey in relation to the rate of migration. Respondents from Banteay Meanchey and Siem Reap confirmed that Thailand is the main destination for both men and women. Respondents from all provinces noted a number of negative impacts resulting from this cross-border migration such as:

- Some of them are tricked by the other (in Thailand and out of province)
- Some of migrants house were confiscated by MFIs or money lenders.
- Some farm land of migrant families were invaded by others
- Confronted with the punishment and violence because of illegal passing the border entrance
- Employers have no regard for work safety, and mostly no compensation in case of accident
- Lack of labor forces in the community (especially for farming). This leads to high cost of agriculture labor
- Difficult to conduct any event or community education campaign
- Some development activities (rural roads, irrigation system) cannot process (and CIP development) due to lack of participation
- Important information was not properly delivered to all families as nobody there to receive it
- Family members are separated each other, nobody take care their children and old people
- Children dropped out school because they had to migrate with their parents
- Domestic violence often happens when they come back home – often leading to divorce

Nevertheless a few village leaders noted that such migration had a positive impact on the lives of the people as it provided them with income to support their families.

III.3 Housing and Assets owned

Housing

The vast majority of HHs own their own home (88%), with slightly less ownership in Kompong Cham and Kompong Thom where some HHs either stay rent-free or with relatives (Table 3.1).

TABLE 3.1 – House status (# & % of HHs)

	Number of HHs					As % of total				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Own	382	513	403	597	1895	91%	86%	84%	90%	88%
Loaned or Rent free	25	20	54	32	131	6%	3%	11%	5%	6%
Stay with relatives	8	67	22	29	126	2%	11%	5%	4%	6%
Rent pay	5	0	1	2	8	1%	0%	0%	0%	0%
	420	**600**	**480**	**660**	**2160**	**100%**	**100%**	**100%**	**100%**	**100%**

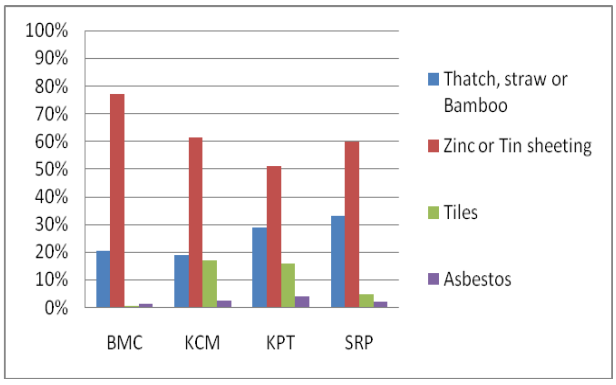
Data on the types of roofing shows that most houses have some form of "permanent" roof, with the majority using zinc or CI sheeting. More expensive forms of roofing such as tiles or asbestos were less commonly observed and 26% of all HHs still use a "traditional" roof made from local materials such as thatch, straw or bamboo. However, within these overall statistics, we can see some differences between provinces, with Siem Reap having a higher percentage of "poorer" type roofing and Kompong Cham and Kompong Thom with a higher than average percentage of tiled roofs (Table 3.2 and Chart 3.1).

TABLE 3.2 – Types of House Roofing (# & % of HHs)

	BMC	KCM	KPT	SRP	Total
Thatch, straw or Bamboo	86	113	138	219	556
Zinc or Tin sheeting	324	368	246	394	1332
Tiles	3	102	77	32	214
Asbestos	6	15	19	14	54
Other	1	2	0	1	4
	420	**600**	**480**	**660**	**2160**

	BMC	KCM	KPT	SRP	Total
Thatch, straw or Bamboo	20%	19%	29%	33%	26%
Zinc or Tin sheeting	77%	61%	51%	60%	62%
Tiles	1%	17%	16%	5%	10%
Asbestos	1%	3%	4%	2%	3%
Other	0%	0%	0%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**

CHART 3.1 – Types of House Roofing (% of HHs)



House walls show overall averages of 45% using local materials such as thatch, straw or bamboo, with the majority of others having timber walls. Although these percentages do not differ much between TD and CD HHs, there is quite a difference between provinces. In Banteay Meanchey, many more HHs (75%) have good quality walls (timber or brick) than local materials. In contrast, 62% of HHs in Kompong Cham and 55% in Kompong Thom have walls made of thatch, straw or bamboo (Table 3.3).

Looking at total floor space (as an indicator of house size), 54% of HHs live in houses between 21 and 50 square meters, with 37% of HHs having 20m2 or less and the remaining 9% having house space greater than 50m2 (Table 3.4). There is relatively little difference in this profile between provinces as can be seen from Chart 3.2.

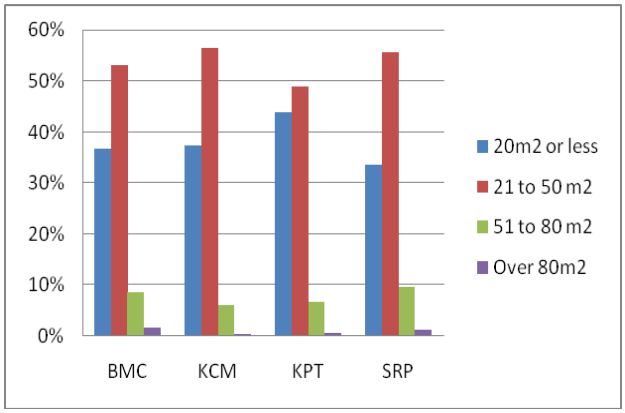
TABLE 3.3 – Types of House Walls (% of HHs)

	BMC	KCM	KPT	SRP	Total
Thatch, straw or Bamboo	19%	62%	55%	40%	45%
Wood, sawn boards, plywo	72%	38%	44%	58%	52%
Cement, bricks, concrete	3%	0%	1%	2%	1%
Asbestos	0%	0%	0%	0%	0%
Other	6%	0%	0%	0%	1%
No wall	0%	0%	0%	0%	0%
	100%	100%	100%	100%	100%

TABLE 3.4 – House sizes – floor space (% of HHs)

	BMC	KCM	KPT	SRP	Total
20m2 or less	37%	37%	44%	33%	37%
21 to 50 m2	53%	56%	49%	56%	54%
51 to 80 m2	9%	6%	7%	10%	8%
Over 80m2	2%	0%	1%	1%	1%
	100%	100%	100%	100%	100%

CHART 3.2 – House sizes – floor space (% of HHs)



Other assets

Almost 6,000 different items were declared by HHs as being their key assets. The items common to most HHs are: mobile phones, bicycles, TVs, motorbikes and radios (Table 3.5). Other items listed are owned by only about 20% of all HHs. The "other" category below is an accumulation of numerous small items such as: batteries, CD/DVD players, fans, speakers, etc. Table 3.6 shows the total value of these items as reported by respondent HHs.

TABLE 3.5 – Total # assets owned by HHs

	BMC	KCM	KPT	SRP	Total
Mobile phones	289	537	389	486	1,701
Bicycles	322	428	291	548	1,589
TVs	238	197	137	136	708
Motorbikes	115	209	139	166	629
Radios	63	117	76	78	334
Water pumps	7	102	23	14	146
Rowing boat	28	77	23	2	130
Electric fans	60	24	15	23	122
Oxcarts	5	21	39	40	105
Sewing m/c	20	10	3	16	49
Hand tractors	15	2	7	18	42
Generators	2	0	0	8	10
Rice Mill	0	3	1	2	6
Laptop computer	2	0	1	1	4
Desktop computer	1	0	0	2	3
Boat with engine	0	2	1	0	3
4WD tractors	2	0	0	0	2
Treshing m/c	0	0	1	0	1
Fridge	1	0	0	0	1
Misc other items	8	106	2	111	227
	1,178	1,835	1,148	1,651	5,812

CHART 3.6 – Value of assets (Riels)

	BMC	KCM	KPT	SRP	Total
Mobile phones	14,840,000	20,599,000	15,910,000	25,080,000	76,429,000
Bicycles	13,692,600	10,006,000	10,035,000	23,000,000	56,733,600
TVs	20,280,000	8,503,000	6,842,000	10,527,000	46,152,000
Motorbikes	199,650,000	170,610,000	156,170,000	332,580,000	859,010,000
Radios	1,228,000	1,294,000	1,382,000	1,196,500	5,100,500
Water pumps	2,130,000	21,565,000	5,180,000	4,490,000	33,365,000
Rowing boat	8,070,000	16,780,000	2,175,000	600,000	27,625,000
Electric fans	2,659,000	488,000	750,000	437,000	4,334,000
Oxcarts	980,000	6,380,000	15,520,000	13,410,000	36,290,000
Sewing m/c	5,950,000	1,275,000	230,000	2,805,000	10,260,000
Hand tractors	49,100,000	8,800,000	32,500,000	80,600,000	171,000,000
Generators	1,000,000	0	0	6,320,000	7,320,000
Rice Mill	0	3,000,000	1,500,000	3,800,000	8,300,000
Laptop computer	4,000,000	0	120,000	400,000	4,520,000
Desktop computer	500,000	0	0	1,640,000	2,140,000
Boat with engine	0	90,000	150,000	0	240,000
4WD tractors	8,500,000	0	0	0	8,500,000
Treshing m/c	0	0	700,000	0	700,000
Fridge	500,000	0	0	0	500,000
Misc other items	1,030,000	3,855,000	3,700,000	9,531,500	18,116,500
	334,109,600	273,245,000	252,864,000	516,417,000	1,376,635,600
Estimate in US$	83,527	68,311	63,216	129,104	344,159

The tables above show that whereas some items are more frequently owned by HHs, some of the less commonly owned are of higher value – in particular, hand tractors. Tables 3.7 and 3.8 present the above data as averages per HH.

TABLE 3.7 – Average # assets per HH

	BMC	KCM	KPT	SRP	Total
Mobile phones	0.69	0.90	0.81	0.74	0.79
Bicycles	0.77	0.71	0.61	0.83	0.74
TVs	0.57	0.33	0.29	0.21	0.33
Motorbikes	0.27	0.35	0.29	0.25	0.29
Radios	0.15	0.20	0.16	0.12	0.15
Water pumps	0.02	0.17	0.05	0.02	0.07
Rowing boat	0.07	0.13	0.05	0.00	0.06
Electric fans	0.14	0.04	0.03	0.03	0.06
Oxcarts	0.01	0.04	0.08	0.06	0.05
Sewing m/c	0.05	0.02	0.01	0.02	0.02
Hand tractors	0.04	0.00	0.01	0.03	0.02
Generators	0.00	0.00	0.00	0.01	0.00
Rice Mill	0.00	0.01	0.00	0.00	0.00
Laptop computer	0.00	0.00	0.00	0.00	0.00
Desktop computer	0.00	0.00	0.00	0.00	0.00
Boat with engine	0.00	0.00	0.00	0.00	0.00
4WD tractors	0.00	0.00	0.00	0.00	0.00
Treshing m/c	0.00	0.00	0.00	0.00	0.00
Fridge	0.00	0.00	0.00	0.00	0.00
Misc other items	0.02	0.18	0.00	0.17	0.11
	2.80	**3.06**	**2.39**	**2.50**	**2.69**

CHART 3.8 – Average value of HH assets (Riels)

	BMC	KCM	KPT	SRP	Total
Mobile phones	35,333	34,332	33,146	38,000	35,384
Bicycles	32,601	16,677	20,906	34,848	26,266
TVs	48,286	14,172	14,254	15,950	21,367
Motorbikes	475,357	284,350	325,354	503,909	397,690
Radios	2,924	2,157	2,879	1,813	2,361
Water pumps	5,071	35,942	10,792	6,803	15,447
Rowing boat	19,214	27,967	4,531	909	12,789
Electric fans	6,331	813	1,563	662	2,006
Oxcarts	2,333	10,633	32,333	20,318	16,801
Sewing m/c	14,167	2,125	479	4,250	4,750
Hand tractors	116,905	14,667	67,708	122,121	79,167
Generators	2,381	0	0	9,576	3,389
Rice Mill	0	5,000	3,125	5,758	3,843
Laptop computer	9,524	0	250	606	2,093
Desktop computer	1,190	0	0	2,485	991
Boat with engine	0	150	313	0	111
4WD tractors	20,238	0	0	0	3,935
Treshing m/c	0	0	1,458	0	324
Fridge	1,190	0	0	0	231
Misc other items	2,452	6,425	7,708	14,442	8,387
	795,499	**455,408**	**526,800**	**782,450**	**637,331**
Estimate in US$	**199**	**114**	**132**	**196**	**159**

The average figures shown above show very low level of asset ownership as the 5,812 items declared averages only 2.69 items per HH. But within these figures, there are HHs with no assets at all and others who have many different types (and a few HHs with quite high value assets). Table 3.9 below shows the spread of ownership of the total number of assets declared:

TABLE 3.9 – Analysis of asset ownership

Asset groups	# HHs	# Assets	Value US$	% of all HHs	% of asset value
No assets at all	204	0	0	9.4%	0.0%
Only 1 type	428	428	13,274	19.8%	3.9%
2 or 3 types	913	2,254	113,687	42.3%	33.0%
4 or 5 types	452	1,973	125,166	20.9%	36.4%
6 to 10 types	157	1,061	77,063	7.3%	22.4%
More than 10 types	6	96	14,970	0.3%	4.3%
Totals	**2,160**	**5,812**	**344,159**	**100%**	**100.0%**

Examining asset ownership in relation to the income earned by HHs (segregated by gender of head of household) naturally shows a higher average value of assets owned per HH for the higher income groups – income here is calculated as all income earned from agriculture and non-agriculture sources (see Table 3.10).

TABLE 3.10 – Analysis of asset value per income groups and gender

Income groups	# HHs			Total assets			Value per HH		
	MHH	FHH	Tot HH	MHH	FHH	Tot HH	MHH	FHH	Tot HH
Less than $500 p.a.	295	225	520	32,854	11,913	44,767	111	53	86
Less than $1,000 p.a.	407	211	618	69,461	18,882	88,343	171	89	143
Less than $2,000 p.a.	433	231	664	83,899	33,042	116,941	194	143	176
Less than $4,000 p.a.	214	99	313	52,768	22,057	74,825	247	223	239
Over $4,000 p.a.	27	18	45	8,708	10,575	19,283	323	588	429
Totals	**1376**	**784**	**2160**	**247,690**	**96,469**	**344,159**	**180**	**123**	**159**

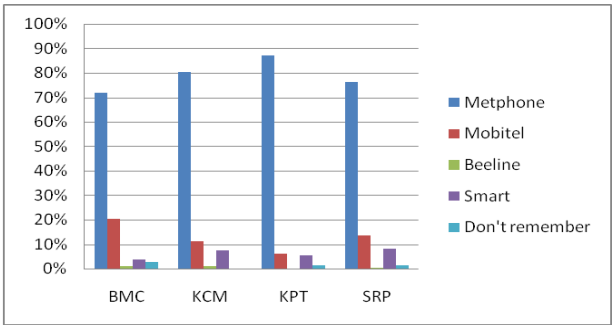
For the lower income groups, average value of assets per HH is lower for FHHs but among HHs of higher income category the rate for FHHs is higher. Examination of the figures shows that a few FHH households in Siem Reap town own some expensive motorbikes and mobile phones.

HHs were asked to list the make(s) of their mobile phones and the service providers. Adding up the total responses does not equal the total number of mobile phones declared under assets above as some HHs whose phones were all the same make (e.g. Nokia) answered generally for all of their phones. Table 3.11 shows that Nokia is by far the most popular make of mobile phone and the majority of HHs use Metphone service (Chart 3.3).

TABLE 3.11 – Makes of mobile phones (# of phones)

	BMC	KCM	KPT	SRP	Total
Nokia	205	462	289	306	1262
Samsung	1	9	9	11	30
Chinese phone	42	37	33	80	192
Metphone	32	23	41	55	151
Others	6	2	4	12	24
	286	**533**	**376**	**464**	**1659**

CHART 3.3 – Telephone service providers (% of users)



TSSD project management had hoped information on mobile phones would help determine whether such technology could be useful for information dissemination. However, the information collected is of limited use for that purpose as the respondents did not specify the exact type of each phone make (e.g. whether it has internet access or can merely accept SMS).

III.4 Land and main agriculture activities

The majority of HHs engage in some type of agriculture production – 90% of all HHs (Table 4.1) with a slightly lower percentage of FHHs in Kompong Thom and Siem Reap (Table 4.2).

TABLE 4.1 – HHs who engage in agriculture activities (# and % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Yes	388	535	430	588	1,941
No	32	65	50	72	219
	420	**600**	**480**	**660**	**2,160**

As % of all HHs

	BMC	KCM	KPT	SRP	Total
Yes	92%	89%	90%	89%	90%
No	8%	11%	10%	11%	10%
	100%	**100%**	**100%**	**100%**	**100%**

TABLE 4.2 – Gender of HoH who engage in agriculture activities (# and %)

# HHs	BMC	KCM	KPT	SRP	Total
Male headed HHs	265	328	285	388	1,266
Female headed HHs	123	207	145	200	675
	388	**535**	**430**	**588**	**1,941**

As % of all HHs in each category

	BMC	KCM	KPT	SRP	Total
Male headed HHs	94%	91%	93%	91%	92%
Female headed HHs	90%	87%	84%	85%	86%
	92%	**89%**	**90%**	**89%**	**90%**

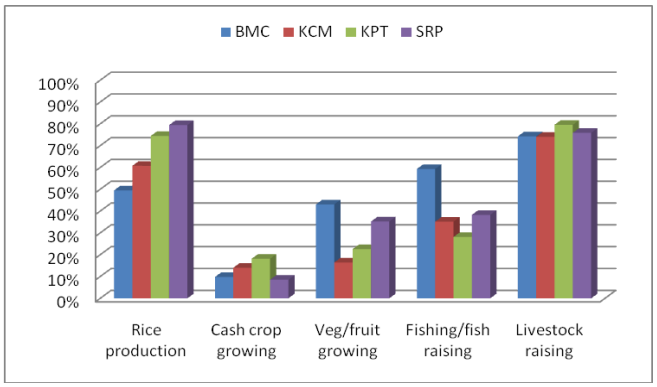
Livestock raising is the agriculture activity in which the largest number of HHs engage (76% of HHs who engage in agriculture), followed by rice production (67% of HHs). Less than 40% of HHs engage in fishing and less than 30% grow vegetables or fruit. Only 12% of HHs grow cash crops, the majority of these being in Kompong Thom and Kompong Cham provinces.

TABLE 4.3 – Types of agriculture activities (# and % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Rice production	192	325	320	467	1,304
Cash crop growing	38	75	78	50	241
Veg/fruit growing	167	88	97	207	559
Fishing/fish raising	230	188	121	225	764
Livestock raising	288	396	342	446	1,472

% of all HHs	BMC	KCM	KPT	SRP	Total
Rice production	49%	61%	74%	79%	67%
Cash crop growing	10%	14%	18%	9%	12%
Veg/fruit growing	43%	16%	23%	35%	29%
Fishing/fish raising	59%	35%	28%	38%	39%
Livestock raising	74%	74%	80%	76%	76%

CHART 4.1 – Types of agriculture activities (% of HHs)



The low percentage of HHs engaged in rice production in Banteay Meanchey province mainly arises from the following communes where relatively low percentages of HHs engage in rice:

- O'Chrouv district, Koub commune 15%
- O'Chrouv district, O'Beichuan commune 29%
- Preah New Preah district, Chup Veari commune 20%
- Krong Serei Sophoan, sangkat Teuk Thla (largely urban area) 11%

There are also some communes in other provinces which have very low percentages of HHs engaged in rice production:

Kompong Cham:

- Dambae district, Seda commune 23%
- Kaoh Sothin district, Kompong Reab commune 0%
- Kaoh Sothin district, Kaoh Sothin commune 10%
- Kaoh Sothin district, Pongro commune 21%
- Kaoh Sothin district, Preak Ta Nong 21%
- Ponhea Kraek district, Veal Mlu commune 13%

Kompong Thom:

- Santuk district, Prasat commune 8%

Siem Reap:

- Sout Nikum district, Dom Daek commune 9%
- Krong Siem Reap, sangkat Sla Kram (largely urban) 0%
- Krong Siem Reap sangkat Sala Kamreuk (largely urban) 0%

Although no HHs in Kompong Reab commune of Kaoh Sothin produce rice, 53% of HHs grow cash crops. Likewise in Seda commune of Dambae district the low figure of 23% producing rice is compensated by 85% of HHs who engage in cash crop production (as this commune has a lot more upland areas than lowlands). Even though numbers engaged in cash crops are generally low compared to other agriculture activities, a number of other communes also show high percentages of HHs engaged in cash crops:

Kompong Cham:

- Ponhea Kraek district, Kraek commune 79%
- Stung Trang district, Dang Kdar commune 67%

Kompong Thom:

- Prasat Balang district, Sala Visai commune 57%
- Sandan district, Meanchey commune 67%
- Sandan district, Sandan commune 73%

The majority of other communes had either no HHs producing cash crops or only one or two.

While a large percentage of HHs engage in livestock raising, there was one commune (Sla Kram in Krong Siem Reap) where no HHs were raising any livestock – but it should be noted that this is generally an urban area. There were four other communes where livestock raising was quite a bit below the average percentage:

- Kompong Cham, Batheay district, Batheay commune 36%
- Kompong Thom, Stung Saen, Damrei Chuan Khla commune 40%
- Kompong Thom, Stong district, Kompong Chen Cheung commune 25%
- Siem Reap, Sout Nikum district, Samrong commune 38%

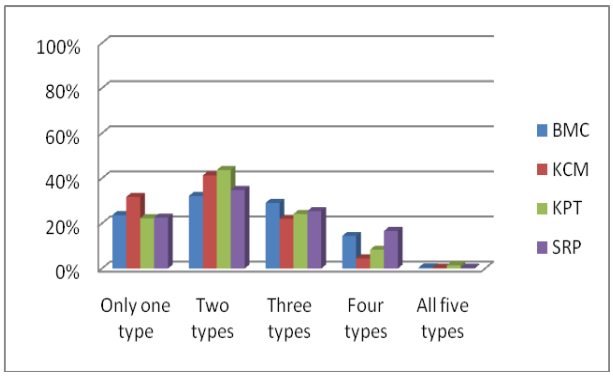
Diversification

Although a few HHs engage in all five types of agriculture activities listed above, the majority of HHs concentrate on one, two or three types (Table 4.4 and Chart 4.2).

TABLE 4.4 – Diversity of agriculture activities (# and % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Only one type	92	170	96	133	491
Two types	125	221	188	205	739
Three types	113	118	104	150	485
Four types	56	24	36	98	214
All five types	2	2	6	2	12
	388	**535**	**430**	**588**	**1,941**
% of all HHs	**BMC**	**KCM**	**KPT**	**SRP**	**Total**
Only one type	24%	32%	22%	23%	25%
Two types	32%	41%	44%	35%	38%
Three types	29%	22%	24%	26%	25%
Four types	14%	4%	8%	17%	11%
All five types	1%	0%	1%	0%	1%

CHART 4.2 – Diversity of agriculture activities (% of HHs)



Information from key informants during the KII interviews substantiates the data from the HH survey shown in the above tables, especially the importance of livestock raising which can be done by HHs even with small land holdings. In Banteay Meanchey, DOA respondents as well as commune and village leaders noted the low level of agriculture activity in some villages due to migration of families to Thailand which correlates with the low percentage of families engaged in rice production in this province compared to others.

Gender in decision making on crop growing

HHs were asked about who makes the decision about taking part in each of these agriculture activities. As the responses did not differ significantly between provinces, the results are summarized in Table 4.5 as a percentage of all responses.

TABLE 4.5 – Gender in agriculture decision making

# HHs	Rice	Cash crops	Veg/fruit	Fishing	Livestock
Husband only	14%	9%	12%	38%	6%
Wife only	14%	12%	24%	5%	18%
Other family member (male)	2%	2%	3%	9%	2%
Other family member (female)	4%	3%	8%	2%	6%
Joint family decision	66%	74%	54%	45%	68%
	100%	**100%**	**100%**	**100%**	**100%**

As can be seen from the above table, decisions are normally made jointly for all activities. Fishing is an exception where a high percentage of males decide on this activity. Where decision making is not a joint decision, more women decide on growing vegetables and fruit than men. Gender participation in more specific actions within each of these agriculture activities will be examined in the following chapters on these subjects.

Agriculture land

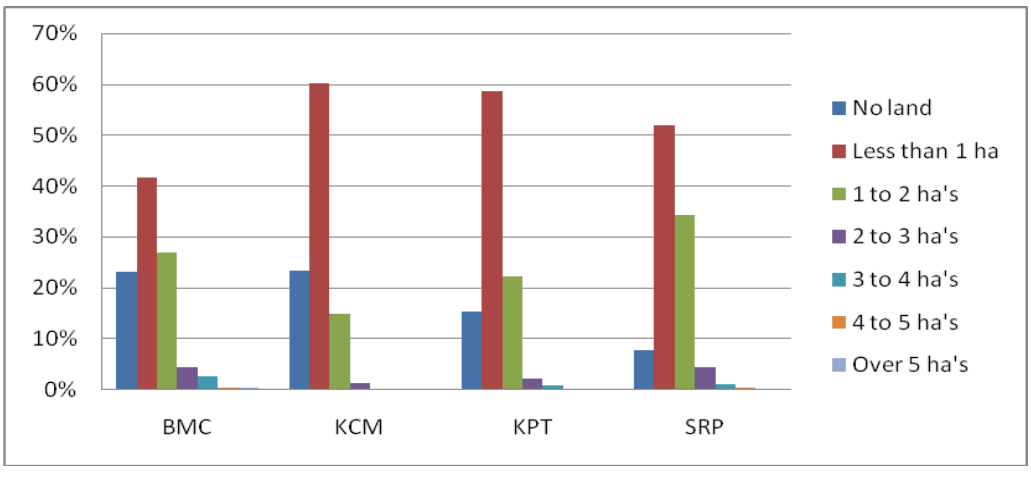
Land holdings among the respondent HHs are generally low, with 54% farming less than one hectare of land and another 25% with land sizes between 1 and 2 hectares. There are 17% of HHs that have no land at all and only about 5% of all HHs have 2 hectares or more (Table 4.6). The profile of land holdings between provinces does not differ greatly but both Banteay Meanchey and Kompong Cham have higher percentages of landless HHs than Kompong Thom or Siem Reap where only 8% of HHs don't have land (Chart 4.3)

TABLE 4.6 – Land sizes of HHs (# and %)

# HHs	BMC	KCM	KPT	SRP	Total
No land	90	125	66	46	327
Less than 1 ha	162	322	252	306	1,042
1 to 2 ha's	105	80	96	202	483
2 to 3 ha's	17	7	10	26	60
3 to 4 ha's	10	1	4	6	21
4 to 5 ha's	2	0	1	2	5
Over 5 ha's	2	0	1	0	3
	388	**535**	**430**	**588**	**1,941**

% of total HHs	BMC	KCM	KPT	SRP	Total
No land	23%	23%	15%	8%	17%
Less than 1 ha	42%	60%	59%	52%	54%
1 to 2 ha's	27%	15%	22%	34%	25%
2 to 3 ha's	4%	1%	2%	4%	3%
3 to 4 ha's	3%	0%	1%	1%	1%
4 to 5 ha's	1%	0%	0%	0%	0%
Over 5 ha's	1%	0%	0%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**

CHART 4.3 – Land sizes per province (% of HHs)



While overall only about 5% of HHs have land of 2 hectares or more, there are six communes where 20% or more of HHs have 2 hectares or more:

- BMC, Preah Net Preah district, Teuk Chour commune 20%
- BMC, Phnom Srok district, Nam Tau commune 20%
- BMC, Phnom Srok district, Srah Chik commune 27%
- KPT, Sandan district, Meanchey commune 33%
- SRP, Banteay Srey district, Khnar Sanday commune, 23%
- SRP, Svay Leu district, Ta Siem commune 31%

Generally, the land is owned by the HHs (over 80%) but some HHs lease or borrow land or engage in crop sharing (Table 4.7). **Average land size** per family is quite small, averaging 0.63 hectares per HH (Table 4.8). Among the target provinces, Kompong Cham shows the smallest land size averaging only 0.41 hectares per HH and Siem Reap the highest at 0.80 hectares per HH. HHs in the CD group showed slightly lower average land sizes per HH than the TD group – 0.47 and 0.68 respectively.

TABLE 4.7 – Status of total agriculture land used by HHs (# hectares)

# Hectares	BMC	KCM	KPT	SRP	Total
Owned by HH	211	161	239	376	987
Leased by HH	41	46	21	42	150
Borrow for free	9	8	13	36	66
Crop sharing	6	6	2	14	28
Total hectares	**267**	**221**	**274**	**468**	**1,231**

TABLE 4.8 – Average land sizes per HH (hectares)

Hectares	BMC	KCM	KPT	SRP	Total
Owned by HH	0.54	0.30	0.55	0.64	0.51
Leased by HH	0.11	0.09	0.05	0.07	0.08
Borrow for free	0.02	0.01	0.03	0.06	0.03
Crop sharing	0.02	0.01	0.00	0.02	0.01
Average all	**0.69**	**0.41**	**0.64**	**0.80**	**0.63**

Within these average figures, a few TD communes have relatively higher average land sizes:

- BMC, O'Chrouv district, Soeung commune 1.75 ha/HH
- BMC, Phnom Srok district, Srah Chik commune 1.61 ha/HH
- KPT, Sandan district, Meanchey commune 1.45 ha/HH
- SRP, Angkor Chum district Doun Peaeng commune 1.38 ha/HH
- SRP, Svay Leu district, Beung Mealea commune 1.38 ha/HH
- SRP, Varin district, Varin commune 1.41 ha/HH

III.5 Rice production

As noted under Section III.4 above (Table 4.3), there are 1,304 HHs growing rice. The majority of HHs (91%) grew rainy season rice, with 31 HHs (2%) doing a second rainy season crop. The remaining HHs grew rice only in the dry season, along with 42 HHs (mostly in Kompong Cham) who grew dry season rice in addition to rainy season rice – see data in Table 5.1 and Chart 5.1 below.

TABLE 5.1 – Types of rice produced (# and & of HHs)

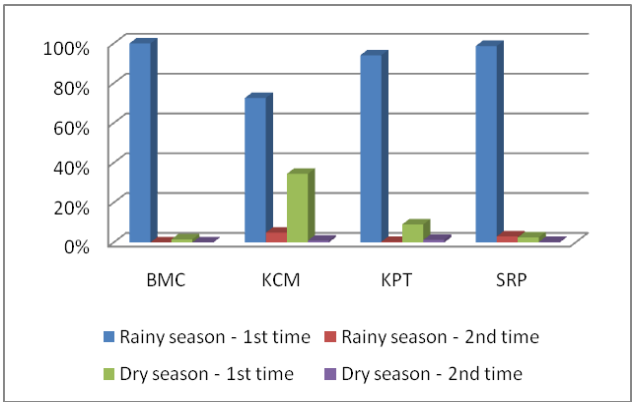
(1st time/2nd time means HHs who grew 2 times in the same season)

	BMC	KCM	KPT	SRP	Total
Rainy season - 1st tim	192	236	301	461	1,190
Rainy season - 2nd tir	0	16	1	14	31
Dry season - 1st time	3	112	29	12	156
Dry season - 2nd time	0	3	4	1	8
	195	**367**	**335**	**488**	**1,385**

% of total HH growing rice

	BMC	KCM	KPT	SRP	Total
Rainy season - 1st tim	100%	73%	94%	99%	91%
Rainy season - 2nd tir	0%	5%	0%	3%	2%
Dry season - 1st time	2%	34%	9%	3%	12%
Dry season - 2nd time	0%	1%	1%	0%	1%

CHART 5.1 – Types of rice produced (% of HHs)



Just over 1,000 hectares of land was planted with rice by these HHs, which averaged at 0.77 hectares per HH (Tables 5.2 and 5.3). This average was quite a bit higher in Banteay Meanchey province than others, especially for rainy season rice, while HHs in Kompong Cham planted less rainy season rice but more dry season rice.

TABLE 5.2 – Total hectares of rice produced

	BMC	KCM	KPT	SRP	Total
Rainy season - 1st	250.4	111.0	200.2	399.9	961.5
Rainy season - 2nd		5.4	1.0	8.5	14.9
Dry season - 1st	1.9	68.3	15.3	7.1	92.6
Dry season - 2nd		2.2	0.8	0.2	3.2
	252.3	**186.8**	**217.4**	**415.7**	**1,072.2**

TABLE 5.3 – Average hectares per HH of rice land used

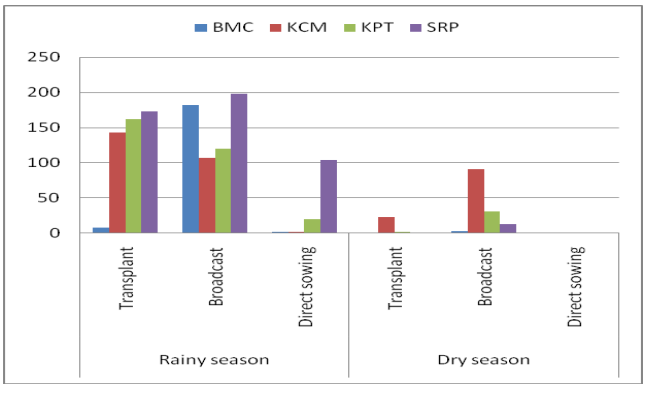
	BMC	KCM	KPT	SRP	Total
Rainy season - 1st	1.30	0.47	0.67	0.87	0.81
Rainy season - 2nd		0.34	1.00	0.61	0.48
Dry season - 1st	0.63	0.61	0.53	0.59	0.59
Dry season - 2nd		0.73	0.21	0.15	0.40
Average all	**1.29**	**0.51**	**0.65**	**0.85**	**0.77**

Analyzing the **means of planting** used by the HHs for the various types of rice, we can see that the majority of HHs transplanted their wet season rice but broadcasted dry season rice (Table 5.4 and Chart 5.2). Direct sowing was mainly confined to Siem Reap province in the upland areas of Svay Leu and Varin districts.

TABLE 5.4 – Means of planting (# HHs)

	BMC	KCM	KPT	SRP	Total
Rainy season					
Transplant	8	143	162	173	486
Broadcast	182	107	120	198	607
Direct sowing	2	2	20	104	128
Dry season					
Transplant	0	23	2	0	25
Broadcast	3	91	31	13	138
Direct sowing	0	1	0	0	1
	195	**367**	**335**	**488**	**1,385**

CHART 5.2 – Means of planting (# HHs)



Analyzing the **rice seed varieties** used is a bit complicated due to the variety of local names used for seeds throughout these provinces. There were 51 different names provided for rice seed varieties planted. Table 5.5 below summarizes the 18 most popular varieties used (combining the remaining 33 together at the end as each one was only used by a few HHs). As can be seen from this table, seed preference by farmers varies considerably between provinces. For example CAR varieties were planted mainly in Siem Reap and IR66 was almost exclusive to Kompong Cham. HHs were asked the reasons for choosing the seed variety they used and the responses were a mixture of reasons as shown in Table 5.6 and Chart 5.3.

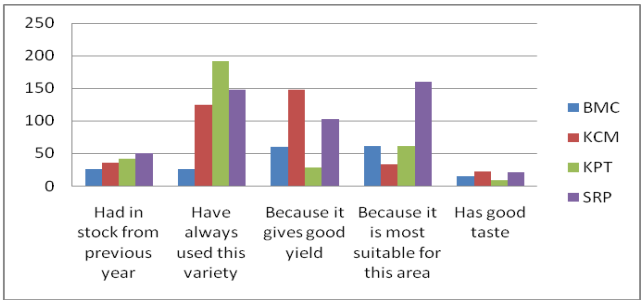
TABLE 5.5 – Rice varieties used (# HHs)

	BMC	KCM	KPT	SRP	Total
IR (other than 66)	12	141	45	28	226
Phka Rumdoul	19	28	59	68	174
Raing Chey	13	39	48	29	129
CAR (other than 4 or 6)	10	0	11	78	99
Neang Kog	2	1	49	13	65
Krachak Chap	2	0	8	53	63
Sen Pidow	4	23	3	12	42
Sen Kraop	5	5	10	20	40
Neang Minh	4	13	9	11	37
Chhmar Dek	19	0	2	15	36
Neang Ouk	1	0	3	31	35
Phka Malis	3	5	16	9	33
Somaly	25	3	2	2	32
Neang Khon	21	5	1	4	31
Lolork Choek	30	0	0	0	30
IR66	0	24	4	1	29
Srov Bei Kour	0	7	3	18	28
Neang Chen	2	10	2	8	22
Misc 33 other varieties	23	63	60	88	234
	195	**367**	**335**	**488**	**1,385**

TABLE 5.6 – Reasons for choosing rice varieties (# HHs)

	BMC	KCM	KPT	SRP	Total
Had in stock from previous year	25	35	41	50	151
Have always used this variety	26	125	192	147	490
Because it gives good yield	60	147	28	103	338
Because it is most suitable for this area	61	33	61	160	315
Has good taste	15	22	8	21	66
Other reasons	8	5	5	7	25
	195	**367**	**335**	**488**	**1,385**

CHART 5.3 – Reasons for choosing rice varieties (# HHs)



Regarding **expenditure on rice production,** for both rainy season and dry season rice, HHs spend the highest amount on labor costs, followed by land preparation, fertilizers/pesticides and seed costs. Seed costs for Banteay Meanchey province are particularly high for dry season rice but this cost is not very representative of all HHs as only a few HHs in this province produce dry season rice.

TABLE 5.7 – Average expenditure per HH on rice production (Riels)

		BMC	KCM	KPT	SRP	Total
Rainy season	Seeds	67,505	99,682	14,988	35,147	68,091
	Land preparation	209,771	275,674	93,563	242,418	249,742
	Fertilizer/pesticides	243,115	197,375	62,666	208,809	202,276
	Labor	283,734	422,101	132,661	189,425	321,581
	Other costs	46,608	32,192	12,555	16,281	29,644
Dry season	Seeds	416,667	177,094	106,440	92,583	172,667
	Land preparation	150,000	569,487	139,636	161,667	349,209
	Fertilizer/pesticides	116,667	543,134	171,090	295,583	343,869
	Labor	293,333	557,963	700,388	171,042	555,388
	Other costs	10,667	74,848	238,814	14,167	119,058
Average all HHs producing rice		**866,160**	**755,454**	**385,624**	**434,215**	**565,953**

Outputs from rice production varied considerably among HHs – from only a few hundred kg per hectare for many HHs to one exceptional yield of 12 tons per hectare in Angkor Thom district of Siem Reap province (but this yield came from a very small plot of land). Table 5.8 below shows the average yields for the various types of rice – per HH and per hectare. It shows that average yields for dry season rice are almost double those of wet season rice at almost 3 tons per hectare compared to about 1.5 tons per hectare for the main rainy season rice crop. However two provinces differ quite a bit from the overall average, with dry season yields in Kompong Cham only slightly higher than rainy season yields and dry season yields in Banteay Meanchey lower than rainy season.

TABLE 5.8 – Average rice yields per HH and per hectare (kgs)

Average rice yield per HH (kgs)

	BMC	KCM	KPT	SRP	Total	TD	CD
Rainy season - 1st time	1,805	953	748	1,300	1,173	1,191	1,114
Rainy season - 2nd time	0	916	1,440	1,033	986	1,100	829
Dry season - 1st time	650	1,784	1,473	1,680	1,697	1,733	1,548
Dry season - 2nd time	0	1,972	583	800	1,131	1,719	543
	1,815	**1,370**	**849**	**1,359**	**1,304**	**1,319**	**1,254**

Average rice yield per hectare (kgs)

	BMC	KCM	KPT	SRP	Total	TD	CD
Rainy season - 1st time	1,384	2,026	1,125	1,498	1,452	1,371	1,816
Rainy season - 2nd time	0	2,718	1,440	1,700	2,051	1,926	2,327
Dry season - 1st time	1,026	2,928	2,786	2,851	2,860	2,837	2,969
Dry season - 2nd time	0	2,689	2,810	5,333	2,845	2,750	3,194
	1,396	**2,611**	**1,293**	**1,585**	**1,649**	**1,559**	**2,067**

There are a number of TD communes who average quite a bit less than the overall average of about 1.5 tons per hectare for rainy season rice.
Some of the more exceptional ones are:

- BMC, Krong Serei Sophoan, sangkat Kaoh Pong Satr 566 kg/ha
- KCM, Ponhea Kraek district, Veal Mlu commune 600 kg/ha
- KPT, Krong Stung Saen, sangkat Srayov 314 kg/ha
- KPT, Santuk district, Prasat commune 240 kg/ha
- KPT, Santuk district, Ti Pou commune 604 kg/ha

On the other hand there are three communes in Kompong Cham province where the average yield is over 3 tons per hectare:

- Batheay district, Batheay commune 4,000 kg/ha
- Batheay district, Cheung Prey commune 3,076 kg/ha
- Kaoh Sothin district, Preak Ta Nong 3.065 kg/ha

HHs were asked to identify plots within their overall rice land that produced the best and worst yields. The results are summarized in Table 5.9.

TABLE 5.9 – Best and Worst rice yields (kgs)

		RS-Best	RS-worst	DS - best	DS - worst
ALL	Average	2,160	1,222	3,647	2,345
	Minimum	125	0	480	200
	Maximum	9,600	6,000	12,653	5,000
BMC	Average	2,107	705	2,500	0
	Minimum	600	100	2,000	0
	Maximum	7,813	1,400	3,000	0
KCM	Average	2,552	1,889	3,775	2,507
	Minimum	125	250	1,200	200
	Maximum	7,778	6,000	10,500	5,000
KPT	Average	1,703	1,139	3,584	2,107
	Minimum	150	120	480	750
	Maximum	9,600	4,700	12,653	3,200
SRP	Average	2,314	1,136	2,983	1,763
	Minimum	400	0	1,667	200
	Maximum	9,200	5,500	6,667	4,250

RS = Rainy Season
DS = Dry Season

As there are a wide range of results from all provinces, further detailed study will need to be conducted to identify possible best yields

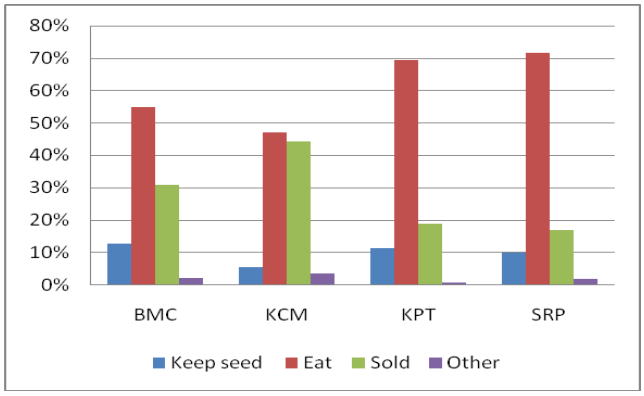
Analysis of the **use of rice** harvested shows that the majority of rice was consumed by the HHs (61%) with only 27% of rice sold (Table 5.10). The remainder was either kept for seed or given to other persons. Chart 5.4 shows quite some different profiles in the use of rice outputs, with HHs in Kompong Cham and Banteay Meanchey selling a higher portion of rice than Kompong Thom or Siem Reap.

TABLE 5.10 – Use of rice outputs Average per HH (kg & % of outputs)

	BMC	KCM	KPT	SRP	Total
Keep seed	226	73	95	133	123
Eat	997	645	590	975	801
Sold	558	607	159	227	354
Other	34	45	5	24	26
Average all	**1,815**	**1,370**	**849**	**1,359**	**1,304**

	BMC	KCM	KPT	SRP	Total
Keep seed	12%	5%	11%	10%	9%
Eat	55%	47%	69%	72%	61%
Sold	31%	44%	19%	17%	27%
Other	2%	3%	1%	2%	2%
Average all	**100%**	**100%**	**100%**	**100%**	**100%**

CHART 5.4 – Use of rice outputs Average per HH (% of outputs)



Due to the low quantities of rice sold compared to that consumed, income from rice sales per HH is relatively low and generally more of the rainy season crop was kept for consumption but a higher portion of the dry season rice was sold. Therefore income from dry season rice is higher than that from rainy season rice. As HHs in Kompong Cham and Banteay Meanchey sold more rice, the average income from rice for these provinces is higher than the other two. Table 5.11 shows the average income from all types of rice per HH for all provinces. Comparison of HHs in the TD and CD domains shows slightly higher income from the main rainy season and dry season rice crops but as most of the HHs who did a second crop in the same season were in the TD domain, income for these is higher for that domain. However, as the number of HHs doing these crops a second time were relatively few (refer Table 5.1 above), these figures do not significantly affect the overall average per HH, which is only slightly higher for the TD HHs than CD HHs.

TABLE 5.11 – Average income per HH from rice sales (Riels)

	BMC	KCM	KPT	SRP	Total	TD	CD
Rainy season - 1st time	468,195	271,011	79,298	172,122	216,024	222,837	194,291
Rainy season - 2nd time	0	362,938	0	194,857	275,323	425,000	68,077
Dry season - 1st time	0	908,046	649,154	632,133	821,232	831,814	778,564
Dry season - 2nd time	0	1,053,333	0	0	790,000	1,053,333	0
Average all	**468,195**	**537,313**	**133,419**	**191,995**	**304,353**	**315,730**	**266,442**

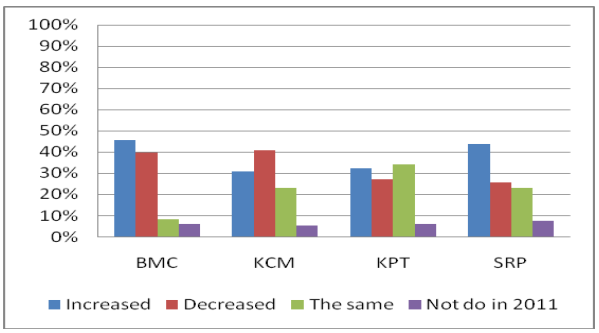
When asked about their **perceptions of change** in rice production compared to the previous year (2011), a slightly higher percentage overall felt that it had increased, with remaining responses divided between decreased and remaining the same (Table 5.12). Only a small percentage of HHs had nothing to compare with as they did not produce rice in 2011. Chart 5.5 shows some differences in perceptions between provinces, with a higher percentage of HHs in Banteay Meanchey and Siem Reap perceiving positive change compared to HHs in Kompong Cham and Kompong Thom.

TABLE 5.12 – Perceptions of change in rice production (# and % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Increased	88	100	103	204	495
Decreased	76	133	87	120	416
The same	16	75	110	108	309
Not do in 2011	12	17	20	35	84
	192	**325**	**320**	**467**	**1,304**

% of HHs	BMC	KCM	KPT	SRP	Total
Increased	46%	31%	32%	44%	38%
Decreased	40%	41%	27%	26%	32%
The same	8%	23%	34%	23%	24%
Not do in 2011	6%	5%	6%	7%	6%
	100%	**100%**	**100%**	**100%**	**100%**

CHART 5.5 – Perceptions of change in rice production (% of HHs)



Many reasons were given as the reasons for these changes in rice production but the most common reason was either natural disaster (negative change) or the absence of any natural disaster (for positive change) – see Table 5.13.

TABLE 5.13 – Main reasons for change in rice production (# responses)

	BMC	KCM	KPT	SRP	Total
Positive :					
Increased plot for cultivation	18	10	5	31	64
No natural disaster (flood, insect, drought..)	73	81	90	169	413
Increase in using agricultural input	19	26	48	44	137
Applied new knowledge in farming	0	2	9	6	17
Reach of rainwater	1	3	0	8	12
Negative :					
Natural disaster (flood, insect, drought.)	74	110	75	83	342
Reduce plot for cultivation	2	5	7	11	25
Poor soil	1	34	33	27	95
Lack of agricultural inputs (fertilizer, seed)	3	26	32	23	84
Lack of knowledge/skill in cultivation	0	8	19	12	39
Lack of laborer	1	0	3	2	6
Destroyed by rats	0	0	1	0	1
Changing of rice seed	1	0	1	0	2
	193	**305**	**323**	**416**	**1,237**

Many of the problems noted by HHs as reasons for decreased rice production were corroborated by respondents to the KIIs where there was general consensus among village and commune leaders as well as staff of the DOAs and PDAs that the following were key problems faced by the farmers in their rice production activities:

- Crop destruction due to natural disasters and insect damage
- High price of agricultural inputs, equipment, raw material, fertilizer
- Lack of Khmer translation on some agriculture inputs (like pesticides) so farmers misuse
- Lack of irrigation systems for farming
- Lack of agricultural technique and skill
- Lack of agriculture inputs: lack of purified seed

Gender in rice production

HHs were asked which members of their HH were most engaged in 10 key tasks related to rice production. The responses did not differ significantly from province to province so only the totals are presented here as it allows easier comparison of the overall gender roles in each task (Table 5.14).

TABLE 5.14 – Gender in rice production

	Male members only	Female members only	Both genders
1. Land preparation	52%	22%	25%
2. Planting/transplanting	25%	26%	49%
3. Tending rice crop	26%	24%	50%
4. Spraying/fertilizer application	44%	21%	35%
5. Harvesting	9%	22%	68%
6. Treshing	14%	23%	62%
7. Transport	38%	20%	42%
8. Deciding how much/when to sell	10%	36%	54%
9. Selling the rice	12%	40%	48%
10. Keep the money after selling	3%	81%	16%

The data shows that most tasks are done by both genders, with land preparation and spraying done mostly by male members but female members generally keep the money after selling the rice. A surprising figure (highlighted in green in the table) is the percentage of HHs that say female members are more engaged in land preparation than male members. Examination of the data shows that not all these responses came from FHHs – 70% were indeed FHHs but the other 30% were male headed households. The largest number of these MHHs are in Siem Reap province so migration of male members could be a contributing factor to more females engaged in this activity.

III.6 Cash crop production

Cash crops (excluding vegetables and fruit) are not commonly grown in many of the communes and districts surveyed. In total, only 241 (12%) of the 1,941 HHs engaged in agriculture activities grow cash crops. This percentage differs slightly between TD and CD groups – 14% and 8% respectively. The figures also vary per province, with the highest number of HHs growing cash crops being in Kompong Thom and Kompong Cham provinces. However, not all communes in these provinces grow these crops. The communes who have the highest percentage of HHs growing cash crops in these two provinces are:

Kompong Thom province

- Sandan district, Sandan commune 93%
- Sandan district, Meanchey commune 67%
- Santuk district, Kraya commune 47%
- Prasat Balang district, Sala Visai commune 53%

Kompong Cham province

- Dambae district, Seda commune 73%
- Ponhea Kraek district, Kraek commune 73%
- Kaoh Sothin district, Kompong Reab commune 53%
- Stung Trang district, Dang Kdar 53%

Overall numbers and percentages per province are shown in Table 6.1 including the gender of the heads of households who engage in this activity.

TABLE 6.1 – HHs growing cash crops (# and % of HHs)

 # HHs who grew cash crops

# HHs	BMC	KCM	KPT	SRP	Total
Yes	38	75	78	50	241
No	350	460	352	538	1,700
	388	**535**	**430**	**588**	**1,941**

% of HHs	BMC	KCM	KPT	SRP	Total
Yes	10%	14%	18%	9%	12%
No	90%	86%	82%	91%	88%
	100%	**100%**	**100%**	**100%**	**100%**

Gender of HoH who grew cash crops

# HHs	BMC	KCM	KPT	SRP	Total
Male	29	46	57	37	169
Female	9	29	21	13	72
	38	**75**	**78**	**50**	**241**

% of HHs	BMC	KCM	KPT	SRP	Total
MHH	10%	13%	19%	9%	12%
FHH	7%	12%	12%	6%	9%
	9%	**13%**	**16%**	**8%**	**11%**

As some of the 241 HHs grew more than one type of cash crop, the total number of crops grown is 259 types, as shown in Table 6.2 below, We can see that cassava is the most popular crop overall, followed by cashew and corn. The total land size allocated to these crops is relatively small, with 130 hectares planted by all these 241 HHs (Table 6.3).

TABLE 6.2 – Types of cash crops grown (# HHs growing each type)

	BMC	KCM	KPT	SRP	Total
Corn	3	5	7	19	34
Soybean	0	4	2	2	8
Mungbean	0	3	1	2	6
Peanut	1	0	5	0	6
Cassava	35	48	33	21	137
Cashew	0	5	37	8	50
Sesame	0	6	0	0	6
Sugar cane	1	2	1	0	4
Rubber	0	3	0	0	3
Tobacco	0	5	0	0	5
	40	**81**	**86**	**52**	**259**

TABLE 6.3 – Number of hectares planted with cash crops

	BMC	KCM	KPT	SRP	Total
Corn	0.51	0.69	0.94	3.79	5.94
Soybean	0.00	4.50	2.50	2.50	9.50
Mungbean	0.00	0.38	1.00	0.35	1.73
Peanut	0.50	0.00	0.69	0.00	1.19
Cassava	12.04	34.45	23.17	10.47	80.13
Cashew	0.00	2.63	24.43	0.96	28.02
Sesame	0.00	1.01	0.00	0.00	1.01
Sugar cane	0.30	0.12	0.00	0.00	0.42
Rubber	0.00	0.70	0.00	0.00	0.70
Tobacco	0.00	0.93	0.00	0.00	0.93
	13	**45**	**53**	**18**	**130**

The majority of this land on which cash crops are grown is land other than rice land, with only 10 hectares of rice land being double-cropped with cash crops (Table 6.4).

TABLE 6.4 – Status of land on which cash crops are grown (# hectares)

	BMC	KCM	KPT	SRP	Total
Rice land (before/after rice)	1.0	2.0	0.3	7.1	10.3
On other land	12.3	43.4	52.5	11.0	119.2
	13	**45**	**53**	**18**	**130**

Average **expenditure** on cash crops per HH is almost the equivalent of $100 per year, with the highest expenditure on labor, followed by land preparation and seed purchase (Table 6.5). However within these average figures, some cash crops require a lot more expenditure per HH than others, with the highest expenditure being on soybeans (average of over one million Riels per HH/p.a.). In general expenditure is low due to the small size of land allocated to these crops.

TABLE 6.5 – Average expenditure per HH on cash crops (Riels)

Average exp/HH - all crops	BMC	KCM	KPT	SRP	Total
Seeds	135,908	83,533	52,051	67,210	78,216
Land preparation	88,974	126,107	42,974	76,200	82,992
Labor	11,947	285,933	45,974	57,840	117,747
Fertilizer/pesticides	63,895	93,680	14,410	23,778	48,825
Other expend	17,816	54,733	20,385	3,600	27,187
Average all exp/HH	**318,539**	**643,987**	**175,795**	**228,628**	**354,966**

Production of these cash crops yielded a total **output** of over 500 tons, which gave an average of over two tons per HH (Table 6.6), with the highest outputs per HH in Kompong Cham province (contributed mainly from cassava production). Yields per hectare varied depending on the type of crop and even among HHs doing the same crop yields varied, with some HHs getting much better yields than others (Table 6.7).

TABLE 6.6 – Average yields per HH from cash crops (kgs)

	BMC	KCM	KPT	SRP	Total
Corn	359	206	614	268	338
Soybean	0	1,603	1,210	1,762	1,544
Mungbean	0	83	200	58	94
Peanut	1,000	0	213	0	345
Cassava	810	5,800	4,022	1,653	3,461
Cashew	0	152	123	40	113
Sesame	0	85	0	0	85
Sugar cane	200	51	10	0	78
Rubber	0	426	0	0	426
Tobacco	0	210	0	0	210
	806	**3,864**	**1,863**	**875**	**2,114**

TABLE 6.7 – Average yields per hectare from cash crops (kgs)

	BMC	KCM	KPT	SRP	Total
Corn	2,118	1,483	4,556	1,343	1,936
Soybean	0	1,424	968	1,410	1,300
Mungbean	0	658	200	329	327
Peanut	2,000	0	1,546	0	1,737
Cassava	2,354	8,081	5,728	3,316	5,918
Cashew	0	289	187	334	201
Sesame	0	502	0	0	502
Sugar cane	667	847	10,000	0	740
Rubber	0	1,824	0	0	1,824
Tobacco	0	1,127	0	0	1,127
Ave all crops	**2,294**	**6,381**	**2,755**	**2,422**	**3,932**

The vast majority of cash crops were sold, with only minimal quantities kept as seed, consumed by the HHs or given away to others (Table 6.8).

TABLE 6.8 – Use of cash crop outputs (kgs)

	BMC	KCM	KPT	SRP	Total
Keep seed	50	394	220	941	1,605
Eat	90	272	253	1,384	1,999
Sold	30,482	288,568	144,792	41,434	505,276
Other	0	530	10	0	540
	30,622	**289,764**	**145,275**	**43,759**	**509,420**

Of the 505 tons of crops sold, 473 tons were cassava.

Prices obtained by HHs for the sale of these crops varied depending on the crop type and even within crop types, prices varied a little between different provinces (Table 6.9). The total **income** per HH averaged at over one million Riels, mainly coming from cassava sales although some other crops like soybeans gave yielded higher income to the HHs who grew those crops (Table 6.10).

TABLE 6.9 – Average prices obtained from selling cash crops (Riels)

	BMC	KCM	KPT	SRP	Total
Corn	664	816	516	998	748
Soybean	0	2,513	2,155	2,963	2,574
Mungbean	0	3,194	3,600	4,000	3,382
Peanut	4,000	0	3,615	0	3,801
Cassava	452	375	434	533	408
Cashew	0	3,837	3,036	3,537	3,164
Sesame	0	4,314	0	0	4,314
Sugar cane	1,000	250	0	0	932
Rubber	0	1,500	0	0	1,500
Tobacco	0	5,677	0	0	5,677

TABLE 6.10 – Average income per HH from selling cash crops (Riels)

	BMC	KCM	KPT	SRP	Total
Corn	232,000	131,800	302,571	207,903	218,328
Soybean	0	3,517,500	2,370,000	4,850,000	3,563,750
Mungbean	0	264,000	720,000	10,000	255,333
Peanut	3,800,000	0	735,260	0	1,246,050
Cassava	365,445	2,173,750	1,746,988	863,229	1,408,095
Cashew	0	583,200	373,068	84,438	347,900
Sesame	0	307,000	0	0	307,000
Sugar cane	200,000	2,500	0	0	51,250
Rubber	0	638,500	0	0	638,500
Tobacco	0	1,190,000	0	0	1,190,000
Ave all crops	**460,173**	**1,766,527**	**1,060,364**	**649,469**	**1,100,240**

Gender in cash crop production

HHs were asked which members of their HH were most engaged in nine key tasks related to cash crop production. The responses did not differ significantly from province to province so only the totals are presented here as it allows easier comparison of the overall gender roles in each task (Table 6.11).

TABLE 6.11 – Gender in cash crop production

	Male members only	Female members only	Both genders
1. Land preparation	37%	20%	43%
2. Planting/transplanting	15%	21%	65%
3. Tending rice crop	13%	18%	68%
4. Spraying/fertilizer application	13%	26%	62%
5. Harvesting	8%	26%	66%
6. Treshing	7%	25%	68%
7. Transport	34%	23%	43%
8. Deciding how much/when to sell	8%	42%	50%
9. Selling the rice	7%	65%	28%

The summary above shows that the majority of tasks are jointly shared by male and female HH members but with a higher percentage of female members responsible for selling the crops. Although land preparation and transport are jointly done by most HHs, quite a high percentage of HHs say they are mainly the tasks of male members.

III.7 Vegetable/fruit production

Of the 1,941 HHs engaged in agriculture activities only 559 HHs (29%) grew vegetables and/or fruit in the last year (Table 7.1). Of these 559 HHs, 175 HHs grew vegetables and 441 HHs grew fruit (with 57 HHs growing both vegetables and fruit). A higher number of male headed HHs grew these types of crops than FHHs.

TABLE 7.1 – HHs growing vegetables and fruit (# & % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Yes	167	88	97	207	559
No	221	447	333	381	1,382
	388	**535**	**430**	**588**	**1,941**

% of HHs	BMC	KCM	KPT	SRP	Total
Yes	43%	16%	23%	35%	29%
No	57%	84%	77%	65%	71%
	100%	**100%**	**100%**	**100%**	**100%**

Vegetables	BMC	KCM	KPT	SRP	Total
MHH	14	18	16	55	103
FHH	8	21	16	27	72
	22	**39**	**32**	**82**	**175**

Fruit	BMC	KCM	KPT	SRP	Total
MHH	96	33	36	89	254
FHH	59	25	38	65	187
	155	**58**	**74**	**154**	**441**

Many different **types of vegetables and fruit** were grown by these HHs. Table 7.2 (and Chart 7.1) below shows the types of vegetables grown and Table 7.3 (and Chart 7.2) lists the main fruits grown. While no particular vegetable stands out as being of high priority to a large percentage of HHs, fruit growing is dominated by bananas and mangos. The combination of these two accounts for 70% of HHs producing fruit.

TABLE 7.2 – Types of vegetables grown (# HHs)

	BMC	KCM	KPT	SRP	Total
Gourd	3	19	4	16	42
Cabbages	4	1	13	20	38
Cucumber	4	5	1	5	15
Beans	2	0	1	14	17
Pumpkin	2	3	0	13	18
Convolvulus	8	9	10	22	49
Eggplant	3	6	8	13	30
Other types	7	8	3	14	32
	33	**51**	**40**	**117**	**241**

TABLE 7.3 – Types of fruits grown (# HHs)

	BMC	KCM	KPT	SRP	Total
Banana	86	28	43	112	269
Mango	76	31	45	49	201
Coconut	17	4	27	13	61
Milk fruit	21	2	13	15	51
Jackfruit	23	5	10	8	46
Other types	13	6	3	20	42
	236	**76**	**141**	**217**	**670**

CHART 7.1 – Types of vegetables grown (# HHs)

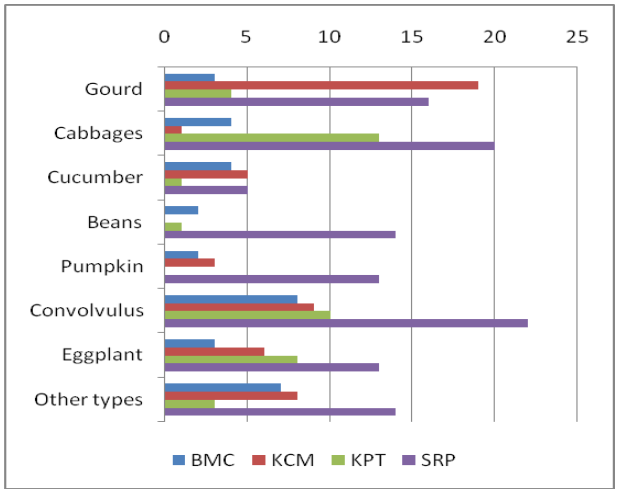
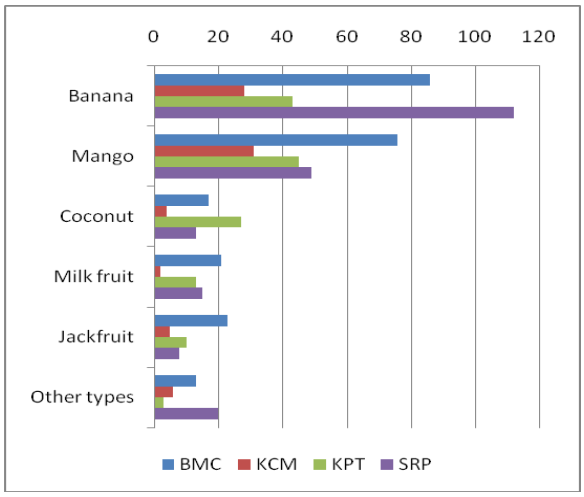


CHART 7.2 – Types of fruits grown (# HHs)



Although **outputs** of vegetables and fruit varied depending on the types of crops being grown, on average HHs harvested over 200 kg of vegetables and almost 100 kg of fruit. Total outputs per HH are shown in Tables 4 and 5 and pictorially as Charts 3 and 4 below. Within the "other" fruit category there are a few HHs who had exceptional yields from two fruit types so these are excluded from Chart 4 to avoid distorting the data from other fruits. These exceptional items were 2 HHs in Svay Leu district of Siem Reap who got yields of 1,400 kg and 900 kg from growing Taro and 2 other HHs who received very high yields from Water Melon – one HH in Sout Nikum, Siem Reap who harvested 1,500 kg and one HH in Kompong Svay district of Kompong Thom who harvested 3,000 kg.

TABLE 7.4 – Vegetables outputs per HH (kgs)

	BMC	KCM	KPT	SRP	Total
Gourd	22	37	89	34	40
Cabbages	51	20	264	499	359
Cucumber	626	1,318	1,865	162	784
Beans	27	0	51	75	68
Pumpkin	9	40	0	131	102
Convolvulus	188	48	107	62	89
Eggplant	30	146	58	194	132
Other fruits	45	200	35	144	126
Ave all HHs	**216**	**265**	**230**	**244**	**242**

TABLE 7.5 – Fruit outputs per HH (kgs)

	BMC	KCM	KPT	SRP	Total
Banana	33	26	43	53	42
Mango	38	189	36	48	63
Coconut	66	144	41	56	58
Milk fruit	27	30	25	38	30
Jackfruit	62	25	28	17	43
Other fruits	44	133	1,139	283	248
Ave all HHs	**61**	**141**	**116**	**100**	**94**

CHART 7.3 – Vegetables outputs per HH (kgs)

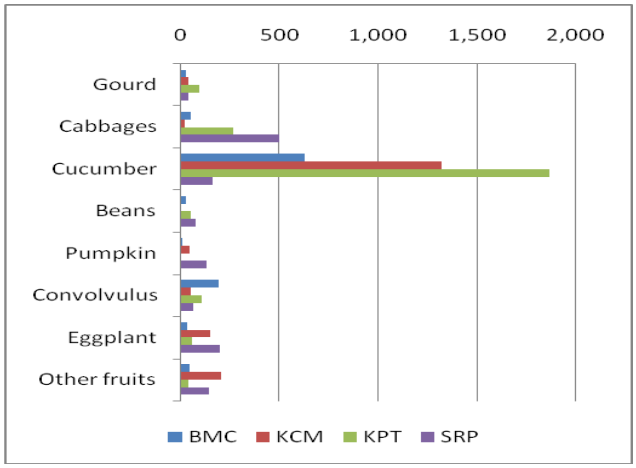
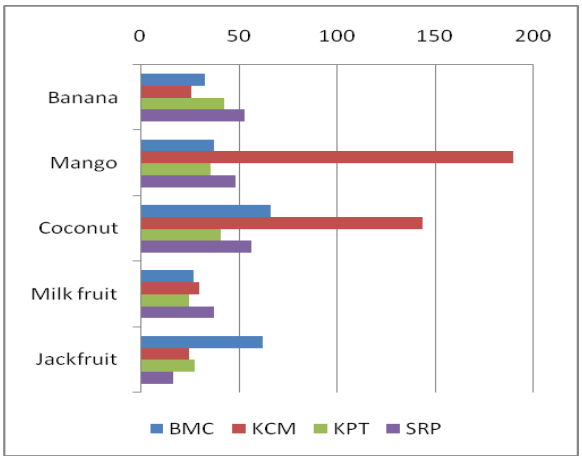


CHART 7.4 – Fruit outputs per HH (kgs)



In total 42.4 tons of vegetables and 41.5 tons of fruit were produced by these 559 HHs. While most of the vegetables were sold rather than consumed, approximately equal portions of fruit were eaten and sold (Table 7.6).

TABLE 7.6 – Use of vegetables and fruit outputs (kg and %)

Use of vegetable outputs (all types)

Total KGs	BMC	KCM	KPT	SRP	Total
Keep seed	0	32	13	76	121
Eat	684	1,357	957	2,981	5,979
Sold	4,022	8,932	6,261	16,896	36,111
Other	35	10	115	35	195
	4,741	**10,331**	**7,346**	**19,987**	**42,405**

% of outputs	BMC	KCM	KPT	SRP	Total
Keep seed	0%	0%	0%	0%	0%
Eat	14%	13%	13%	15%	14%
Sold	85%	86%	85%	85%	85%
Other	1%	0%	2%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**

Use of fruit outputs (all types)

Total KGs	BMC	KCM	KPT	SRP	Total
Keep seed	50	0	0	1,109	1,159
Eat	6,409	2,233	4,087	7,340	20,069
Sold	2,779	5,911	4,344	6,469	19,503
Other	144	5	144	474	767
	9,382	**8,149**	**8,575**	**15,392**	**41,498**

% of outputs	BMC	KCM	KPT	SRP	Total
Keep seed	1%	0%	0%	7%	3%
Eat	68%	27%	48%	48%	48%
Sold	30%	73%	51%	42%	47%
Other	2%	0%	2%	3%	2%
	100%	**100%**	**100%**	**100%**	**100%**

Comparing the rates of sales and consumption between provinces, we can see that for vegetables the percentages are almost the same but for fruit, HHs in Banteay Meanchey consumed more fruit than they sold whereas the opposite was the case for Kompong Cham where 73% of fruit harvested was sold. These percentages are reflected in the income earned from selling fruit as HHs in Banteay Meanchey received very little income from fruit selling whereas income per HH in Kompong Cham was well above the overall average. The similarity in percentages of vegetables sold is also reflected in the average income per HH but HHs in Kompong Cham received a little less income as they sold vegetable types which had lower market prices. The average income per HH for both vegetables and fruit is shown in Table 7.7 below.

TABLE 7.7 – Average income per HH from selling vegetables & fruit (Riels)

VEGETABLES	BMC	KCM	KPT	SRP	Total
Gourd	35,000	8,211	147,500	20,531	28,083
Cabbages	95,000	20,000	290,769	571,750	410,921
Cucumber	600,000	572,600	1,378,000	88,200	472,133
Beans	17,000	0	120,000	102,500	93,471
Pumpkin	0	3,333	0	49,423	36,250
Convolvulus	337,500	23,622	133,300	56,818	112,155
Eggplant	28,333	116,167	43,625	106,231	83,733
Other types	42,857	176,125	33,333	270,354	174,811
	272,909	**137,631**	**239,063**	**252,414**	**226,969**

FRUIT	BMC	KCM	KPT	SRP	Total
Banana	7,291	8,000	14,849	10,433	9,881
Mango	9,197	123,677	25,367	20,306	33,182
Coconut	58,529	8,875	5,444	39,000	27,615
Milk fruit	10,714	0	10,154	16,333	11,804
Jackfruit	20,652	12,000	6,800	0	13,109
Other types	20,269	519,667	1,966,667	204,600	318,417
	21,190	**125,371**	**108,473**	**45,503**	**58,028**

Gender in vegetable and fruit production

HHs were asked which members of their HH were most engaged in 10 key tasks related to vegetable and fruit production. The responses did not differ significantly from province to province so only the totals are presented here as it allows easier comparison of the overall gender roles in each task (Table 7.8).

TABLE 7.8 – Gender in vegetable & fruit production

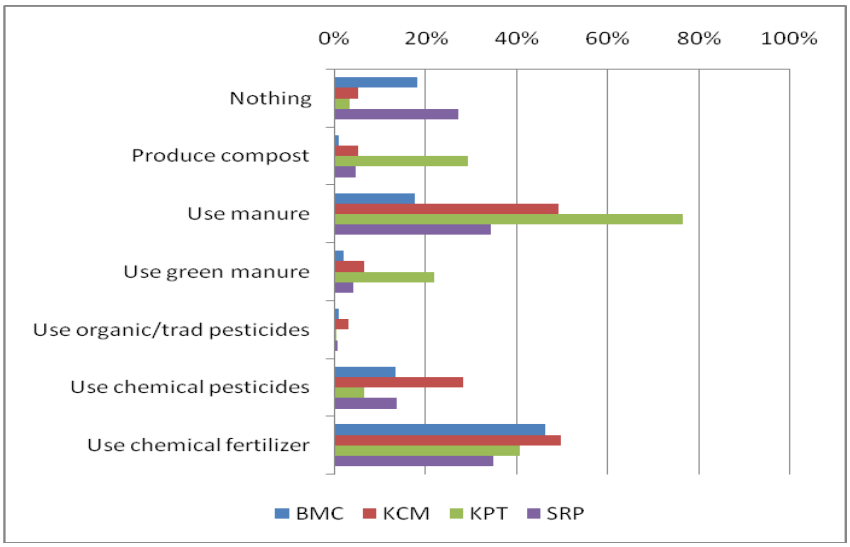
	Male members only	Female members only	Both genders
1. Preparing the soil	36%	38%	26%
2. Making fencing	25%	42%	33%
3. Planting the seeds	12%	43%	45%
4. Weeding	21%	46%	34%
5. Spraying/fertilizer application	8%	50%	42%
6. Harvesting	7%	49%	43%
7. Post harvest activities	11%	52%	37%
8. Deciding how much/when to sell	3%	67%	29%
9. Selling the veg/fruit	4%	71%	24%
10. Keep the money after selling	2%	87%	11%

From the table above we can see that vegetable and fruit growing is largely a female occupation but there are a number of HHs where both genders are involved in all activities. In particular, soil preparation is done exclusively by male members for 36% of the HHs engaged in these activities. As with gender analysis for rice and cash crops, female members are mostly responsible for keeping the money after selling.

III.8 Agriculture techniques

The most frequently used methods of **soil improvement** used by HHs are manure and chemical fertilizers (Chart 8.1). Use of manure (and also green manure and compost) is higher in Kompong Thom than the other provinces. While a high percentage of HHs in Kompong Cham also use manure, they also use a high proportion of chemical fertilizers and pesticides. Quite high percentages of HHs in both Banteay Meanchey (18%) and Siem Reap (27%) do not do anything to improve soil fertility. There were no significant differences in methods of soil improvement between TD and CD HHs.

CHART 8.1 – Methods of soil improvement (% of HHs who use each type)



When asked about various **IPM methods**, there was relatively low knowledge of most methods and even less had used what they knew – methods practiced were lower in most cases than what they say they know of (Table 8.1). There was particularly low level of knowledge among HHs in Banteay Meanchey province where most HHs had no idea of any IPM methods. There were no significant differences in knowledge between TD and CD HHs.

TABLE 8.1 - IPM methods known and practiced (% of HHs)

	KNOW					USED				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Use insect net	0%	2%	7%	1%	2%	0%	1%	6%	1%	2%
Remove disease plants	0%	1%	0%	2%	1%	1%	0%	0%	2%	1%
Sterilize soil using heat	0%	0%	0%	2%	1%	0%	0%	0%	2%	1%
Use netting to protect seedling from in	0%	1%	1%	0%	1%	0%	0%	0%	0%	0%
Remove host weeds	4%	12%	55%	15%	21%	4%	12%	49%	14%	19%
Apply wood ash	1%	9%	10%	2%	5%	1%	6%	4%	2%	3%
Apply organic pesticide	2%	22%	17%	5%	11%	1%	17%	5%	3%	7%
Apply lime	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%
Remove insects by hand	1%	3%	8%	6%	5%	1%	3%	5%	6%	4%

Information collected via KIIs, especially from DOA and PDA respondents substantiated these findings as they note that the majority of HHs have low level of knowledge of agriculture techniques in general and thus their crops suffer damage from pests that could be reduced with improved knowledge through additional training.

HHs were asked about knowledge and practice of **safety measures** when using chemicals. While there is some knowledge of measures such as wearing protective equipment, the knowledge of other measures is very limited – and there is even less use of knowledge in practice (Table 8.2). There were no significant differences in knowledge between TD and CD HHs.

TABLE 8.2 – Safety measures known and practiced (% of HHs)

	KNOW					USED				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Check wind	3%	13%	39%	12%	16%	3%	9%	11%	6%	7%
Wear protective equipment	30%	56%	67%	32%	46%	21%	42%	22%	16%	26%
Check for people around	0%	9%	28%	4%	10%	0%	5%	8%	2%	4%
Check if pesticide dangerous	0%	8%	0%	3%	3%	0%	4%	0%	2%	2%
Check right mixing rate	0%	11%	6%	2%	5%	0%	7%	5%	1%	3%
Other	2%	3%	0%	4%	2%	1%	3%	0%	2%	2%

III.9 Fishing/fish raising

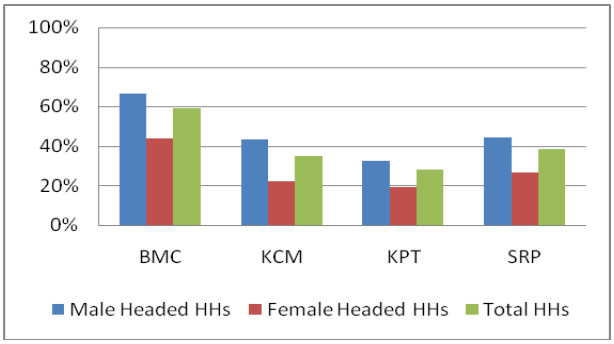
Of the total 1,941 HHs engaged in agriculture activities. 764 (39%) engage in some form of fishing (Table & Chart 9.1). There is only slight difference between numbers of TD and CD HHs (40% and 36% respectively). The highest percentages of total HHs engaged in fishing is in Banteay Meanchey where 59% of HHs engage in this activity compared to a low figure of 28% of HHs in Kompong Thom.

TABLE 9.1 – HHs fishing/fish raising (# & % by gender)

# HHs	BMC	KCM	KPT	SRP	Total
Male Headed HHs	176	142	93	172	583
Female Headed HHs	54	46	28	53	181
	230	**188**	**121**	**225**	**764**

% of HHs in category	BMC	KCM	KPT	SRP	Total
Male Headed HHs	66%	43%	33%	44%	46%
Female Headed HHs	44%	22%	19%	27%	27%
Total HHs	**59%**	**35%**	**28%**	**38%**	**39%**

CHART 9.1 – HHs fishing/fish raising (% by gender)



Within these overall percentages, some TD communes stand out as having particularly high percentages of HHs engaged in fishing (and others none at all) as follows:

Highest:

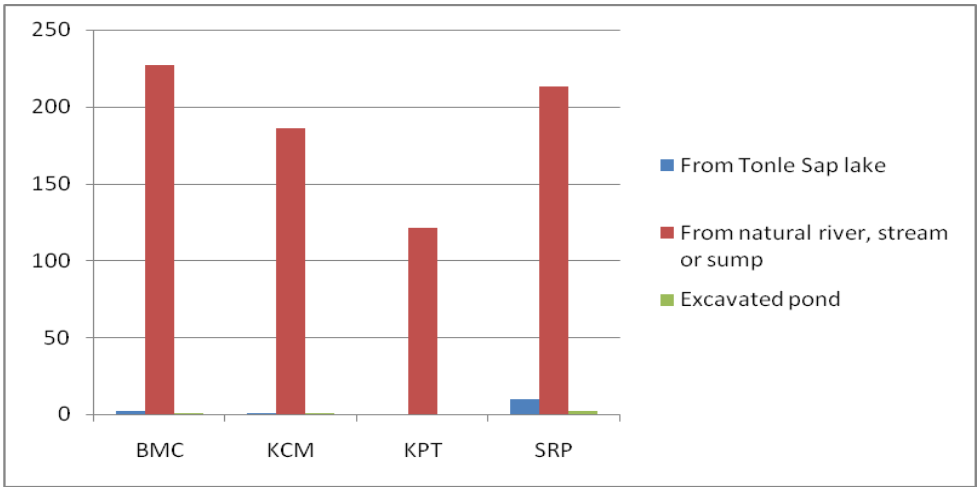
- BMC, Thmar Pouk district, Kouk Kakthen commune 93%
- BMC, O'Chrouv district, O'Bei Chuan commune 93%
- BMC, O'Chrouv district, Samrong commune 86%

No HHs engaged in fishing:

- KPT, Baray district, Kokir Thum commune 0%
- SRP, Angkor Chum district, Char Chhuk commune 0%
- SRP, Angkor Chum district, Kouk Doung commune 0%
- SRP, Krong Siem Reap, sangkat Sla Kram 0%
- SRP, Svay Leu district, Khnang Phnom commune 0%

Chart 8.2 shows clearly that fishing from natural rivers, streams or sumps is the most common source of fishing resources for these families. There are only a few families in Siem Reap province who fish from the Tonle Sap lake. A small number have excavated ponds but the number is so small it hardly shows up in the chart below.

CHART 9.2 – Fishing sources (# HHs)



Average outputs from fishing were relatively low, averaging 154 kg per HH over the last year. HHs in Kompong Cham province got slightly higher yields from the main source of fishing (natural rivers or streams). The output from fishing in the Tonle Sap lake is high for this province but actually there is only one HH fishing from this source so it has little impact on the overall averages.

TABLE 9.2 – Average outputs per HH from fishing (kgs)

	BMC	KCM	KPT	SRP	Total
From Tonle Sap lake	75	1,460	0	108	207
From natural river, stream or sump	127	259	163	85	154
Excavated pond	80	15	0	75	61
	127	**264**	**163**	**86**	**154**

A slightly higher percentage of total outputs are sold rather than consumed – 60% compared to 40%. Siem Reap province differs quite a bit from the others in this respect, where 65% of outputs were consumed and only 35% sold and HHs in Kompong Cham consumed even less than other provinces at only 29%, selling 71% (Table 9.3).

TABLE 9.3 – Use of outputs from fishing (kgs & % of outputs)

KGs	BMC	KCM	KPT	SRP	Total
Eat	54	77	65	56	62
Sold	73	187	98	30	92
	127	**264**	**163**	**86**	**154**

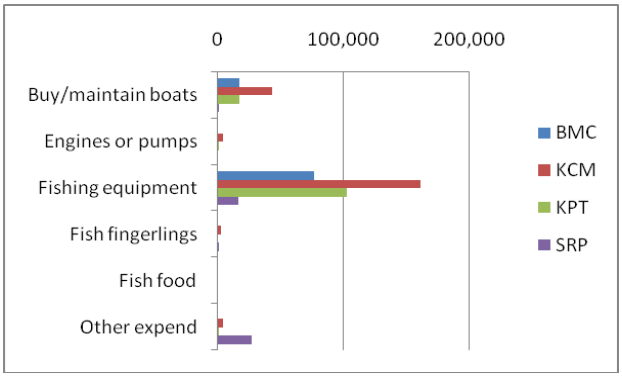
% of outputs	BMC	KCM	KPT	SRP	SRP
Eat	42%	29%	40%	65%	40%
Sold	58%	71%	60%	35%	60%
	100%	**100%**	**100%**	**100%**	**100%**

On average, these HHs spent just over 100,000 Riels per HH on fishing activities. The largest item of expenditure was on fishing equipment (Table 9.4 and Chart 9.2). As fishing was mainly done from natural sources, there is minimal expenditure on fingerlings – only by the few HHs who have excavated ponds; and even these HHs did not spend any money on fish food.

TABLE 9.4 – Average expenditure per HH on fishing (Riels)

	BMC	KCM	KPT	SRP	Total
Buy/maintain boats	16,941	42,731	16,785	889	18,535
Engines or pumps	0	4,266	455	0	1,122
Fishing equipment	76,530	160,758	102,221	16,185	83,554
Fish fingerlings	0	2,660	0	667	851
Fish food	0	0	0	0	0
Other expend	0	4,386	248	26,900	9,041
	93,472	**214,801**	**119,709**	**44,641**	**113,102**

CHART 9.2 – Average expenditure per HHs on fishing (Riels)



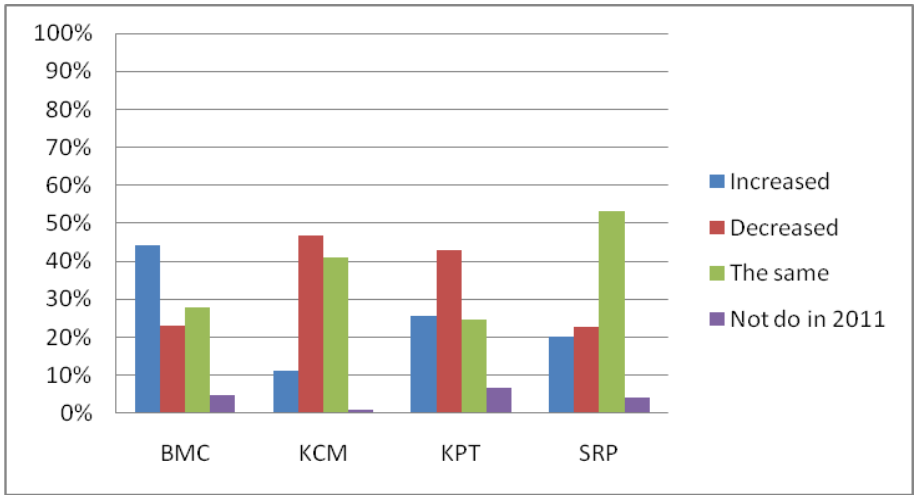
Income from fishing averaged almost the equivalent of $100 per HH (Table 9.5). As expected from the figures shown in Table 9.2 on outputs, the highest income earned was in Kompong Cham, with again the exceptionally high figure from the one HH who fishes from the Tonle Sap lake.

TABLE 9.5 – Average income per HH from fishing (Riels)

	BMC	KCM	KPT	SRP	Total
From Tonle Sap lake	187,500	2,190,000	0	100,000	274,231
From natural river, stream or sump	323,953	763,288	418,636	126,352	392,338
Excavated pond	0	0	0	0	0
	321,358	**766,816**	**418,636**	**124,058**	**388,275**

Chart 9.3 below shows that there is divided opinion as to whether fishing has improved or otherwise in the last year. The majority of HHs in most provinces say either decreased or stayed the same, with the exception of Banteay Meanchey province, where more HHs perceived fishing to be increasing rather than decreasing.

CHART 9.3 – HH perceptions of change in fishing (% of HHs)



The main reasons for HH perception of positive change were increased availability of fish or aquatic animals or improved quantity/quality of water. The opposite was the case for the majority of families who perceived fishing as decreasing, with declining availability of fish or other aquatic animals being the main reason. A number of other reasons were raised but only by a few HHs. Total responses are shown in Table 9.6 below.

TABLE 9.6 – Reasons for change in fishing/fish raising (# of responses)

Change	Reason	BMC	KCM	KPT	SRP	Total
Postive	Change in quantity of aquatic animals available	68	17	30	19	134
	Change in quality/quantity of water	77	11	12	37	137
	Expanded production	0	0	0	1	1
	Improved technology	0	1	0	2	3
	Use of better quality equipment	0	3	5	1	9
Negative	Change in quantity of aquatic animals available	45	79	49	41	214
(or same)	Change in quality of food used	6	2	0	2	10
	Can't fish as often as before (busy with other activities)	4	2	24	5	35
	Can't fish as often as before (sick, injured or other infliction)	2	3	1	1	7
	Lack of water	0	3	0	0	3
	Lack of fishing gear	0	3	1	0	4
	Too many fishermen	2	0	1	4	7
	Illegal implement	0	5	3	1	9
		204	**129**	**126**	**114**	**573**

Gender in fishing/fish raising

HHs were asked which members of their HH were most engaged in nine key tasks related to vegetable and fruit production. The responses did not differ significantly from province to province so only the totals are presented here as it allows easier comparison of the overall gender roles in each task (Table 9.7).

TABLE 9.7 – Gender in fishing/fish raising

	Male members only	Female members only	Both genders
1. Making boat	69%	4%	27%
2. Preparing/repairing nets	81%	4%	15%
3. Rowing or operating boat engine	72%	6%	22%
4. Feeding aquatic animals	40%	20%	40%
5. Hauling fish	67%	6%	26%
6. Post harvest activities (cleaning, cutting, etc.)	55%	18%	27%
7. Decision taking about how much/when to sell	12%	46%	41%
8. Selling the fish/other aquatic animals	11%	58%	31%
9. Keep the money after selling	4%	85%	12%

From the table above we can see that fishing is largely a male activity up to the time of making decisions about selling. Female members are mostly responsible for selling and keeping the money after selling. The only activity seemingly shared evenly is “feeding fish/aquatic animals” but the percentages here represent only the five HHs who have excavated ponds.

III.10 Livestock production

The vast majority of HHs engage in some types of animal raising – 1,472 HHs (76%) of the total HHs who engage in agriculture activities (Table 10.1). With the exception of Kompong Thom where slightly higher percentages of HHs engage in livestock production, the percentage is fairly even among provinces (and among domains) and similar percentages of male and female headed HHs take part in raising livestock.

TABLE 10.1 – HH engaged in livestock production (# and & of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Male Headed HHs	197	243	232	296	968
Female headed HHs	91	153	110	150	504
	288	**396**	**342**	**446**	**1,472**

% of each category	BMC	KCM	KPT	SRP	Total
Male Headed HHs	74%	74%	81%	76%	76%
Female headed HHs	74%	74%	76%	75%	75%
	74%	**74%**	**80%**	**76%**	**76%**

Within these overall percentages, there are two communes where less than 40% of HHs engage in livestock production (Kompong Chen Cheung commune in Stong district and Samrong commune in Sout Nikum), not counting sangkat Sla Kram in Siem Reap town and there is only one HH engaged in agriculture there (cash crops being this HH's only activity).

On the other hand, there are seven TD communes where 100% of all HHs, male and female-headed, engage in animal raising, as follows:

- KCM, Dambae district, Chong Cheach commune
- KCM, Kaoh Sothin district, Kompong Reab commune
- KCM, Kaoh Sothin district, Preak Ta Nong commune
- KPT, Stung Saen district, Achar Leak commune
- SRP, Chikreng district, Sangvuey commune
- SRP, Sout Nikum district, Dam Daek commune

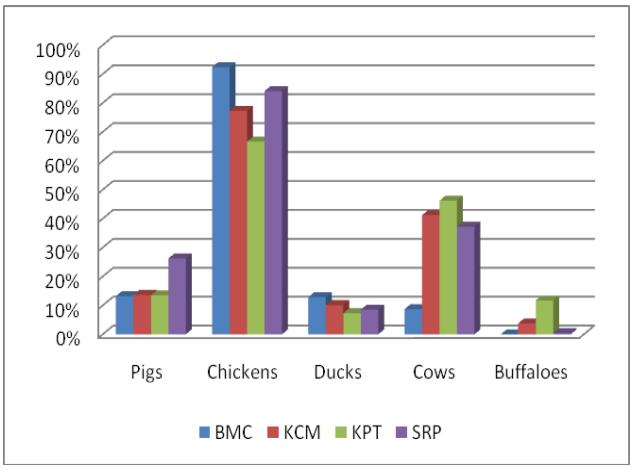
Table 10.2 shows the types of animals being raised in each province and the percentage of HHs raising each type of animal (also shown in Chart 10.1 – but horses are excluded from the chart as they are only raised by 2 HHs in Kompong Cham).

TABLE 10.2 – Types of animals raised (# & % of HHs raising each type)

# HH raising each type	BMC	KCM	KPT	SRP	Total
Pigs	38	54	46	117	255
Chickens	266	306	228	375	1,175
Ducks	37	40	25	38	140
Cows	25	163	158	166	512
Buffaloes	0	15	40	2	57
Horses	0	2	0	0	2
Totals (multiple)	**366**	**580**	**497**	**698**	**2,141**

% HH raising animals	BMC	KCM	KPT	SRP	Total
Pigs	13%	14%	13%	26%	17%
Chickens	92%	77%	67%	84%	80%
Ducks	13%	10%	7%	9%	10%
Cows	9%	41%	46%	37%	35%
Buffaloes	0%	4%	12%	0%	4%
Horses	0%	1%	0%	0%	0%

CHART 10.1 – Types of animals raised (% of HHs raising each type)



The chart above shows at a glance that chickens are by far the most popular animal to raise, followed by cows, although for Banteay Meanchey province, cows are relatively less important. Pigs are raised by a relatively higher portion of HHs in Siem Reap than other provinces and the majority of HHs rearing buffalos are in Kompong Thom province.

The total numbers of each type of animal raised are shown in Table 10.3 below. Significantly **high figures for animal deaths**, particularly for pigs, chickens and ducks means the overall number of animals being raising at the end of the year has reduced considerably from the start of the year. Without these deaths, new animals born and purchased would have increased herds even after sales and consumption of animals. This issue of animal sickness leading to loss of animals was also raised by all respondents during the KIIs.

TABLE 10.3 – Numbers of animals raised over the last year

Animal movement throughout previous year					
	BMC	KCM	KPT	SRP	Total
Opening stock start of year	5,268	6,977	6,245	8,158	26,648
Purchased	42	2,517	1,148	509	4,216
New born	1,394	5,051	2,628	3,518	12,591
Died	3,393	8,315	4,562	4,728	20,998
Sold	758	2,064	1,667	1,249	5,738
Eat	277	801	648	1,171	2,897
Other (lost or given away)	0	80	20	6	106
Closing stock end year	**2,276**	**3,285**	**3,124**	**5,031**	**13,716**

Analysis per animal type					
Pigs	Chickens	Ducks	Cows	Buffalos	Horses
667	22,072	2,635	1,136	136	2
210	475	3,507	17	6	1
540	11,343	551	143	14	
400	17,010	3,541	32	15	
684	3,141	1,771	125	17	
8	2,670	217	2		
6	72	12	9	7	
319	**10,997**	**1,152**	**1,128**	**117**	**3**

The low number of HHs who vaccinate their animals for key diseases is possibly a contributing factor to the high number of animal deaths. Table 10.4 below shows the numbers of HHs who vaccinated for the various diseases listed and the average cost of the vaccine per animal. The numbers of HHs are a lot less than the numbers of HHs who raise these types of animals.

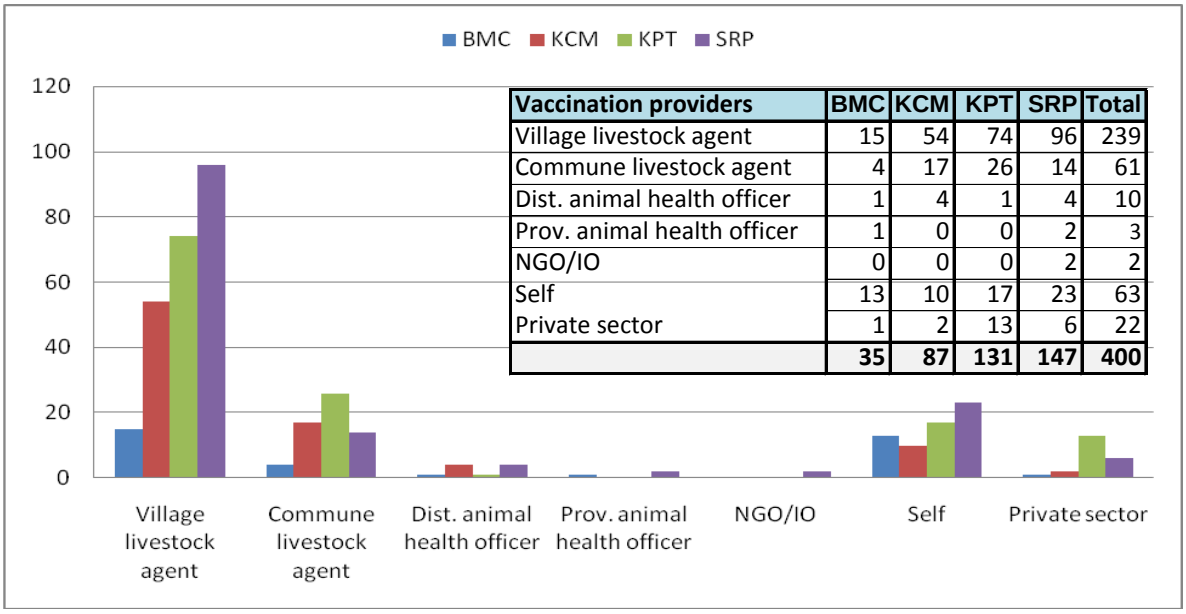
TABLE 10.4 – Animal vaccinations (# HHs using and average cost per animal)

Number of HHs vaccinating against following diseases					
	BMC	KCM	KPT	SRP	Total
PIGS					
Classical Swine Fever	4	11	11	13	39
Pasterellosis	3			6	9
PPRS (blue ear)				2	2
Foot and Mouth	2	6		6	14
Complex Respiratory Disease	1	0		13	14
Don't remember name	6	6	11	31	54
CHICKENS					
Fowl Pox		2		2	4
Newcastle		1			1
Cholera	4	8	9	8	29
Don't remember name			1	1	2
DUCKS					
Cholera	2	1	1		4
Duck Plague				1	1
Avian Fluenza	1			1	2
Duck pox			1		1
Don't remember name	2	1		3	6
COWS/BUFFALOS					
Pasterellosis		2	3		5
Foot and Mouth	2	25	46	18	91
Black Leg	1		1	3	5
Don't remember name	7	24	47	39	117
Total HHs	**35**	**87**	**131**	**147**	**400**

Average cost of vaccination per animal				
BMC	KCM	KPT	SRP	Total
28,000	27,182	38,236	26,846	30,272
21,667			14,167	16,667
			5,000	5,000
45,000	25,333		11,167	22,071
50,000			23,392	25,293
32,667	27,167	15,364	20,603	21,606
	15,000		11,250	13,125
	10,000			10,000
8,500	10,063	17,111	13,438	12,966
		10,000	3,500	6,750
22,250	5,000	3,700		13,300
			10,000	10,000
5,000			20,000	12,500
		30,000		30,000
14,750	10,000		11,667	12,417
	22,500	27,667		25,600
5,000	11,720	10,633	9,617	10,607
20,000		50,000	8,500	19,100
5,143	17,583	15,970	8,872	13,287

The majority of these 400 HHs who vaccinate make use of the services of village livestock agents, with some HHs using commune livestock agents and private operators as well as a number of HHs who vaccinate themselves (CHART 10.2 which shows the figures inset).

CHART 10.2 – Vaccination providers (# of HHs using each)



Vaccination providers	BMC	KCM	KPT	SRP	Total
Village livestock agent	15	54	74	96	239
Commune livestock agent	4	17	26	14	61
Dist. animal health officer	1	4	1	4	10
Prov. animal health officer	1	0	0	2	3
NGO/IO	0	0	0	2	2
Self	13	10	17	23	63
Private sector	1	2	13	6	22
	35	**87**	**131**	**147**	**400**

Analysis of the **average expenditure** per HH over the last year shows that those engaged in pig raising spend a lot more that those raising other animals (especially on feeding and new stock).

TABLE 10.5 – Income and expenditure per HH on animal raising (Riels)

Average exp per HH		BMC	KCM	KPT	SRP	Total
New stock	Pigs	15,789	146,296	83,696	154,231	119,196
	Chickens	56	8,464	1,601	3,389	3,609
	Ducks	2,270	93,725	38,000	18,026	39,057
	Cows	0	25,767	71,519	77,229	55,313
	Buffaloes	0	0	180,000	0	126,316
	Horses	0	600,000	0	0	600,000
Housing	Pigs	53,132	113,241	64,696	33,744	59,051
	Chickens	4,207	8,935	6,022	5,843	6,312
	Ducks	12,443	11,750	6,400	3,421	8,717
	Cows	12,000	15,816	1,266	5,663	7,848
	Buffaloes	0	3,333	0	0	877
	Horses	0	20,000	0	0	20,000
Animal feed	Pigs	294,926	541,741	270,991	213,483	305,507
	Chickens	1,109	22,060	10,692	1,529	8,559
	Ducks	36,351	96,613	30,280	4,711	43,896
	Cows	0	1,325	316	361	637
Medicines	Pigs	25,342	28,500	42,165	16,279	24,887
	Chickens	445	492	1,525	340	633
	Ducks	932	375	12,000	1,447	2,889
	Cows	9,840	7,475	11,580	3,817	7,671
	Buffaloes	0	8,667	7,863	0	7,798
Other exp	Pigs	0	3,704	1,304	0	1,020
	Chickens	0	0	0	347	111
	Cows	0	0	6,348	0	1,959
	Buffaloes	0	0	450	0	316
Average all HHs		**65,301**	**189,303**	**145,897**	**153,970**	**144,251**

	Average expenditure per animal type				
	BMC	KCM	KPT	SRP	Total
Pigs	389,189	833,481	462,852	417,737	509,661
Chickens	5,818	39,951	19,840	11,448	19,225
Ducks	51,997	202,463	86,680	27,605	94,560
Cows	21,840	50,383	91,030	87,070	73,427
Buffaloes		12,000	188,313		135,307
Ave all HHs	**65,301**	**189,303**	**145,897**	**153,970**	**144,251**

	Average income per HH in last year				
	BMC	KCM	KPT	SRP	Total
Pigs	1,117,461	1,062,500	1,094,946	727,915	923,027
Chickens	29,207	36,158	56,117	33,053	37,466
Ducks	8,243	222,875	200,960	9,539	104,332
Cows	276,000	321,288	420,000	488,072	403,613
Buffaloes	0	180,000	596,250	2,250,000	544,737
Ave all HHs	**199,436**	**334,405**	**463,147**	**411,308**	**361,210**

Average income per HH from animal sales was low, at less than the equivalent of $100 per HH. It was noted above that pig raising incurs high expenditure but this analysis of income shows that pigs also bring in the highest average income per HH. Although chickens are the animal type raised by most HHs, income from chickens is low – but analysis of animals raised above showed that almost as many chickens were eaten as sold.

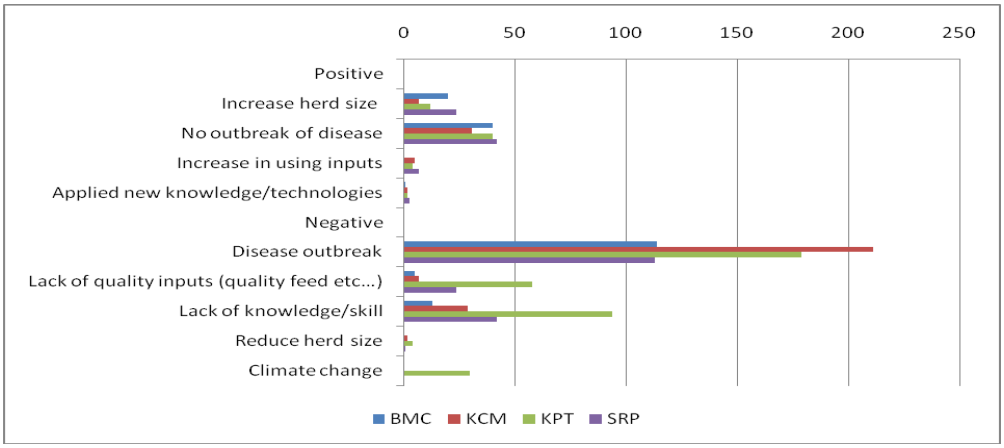
In spite of the apparently profitable animal raising, more HHs responded they perceived animal raising to have decreased (46%) or remained the same (34%) compared to previous year. Only 13% perceive the activity as increasing (the remaining 7% did not do in the previous year) – see Table 10.6. This pattern was similar throughout all provinces and also between both TD and CD domains.

TABLE 10.6 – Perceptions of change in livestock raising over past year (# & % of HHs)

	Number of HHs					% of HHs				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Increased	50	34	46	62	192	17%	9%	13%	14%	13%
Decreased	125	216	188	150	679	43%	55%	55%	34%	46%
The same	93	120	101	184	498	32%	30%	30%	41%	34%
Not do in 2011	20	26	7	50	103	7%	7%	2%	11%	7%
	288	**396**	**342**	**446**	**1,472**	**100%**	**100%**	**100%**	**100%**	**100%**

Chart 10.4 presents the main reasons given by HHs for perceived change in animal raising since the previous year.

CHART 10.3 – Reasons for perceived change in livestock raising (# responses)



The table above indicates that the greatest perceived reason for decrease in the quality of animal raising is animal sickness. There are no significant differences in these reasons between TD and CD HHs but comparison of the provinces shows animal disease is a significant factor in Kompong Thom and Kompong Cham provinces.

Gender in livestock production

Comparison of gender roles in nine key tasks related to livestock production shows that most activities are either joint or done by female members, with male members most active in making housing (Table 10.7).

TABLE 10.7 – Gender in livestock production

	Male members only	Female members only	Both genders
1. Deciding what types of livestock to raise	17%	36%	47%
2. Making livestock housing	59%	19%	22%
3. Buying new stock	22%	42%	36%
4. Feeding/tending ailments	10%	47%	43%
5. Cleaning housing	10%	52%	38%
6. Deciding when to sell the livestock	6%	50%	44%
7. Finding a buyer when selling	12%	50%	38%
8. Selling the livestock	7%	55%	38%
9. Keep the money from selling livestock	2%	89%	9%

III.11 Extension services

Under this section, respondents were asked what extension services they knew of in their area as well as those they had made use of to date. As multiple responses were possible, the total number of responses exceeds the number of respondents. Table 11.1 below summarizes their responses and presents the responses as a percentage of all HHs who engage in agriculture activities.

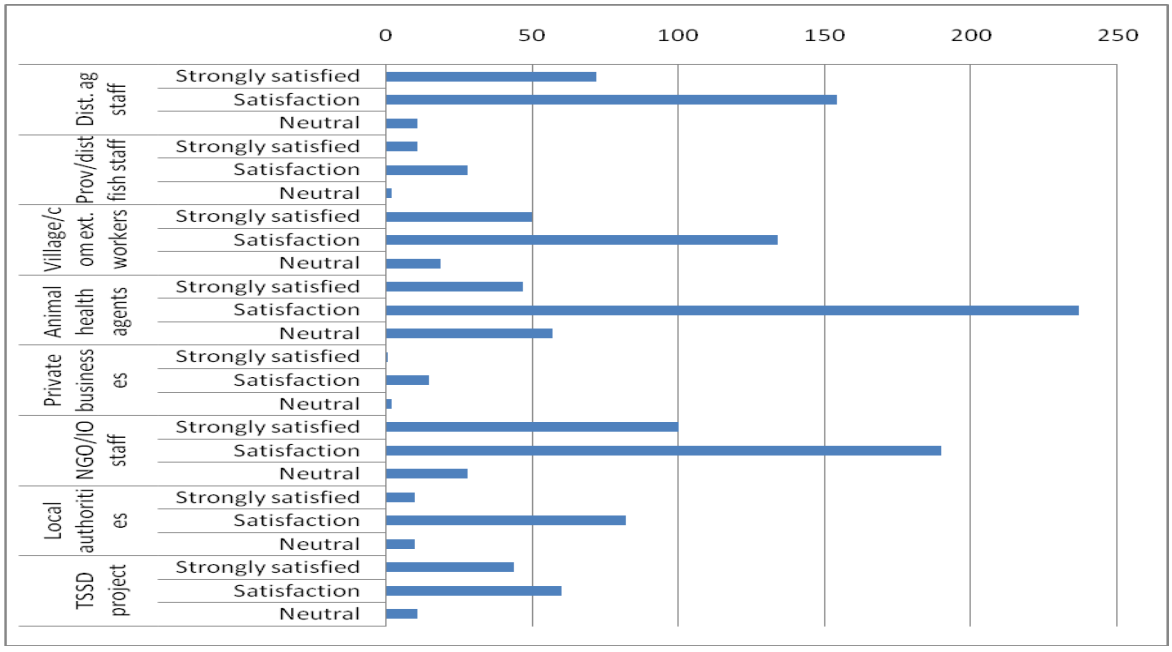
TABLE 11.1 – Extension services known and used (# of responses & % of HHs)

	Extension services available					Extension services used				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
District agriculture staff	43	255	104	161	563	11	63	93	71	238
Provincial or district fishery staff	7	62	13	45	127	6	7	12	16	41
Village/commune agriculture extension workers	19	126	66	224	435	11	35	36	121	203
Village/commune/district animal health agents	105	228	128	230	691	44	65	102	131	342
Private businesses who advice on agriculture products	2	59	8	27	96	3	9	2	4	18
NGO/IO staff	64	124	122	270	580	32	15	92	179	318
Local authorities (village leaders or commune councils)	18	143	4	113	278	9	43	4	46	102
TSSD project	20	41	53	137	251	13	4	36	64	117
Others	0	0	3	0	3	0	0	3	0	3
Total (multiple)	**278**	**1,038**	**501**	**1,207**	**3,024**	**129**	**241**	**380**	**632**	**1,382**

% of all HHs who knew or used each	Extension services available					Extension services used				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
District agriculture staff	11%	48%	24%	27%	29%	3%	12%	22%	12%	12%
Provincial or district fishery staff	2%	12%	3%	8%	7%	2%	1%	3%	3%	2%
Village/commune agriculture extension workers	5%	24%	15%	38%	22%	3%	7%	8%	21%	10%
Village/commune/district animal health agents	27%	43%	30%	39%	36%	11%	12%	24%	22%	18%
Private businesses who advice on agriculture products	1%	11%	2%	5%	5%	1%	2%	0%	1%	1%
NGO/IO staff	16%	23%	28%	46%	30%	8%	3%	21%	30%	16%
Local authorities (village leaders or commune councils)	5%	27%	1%	19%	14%	2%	8%	1%	8%	5%
TSSD project	5%	8%	12%	23%	13%	3%	1%	8%	11%	6%
Others	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%

As can be seen from the above table, very few HHs are aware of many extension services and the level of usage is even lower. The responses were similar for TD and CD HHs with the exception of NGO/IO services where 41% of CD HHs said they were available compared to only 27% of TD HHs – but even then, only about half of the CD HHs had made use of these. All HHs who made use of these services were generally satisfied with them to some extent with some neutral responses and practically no dissatisfaction (Chart 11.1).

CHART 11.1 – Level of satisfaction with extension services used (# responses)



When asked about the gender of the village/commune agriculture extension workers and the animal health agents, many HHs had no ideas but among the responses given, there were more males than females, with some villages and communes having a mixture of both genders (Table 11.2).

TABLE 11.2 – Gender of extension workers

	Agriculture extension workers					Animal health agents				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Male	11	27	25	46	109	32	53	91	85	261
Female	1	1	2	13	17	3	0	1	8	12
Mix of both genders	6	18	19	77	120	9	12	10	38	69
	18	**46**	**46**	**136**	**246**	**44**	**65**	**102**	**131**	**342**

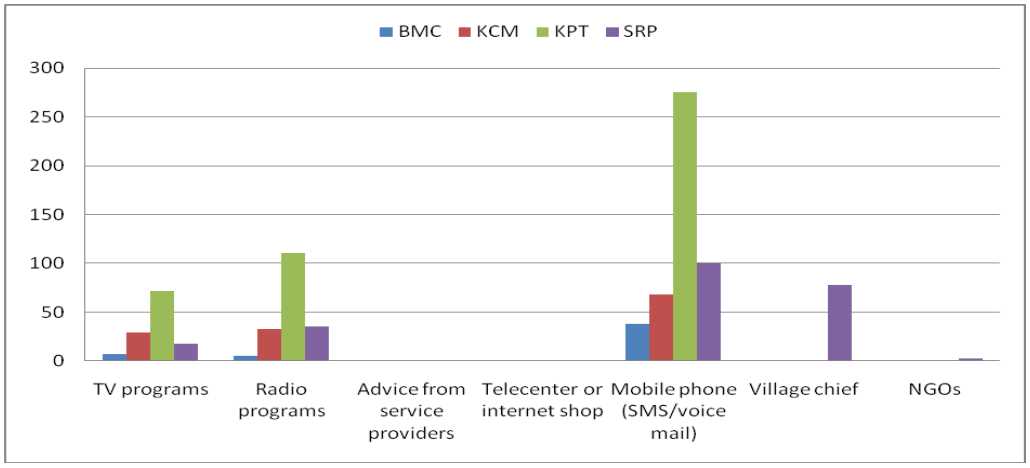
Asked about sources of agricultural information, of the 1,941 HHs engaged in agriculture, only 687 HHs knew of any sources. The vast majority of these HHs were in Kompong Thom province, with relatively few responses from other provinces (Table 11.3).

TABLE 11.3 – Knowledge of sources of agricultural information (# HHs)

	BMC	KCM	KPT	SRP	Total
Know	49	98	337	203	687
Don't know of any	339	437	93	385	1,254
	388	**535**	**430**	**588**	**1,941**
% of HHs who know	13%	18%	78%	35%	35%

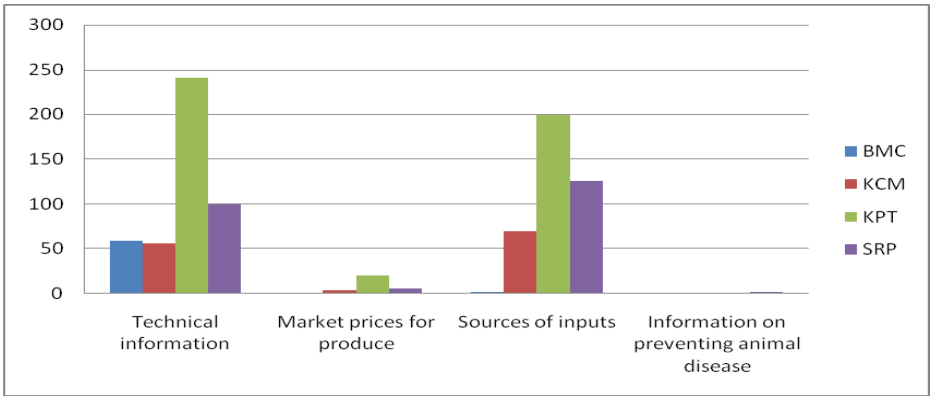
Responses from these 687 HHs as regards the types of information sources are shown in Chart 11.2 below. The majority mentioned messages via mobile phones, TV and radio.

CHART 11.2 – Main sources of agricultural information (# responses)



The type of information received via these sources was generally technical information or where to source agriculture inputs. A few responses mentioned marketing information and information about how to prevent animal disease (Chart 11.3).

CHART 11.3 – Types of information received (# responses)



Finally in this section, HHs were asked if they had adopted any new practices as a result of receiving the above mentioned information. Of the 687 HHs who responded to this questions, only 214 of them said that they had. They gave the following examples of things they had adopted – as some gave more than one example, the total adds up to more than the 214 HHs.

TABLE 11.4 – New practices adopted from agriculture information received (# responses)

	BMC	KCM	KPT	SRP	Total
How to use fertilizer to maintain good soil	6	21	70	13	110
Preventing insects	6	2	11	10	29
Apply pesticides	1	14	10	1	26
Prepare soil for good shape	3	0	11	5	19
How to feed animals	2	3	6	6	17
Methods to transplant rice	1	2	12	2	17
How to prepare cage for animals	1	0	2	6	9
Use of rice seeds	0	1	1	3	5
How to make compost	0	0	2	3	5
How to prepare animal feed	0	0	2	3	5
How to grow small plants	0	0	2	2	4
Apply wood ash	1	1	0	0	2
Apply rice straw to keep soil cool	0	0	0	1	1
Not to eat birds died by disease	0	0	0	1	1
Total (multiple)	**21**	**44**	**129**	**56**	**250**

This low level of adoption of new technology was corroborated by information via KIIs. Village and commune leaders as well as staff of the DOAs and PDAs noted the following issues related to information and new technologies (for more detailed information, refer to KII report in Annex 3):

- Farmers lack capital to put the new knowledge and skill they had learnt into practice
- Low level of education of the people makes it difficult for them to catch new knowledge and skill (especially women)
- Poor people did not have agricultural equipment and land for farming so they just participated in the training but they could not apply their new knowledge
- The main problem DOA faces in getting farmers to adopt new technologies is low capacity of the DOA staffs. When farmers face a problem they cannot solve, they need to refer to specialists at provincial level and this takes time.
- High rate of migration constrain to adopting new technologies.
- Many people are not interested in participating in the agriculture training activities without financial incentive

III.12 Agriculture group membership

Out of the 1.941 HH who engage in agriculture activities, only 94 HHs are members of some type of agriculture, animal raising or fishery group. As some HHs are members of more than one group, these HHs are members of 109 different types of groups as shown in Table 12.1. The majority of these groups are in Siem Reap province. The majority of group leaders are male (75 groups) with 24 groups having female leaders – for the remaining ten groups, those interviewed did not know the gender of the group leader (Chart 12.1). Group sizes varied from only 5 members to some large groups with 80 members. Forty of the 109 group members interviewed did not know the size of their group. From the data known to group members, the average group size was about 15 members (Table 12.2).

TABLE 12.1 – Types of agriculture groups

	BMC	KCM	KPT	SRP	Total
Crop growing	3	13	5	29	50
Seed production	1	1	2	1	5
Animal or fish raising	10	13	7	24	54
	14	**27**	**14**	**54**	**109**

CHART 12.1 – Gender of group leaders

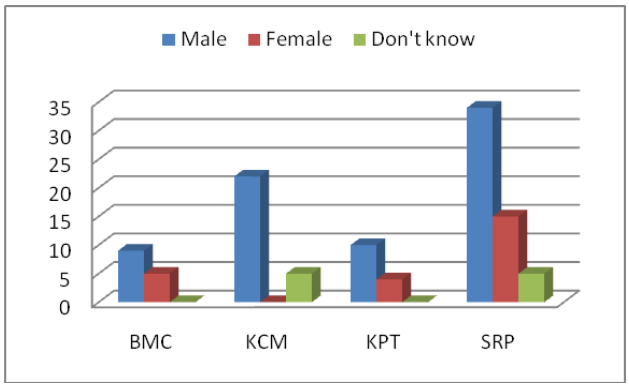


TABLE 12.2 – Average group size

	BMC	KCM	KPT	SRP	Total
Total number of groups	14	27	14	54	109
# groups don't know membership	2	19	8	11	40
# groups reported membership	12	8	6	43	69
Total male members	50	57	17	252	376
Total female members	78	58	198	344	678
Total all members	128	115	215	596	1,054
Average # members/group	**11**	**14**	**36**	**14**	**15**

The majority of these 109 groups were either formed by NGO/IO projects or by members own initiative, with a few formed by government and the remaining people interviewed did not know who formed the group (Table 12.3). Most of the groups are quite new (69 of the 109 groups being formed in the last year) but the others have been operating for up to three years or more (Table 12.4).

TABLE 12.3 – Who initiated group formation

	BMC	KCM	KPT	SRP	Total
Own/other group members' initiative	4	7	6	19	36
NGO/IO project	9	7	4	18	38
Government project	0	2	4	7	13
Don't know	1	11	0	10	22
	14	**27**	**14**	**54**	**109**

CHART 12.4 – Number of years groups have been operating

	BMC	KCM	KPT	SRP	Total
Less than 1 year	6	20	11	32	69
1 to 3 years	6	4	2	14	26
3 to 5 years	0	1	0	4	5
More than 5 years	2	0	1	1	4
Don't know	0	2	0	3	5
	14	**27**	**14**	**54**	**109**

When asked about their ideas about improving group functioning, some had no suggestions but some respondents had the following ideas (Table 12.5).

TABLE 12.5 – Suggestions for group improvement

	BMC	KCM	KPT	SRP	Total
To advise each other	5	2	4	10	21
Have solidarity between members	4	1	3	8	16
Have training on agriculture techniques	2	5	3	4	14
Provide loan to group members	0	5	1	6	12
NGO or Govt. to provide species or seeds	1	2	1	7	11
Provide rice & veg seeds	0	1	1	4	6
Select same species of animals	1	1	0	1	3
NGO or Govt. to vaccinate animals	0	0	1	1	2
Need to apply agriculture techniquest learnt	0	0	1	1	2
Help to find market for agriculture produce	0	0	1	0	1
Don't know	0	0	2	0	2
	13	**17**	**18**	**42**	**90**

Discussions during KII interviews revealed some interesting information related to agriculture groups. The majority of village and commune leaders as well as DOA and PDA staff noted that there were many different types of groups formed within their provinces. These can be divided into two main types – those informal groups that are not registered with anybody and groups that form into associations or cooperatives and are thus recognized by the Department of Agriculture. All respondents of the KIIs agreed that the majority of groups are good for overall development and help to reduce poverty – and for provinces with high levels of migration, can help to offer alternatives to these families and thus induce them to try to generate income from their home village rather than migrate within Cambodia or to other countries.

III.13 Irrigation

Only 444 of the 2,160 HHs (23%) have access to some type of irrigation (Table 13.1). There are quite significant differences between the provinces, with Banteay Meanchey having the least number of HHs with access to irrigation (only 5%) and Kompong Cham having the most (34%). There are no significant differences between TD and CD HHs.

TABLE 13.1 – HHs who have access to irrigation (# and % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Male headed HHs	13	123	55	101	292
Female headed HHs	5	60	31	56	152
Total HHs	**18**	**183**	**86**	**157**	**444**

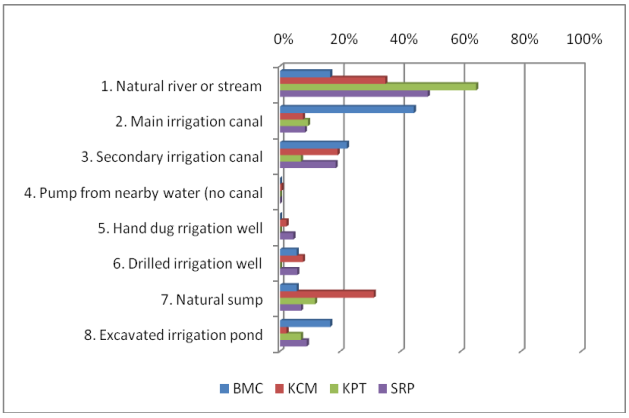
% of each categoy	BMC	KCM	KPT	SRP	Total
Male headed HHs	5%	38%	19%	26%	23%
Female headed HHs	4%	29%	21%	28%	23%
% of all HHs	**5%**	**34%**	**20%**	**27%**	**23%**

Various different sources of water are used by these HHs for irrigation, with natural sources of water more frequently used than man-made irrigation schemes (Table 13.2). The total sources are a little more than the 444 HHs with access to irrigation as some HHs have access to more than one source. Chart 13.1 shows the percentage of HHs in each province who use each type of irrigation water source.

TABLE 13.2 – Types of irrigation sources (# HHs with access to each type)

	BMC	KCM	KPT	SRP	Total
1. Natural river or stream	2	64	56	77	199
2. Main irrigation canal	8	14	8	13	43
3. Secondary irrigation canal	4	35	6	29	74
4. Pump from nearby water (no canal)	0	1	0	0	1
5. Hand dug rrigation well	0	4	0	7	11
6. Drilled irrigation well	1	14	0	9	24
7. Natural sump	1	57	10	11	79
8. Excavated irrigation pond	3	4	6	14	27
Total (multiple)	**19**	**193**	**86**	**160**	**458**
SUMMARY					
# Man-made schemes (2, 3, 5, 6 & 8)	16	71	20	72	179
# Natural water sources (1, 4 & 7)	3	122	66	88	279
Total irrigation means	**19**	**193**	**86**	**160**	**458**

CHART 13.1 – Types of irrigation sources (% of HHs who use irrigation)



These irrigation sources can irrigate 284 hectares which is 23% of the total agriculture land in these provinces and 82% of the land used by the HHs who have access to these irrigation sources (Table 13.3).

TABLE 13.3 – Land with access to irrigation (# hectares)

	BMC	KCM	KPT	SRP	Total
Natural river or stream	0	38	34	69	142
Main irrigation canal	11	9	5	8	33
Secondary irrigation canal	2	14	4	17	37
Pump from nearby water (no canal)	0	0	0	0	0
Hand dug rrigation well	0	0	0	2	2
Drilled irrigation well	0	5	0	3	8
Natural sump	1	25	6	9	40
Excavated irrigation pond	2	1	5	12	21
Total	**16**	**93**	**55**	**121**	**284**
Compare with total land (refer to Table 4.7)					
Total agriculture land	267	221	274	468	1,231
% of land irrigated	6%	42%	20%	26%	23%
Compare with land of HHs who have irrigation					
Total land of HHs with irrigation	19	112	73	142	346
% of land irrigated	85%	82%	75%	85%	82%

The majority of HHs (84%) grow only rice on their irrigated land but some HHs grow vegetables or other crops as well (Table 13.4).

TABLE 13.4 – Types of crops grown on irrigated land (# HHs)

	BMC	KCM	KPT	SRP	Total
Rice only	16	166	70	132	384
Veg only	2	15	7	9	33
Rice & veg	0	3	3	8	14
Mixture of crops	1	9	6	11	27
	19	**193**	**86**	**160**	**458**

For the man-made irrigation schemes (179 as per Table 13.2 above), HH with access to these schemes were asked about the cost of construction and who constructed them. The majority of HHs had no idea what the cost was but among those who did know, the responses show that most of the schemes were relatively low cost (Table 13.5). Support for construction came from multiple sources, with the majority either constructed by government projects or by the users themselves (Table 13.6).

TABLE 13.5 – Cost of irrigation schemes (# of responses)

	BMC	KCM	KPT	SRP	Total
Less than 1 million Riels	0	10	0	22	32
One to 5 million Riels	1	7	3	7	18
Five to 10 million Riels	0	3	0	0	3
Over 10 million Riels	0	1	0	0	1
Don't know	15	50	17	43	125
	16	**71**	**20**	**72**	**179**

TABLE 13.6 – Irrigation schemes constructed by (# of responses)

	BMC	KCM	KPT	SRP	Total
Own/other group members' initiative	2	19	6	29	56
NGO/IO project	2	4	1	10	17
Government project	6	13	12	25	56
Don't know	6	35	1	8	50
	16	**71**	**20**	**72**	**179**

The majority of the 444 HHs with access to irrigation have had access for more than five years, with only a few HHs receiving access in the last year (Table 13.7). The water can supply between 50 to 100% of the water needs of more than two-thirds of the HHs (Table 13.8)

TABLE 13.7 – Number of years access to irrigation schemes (# of responses)

	BMC	KCM	KPT	SRP	Total
Less than 1 year	1	0	0	4	5
1 to 3 years	8	11	10	29	58
3 to 5 years	1	24	8	14	47
More than 5 years	8	148	68	110	334
	18	**183**	**86**	**157**	**444**

TABLE 13.8 – Quantity of water compared to needs (# of responses)

	BMC	KCM	KPT	SRP	Total
0 to 10%	0	1	0	2	3
11 to 25%	3	8	1	8	20
26 to 50%	3	22	11	60	96
51% to 100%	11	141	65	76	293
Over 100% (more than can use)	1	11	9	11	32
	18	**183**	**86**	**157**	**444**

Only 17 of the 444 HHs say they have to pay for their irrigation water, 10 of these in Kompong Cham, 4 in Kompong Thom and 3 in Siem Reap (there were none in Banteay Meanchey). Various different systems of payment were applied as shown in Chart 13.2 below and Table 13.9 gives the average cost paid by HHs under each system.

CHART 13.2 – Systems for payment of irrigation water (# responses)

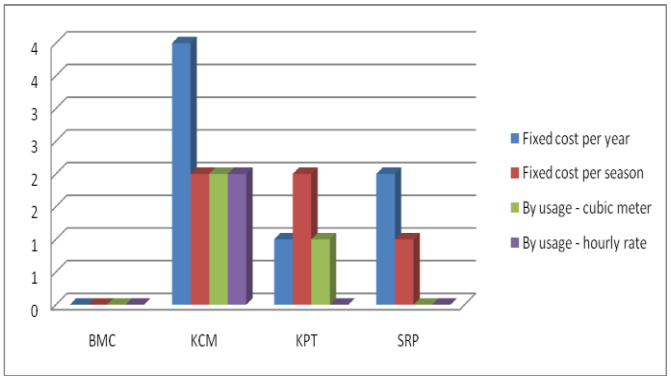
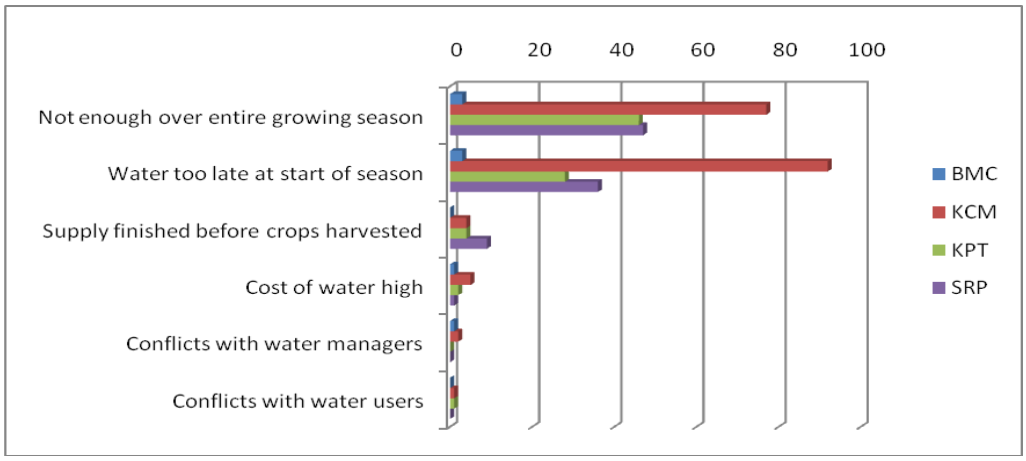


TABLE 13.9 – Average cost of irrigation water (Riels)

	BMC	KCM	KPT	SRP	Total
Fixed cost per year	0	93,500	480,000	19,500	127,571
Fixed cost per season	0	251,200	240,000	45,000	205,480
By usage - cubic meter	0	20,000	20,000	0	20,000
By usage - hourly rate	0	7,000	0	0	7,000

Respondents were asked about the main problems they have faced to date with their irrigation systems. The majority did not have any problems to report but a number of issues were raised by some HHs, the most important being that the water is not always sufficient throughout the entire growing season or the water was too late at the start of the season (Chart 13.3).

CHART 13.3 – Problems faced with irrigation (# of responses)



Discussions during the KIIs corroborated the information presented in the tables and charts above as regards:

- Lack of irrigation schemes available to farmers so they depend on rainfall
- Water from schemes that do exist is often not sufficient to meet the needs of farmers
- There are generally no systems in place for paying for water

Farmer Water User Groups (FWUGs)

Only five HHs out of the 444 HHs who use irrigation water were members of FWUGs and all these were in Kompong Cham province. three in TD districts (one in Batheay and two in Kong Meas) and the other two in the CD district of Prey Chor. All groups have male group leaders. The two groups in Prey Chor were formed by government projects and the other three were formed by members own initiative. These three formed by members own initiative have been in operation for more than five years as has one of the government initiated groups in Prey Chor but the other group in Prey Chor has only been operational for less than three years.

III.14 Markets

Selling

Among the 2,160 HHs interviewed, only 57% sell agriculture products (Table 14.1). This percentage is similar among TD and CD HHs. While the percentages do not differ greatly between provinces, there are a number of communes in the provinces where the percentages are considerably lower than the average.

The lowest of these are:

- KCM, Ponhea Kraek district, Veal Mlu commune 13%
- KPT, Krong Stung Saen, sangkat Prey Ta Hu 20%
- SRP, Angkor Chum district, Char Chhum commune 20%
- SRP, Krong Siem Reap, sangkat Sla Kram 20%
- SRP, Krong Siem Reap, sangkat Sala Kamreuk 13%
- SRP, Varin district, Srey Noy commune 20%

TABLE 14.1 – HHs who sell agriculture products (# & % of HHs)

	BMC	KCM	KPT	SRP	Total
Yes	215	365	288	365	1,233
No	205	235	192	295	927
	420	**600**	**480**	**660**	**2,160**

% of all HHs	BMC	KCM	KPT	SRP	Total
Yes	51%	61%	60%	55%	57%
No	49%	39%	40%	45%	43%
	100%	**100%**	**100%**	**100%**	**100%**

A variety of different products are sold by these HHs (Table 14.2) but the number of products sold is relatively low in comparison to the total number of HHs who sell products – averaging only about 1.5 items per HH. Although rice is sold by the greatest number of HHs, it only represents 33% of HHs, which is consistent with the information in Chapter 5 on rice production whereby HHs consumed more of their rice than they sold. The next items sold by the largest number of HHs are chickens/ducks and fish.

TABLE 14.2 – Types of products sold (# & % of HHs)

	# of HHs selling each product					% of HHs who sell products				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Rice	74	161	66	102	403	34%	44%	23%	28%	33%
Cassava	31	46	33	20	130	14%	13%	11%	5%	11%
Corn	2	4	5	18	29	1%	1%	2%	5%	2%
Beans (soy, mung etc)	3	7	9	13	32	1%	2%	3%	4%	3%
Vegetables	17	26	25	59	127	8%	7%	9%	16%	10%
Fish	61	108	67	41	277	28%	30%	23%	11%	22%
Cows/buffalos	6	24	29	32	91	3%	7%	10%	9%	7%
Pigs	27	29	34	69	159	13%	8%	12%	19%	13%
Chickens/ducks	62	82	93	106	343	29%	22%	32%	29%	28%
Fruit trees	29	33	68	53	183	13%	9%	24%	15%	15%
Items crafted from NTFPs	3	0	7	49	59	1%		2%	13%	5%
Timber	2	0	3	52	57	1%		1%	14%	5%
Total (multiple)	**317**	**520**	**439**	**614**	**1,890**					
Ave # products sold/HH	**1.47**	**1.42**	**1.52**	**1.68**	**1.53**					

Average prices obtained for the main agriculture products sold are shown in Table 14.3. There are not significant differences in the prices per province with the exception of vegetables which are lower in Kompong Cham and corn prices in Kompong Cham and Kompong Thom are quite lower than prices in Banteay Meanchey and Siem Reap.

TABLE 14.3 – Sales prices for main agriculture products (Riels)

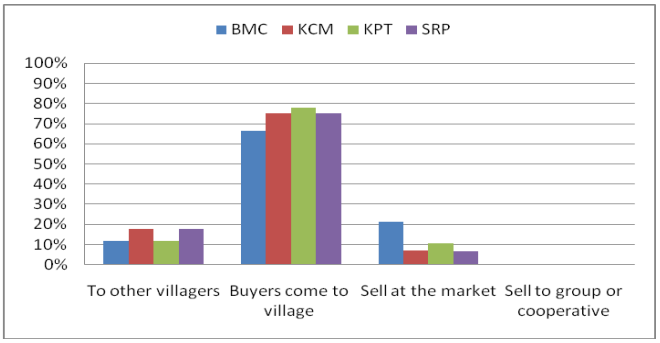
	Unit	BMC	KCM	KPT	SRP	Total
Rice	KG	807	905	834	835	857
Cassava	KG	529	438	494	554	492
Corn	KG	1,300	825	720	1,422	1,210
Beans (soy, mung etc)	KG	2,333	3,271	3,122	2,177	2,697
Vegetables	KG	2,176	906	1,388	1,628	1,506
Fish	KG	5,251	5,967	6,366	7,002	6,059
Cows/buffalos	Head	983,333	1,392,708	1,739,655	1,421,250	1,486,319
Pigs	KG	8,759	9,576	9,150	11,377	10,128
Chickens/ducks	KG	12,871	13,866	12,919	13,548	13,331

The majority of HHs do not take their produce to markets themselves, the buyers come to their villages to buy their products although a slightly higher percentage of products in Banteay Meanchey province are sold directly to the market (Table 14.4 in numbers and Chart 14.1 as % of products sold to each location).

TABLE 14.4 – Where products sold (# items sold to each location)

	BMC	KCM	KPT	SRP	Total
To other villagers	38	93	51	109	291
Buyers come to village	211	390	342	462	1,405
Sell at the market	68	36	46	41	191
Sell to group or cooperative	0	1	0	2	3
	317	**520**	**439**	**614**	**1,890**

CHART 14.1 – Where products sold (% of all products)



Asked about their level of satisfaction with the service and cost from buyers, there was generally a high level of satisfaction with service but less so with cost. Within the average 28% dissatisfaction shown in Table 14.5, the products where HHs were less satisfied with costs were rice (42%), cassava (38%) and pigs (26%).

TABLE 14.5 – Levels of satisfaction with service and cost for selling products (# and & of HHs)

Level of satisfaction with SERVICE

# HHs	BMC	KCM	KPT	SRP	Total
Strongly satisfied	4	94	77	11	186
Satisfaction	294	349	295	536	1,474
Neutral	14	60	54	51	179
Unsatisfied	5	17	13	16	51
Strongly unsatisfied	0	0	0	0	0
	317	**520**	**439**	**614**	**1,890**

% of all HHs	BMC	KCM	KPT	SRP	Total
Strongly satisfied	1%	18%	18%	2%	10%
Satisfaction	93%	67%	67%	87%	78%
Neutral	4%	12%	12%	8%	9%
Unsatisfied	2%	3%	3%	3%	3%
Strongly unsatisfied	0%	0%	0%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**

Level of satisfaction with COST

# HHs	BMC	KCM	KPT	SRP	Total
Strongly satisfied	1	27	30	9	67
Satisfaction	187	173	172	399	931
Neutral	54	106	83	117	360
Unsatisfied	73	207	124	89	493
Strongly unsatisfied	2	7	30	0	39
	317	**520**	**439**	**614**	**1,890**

% of all HHs	BMC	KCM	KPT	SRP	Total
Strongly satisfied	0%	5%	7%	1%	4%
Satisfaction	59%	33%	39%	65%	49%
Neutral	17%	20%	19%	19%	19%
Unsatisfied	23%	40%	28%	14%	26%
Strongly unsatisfied	1%	1%	7%	0%	2%
	100%	**100%**	**100%**	**100%**	**100%**

Buying

A higher percentage of HHs buy agriculture products than those who sell them, an average of 67% of HHs (Table 14.6).

TABLE 14.6 – HHs who buy agriculture products (# & % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
Yes	257	422	339	438	1,456
No	163	178	141	222	704
	420	**600**	**480**	**660**	**2,160**

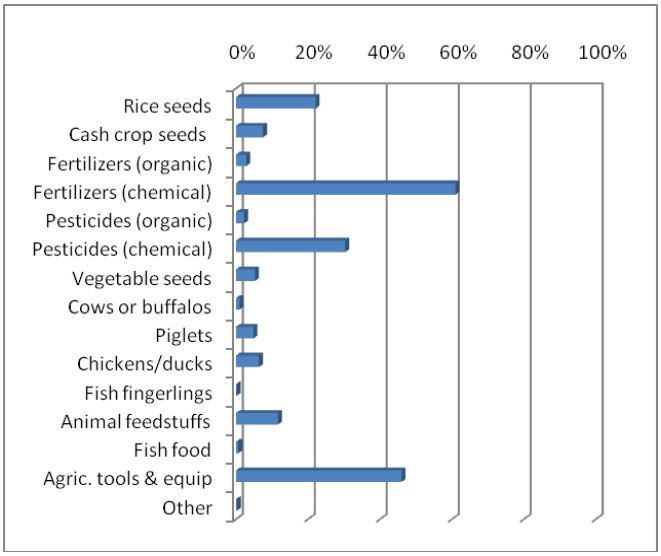
% of all HHs	BMC	KCM	KPT	SRP	Total
Yes	61%	70%	71%	66%	67%
No	39%	30%	29%	34%	33%
	100%	**100%**	**100%**	**100%**	**100%**

The most common products purchased are chemical fertilizers, tools & equipment and chemical pesticides (Table 14.7). Chart 14.2 shows the total items purchased as a percentage of all HHs who purchase products.

TABLE 14.7 – Types of agriculture products purchased (# of HHs)

	BMC	KCM	KPT	SRP	Total
Rice seeds	47	187	37	51	322
Cash crop seeds	21	28	24	37	110
Fertilizers (organic)	7	8	4	23	42
Fertilizers (chemical)	179	281	216	212	888
Pesticides (organic)	1	17	4	11	33
Pesticides (chemical)	94	217	43	88	442
Vegetable seeds	6	13	13	45	77
Cows or buffalos	0	3	3	9	15
Piglets	2	18	8	43	71
Chickens/ducks	8	35	8	42	93
Fish fingerlings	0	0	0	3	3
Animal feedstuffs	23	67	42	38	170
Fish food	0	7	2	1	10
Agric. tools & equip	134	186	170	180	670
Other	0	3	0	1	4
Total (multiple)	**522**	**1,070**	**574**	**784**	**2,950**
Ave # items/HH	**2.03**	**2.54**	**1.69**	**1.79**	**2.03**

CHART 14.2 – Types of agriculture products purchased (% of HHs)



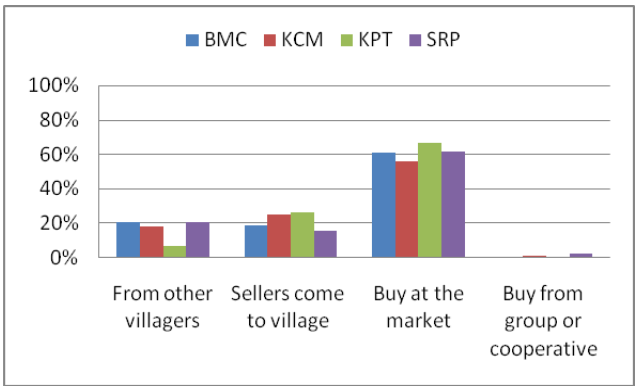
In contrast to selling produce where most HHs sell to buyers who come to the village, when purchasing products, most HHs buy directly from the market (Table 14.8 and Chart 14.3).

TABLE 14.8 – Where products purchased (# & % of HHs)

# HHs	BMC	KCM	KPT	SRP	Total
From other villagers	106	191	39	161	497
Sellers come to village	97	268	150	123	638
Buy at the market	319	598	384	481	1,782
Buy from group or coop	0	13	1	18	32
	522	**1,070**	**574**	**783**	**2,949**

% of HHs	BMC	KCM	KPT	SRP	Total
From other villagers	20%	18%	7%	21%	17%
Sellers come to village	19%	25%	26%	16%	22%
Buy at the market	61%	56%	67%	61%	60%
Buy from group or coop	0%	1%	0%	2%	1%
	100%	**100%**	**100%**	**100%**	**100%**

CHART 14.3 – Where products purchased (% of HHs)



Analyzing purchasing in respect of some of the main products shows that while on average most products are purchased directly from the market, there are variations in this preference for certain products (see highlighted figures in Table 14.9).

TABLE 14.9 – Locations of purchase of main products (% of HHs)

Type of product	Other villagers	Sellers come to village	From market	Group or coop	Total
Rice seeds	37%	34%	28%	2%	100%
Cash crop seeds	34%	31%	34%	2%	100%
Fertilizers (organic)	17%	21%	62%	0%	100%
Fertilizers (chemical)	11%	20%	68%	0%	100%
Pesticides (organic)	24%	12%	61%	3%	100%
Pesticides (chemical)	10%	20%	69%	0%	100%
Vegetable seeds	10%	10%	77%	3%	100%
Cows or buffalos	60%	13%	7%	20%	100%
Piglets	38%	48%	8%	6%	100%
Chickens/ducks	40%	45%	8%	8%	100%
Animal feedstuffs	15%	20%	64%	1%	100%
Agric tools & equip	11%	13%	76%	0%	100%

This table shows that rice seeds are purchased from other villagers or from sellers who come to the village more than directly from the market. Cows or buffalos are purchased mainly from other villagers or from groups/cooperatives. Most HHs buy piglets from sellers who come to the village as they do chickens/ducks but these are also frequently bought from other villagers.

HHs responses to how they rated the quality of inputs showed that the majority of HHs were satisfied with the quality of the items they purchased. Only 56 responses were "not so satisfactory" (Table 14.10).

TABLE 14.10 – Rating quality of agriculture inputs (# of HHs)

Rating quality of agriculture inputs					
	BMC	KCM	KPT	SRP	Total
Very satisfactory	0	163	63	21	247
Satisfactory	495	803	436	622	2,356
Neutral	22	83	71	115	291
Not so satisfactory	5	21	4	26	56
Very unsatisfactory	0	0	0	0	0
	522	**1,070**	**574**	**784**	**2,950**

Main items rated "Not so satisfactory"					
	BMC	KCM	KPT	SRP	Total
Fertilizers (chemical)	1	5	2	8	16
Agric tools & equip	2	4	0	4	10
Rice seeds	1	4	1	3	9
Pesticides (chemical)	1	3	0	3	7
Vegetable seeds	0	1	1	2	4
Mixture of other items	0	4	0	6	10
	5	**21**	**4**	**26**	**56**

This information contrasts with information received through the KIIs whereby most respondents (local authorities as well as DOA and PDA staff) noted problems with lack of quality of inputs as being an influencing factor on low agriculture production.

Marketing groups

Only one HH from among the 2,160 was a member of a marketing group – in Phum Thmei commune, Thmar Pouk district. This group has five members (three female, of whom one them is the group leader) and was formed by an NGO within the last three years.

III.15 Non-farm income

All except 17 HHs have members who engaged in some form of non-farm income generation. These varied activities have been analyzed into four main categories – Small Business income, Income from Common Property Resources (CPR), Laboring income and "other" income. Other income is mainly salary from employment or remittances but some other small amounts are included from rent or sale of assets (land, buildings or equipment). Tables 15.1 to 15.4 present the number of persons engaged and the average income per person in the last year from each of these categories. Then Table 15.5 summarizes the totals for all categories per province and Table 15.6 compares the two domains.

TABLE 15.1 – Small Business Income (# HHs and average income per HH in Riels)

# HHs engaged	BMC	KCM	KPT	SRP	Total
Handicraft	23	19	18	67	127
Palm juice/sugar production	0	10	13	12	35
Small business/petty trade	80	82	102	128	392
Other business	1	2	4	3	10
Totals	**104**	**113**	**137**	**210**	**564**

Average income per HH	BMC	KCM	KPT	SRP	Total
Handicraft	539,565	1,786,263	1,483,778	1,053,457	1,131,013
Palm juice/sugar production	0	3,630,000	2,918,846	1,828,750	2,748,286
Small business/petty trade	3,634,563	3,483,951	2,821,265	2,044,891	2,872,357
Other business	600,000	1,550,000	790,000	1,666,667	1,186,000
Totals	**2,920,913**	**3,177,195**	**2,595,489**	**1,710,822**	**2,442,646**

TABLE 15.2 – Income from Common Property Resources (CPRs)
(# HHs and average income per HH in Riels)

# HHs engaged	BMC	KCM	KPT	SRP	Total
Fishing	63	109	67	42	281
Hunting	0	0	1	2	3
Collect rattan/Pandanus leaf/Proa	5	9	18	21	53
Other	5	3	14	49	71
Totals	**73**	**121**	**100**	**114**	**408**

Average income per HH	BMC	KCM	KPT	SRP	Total
Fishing	1,173,210	1,322,583	756,045	664,595	1,055,665
Hunting	0	0	200,000	1,000,000	733,333
Collecting rattan/Pandanus leaf/Pro	3,678,000	983,333	1,203,667	1,018,524	1,326,321
Other	1,776,000	333,333	2,021,429	1,035,408	1,252,324
Totals	**1,386,058**	**1,272,822**	**1,008,210**	**895,061**	**1,122,676**

TABLE 15.3 – Laboring income (# HHs and average income per HH in Riels)

# HHs engaged	BMC	KCM	KPT	SRP	Total
On other's farms (in country)	185	367	270	271	1,093
On other's farms (outside of Cambo	30	6	5	15	56
As construction laborer (in country)	76	111	82	122	391
As construction laborer (outside Ca	81	8	10	68	167
For other's businesses (in country)	8	19	37	15	79
For other's businesses (outside Cam	5	10	10	11	36
Other types of laboring work	35	47	45	105	232
Totals	**420**	**568**	**459**	**607**	**2,054**

Average income per HH	BMC	KCM	KPT	SRP	Total
On other's farms (in country)	1,131,438	1,827,614	1,266,810	1,441,089	1,475,411
On other's farms (foreign)	2,920,000	2,558,333	2,158,000	2,886,333	2,804,196
Construction laborer (in country)	2,926,579	2,414,410	2,561,171	2,349,180	2,524,387
Construction laborer (foreign)	2,613,123	3,862,500	1,632,000	2,870,735	2,719,120
For other's businesses (in country)	2,595,000	2,765,053	2,431,351	3,359,200	2,704,354
For other's businesses (foreign)	2,600,000	3,880,000	3,249,500	2,605,455	3,137,639
Other types of laboring work	2,905,286	1,830,851	2,068,778	1,799,500	2,024,903
Totals	**2,062,962**	**2,046,426**	**1,731,404**	**1,949,976**	**1,950,908**

TABLE 15.4 – Other non-farm income (# HHs and average income per HH in Riels)

# HHs engaged	BMC	KCM	KPT	SRP	Total
Land/house rental	7	22	15	8	52
Salary from employment	28	115	35	85	263
Equipment/animal rentals	2	1	2	2	7
Interest from lending money	3	2	4	1	10
Remittances (in-country)	35	148	102	89	374
Remittances (foreign)	87	13	35	64	199
Selling land or other assets	3	3	1	7	14
Other	8	20	18	21	67
Totals	**173**	**324**	**212**	**277**	**986**

Average income per HH	BMC	KCM	KPT	SRP	Total
Land/house rental	535,571	295,455	434,427	534,250	404,604
Salary from employment	3,477,143	4,410,052	3,068,217	2,182,988	3,412,386
Equipment/animal rentals	1,750,000	240,000	1,080,000	5,200,000	2,328,571
Interest from lending money	1,333,333	5,040,000	2,640,000	400,000	2,504,000
Remittances (in-country)	1,603,143	1,109,426	1,506,780	1,321,124	1,314,376
Remittances (foreign)	1,574,207	1,714,615	2,753,743	1,606,406	1,801,191
Selling land or other assets	1,233,333	11,433,333	2,400,000	4,785,714	5,278,571
Other	2,487,500	514,900	889,861	969,524	993,664
Totals	**13,994,231**	**24,757,781**	**14,773,028**	**17,000,006**	**18,037,364**

TABLE 15.5 – Summary all non-farm income (# HHs and average income per HH in Riels)

	# HH engaged				
	BMC	KCM	KPT	SRP	Total
Small business	104	113	137	210	564
Common property resources	73	121	100	114	408
Laboring work	420	568	459	607	2,054
Other income sources	173	324	212	277	986
Totals	**770**	**1,126**	**908**	**1,208**	**4,012**
Ave # income sources per HH	**1.83**	**1.88**	**1.89**	**1.83**	**1.86**

% of all HHs				
BMC	KCM	KPT	SRP	Total
25%	19%	29%	32%	26%
17%	20%	21%	17%	19%
100%	95%	96%	92%	95%
41%	54%	44%	42%	46%

Average income per HH	BMC	KCM	KPT	SRP	Total
Small business	2,920,913	3,177,195	2,595,489	1,710,822	2,442,646
Common property resources	1,386,058	1,272,822	1,008,210	895,061	1,122,676
Laboring work	2,062,962	2,046,426	1,731,404	1,949,976	1,950,908
Other income sources	1,880,202	2,330,429	1,863,746	1,714,361	1,978,018
Totals	**2,073,606**	**2,158,493**	**1,813,031**	**1,754,820**	**1,942,471**
Estimate in US$	**518**	**540**	**453**	**439**	**486**

TABLE 15.6 – Summary all non-farm income
(# HHs and average income per HH in Riels – comparison per domain)

	# HHs engaged			% of all HHs		
	TD	CD	Total	TD	CD	CD
Small business	406	158	564	24%	33%	26%
Common property resources	329	79	408	20%	16%	19%
Laboring work	1,589	465	2,054	95%	97%	95%
Other income sources	741	245	986	44%	51%	46%
Totals	**3,065**	**947**	**4,012**			
Ave # income sources per HH	**1.82**	**1.97**	**1.86**			

Average income per HH	TD	CD	Total
Small business	2,398,819	2,555,266	2,442,646
Common property resources	1,166,230	941,291	1,122,676
Laboring work	1,931,955	2,015,672	1,950,908
Other income sources	1,942,215	2,086,305	1,978,018
Totals	**1,914,084**	**2,034,347**	**1,942,471**
Estimate in US$	**479**	**509**	**486**

Average income from non-farm sources contributes almost $500 p.a. per HH, with only small differences between provinces and between the two domains. However, there are a number of exceptions at commune level where non-farm income in some of the target communes is well below the average.

The following communes have averages of less than $200:

- BMC, Thmar Pouk district, Kouk Kakthen commune $ 179
- SRP, Srey Snam district, Slaeng Spean commune $ 149
- SRP, Svay Leu district, Khnang Phnom commune $ 186
- SRP, Svay Leu district, Ta Siem commune $ 173
- SRP, Varin district, Lvea Krang commune $ 195

On the other hand, there are a number of communes with earnings well above the overall average – the following lists communes with average non-farm income over $750 p.a.:

- BMC, O'Chrouv district, Koub commune $ 849
- KCM, Cheung Prey district, Prey Char commune $ 766
- KCM, Kroch Chmar district, Chhuk commune $ 759
- KCM, Kong Meas district, Kang Ta Noeung commune $ 782
- KCM, Kong Meas district, Praeak Koy commune $ 827
- KCM, Stung Trang district, Dang Kdar commune $ 831
- SRP, Kralanh district, Snuol commune $ 796
- SRP, Krong Siem Reap, sangkat Sala Kamroeuk $ 966

The data in the tables above shows the importance of non-farm income to these IDPoor2 HHs. A comparison of the total income from all agriculture and non-agriculture sources shows that non-farm income accounts for over 70% of all the income of the 2,160 HHs surveyed. Although income from small businesses gives a higher income per HH, laboring income accounts for the greatest part of the non-farm income due to the higher number of HH members engaged in this activity. Within the laboring category, average income per HH from farm laboring in-country is lower than the other categories of laboring income but accounts for the largest portion of income in this category due to the high numbers of HH members who take part in this type of laboring work.

Discussions with local authorities during the KIIs confirmed the importance of non-farm income to the poorer HHs in their jurisdictions. They noted that small businesses such as selling good in the market is a good occupation for women who have less land to farm although they note that in recent times many women prefer to migrate for laboring work in country (such as in garment factories) or outside Cambodia.

III.16 Food Security

Almost two thirds of HHs reported suffering food shortages for some periods over the last year (Table 16.1). There are relatively little differences between domains and the percentage of FHHs who experience food shortages is roughly the same as the overall total of HHs. However, there is a significant difference between provinces, with Kompong Cham province showing much higher percentage of HHs who suffer food shortages and Kompong Thom significantly lower.

TABLE 16.1 – HH who experience food shortages (# & % of HHs)

	All HHs					Domains		FHHs				
# HHs	BMC	KCM	KPT	SRP	Total	TD	CD	BMC	KCM	KPT	SRP	Total
Yes	268	491	177	386	1,322	1,043	279	90	198	61	139	488
No	152	109	303	274	838	637	201	47	41	112	96	296
	420	**600**	**480**	**660**	**2,160**	**1,680**	**480**	**137**	**239**	**173**	**235**	**784**
% of HHs	BMC	KCM	KPT	SRP	Total	TD	CD	BMC	KCM	KPT	SRP	Total
Yes	64%	82%	37%	58%	61%	62%	58%	66%	83%	35%	59%	62%
No	36%	18%	63%	42%	39%	38%	42%	34%	17%	65%	41%	38%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The high percentages of HHs who experience food shortages in Kompong Cham arises mainly from the data of five of the districts in which the following communes show 100% of HHs who suffer food shortages:

- Dambae district, Neang Teut commune 100%
- Kroch Chmar district, Trea commune 100%
- Kaoh Sothin district, Praeak Ta Nong commune 100%
- Ponhea Kraek district, Kak commune 100%
- Stung Trang district, Preak Bak commune 100%

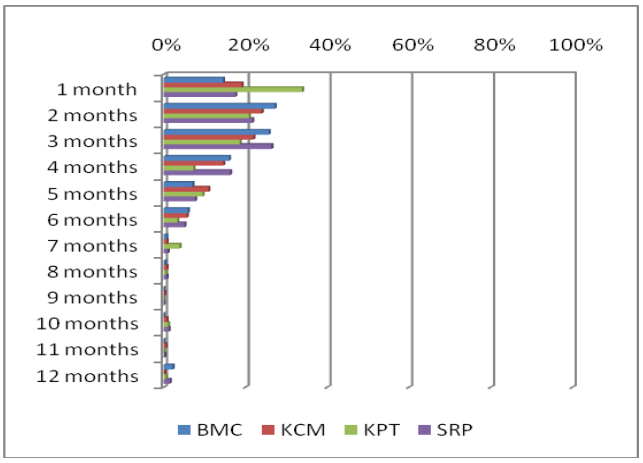
During the KII interviews with village leaders, most of them suggested a percentage of between 30 and 40% of HHs in their villages who experience food shortages. This is relatively consistent with the data from the HH interviews as the village leaders assess the village as a whole whereas the HH interviews were conducted with IDPoor2 HHs only and this group are likely to suffer food shortages more than non-IDPoor HHs.

Although a few families reported food shortages throughout the whole year, the majority of HHs (67%) suffers food shortages of three months or less (Table 16.2). This still leaves a large percentage of HHs experiencing food shortages for four months or more throughout the year. The percentages of HH in each category are shown in Chart 16.1.

TABLE 16.2 – # months HH experience food shortages (# of HHs)

	BMC	KCM	KPT	SRP	Total
1 month	39	94	60	68	261
2 months	73	118	37	84	312
3 months	69	108	33	102	312
S/T	**181**	**320**	**130**	**254**	**885**
4 months	43	72	13	63	191
5 months	19	54	17	30	120
6 months	16	28	6	20	70
7 months	2	4	7	4	17
8 months	1	4	1	3	9
9 months	0	1	0	0	1
10 months	0	4	2	5	11
11 months	0	3	0	1	4
12 months	6	1	1	6	14
Total	**268**	**491**	**177**	**386**	**1,322**
Ave # mths	**3.17**	**3.12**	**2.80**	**3.24**	**3.12**

CHART 16.1 – # months HH experience food shortages (% of HHs)



The table above shows average months of food shortage is just over 3 months, with Kompong Thom slightly less at 2.8 months.

For all provinces there is clear correlation between income and food shortages as the higher the level of income the lower the percentage of HH who suffer food shortages (Table 16.3). Nevertheless it is interesting to see that there is one HHs with quite high income claiming food shortage. A check on this HH showed that it is a FHH with no agriculture income and main income is from laboring for other people outside of Cambodia. The reason for high income in the last year came from "sales of land or other assets".

TABLE 16.3 – Food shortages per income groups (# HHs)

Annual income	BMC	KCM	KPT	SRP	Total
Less than $1,000	147	251	132	243	773
$1,000 to $2,000	84	157	37	106	384
$2,000 to $5,000	37	82	8	37	164
Over $5,000	0	1	0	0	1
	268	**491**	**177**	**386**	**1,322**

The three most frequent reasons given for why HHs experience food shortages are: they don't have land (or not enough land); they don't have enough work; and serious illness in the family that causes loss of labor income (Table 16.4).

TABLE 16.4 – Main reasons for food shortages (# responses)

	BMC	KCM	KPT	SRP	Total
No land / not enough land	197	292	130	236	855
Not enough work	103	363	146	192	804
Serious illness in family / loss of labor	78	148	103	126	455
Lack of agricultural inputs	3	106	38	29	176
Crop destruction - flood, drought, pests	35	45	24	41	145
Poor soil	7	48	39	49	143
Poor access to credit	16	7	17	64	104
Lack of skills / knowledge	4	4	40	24	72
Sold all rice grown	0	1	0	2	3
Totals (multiple)	**443**	**1,014**	**537**	**763**	**2,757**

The reasons given above were consistent with information collected from village and commune leaders during the KIIs. In addition to the above they suggested other factors such as lack of capital to start a business and negative impacts from natural disasters such as droughts or floods.

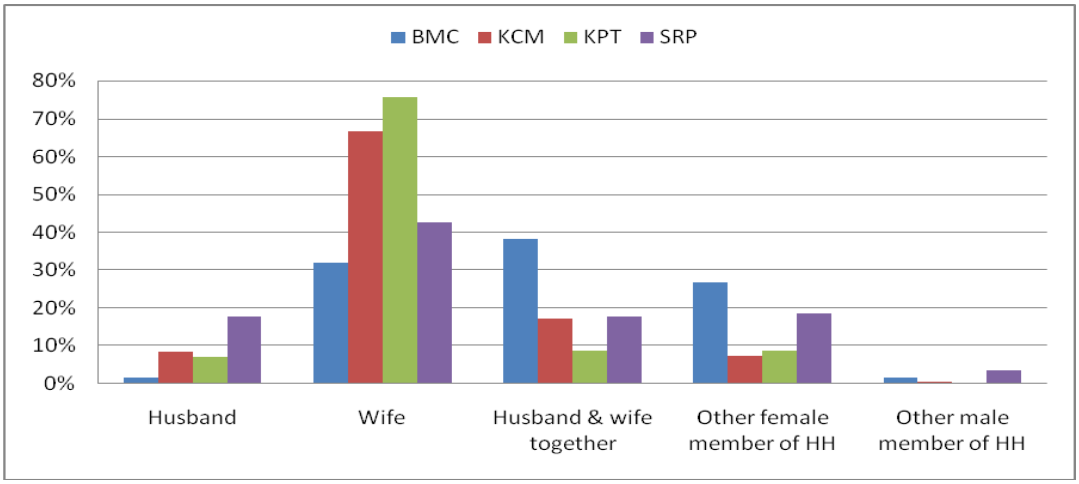
Many different strategies are used by HHs to cope with these times of food shortage. The most common strategy is to borrow rice or food from relatives and friends. Others HHs borrow money from other people or from money lenders. Only a few HHs reported selling assets to solve food shortages (Table 16.5). These reasons were consistent with information received through the KIIs.

TABLE 16.5 – Coping mechanisms for food shortages (# responses)

	BMC	KCM	KPT	SRP	Total
Borrowed rice/food from relatives/friends	140	302	155	204	801
Borrowed money from others	34	251	47	104	436
Borrowed money from money lender	111	238	29	56	434
Borrowed rice from rice bank	5	1	4	22	32
Sold assets	4	6	3	17	30
Reduced food consumption	9	12	1	4	26
Find additional work	0	3	4	12	19
Relatives provide food	0	1	5	9	15
Adopted alternative food sources	4	6	2	2	14
Neighbors provided food	0	3	1	5	9
Had no way to solve	3	0	1	4	8
Totals (multiple)	**310**	**823**	**252**	**439**	**1,824**

Where HHs borrowed money or rice at times of food shortage, they were asked which members of the HH normally go to borrow. The responses received are shown Chart 16.2.

CHART 16.2 – HH members who ask for loan at times of food shortage (% responses)



Responses show that female members more often took the responsibility for asking for the rice or money at times of food shortage, with a few cases of joint borrowing by the husband and wife and even fewer cases of the husband asking for the loan.

III.17 Savings & Credit

Savings

Of the 2,160 HHs, only 268 HHs (12%) have family members who save money. However, this percentage varies quite considerably between provinces, with 23% of HHs in Siem Reap having family members who save as opposed to only 4% in Kompong Cham. There is also a slight difference between TD and CD HHs, with an average of 11% of TD HHs with members who save compared to 16% among the CD HHs (Table 17.1).

TABLE 17.1 – HHs who have members that save money (# & % of HHs)

	BMC	KCM	KPT	SRP	Total	TD	CD
Male headed HHs	27	14	37	97	175	120	55
Female headed HHs	9	10	19	55	93	70	23
	36	**24**	**56**	**152**	**268**	**190**	**78**

	BMC	KCM	KPT	SRP	Total	SRP	Total
Male headed HHs	10%	4%	12%	23%	13%	11%	19%
Female headed HHs	7%	4%	11%	23%	12%	12%	13%
	9%	**4%**	**12%**	**23%**	**12%**	**11%**	**16%**

For most HHs, only one member of the HH saves money (Table 17.2). The amounts saved are often quite small but there are 10 HHs whose members save over 100,000 Riels per month (Table 17.3).

TABLE 17.2 – # HH members who save

	BMC	KCM	KPT	SRP	Total
Only 1 person	31	20	56	118	225
2 persons	4	4	0	25	33
3 persons	0	0	0	5	5
4 persons	0	0	0	3	3
5 persons	0	0	0	1	1
7 persons	1	0	0	0	1
	36	**24**	**56**	**152**	**268**

TABLE 17.3 – Average amounts saved per month (# HHs)

	BMC	KCM	KPT	SRP	Total
5,000 or less	8	3	16	61	88
5,000 to 10,000	13	9	11	19	52
10,000 to 50,000	6	10	25	44	85
50,000 to 100,000	5	2	4	22	33
Over 100,000	4	0	0	6	10
	36	**24**	**56**	**152**	**268**

Group membership

Among all the HHs, only 7% (159 HHs) are members of a credit/savings group. The highest percentages of groups are in Kompong Thom and Siem Reap provinces (11%), with Kompong Cham having the lowest at only 1.5%. A higher percentage of CD HHs are members of groups (15%) than TD HHs (5%) – Table 17.4.

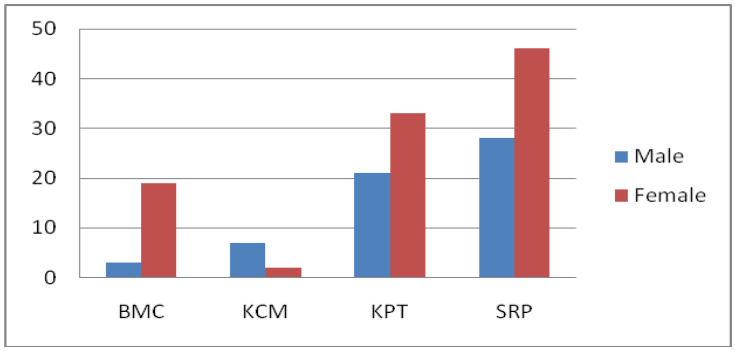
TABLE 17.4 – HHs who are members of savings/credit groups (# & % of HHs)

	BMC	KCM	KPT	SRP	Total	TD	CD
Male headed HHs	16	3	33	47	99	49	50
Female headed HHs	6	6	21	27	60	40	20
	22	**9**	**54**	**74**	**159**	**89**	**70**

	BMC	KCM	KPT	SRP	Total	TD	CD
Male headed HHs	5.7%	0.8%	10.7%	11.1%	7.2%	4.5%	16.9%
Female headed HHs	4.4%	2.5%	12.1%	11.5%	7.7%	6.7%	10.9%
	5.2%	**1.5%**	**11.3%**	**11.2%**	**7.4%**	**5.3%**	**14.6%**

Of the 159 groups, there are more female than male group leaders for most provinces, with the few groups in Kompong Cham being an exception with more male group leaders (Chart 17.1).

CHART 17.1 – Gender of savings/credit group leaders (# groups)

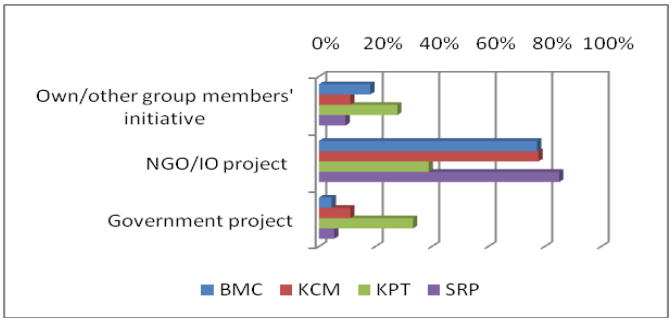


These 159 groups were formed under the facilitation of different persons or institutions (Table 17.5). Almost 70%were formed by NGO/IO projects, with the remainder divided between groups formed by government projects and those formed by members own initiative (Chart 17.2).

TABLE 17.5 – Savings/credit groups formed by (# groups)

	BMC	KCM	KPT	SRP	Total
Own/other group members' initiative	4	1	15	7	27
NGO/IO project	17	7	21	63	108
Government project	1	1	18	4	24
	22	**9**	**54**	**74**	**159**

CHART 17.2 – Savings/credit groups formed by (% of groups)



The size of these groups varies considerably, with some small groups of only five members, and some very large groups of over 50 members. But the majority of groups fall into the range of six to 20 members (Table 17.6). The length of time these groups have been operational also varies considerably, with some groups existing for over five years and others only formed in the last year but the majority of groups are between one and three years old (Table 17.7).

TABLE 17.6 – Average size of savings/credit groups

	BMC	KCM	KPT	SRP	Total
5 members or less	1	0	2	5	8
6 to 10 members	11	1	6	26	44
11 to 15 members	3	1	11	20	35
16 to 20 members	4	2	15	11	32
21 to 50 members	3	0	17	10	30
Over 50 members	0	0	2	2	4
Don't remember	0	5	1	0	6
	22	**9**	**54**	**74**	**159**

TABLE 17.7 – # years savings/credit groups have been operating

	BMC	KCM	KPT	SRP	Total
Less than 1 year	10	2	8	16	36
1 to 3 years	9	4	16	41	70
3 to 5 years	1	0	10	12	23
More than 5 years	2	3	20	5	30
	22	**9**	**54**	**74**	**159**

Credit access

Before collecting information on credit actually accessed by HHs, they were asked to list what possible options they knew of to access credit in their area (village/commune/district). As this questions allowed multiple responses, the total responses is quite higher than the total respondents. The majority acknowledged MFIs as an important source of credit (but the number of responses here being higher than the total responses reflects that they mentioned different MFIs by name as different

sources but they have been added together here). Private money lenders, followed by banks (Acleda) were the next categories best known to the respondents (Table 17.8).

TABLE 17.8 – Credit facilities available in the area (# of responses)

# responses	BMC	KCM	KPT	SRP	Total
Friends or relatives	210	349	84	419	1,062
Private money lenders	324	424	301	352	1,401
Credit/savings groups	18	33	71	118	240
ACLEDA	86	481	345	193	1,105
MFIs	269	1,258	893	549	2,969
TSSD	0	1	0	1	2
NGO/IO projects	5	14	5	22	46
Totals (multiple)	**912**	**2,560**	**1,699**	**1,654**	**6,825**

Of the 2,160 HHs, 521 HHs did not take any credit in the last three years. So data on borrowings was only obtained from the remaining 1,639 HHs. Of these 1,639 HHs, 1,322 only used one source of credit, 271 HHs accessed from two sources, 44 HHs accessed from three different sources and two other HHs accessed four and five of the sources mentioned in Table 17.8. So the total number of loan types obtained in the last three years by these HHs was 2,005. These loans were obtained from the sources set out in Table 17.9 below.

TABLE 17.9 – Sources of credit accessed in the last 3 years (# of loans)

	BMC	KCM	KPT	SRP	Total	TD	CD	Total
Friends or relatives	75	220	54	171	520	410	110	520
Private money lenders	164	204	63	78	509	431	78	509
Credit/savings groups	13	8	27	28	76	51	25	76
ACLEDA	21	96	34	48	199	168	31	199
MFIs	81	231	179	190	681	512	169	681
NGO/IO projects	1	5	2	12	20	16	4	20
Totals (multiple)	**355**	**764**	**359**	**527**	**2,005**	**1,588**	**417**	**2,005**
As a % of all HHs in each category								
	BMC	KCM	KPT	SRP	Total	TD	CD	Total
Friends or relatives	18%	37%	11%	26%	24%	24%	23%	24%
Private money lenders	39%	34%	13%	12%	24%	26%	16%	24%
Credit/savings groups	3%	1%	6%	4%	4%	3%	5%	4%
ACLEDA	5%	16%	7%	7%	9%	10%	6%	9%
MFIs	19%	39%	37%	29%	32%	30%	35%	32%
NGO/IO projects	0%	1%	0%	2%	1%	1%	1%	1%
% of HHs who accessed institutional credit (Bank/MFI)								
Total HHs who accessed	102	327	213	238	880	680	200	880
Less those who accessed both	2	33	4	9	48	44	4	48
Net HHs who accessed	100	294	209	229	832	636	196	832
% of all HHs	**24%**	**49%**	**44%**	**35%**	**39%**	**38%**	**41%**	**39%**

Many HHs borrowed more than once from the same sources during this period. Table 17.10 shows that the most frequent borrowing is from friends/relatives or from private money lenders. Nevertheless some HHs have also borrowed frequently from MFIs.

TABLE 17.10 – Number of times borrowed in the last 3 years (# of loans)

	Only once	2 to 3 times	4 to 12 times	Over 12 times	Total loans
Friends/relatives	159	147	170	44	520
Private money lenders	169	210	115	15	509
Credit/savings group	30	37	9	0	76
Acleda	94	89	16	0	199
MFIs	338	284	59	0	681
Others	8	11	1	0	20
Total loans	**798**	**778**	**370**	**59**	**2,005**

The average amounts borrowed from each source varied in amounts (Table 17.11). The largest number of loans is in the 100,000-500,000 Riels category but with quite a large number of loans taken out up to four million Riels. Very few loans over that amount were taken.

TABLE 17.11 – Size of loans taken out in the last 3 years (# & % of loans)

	# of loans					% of loans				
	BMC	KCM	KPT	SRP	Total	BMC	KCM	KPT	SRP	Total
Less than 50,000 Riels	14	88	8	36	146	4%	12%	2%	7%	7%
50,000 to 100,000 Riels	65	136	38	83	322	18%	18%	11%	16%	16%
100,000 to 500,000	138	209	129	179	655	39%	27%	36%	34%	33%
500,000 to 1 million	73	183	79	98	433	21%	24%	22%	19%	22%
1 to 4 million	59	138	93	112	402	17%	18%	26%	21%	20%
4 to 8 million	5	9	9	17	40	1%	1%	3%	3%	2%
8 to 10 million	1	1	2	0	4	0%	0%	1%	0%	0%
Over 10 million Riels	0	0	1	2	3	0%	0%	0%	0%	0%
	355	**764**	**359**	**527**	**2,005**	**100%**	**100%**	**100%**	**100%**	**100%**

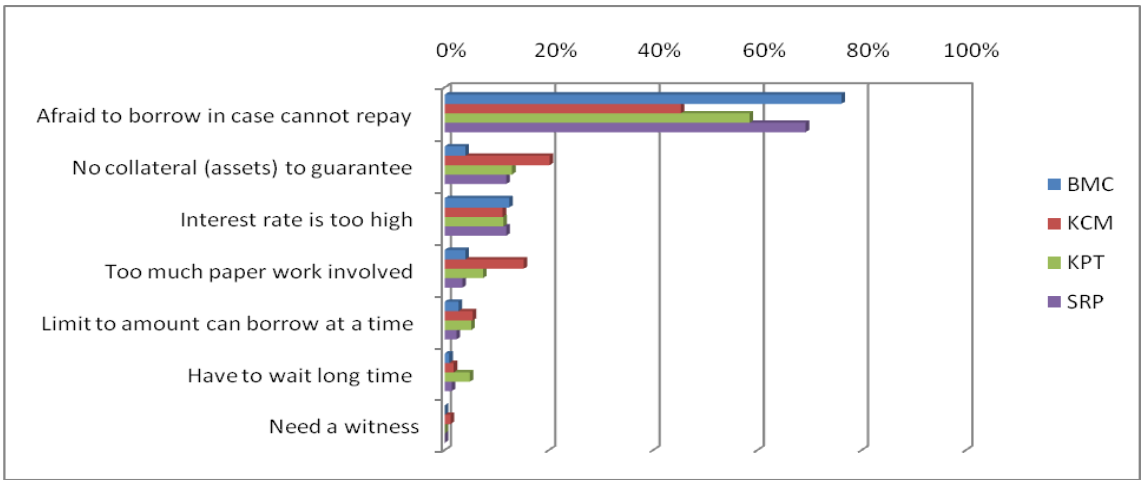
Looking at the sources in relation to the size of loans taken out, we can see that for smaller loans (less than 100,000 Riels), friends/relatives were the most common source. For amounts between 100,000 and 500,000 Riels, either friends or private money lenders were the preferred source but some also from MFIs. For amounts greater than 500,000, MFIs or banks were the main source of loans (Table 17.12).

TABLE 17.12 – Sources of loans by size (# of loans)

	Friends/ relatives	Money lenders	C/S groups	Bank/ MFIs	NGO/IO projects	Total
Less than 50,000 Riels	128	15	2	0	1	146
50,000 to 100,000 Riels	173	110	19	15	5	322
100,000 to 500,000	143	234	41	231	6	655
500,000 to 1 million	38	87	5	297	6	433
1 to 4 million	38	59	9	294	2	402
4 to 8 million	0	4	0	36	0	40
8 to 10 million	0	0	0	4	0	4
Over 10 million Riels	0	0	0	3	0	3
	520	**509**	**76**	**880**	**20**	**2,005**

Asked about the main problems they face in accessing credit, 888 HHs (over 50%) said they did not experience any problems. Of the other 50%, the main problem they faced was that they feared to borrow in case they could not repay. Other minor reasons given are shown in Chart 17.3 below.

CHART 17.3 – Problems faced in accessing credit (% of responses)



Information from village and commune leaders during KIIs agreed with most of the problems listed by the respondents of the HH interviews. They also noted some other problems in relation to credit access, such as:

- Many HHs lack proper documentation (e.g. land certificate or proof of asset ownership) to receive loan
- A number of commune councilors and village leaders noted that the loans were usually provided to the men (as the head of household) but if women are the household head, they also have the same chance to receive credit service
- Poor people find it difficult to get someone to guarantee their loan
- Banks and MFIs are reluctant to issue loans to HHs who have no guaranteed occupation as they are afraid they cannot generate the income to repay

Some village leaders suggested that it would be less of a problem for poor people in accessing credit if they organized in groups. Women and men could have equal opportunity to receive loan if they were the group members.

IV General issues arising from KIIs

The full report on the Key Informant Interviews (KIIs) is attached as Annex 3 to this report. Extracts from this report have already been noted where appropriate under the relevant sections of this report. However the KIIs covered some additional issues not specifically addressed under the HH survey topics. These include:

- Knowledge of TSSD & participation in the project
- Large-scale Rice Producers (LRPs)
- Working with Commune Councils
- Suggestions for poverty reduction

The following paragraphs summarize some key issues related to these topics.

Knowledge of TSSD

In all four provinces, there was a decreasing level of knowledge of the TSSD project from provincial to village level. PDAs, DOAs and DFTs were quite informed about the project and they could even indicate who the main donors of the project were. While a few commune councilors had heard about the project and new a little of its objectives, the majority had only a vague idea. Most of the village leaders interviewed did not know anything about the project.

PDAs, DOAs, DFTs and CCs all expressed some reservations as to their capacity to implement the project and request additional technical and management training to increase their capacity. They also face potential time constraints to participation as they have many other tasks to carry out.

Large-scale Rice Producers (LRPs)

LRPs to which the survey team was directed by the DOAs varied in profile but generally they were considered LRPs in the context of their district as they were either able to cultivate both rainy and dry season rice or they had either a relatively large land size or got a relatively high yield from a small land size. However, some farmers indicated as LRPs seem to be quite average to be considered a large rice producer – and some of these got relatively low yields. This could be very important to TSSD project management in setting its goals for rice production yields. The project aims for average yields of 3.5 tons per hectare but, when even some LRPs cannot reach that figure, it could be even more challenging for IDPoor2 HHs.

Working with Commune Councils

This issue was discussed with DFTs to gain knowledge from their experiences of working with CCs to date which could be useful for the management of the TSSD project which will work also with CCs. Information from the DFTs interviewed showed that CCs have most experience with implementing the Commune Development Fund (CDF) and most of the projects have been of an infrastructure nature. The experiences of the DFTs regarding planning and implementation were generally positive as were their assessments of the participation of women in these processes. They noted however that much more training needs to be done with the CCs to improve their capacity (both management and technical).

Suggestions for poverty reduction

Many different suggestions were raised by the various informant groups which are grouped below under the headings of economical (agriculture/livelihood), irrigation/infrastructure and others:

Economical (agriculture/livelihoods):

- Provide credit to the people without interest rate
- Provide capital support for the agricultural activities such as providing fertilizers, pesticides, rice seeds, vegetable seeds, livestock, etc and business operation

- Provide training on agriculture (livestock raising, crop growing) technique, technical skill to farmer
- Provide agricultural inputs such as high quality (certified) crop seeds and livestock to people in the village
- Provide credit to the people in the commune with low interest rate and allow them to delay in debt payment
- Provide more agriculture extension services in the commune
- Regularly follow up after training (to ensure farmers practice)
- Find more markets for the agricultural products
- Provide technical skill training to people for example tailoring, mechanism
- Provide capital support for starting business after completion of technical skill training
- Create more jobs for people in the village through construction garment factory, weaving factory in the village so they will not need to migrate for work

Irrigation/infrastructure:

- Construct irrigation system, canal and embankment for farming in both dry season and wet season
- Address more secondary canals to bring water from main canal to rice fields
- Construct road access which will not flood in wet season
- Construct latrine for people in the village and commune
- Support drinking water system

Other suggestions

- Leaders should be provide more social land concession for poor villagers
- Training courses to increase capacity of CCs and village chiefs
- Increase of Commune Development Fund (CDF)
- Provide medical support especially when there is flood
- Support children to go to school
- Support elderly persons
- Construct adequate drinking water system

In addition, they provided some specific **suggestions to TSSD for project implementation**:

- The project should not focus on only Poor 2 because these people always migrated to work. The project beneficiaries of the project should be poor 2 and the people who have medium level.
- Provide project implementation plan on time to the CC
- TSSD should provide motor for project implementation and money for field mission as well as provide office stationary, for example chair, computer etc.
- Provide more funds and on time to improve people livelihoods
- Provide fund immediately so the DOA staffs are able to implement the project's activities on time.
- Provide more supports to DOA staff to implement project's activities
- Provide office support to DFT
- Provide capacity building to DFT, DOA staffs
- Increase salary for DFT staffs
- Provide money incentive to the livelihoods improvement group who implemented the project well.
- Construct factories in the communes so people will have many jobs and are able to improve their livelihoods

V Conclusions and recommendations

This section concludes the baseline survey analysis with the following topics:
- Issues arising during the course of the survey
- Use of the survey data
- Considerations for follow up surveys

IV.1 Issues arising during the course of the survey

There were no major issues arising during the course of the implementation of this survey. SBK received excellent cooperation and support from the TSSD project team during the course of developing the tools and implementing the work. During the field work, the respondents did not raise any specific questions to the survey team about the TSSD project. The only constraint faced was, as mentioned earlier under methodology. the difficulty in meeting IDPoor2 HHs as many of them are often absent from the village for laboring work or other income generation activities.

IV.2 Use of survey data

The data collected through this Baseline Household Survey can serve two main purposes:
- To help determine project impact through comparison with data from follow up surveys (medium to long-term purpose)
- To help guide project planning (short term or immediate purpose)

Medium to long term use

In the medium to longer term, the data will provide a point of comparison with future data collected to help determine the impact of the TSSD project implementation

The key assumptions underlying the indicators listed in the DMF (Design & Monitoring Framework) are largely supported by the data from the baseline survey – see summary of data for key indicators in Annex 2. The project aimed to reduce the number of months of food shortages from three months to one month and the data shows that current average number of months of food shortages is approximately three months. Average rice yields are almost 1.5 tons per hectare for rainy season rice and almost three tons per hectare for dry season rice. While this give space to the project to achieve its aim of over 3.5 tons per hectare, this may be a little bit ambitious given that data collected from Large Rice Producers (LRPs) during the KIIs shows that many larger farmers do not even achieve such yields (especially for the main rainy season crop).

Current low level of income from agriculture activities other than rice (especially from cash crops, vegetables and fruit) mean that rice contributes almost 50% of agriculture income. This offers wide scope for encouraging agriculture diversification to enable the project to achieve the aim of reducing this rice dependency by 20%. However, it should be noted that challenges to such diversification could be small land sizes (or in some cases, no land) or lack of access to water for irrigation and for fishing.

The project aims to increase market access by 25%. Baseline data shows that over 40% of HHs surveyed do not sell any agriculture or non-agriculture produce. Even among those who do sell, the numbers selling each type of product is limited. Therefore there is a lot of scope to improve on these percentages.

Current participation in livelihood activities varies with higher numbers of HHs engaging in agriculture related activities compared to non-agriculture. Within the agriculture related activities the highest level of participation is in livestock raising, followed by rice production. With the exception of vegetable/fruit growing, there are lower levels of participation by FHHs compared to male headed HHs.

The baseline data shows that less than 40% of HHs in the target communes have been able to access credit from banks or MFIs. The project aims for 70% of LIG members to graduate to become eligible for such credit. As not all HHs who are eligible may actually make use of this possibility, follow up surveys will need to pay specific attention to the reasons why HHs (especially TD HHs) have not accessed any credit from banks or MFIs.

Immediate use

The data produced through this survey can provide project managers with information to assist the design and implementation of the project by indicating areas of particular concern, either geographically or thematically.

In order to use this data to assist with current decision making as regards project implementation, TSSD managers can refer to the Annexes (listed in the Table of Contents above) which allow the interpretation of all data for the target domain down to commune level. The full dataset in SPSS is also included in case the provincial teams would like to conduct any further analysis or cross checking.

Although it is not normally the function of the baseline consultants to determine to what extent project management adjust their project based on the data emerging from such a survey, SBK would like to suggest that the following issues noted during data analysis be taken into consideration:

- Land sizes are generally low (average of less than one hectare per HH) so agriculture practices should focus on intensification of the use of small plots.
- With 25% of HHs not having received any education (and females at 28%), IEC materials developed by the project should be appropriate for non-literate persons (pictorial where possible)
- As a large percentage of the IDPoor2 HHs in the target area are landless and therefore earn their living from non-agriculture activities, the TSSD project should try to invest in non-farm income generation activities (which could also help to reduce the necessity for migration)
- As a high percentage of IDPoor2 HHs (26%) migrate from their villages for work, they may be excluded from participation in decision-making sessions that could offer them alternatives to migration. Therefore the project should try to arrange such meetings or workshops to coincide with times when these HHs are present in their village.
- Although a large percentage of HHs engage in livestock production, high rate of animal deaths (particularly chickens, ducks and pigs) means they gain little in income from their efforts. The project needs to promote animal vaccination as a key priority to raising the income level of these HHs.
- In spite of the fact that the target area is chosen around the rich resources of the Tonle Sap lake, very few IDPoor2 HHs seems to be able to make use of this resource. The project needs to investigate why this is the case and advocate for any policy changes necessary to ensuring better access to this resource for the poorest HHs.
- Through the KIIs, many key stakeholders in the project (such as the PDAs, DOAs, DFTs and CCs) expressed the need for further capacity building (both management and technical). The project will need to put strong emphasis on such capacity building in order to ensure the smooth running of the project.
- Although baseline and follow-up surveys can measure the wider picture of project impact, the provincial project teams should maintain detailed data on all group members in order to be able to measure more specifically the changes in socio-economic status of the members as a result of the project.

IV.3 Considerations for follow up surveys

The data shows generally similar socio-economic status between TD and CD HHs. This is logical considering HHs in both domains were chosen from among the IDPoor2 HHs in the selected villages. The data therefore provides a good basis for future comparison of change among these groups.

In order to help isolate the change resulting from TSSD interventions, follow up surveys should retain the current CD HHs as much as possible – as using new IDPoor2 lists for HH selection during follow up surveys would automatically exclude any HHs who had improved (or otherwise) their IDPoor status since this baseline survey was conducted. TD HHs for follow up surveys should be selected from lists of TSSD beneficiaries.

Regarding tools for the follow up surveys, we suggest to add a specific question under "Credit" for any HHs who did not access credit from banks or MFIs to explore the reasons why they did not borrow.

For the KIIs, we suggest to drop FGDs with groups as their will be more relevant information available through the HH survey for the TD group (who will already be LIG members). Information from LRPs will also not be relevant in measuring the impact of the project as they will not be project beneficiaries – so this group should also be dropped.

KIIs should therefore concentrate on the PDAs, DOAs, DFTs, commune councilors and village leaders but the questions should be reformulated. Some questions about overall situation will not be of any benefit in measuring the success of the TSSD project. Instead questions should be limited to specific experience of these groups in the implementation of the project. Issues to be discussed could include:

- Positive experiences from their participation in the project
- Changes in their capacity as a result of the project
- Their perceptions of change in the livelihood situation of the IDPoor2 HHs
- Limitations and constraints encountered

Other specific technical issues that TSSD would like to include in such KIIs can be discussed between TSSD management and survey team prior to the conducting of such follow up surveys.