

# **Impact Assessment of Irrigation Infrastructure Development on Poverty Alleviation: Case Studies from Pakistan and Sri Lanka**

## **Interim Report PHASE-II October 2002**

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# **Impact Assessment of Irrigation Infrastructure Development on Poverty Alleviation: Case Studies from Pakistan and Sri Lanka**

## **General**

On the invitation of Japan Bank for International Cooperation (JBIC), International Water Management Institute (IWMI) conducted case studies to evaluate the impact of irrigation infrastructure development and rehabilitation on poverty, using the concepts of chronic and transient poverty. For this purpose, IWMI established panel data sets of households in both irrigated and rainfed settings. Case studies were carried out in Sri Lanka (Uda Walawe Left Bank) and Pakistan (Mandi Bahaudin and Gujrat in the upper Indus basin) in irrigation systems where JBIC has funded the developments/improvements/rehabilitation of irrigation systems. The study sites were selected so as to capture the effects of (a) availability of irrigation facilities, (b) timings of irrigation development, (c) state of rehabilitation of irrigation infrastructure, (d) timing of rehabilitation of irrigation infrastructure (e) cropping patterns, (f) access to other infrastructure facilities, and (g) issuance of water for the main growing season. Main activities of the study consist of (1) selecting suitable study areas and specific study sites, (2) developing detailed sampling framework, (3) developing panel data base by undertaking household level surveys during the year (2002) to cover 'before', 'during', and 'after' situations both for the wet and dry seasons of the year, and (4) undertaking econometric analyses of impacts of irrigation infrastructure on poverty. The overall goal of the study is to develop an in-depth understanding of income dynamics in relation to access to irrigation water and to comprehensively evaluate the impact of irrigation infrastructure on poverty. The study is of highly intensive nature in terms of time and scope. The study uses a multi-topic questionnaire to gather as comprehensive set of data and information, on various aspects of irrigation and poverty, as possible using a fairly large sample of households.

An intensive sampling procedure was used for the selection of strata and households, and both farm and non-farm households were selected to enable an in-depth analysis and multi-faceted comparison. Both spatial and temporal aspects were analyzed. Spatial aspects were captured by selecting strata/households located at head-middle-and tail ends of the irrigation system/field canals. And, intertemporal aspects were captured by establishing a panel data set of 858 households in Walawe area in Sri Lanka, and 720 households in Mandi Bahaudin and Gujrat districts in Pakistan over 12 months period. In Phase-1 of the study, *same* sampled household was surveyed thrice over the course of the agricultural year (2000-01): the first survey generated information about wet season (Kharif/Maha - October-March) followed by two equally spaced surveys that covered inter-wet –dry slack period (April- mid June) and dry season (Rabi/Yala mid June-September, 2001). Dynamic poverty profiles were constructed using both monetary and non-monetary indicators of poverty and household welfare. The Phase-1 results indicate that (1) access to irrigation infrastructure have significantly contributed to alleviation of

chronic poverty; (2) the impact of irrigation infrastructure on poverty is highest where landholdings are fairly equitably distributed (Sri Lanka) (3) for effective poverty alleviation, agricultural water/irrigation infrastructure development must be targeted to the poor communities/areas/localities; and (4) in situations where land distribution is highly skewed (Pakistan), the benefits of agricultural water will continue to be inequitably distributed unless fundamental measures such as land re-distribution are taken. However, the analysis is based on only one year panel data. Year around panel, although rare in empirical literature, is not adequate to arrive at definite conclusions and to generalize the study findings for applied policy making and warranted that a longer panel be generated to be doubly sure about study findings and its implications. Both JBIC and IWMI decided to launch Phase-II of the study, such that multi-year and multi-season panel data becomes available. The Phase-II covers the period October 2001 to September 2002. This interim-report presents a summary of activities and lessons learnt during the first survey (October 2001-March 2002) of Phase-II. It does not aim to present a rigorous analysis of the impact of irrigation interventions on dynamic poverty rather the later remains to be done after the completion of Phase-II.

For any questions, clarifications, comments and suggestions on the contents of this report as well as about the final analysis, please contact the project leader at the following address:

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## PART-A

### STUDY BACKGROUND

#### Introduction

A large majority of population in Asia-Pacific continues to face food insecurity, vulnerability, malnutrition, and injustice despite decades of efforts to alleviate these ills. Increasing demand for food, growing populations, scarcity and degradation of land and water resources, and ensuing social unrest are causing concern among development planners. Of particular concern is limited access to and quality of irrigation resources which militates against food security for the poor and perpetuates poverty. Consequently, a large majority of population suffers from poverty in the region.

International development assistance agencies and donors have recently reinvigorated their efforts to alleviate poverty in the developing countries. A *world free of poverty* has become the key foci of their development lending. Further the concept of poverty has changed from a static to a dynamic one. Dynamic poverty is composed of a chronic or static component and a transient or stochastic component. The chronic poverty is caused by persistently low levels of income and therefore remains the same over time, while transient poverty is caused by inter-temporal fluctuations in income and therefore changes over time. Recent studies suggest that the two poverty types are not the same, and a significant component of existing poverty is only transitory. Further, the process that cause these also differ. The implication is that any efforts to quantify poverty using estimate from single point in time would poorly define the poor: Static measurements of poverty may poorly estimate the poor by capturing those who fall into the poverty trap because of temporary misfortunes, or by skipping those who escape poverty due to temporary good-fortunes. Errors of inclusion or errors of exclusion are a well documented concern in conventional poverty studies. Poverty alleviation policies, based on static poverty definitions, can therefore lead to poor targeting and large leakage to the non-poor. Hence, for applied policy making and fine-tuning the targeting efforts, the concept of dynamic poverty has become popular among development planners. The construction of reliable dynamic poverty profiles however requires panel data sets that spans several seasons/ years. Not only such data are hard to come-by from the developing world, efforts to collect such information have only recently begun.

It is commonly accepted that irrigation infrastructure developments promote growth and help to improve the welfare of rural communities, and therefore has the potential to alleviate poverty. Further, irrigation infrastructure development, *inter alia*, in general helps small, and presumably poor farmers, to manage risk and reduce income variability caused by untimely and unevenly distributed rainfall. However, little is known about (a) the potential of irrigation infrastructure development and rehabilitation to alleviate chronic and transient poverty, and (b) the enabling conditions under which such interventions are pro-poor: that is, how can they give poor and vulnerable both a stake and voice in the society. This study aims to fill this important gap in irrigation-poverty literature in terms of clarifying the linkages between irrigation infrastructure development and dynamic poverty.

IWMI has identified following basic premise to intensify dynamic poverty-irrigation discourse:

- a) Irrigation can help reduce transient poverty by reducing sudden fluctuations in income. Opportunities offered by irrigation can enable poor farmers to mitigate or skirt the adversities associated with water scarcity, floods or drought, or personal shocks.
- b) Past investments in the irrigation infrastructure have tended to be more growth/production rather than equity-oriented. This imbalance can be corrected by complimentary interventions in the mainstream programs and by reaching out to the poor through better analysis and quantification of opportunities and constraints.
- c) All inclusive and poverty-focused interventions are needed to enable the poor to share equitably in the benefits of irrigation; special poverty-focus is needed in *all* interventions designed to mitigate the impacts of water scarcity and associated problems on the poor.
- d) There is complimentary between irrigation infrastructure and other forms of infrastructure such as physical, human, social, and environmental. A mix of irrigation and other infrastructure interventions would together achieve more than a single intervention alone.

## **Goal and Objectives**

Like Phase-I, this round aims to evaluate the effectiveness of irrigation infrastructure development and rehabilitation as a policy instrument for dynamic poverty alleviation in developing countries. The objective of this study is to make an impact assessment of infrastructure development by using the concept of transient and chronic poverty, taking case studies of irrigation projects in Sri Lanka and Pakistan.

The study aims to fill a major gap in the literature on the role of irrigation in poverty reduction, particularly its impact on transient poverty. This study formally investigates the dynamic poverty reduction effect of irrigation infrastructure development by integrating field observations, economic theory, and econometric analysis, and voices of the poor. In addition, this study also takes into account the impact of other infrastructure developments, such as credit use, access to medical facilities, availability of electricity, access to paved road and communication facilities etc. By using the quantitative and qualitative evaluation results, the study also derives policy implications for future infrastructure development.

Specific objectives of Phase-II are:

1. To assess the impacts of irrigation infrastructure development on poverty alleviation taking JBIC financed irrigation projects in Sri Lanka and Pakistan as case studies, using a multi-season panel data sets.
2. To develop and refine an analytical method to quantify the impact of irrigation infrastructure development, especially on dynamic poverty alleviation.

3. To identify a set of performance indicators to measure the impact of irrigation infrastructure development on dynamic poverty, and to test their inter-temporal stability in contrasting environments.
4. To establish information collection and management system from the villages, and generate expertise for its speedy processing and dissemination to stakeholders around the globe.

## Scope and Coverage

The scope and coverage of Phase-II includes the following:

1. Undertake assessments of impacts of irrigation infrastructure development on poverty taking selected JBIC funded projects – Udawalawe area in Sri Lanka (Udawalawe Left Bank Irrigation System) and irrigation systems in Mandi Bahaudin and Gujrat districts in the upper Indus basin, Pakistan.
2. Establish a detailed methodology including inputs, outputs, and data requirements for the study. Develop an analytical framework including indicators of poverty to analyze inter-temporal changes in income, consumption, and welfare.
3. Utilize sampling framework developed in Phase-I of the study for implementing second round of surveys, by incorporating lessons learnt in Phase-I . The framework is based on several criteria including access to irrigation water, cropping patterns and stage of development of irrigation infrastructure. Specific locations identified within the selected areas were where irrigation infrastructure is well established/developed/improved, partially developed/improved, unimproved and with no infrastructure.
4. Carryout household level surveys twice over the course of the agricultural year 2001-02, beginning October 2001, of a representative sample of rural households in order to establish panel database.
5. Evaluate the impact of irrigation infrastructure on dynamic poverty reduction using “with and without” approach by comparing sample areas with improved, unimproved and with no infrastructure and without irrigation to construct the optimal mix of irrigation accessibility in each of the selected settings.
6. Compare the inter-temporal movements of income and consumption, e.g., variance and means, of household income and consumption in the surveyed areas. Through this quantitative evaluation, assess the impact of the irrigation infrastructure on dynamic poverty in selected locations, *ceteris paribus* (assuming that other conditions such as climate, soil, and access to the market is more or less similar across the selected areas and locations in order to control those external factors in the analysis).
7. Carry out econometric analysis of household level panel data to investigate the dynamic poverty reduction impacts of irrigation infrastructure development and rehabilitation. The empirical framework will be based on rigorous analysis of dynamic investment and consumption decisions of rural households.

*In summary:* Main activities during Phase-II include: (1) generate panel data base by undertaking household level surveys during the year (2001-02) to cover 'before', 'during', and 'after' situations both for the wet and dry seasons of the year, and (2) implement previously established protocol for irrigation-poverty impact evaluation and undertake econometric analyses of impacts of irrigation infrastructure on dynamic poverty



## **PART – B**

### **SRI LANKA COMPONENT**

#### **Execution of Phase-II**

##### **Survey Schedule and Implementation**

In order to establish multi-season panel data sets, two more surveys were planned to collect data from the *same* households for Maha (wet) and Yala (dry) seasons for agricultural year 2001-02. Minor changes were made to the questionnaire used in Phase-I of the study. These changes would help to capture the incidence of female headship more efficiently, and would allow the determination of timings of income receipts from secondary jobs, and the cost of rearing livestock. Further, GPS readings of the households were taken which would allow integration of the household specific poverty profiles with their geographic location, with respect to other infrastructure facilities, to help discern the complementarity among various forms of infrastructure, and its impact on poverty. A team of 22 enumerators, 4 data entry operators, one GPS data collection person, and 3 supervisors was lead by the IWMI project leader for the execution of first survey of Phase-II. The survey team resided at the Mahaweli Development Centre, Sooriyawewa throughout the survey. Data entry was done at the IWMI Headquarters.

The first survey of the Phase-II covers Maha season 2001-02 (October 2001-May 2002), and was completed in early July 2002. The data management and cleaning was completed in early August 2002. As per schedule, second survey of Phase-II is currently underway, and would be completed by early November 2002. Data being collected in the second survey is for the Yala season 2002 (June-September, 2002).

A refined survey instrument is being used to collect data on 4500 variables on household level itemized expenditure, income, access to infrastructure and credit, and heights and weights of the individual members of the sample households. A retrospective module, executed with the first survey only, also sought information on price movements, major aggregate and personal shocks, and risk coping and management strategies of the sampled households. Further details on execution of first survey of Phase-II are as below.

##### **Survey Preparation and Planning**

The hiring of enumerators, data entry persons, refinement and translation of the questionnaire, boarding and logistical arrangements etc. were done prior to the commencement of the survey as given in Table1. The detailed schedule is given in Appendix 1.

The survey instrument being used in Phase-II is basically the same as in Phase-I, however, following modifications were affected:

- Changes in the calendar year/months;

- Month of income receipt from secondary jobs;
- livestock rearing cost; and
- Overall summary of the household incomes and expenditures.

Table 01: Schedule of Main Activities

Activity	Date/Duration (2002)
1. Lodging and transport arrangements	16 May
2. Advertised the enumerators/data entry operators positions in Universities and finalized the enumerators and data entry persons	16-24 May
3. Finalized the questionnaire	24 May
4. Printing	28 May
5. Preparation of training materials	24 May
6. Stationary	28 May
7. Enumerators arrival at DC	2 June
8. Training of the enumerators	2-3 June
9. Actual survey	3 June to 7 July
10. Maintenance of the log book and cross checking	Throughout the survey
11. GPS data collection	4 June to 7 July
12. Data entry and cleaning	10 June
13. GPS data entry and mapping	10 - 15 July

The MS EXCEL templates were adjusted to accommodate changes in the questionnaire. In order to facilitate data entry, all questions in the questionnaire were serially numbered, and the numbers were incorporated in the templates. The first two pages of the filled questionnaire, from the first survey of Phase-I, were photocopied and attached to the new questionnaire to reduce the chances of errors in filling up the questionnaires, and in particular to help identify the panel households. The respondent ID and code number of each respondent was written on *every* page of the questionnaire so as to reduce potential errors resulting from torn pages, mix-up or coding/entry inaccuracies.

The work plan for 1<sup>st</sup> survey of Phase-II is given in Table 2 below. Initially, it was assumed that each enumerator would be able to complete two interviews per day, provided that the respondents were home. Thus, the survey was originally anticipated for completion within 20 days with 22 enumerators. The detailed schedule is given in Appendix 02.

In order to refine the quality of collected data, best performing enumerators were assigned for checking questionnaire completed on previous day. Inadequately filled questionnaires, say where household members were absent, were referred back to the data enumerators, who was required to re-visit the household to seek the missing information. Similarly, illegible entries, although rare, were required to be corrected by the respective enumerator. Supervisors were also required to maintain a log-book to keep track of the number of questionnaires filled daily by each enumerator and their work performance. To

help improve enumerator's efficiency star-rated performance system (five star, 4 star, 3 star and so on) was used. One of the supervisors cross-checked a random sample of about 10-15% of the checked questionnaires to ensure that the checking was being done properly. Four persons, trained for the job, were assigned for data entry. They were required to complete data entry of all the questionnaires completed and checked on the previous day. Log-books were maintained by the data entry persons as well as the supervisors, to monitor the progress and quality of data entry. Overall supervision and monitoring of the survey was done by the project leader.

### **Training of Enumerators**

A copy of the questionnaire was provided to each new enumerator, on the day of selection and they were required to go through the questionnaire and understand it as thoroughly as possible, and seek advice from the supervisor/team leader about any doubts/clarifications on questions.

Table 2: Planned Survey Schedule

<b>Setting/Strata</b>	<b>No. of Samples</b>	<b>Dates of Interview (2002)</b>
Extension area	105	4 - 6 June
Sevanagala Irrigated	167	7 - 10 June
Sevanagala Rainfed	60	11 - 12 June
Kiriibbawewa	151	13 - 16 June
Sooriyawewa	229	17 - 21 June
Ridiyagama	146	22 - 23 July and 26 June to 3 July*
Missing households and heights/weights		4 -7 July

All the enumerators including the data entry persons were given an in-house short training of one and half day prior to the beginning of the survey (Appendix 3). The training was designed to provide an overview of the study including study background and objectives. The ethics and code of conduct of surveys was dealt with in full detail in order to inculcate a spirit of discipline and dedication among the enumerators, and to elucidate the importance of upholding the standards of the institution. A general review of the questionnaire was conducted to introduce the contents of the questionnaire, and to discuss the methods or processes to be adopted in filling-out the questionnaire, and to explain what was expected of the enumerators in this information collection process. This was followed by a detailed review of the questionnaire in both languages (English & Sinhalese). Each question in the questionnaire was discussed and explained in detail to the enumerators and any doubts were cleared. A further period was set aside to allow the enumerators to discuss their individual problems in relation to the questionnaire. Finally enumerators were divided into five groups, and each enumerators was required to

perform a hypothetical role-play to fill up the questionnaire. It was only after intensive training and thorough evaluation that enumerators were sent to the field for actual survey.

Field level training was also provided to the new team members on the second day and first half of the third working day. All new enumerators were sent to households with an experienced enumerator who had participated in previous surveys. Further support and guidance was provided by supervisors and the project leader.

Apart from the formal training session, there were clarifications and discussions sessions, conducted from time to time by the supervisors throughout the survey. Further, a notice board was maintained at Mahaweli Development Centre -the place of accommodation for the team- to provide some general instructions to enumerators and to share new experiences and insights that team members came across in the field. Enumerators were also asked to share their new questions/experiences with the supervisor/ project leader who channeled these back to all the team members alongwith necessary input.

### **Logistical Arrangements**

Logistical arrangement for the first survey of the Phase-II were similar to the arrangements made for the previous surveys. Accommodation for the enumerators and supervisors was provided at the Mahaweli Development Center in Sooriyawewa. Two mini-vans were hired to drop enumerators at the households, and to travel back to the Centre. The supervisor accompanied the enumerators in the vans, to help locate farmers and to ensure the proper conduct of the survey. The GPS data collector accompanied the enumerators too.

Data entry took place at IWMI Headquarters in Colombo, as there were better computing facilities. The data entry process was closely supervised by the project leader. Prior to starting data entry, operators accompanied enumerators to interview the households. This helped to improve their understanding about the information creation process and to eliminate potential coding errors.

### **Survey Implementation Schedule**

The first survey of Phase-II commenced on 3<sup>rd</sup> June, 2002 following field level training at the stratum New Extension area (of Mayurapura). Prior appointments were made with the households to minimize any inconvenience to them. The survey continued until 8<sup>th</sup> July, 2002. Major part of the survey was completed by 3<sup>rd</sup> July, as expected, and another five days were allowed to collect missing data, specially on weights and heights, by re-visiting respective households. A second round of prior appointments helped to collect information from survey households that could not be contacted during the initial round. This helped to minimize attrition rate. The actual time taken for whole survey was 32 days. Team members were allowed four days leave for Poson Full Moon Poya. Appendix 3 shows the allocation of time to complete the questionnaires.

During this survey each enumerator was able to complete at least two questionnaires per day. Field supervisor were entrusted with the responsibility of locating the enumerators to sample households with a correct questionnaire, and to ensure proper conduct of

enumerators in the field. Before starting the survey, previously completed first page of questionnaire was attached to new questionnaire to facilitate identification of correct households, and to make sure that details of family members were entered in the same order as in previous rounds. Unique ID (UID) and serial numbers of the sample households were clearly written on each page of questionnaires to prevent mixing up and possible coding errors, say due to torn pages or removed staples. All questionnaires were arranged by strata and distributory canal/village such that it was easier to find out relevant questionnaires at the field. All enumerators were advised to make sure that the ID numbers imprinted on the door of the sample household, during first survey of Phase-I, coincided with the ID number on the questionnaire to be used, prior to commencing the interview. The GPS data collector worked as a second field supervisor while carrying out his task. The project leader provided over all supervision, support, and guidance to the team members.

Four enumerators, selected by ingenuity and work performance, were assigned to check the entries of completed questionnaires for clarity, completion of all entries, entering of data into appropriate columns, use of correct codes and units, consistency of information, and its legibility. Supervisors, with the help of checkers, also prepared guidelines to facilitate cross-checking. After data checker have checked each questionnaire, supervisor/project leader also went through some randomly selected questionnaires to check the standard of checking work, and the integrity of information. All completed questionnaires were checked same/next day and incomplete ones were returned back to the enumerator who completed them in the first place, with necessary advice to do the needful. Then enumerators corrected shortcomings through memory recalls, and even re-visit to the households, if necessary. In particular, for missing data enumerators were required to go back to the households and to seek the missing information.

Every evening, the survey team gathered for a short informal discussion after dinner. During this, all the problems were discussed and necessary actions were taken to solve/avoid those problems. Next day's activities were discussed with enumerators. These short sessions culminated in mutual self-respect, working relationship, and cohesiveness among the team members, which helped to improve the quality of work.

Completed questionnaires (after checking and correcting of shortcomings) were sent to the IWMI Head Quarters weekly, where data entry took place.

### **GPS Data Collection**

This survey also collected the GPS data of sampled households. The purpose of collecting the data is to pin point the household location with respect to the irrigation, and other infrastructure facilities, so as to be able to interpret spatial dimensions of poverty. A portable GPS instrument was used to get the satellite readings, with Udawalawe tank being considered as the reference point. Each day after the survey GPS reading were transferred into MS EXCEL in order to calculate the actual distance with reference to the Udawalawe tank. Then these data were transferred to ARCVIEW through ARCINFO for final mapping.

## **Field Problems**

- A. Initially, it was planned to complete main survey in 20 days, and allow another 6-8 days for missing information/households. But this plan has to be extended, and the work could be completed in 32 days due to following main reasons:
1. Sometimes, enumerator could not complete two questionnaires per day because households were unable to keep-up appointments due to personal problems such as sudden sickness, mental aberration, poor memory etc., or due to other pressing commitments.
  3. Checking of completed questionnaires took more man-hours than expected, since it was imperative to do a thorough checking to ensure a high quality data-set.
  4. Expected labor days couldn't be found within the period due to leave requests by some enumerators.
- B. In some cases, enumerators met a poor initial response. However, in most of the cases enumerators patiently bared with these un-expected responses, and were finally able to do their job after explaining the objective of the survey and persuading the households. Supervisors were involved in persuading unwilling-respondents too. Main reasons for these negative responses were some political beliefs, reluctance to spent long time, and inadequate or incorrect awareness of the survey.
- C. Some times the survey could not be carried out in the planned area due to some community events like meetings of farmer organizations, weekly fair, subsidy distributions, funerals etc. In such situations, the team had to change the work-plan and to relocate the activity to another sampled area, with obvious time costs.

## **Survey Team**

The survey team for first survey of Phase-II comprised of the following members:

Dr. Intizar Hussain	-	IWMI Senior Economist/ Project Team Leader
Munir A. Hanjra	-	Economist
Mr. Sunil Thrikawala	-	Supervisor (Data entry)
Mr. Deeptha Wijeratne	-	Supervisor (Field)
Mr. J.K. Somasiri	-	Supervisor (Field)
Mr. Bandula Seneviratne	-	GPS data collector
Enumerators	-	22
Data entry persons	-	04

Dr. Hussain launched the survey and made frequent follow-up visits during the survey. Field problems were referred to the supervisors, who discussed these problems and tried to resolve them as quickly as possible.

## **Data Entry and Data Cleaning Process**

Data entry for the first survey of the Phase-II commenced on 12 July 2002, with four data entry operators. New variables as well as some composite variables needed for further calculations were incorporated in the previously developed MS EXCEL templates. Data user manual, containing the names/codes and full description of all the variables were provided to data enumerators. For speedy processing, each data entry operator specialized in a particular module(s). They were also required to convert data entered in different units in the questionnaire to standard units, prior to entering in the database. Initially, they were able to enter only 12 - 16 questionnaires per day, but later this increased to 24 questionnaires per day, as they became more familiar and proficient in their work. The computers were connected to the network and hence the supervisor was able to access the data-base at regular intervals in order to check the quality of the data entered. The data entry persons were regularly advised to minimize the errors in data entering. Data entry completed on 28 July 2002, and data cleaning continued until the 4 August 2002. Data is now being further cleaned after transferring to the SPSS.

## **PART-C**

### **PAKISTAN COMPONENT**

#### **Introduction**

This part of the report presents the research activities carried out under JBIC project Phase-II. It provides details on survey planning and data collection process followed for the survey conducted in June- July 2002 for crop season Rabi 2001/02. Detailed analysis of poverty impacts of irrigation will be done after the completion of Kharif 2002 survey in December and will be incorporated in the final report. Major elements of the activities are discussed in the following sections.

#### **Survey Preparation and Planning**

Two surveys were planned to undertake during the study period. The first survey was designed to obtain data for the Rabi cultivation season (October 2001-March 2002) and was completed in June 2002. The second survey is planned to collect data for the Kharif cultivation season (April-October, 2002) which will be conducted during December 2002. This report provides account of 1<sup>st</sup> survey of Phase-II. The initial project activities involved planning meetings regarding survey team composition and recruitment, enumerators training, logistical arrangements and modifications in the questionnaire and database program keeping in view the previous experience of three field surveys of JBIC Phase –I. The basic information for both the surveys remained the same except one modification, that is, an additional page was adjoined at the end of the old questionnaire to generate summary of overall incomes and expenditures.

#### **Composition of Survey Team**

A survey team of 22 enumerators, 16 male and 6 female was appointed in June 2002 for first survey of Phase-II. Their period of services spanned from June-December 2002. To manage and supervise the survey in an effective and efficient manner, the team was divided into two sub-teams A and B consisting of 13 enumerators (nine male and four female), and seven enumerators (five male and two female), respectively. Two Agricultural Economists from IWMI-Pakistan were assigned to supervise the survey teams separately. It was planned that team A would complete two watercourses or 30 households, whereas team B was assigned to cover one watercourse or 15 households in one day. The same work-pattern was followed throughout the survey period.

The best two enumerators were chosen to act as sub-supervisors in addition to their routine work of conducting interviews. As sub-supervisors, they were responsible for daily attendance of their teams at the time of departure and arrival. Additionally, they facilitated their supervisors in the preparation of Daily Visit Plan and in drawing lists of respondents from their biographical record, cross checking their IDs and names with the original JBIC list. They also assisted in allocating the enumerator to the households.



Two guides from local area were also recruited to make prior appointments with the sample households, as well as to guide the survey team to households' location.

## **Survey Team**

The survey team for the first survey of JBIC Phase II comprised the following members:

Dr. Intizar Hussain	:	IWMI Senior Economist/ Project Team Leader
DR. Waqar A. Jehangir	:	Project Sub-leader
Dr. Muhammad Ashfaq	:	Economist/Field Supervisor
Mr. Aamir Nazeer	:	Economist/ Field Supervisor
Enumerators	:	22
Data Entry Persons	:	03
Field Guides	:	02

## **Training of Enumerators**

Majority of the 22 recruited enumerators were trained and had significant prior experience in conducting surveys, including previous JBIC surveys. Before the start of the survey, the project leader and supervisors conducted a two-day comprehensive training at IWMI Regional Office, Lahore. This training helped enumerators, including the seven newly recruited enumerators, to help refresh and understand the mechanics of the survey and its execution. Considering the intensive nature of this study, sample size, and structure of questionnaire, components of the study were explained in fullest detail. This covered purpose and rationale of the study, details on study areas, sampling procedures adopted and use and importance of collected data/information. The training contents covered interview methods, effective communication skills, data collection techniques, cross checking of data, units of measurement and their conversion and ethical standards in conducting household level surveys. The trainers emphasized on the need for adhering to the ethics and code of conduct of the surveys to inculcate a sense of discipline among the enumerators. Each and every question/ variable in the questionnaire, and all technical and non-technical problems and issues were discussed in detail. The exercise of measuring heights and weights was repeated and the correct use of measuring instruments as well as tips for accurate measurements were demonstrated. Data entry persons were also involved in the training program to ensure that they also fully understand the data collection process. Data entry operators highlighted the problems faced during Phase-I surveys regarding data entry and cleaning.

## **Logistical Arrangements**

Like previous surveys, Mandi Bahaudin (M. B. Din) was selected as the center of field activities in view of its proximity to sampled villages. A temporary field office was established at M.B.Din for survey team. Two houses were rented-in; one was the focal point of field activities while the other house was used as the accommodation of female enumerators. The male enumerators were accommodated at Government Technical College Rasul hostel.

One 4WD and two vans were arranged for transportation. Two motorbikes were also provided to the guides in order to arrange prior appointments as well as to drop the enumerators. The other necessary equipment including computers, printers, copiers, furniture etc. were also arranged at the field station.

### Survey Implementation Schedule

Table 1 below presents date-wise schedule for the first survey of JBIC Phase-II, showing the respective distributary, watercourse and village. Survey was completed in 22 days including pre-testing, left over sample respondents, and data editing and checking. On an average, each enumerator covered 31.5 households (farmers and non-farmers) ranging from 29 to 37 households during the entire survey, whereas average per day coverage stood at 1.57 households by each enumerator ranging between one to four households.

Table 3: Phase-II Survey-1 Schedule, 11 June to 2 July 2002

Sr. No.	Survey Date (2002)	Distributor/Village	Watercourse	Sample Village	Survey Team
1	June 11	Lahore to M.B. Din and Pre-testing of Questionnaire in Mong Village			
2	June 12	Kakowal	24000-L	Bhiki + Chak 40	A+B
		Kakowal	24400-L	Chak 40	A+B
3	June 13	Kakowal	68798-R	Bosal Sukhan	B
		Kakowal	67500-R	Bosal Sukhan	A
		Kakowal	77129-R	Bosal Sukhan	A+B
4	June 14	Phalia	200103-R	Kot Sher Muhammad	A
		Phalia	203000-R	Musa Kalan	A
		Kakowal	77650-R	Bosal Sukhan	B
5	June 15	Editing, Checking and Session			
6	June 16	14-R Maggowal	132416-R	Kot Sattar	B
		Phalia	125061-L	Takhat Mahal	A
		Phalia	125392-R	Takhat Mahal	A
7	June 17	Phalia	31000-L	Chak Jewan	A
		Phalia	33610-L	Charanwala	A
		14-R Maggowal	129915-L	Phirray	B
8	June 18	14-R Maggowal	86090-L	Chak Mitha	A
		14-R Maggowal	81090-L	Chak Mitha	A
		14-R Maggowal	94996-L	Kot Sattar	B
9	June 19	13-R Saroki	38537-L	Gumrali	A
		13-R Saroki	42640-L	Kot Kana	A
		14-R Maggowal	97539-L	Thatta Alia	B
10	June 20	10-R Dhup Sari	8780-L	Mughali	A
		10-R Dhup Sari	9900-L	Bagarianwala	A
		10-R Dhup Sari	20049-L	Chak Hussain	B
		10-R Dhup Sari	27940-R	Kalu Sahi, Chak Wasan	A
11	June 21	9-R Khoja	22500-R	Kalu Sahi	A
		10-R Dhup Sari	23000-L	Jamobola	B
12	June 22	Editing, Checking and Session			
13	June 23	9-R Khoja	20830-L	Suli wind	B
		9-R Khoja	14600-L	Chak Mehmood	A
		9-R Khoja	9580-L	Chak Mehmood	A
		9-R Khoja	29500-TL	Bakhat Jamal	B

14	June 24	9-R Khoja	29500-TL	Bakhat Jamal	B
		9-R Khoja	28288-L	Warraichanwala	A
		9-R Khoja	9700-R	Warraichanwala	A
15	June 25	13-R Saroki	17017-L	Chakori Bakhu	A
		13-R Saroki	21642-R	Chakori Bakhu	A
		13-R Saroki	18060-R	Kot Shammass	B
16	June 26	Rainfed	--	Dherkay	A+B
		Rainfed	--	Mianwal	A
		Rainfed	--	Gigian	B
17	June 27	Rainfed	--	Jalalpur Sobtian	A+B
18	June 28	Rainfed	--	Chak Kamala	B
		Rainfed	--	Baru	A
19	June 29	13-R Saroki	18040-R	Nagranwala	B
20	June 30	Left over sample respondents			
21	July 1	Left over sample respondents			
22	July 2	Left over sample respondents			

The first survey for the Phase-II was executed during 11 June-2 July 2002. The survey team left Lahore for M. B. Din on 11<sup>th</sup> June at 10.00 a.m. The project team leader along with sub-leader and field supervisors lead the survey team.

Before initiating the surveys, the team leaders reiterated the need for collecting the good quality data and strived to ensure the clarity of all the components of the study including interviewing methods, cross checking of information and ways of interaction with the households. Demonstrations were also made to fill up the questionnaire in a hypothetical role-play situation. A long question-answer session continued till the team leaders were satisfied with the performance of enumerators. Before going to the field, a list showing watercourse number, names and IDs of sample respondents was also taken. An updated list of all watercourses, from three JBIC surveys, was already with the supervisors. The guides made prior appointments, one day before, and they led the team to the target villages. The supervisors allocated enumerators to sample households. The guides led the enumerators to the houses of the respondents. In case the respondent was not available in the village, the motorbikes were used to drop the enumerator at the fields. The name of each enumerator was written in the list against the household allocated to him by the supervisor. After allocating the enumerators in the first village the team moved to the next village and in this way all the enumerators were allocated to 22 households in the first phase. In the second phase the remaining households were covered, as the return of enumerators started from the first phase after completion of the interview. Three data entry operators were also with the team who were assigned to conduct interviews of three non-sample households, and later they accompanied the enumerators. This helped to improve their understanding of the data generation process, and its importance for analytical work.

Meanwhile, team leaders held group discussions with the group of farmers and non-farmers who gathered at a central place in the village Annawal, to share their views on the situation of existing poverty in their village, and invited suggestions to help improve their plight. The team leaders also drove and walked along the sample distributary named Kakowal and watercourse No. 24000-L and 24400-L to observe its physical condition.

Watercourse No. 24400-L was unimproved while 24000-L was an improved one. The team worked for seven hours, including three hours after sunset, and covered 29 households.

Over all, a target of three watercourses, or 45 households was planned to be completed in one day (two households per enumerator per day). However, more than two households were also assigned to some enumerators according to the varied situation in the project area, especially in the rainfed area where number of households was up to 55 in one village with majority being non-farmers.

The general approach adopted for the execution of the survey was that after reaching the village the supervisor of the team allocated the households to the enumerators one by one who commenced their working accordingly. In view of cultural sensitivities, female enumerators were sent where male household members were not present, or sample households were reluctant to allow male enumerators to interact with their female members.

The performance of each and every enumerator was observed by the supervisors by assessing the way of conducting interviews, the modus-operandy of their presentation and briefing regarding the project, their interaction with the respondent, ability to involve them in the interview, method of filling questionnaire, their articulation skills, tackling problem, finding logical solutions, and their ability to satisfy a respondent bringing him to a level where (s)he feels comfortable to give true information. At the end of each day the supervisors reviewed work-progress and shared field problems with all team members, before finalizing the next day plan. Appointments for next day were made by the two guides.

The sub-supervisor of each team maintained a log-book of daily records of enumerators attendance, the number of sample households visited, the numbers left over, the number of questionnaires completed, the number of questionnaires checked, and the performance evaluation and grading of enumerators and checkers. It was found that every enumerator worked hard, keeping in mind the importance of data, feeling their responsibility as a team member, showing a cooperative behavior and acted as a good sub-ordinate.

Few of the selected households, which were not available at the time of scheduled visit, were considered left-overs and were contacted at the end of the survey. However, the supervisors tried their best to manage the interview of all the households according to planned schedule. In so doing, sometimes team had to wait for the respondents till 9.00PM.

Despite concerted efforts, the original sample of 720 households dropped to 707 at the end of phase I, as the enumerators could not get data from 13 selected households, therefore the first survey of phase II started with 707 households. Enumerators further failed to get data from 14 more respondents who stood left over sample respondents during the current survey. This yielded a final sample of 693 respondents. Table 4 below shows village-wise details of left over cases along with the reasons.

Table 4: Village- Wise Left Over Cases

Sr. No	Village Name	Total	Done	Left over sample respondents	Reason
1	Bhiki + Chak 40	15	15	0	--
2	Chak 40	15	14	1	Not Available
3	Bosal Sukhan	14	14	0	--
4	Bosal Sukhan	15	15	0	--
5	Bosal Sukhan	15	15	0	--
6	Kot Sher Muhammad	14	14	1	Refused
7	Musa Kalan	14	14	0	--
8	Bosal Sukhan	14	14	0	--
9	Kot Sattar	15	15	0	--
10	Takhat Mahal	15	15	0	--
11	Takhat Mahal	12	12	1	Migrated
12	Chak Jewan	14	14	1	Migrated
13	Charanwala	15	15	0	--
14	Phirray	15	15	0	--
15	Chak Mitha	15	15	0	--
16	Chak Mitha	15	15	0	--
17	Kot Sattar	15	15	1	Refused
18	Gumrali	15	15	0	--
19	Kot Kana	15	15	0	--
20	Thatta Alia	15	15	0	--
21	Mughali	14	14	0	--
22	Bagarianwala	13	13	1	Refused
23	Chak Hussain	15	15	1	Refused
24	Kalu Sahi, Chak Wasan	15	14	1	Not Available
25	Kalu Sahi	15	14	1	Not Available
26	Jamobola	15	15	0	--
27	Suli wind	14	14	0	--
28	Chak Mehmood	16	16	0	--
29	Chak Mehmood	17	17	0	--
30	Bakhat Jamal	15	15	0	--
31	Warraichanwala	15	15	0	--
32	Warraichanwala	15	15	0	--
33	Chakori Bakhu	15	15	0	--
34	Chakori Bakhu	15	15	0	--
35	Kot Shammas	13	13	0	--
36	Dherkay	45	45	1	Refused
37	Mianwal	23	23	0	--
38	Gigian	13	13	0	--
39	Jalalpur Sobtian	49	49	4	3 migrated, I refused
40	Chak Kamala	11	11	0	--
41	Baru	30	30	0	--
42	Nagranwala	15	15	0	--
<b>Total</b>		<b>707</b>	<b>693</b>	<b>14</b>	

-- Not Applicable

Following were the reasons for left over cases during the current survey:

- Of the total 14 left over cases, six refused to be interviewed due to time concerns. The enumerators, along with the supervisor, tried their best to convince the respondent but to no avail.
- Five households out of 14 had migrated to the nearest urban areas and were neither contactable nor relevant for the survey.
- Three of the 14 left over households were those where the key person was absent. These respondents were visited 3 to 4 times by the team, but appropriate person could not unfortunately be contacted due to reasons like death of a family member/relative, out of village with family, court hearing etc.

### **Data Editing and Checking**

Two of the best enumerators were assigned the responsibility of checking the entire questionnaire of every enumerator thoroughly and point out deficiencies and return it to them for correction so that the future chances of error could be minimized. The checkers looked for errors in the filling up of questionnaire such as missing or illegible entries or responses, very high/low or improper values, faulty coding or numbering etc.

The performance of data checkers was evaluated in turn by the supervisors on the criteria of accuracy, completeness and reliability of data collected. In addition to this, one un-edited questionnaire of every enumerator was also checked by their respective supervisors to assess their method of filling questionnaire, i.e., writing information at its proper place and notes of justifications in case of abnormality. This was preferably done on the same day but due to excessive fieldwork load it was also done during a field holiday. This improved the quality of work as well as skill of the enumerators. Frequent sessions were also conducted to discuss day-to-day problems arising during the interview and editing, and their proper solutions were also sought to improve understanding of enumerators. Certainly, the quality of data improved through this process and every member of the team contributed in it.

### **The GPS Data**

Geographical Position Standing (GPS) reading of the houses as well as farms of all sample households were taken by trained professionals. The missing GPS were taken at the end of the survey.

### **Field Problems**

The survey team learnt following important lessons during first survey of Phase-II:

- Though prior appointments were made for every household visited, yet most of the farmers avoided the survey team and showed reluctance to spend long hours for interview. This problem was encountered more seriously at those places where

other project teams had also conducted surveys few weeks back and in some cases with the same respondent.

- Some of the selected households were unsure about the purpose of repeat surveys, and remained concerned about the study objectives. Eventually enumerator had to spend more time in convincing and persuading them to get accurate information.
- Some respondents were expecting gifts from the survey team. Supervisors intervened to help out such respondents and explained to them the purpose of the study, which helped to improve their understanding.
- Survey team had to wait long hours for “not available” households in some cases which reduced efficiency.
- To conduct the interview of the left over sample households in a limited period meant less work and more traveling, given that the left over households were scattered.

### **Data Entry and Cleaning Process**

As discussed above, all the questionnaires were edited and reviewed by enumerators, checked by their field sub-supervisors on a daily basis. The sub-supervisors, after going through the questionnaire, submitted them to the supervisors who, after final checking endorsed the reliability of information by putting their signatures on the questionnaires. In case of any problem, the concerned enumerators were asked to rectify it after which the questionnaires were returned to the data editing persons, who after the final examination forwarded the questionnaire for final data entry.

The data entry persons used the coded variables to enter the data. In case if they found ambiguity in any questionnaire, those questionnaires were referred back to the enumerators for possible data correction. This crosschecking at different levels, introduction of data editing persons, and imposition of strict data-integrity procedures helped in maintaining the quality of data sets collected.

The data entry operator was required to complete all modules of the filled questionnaire, before moving on to the next questionnaire. They were also required to convert data entered in different units in the questionnaire to standard units, prior to entering in the database. So far, entire data has been entered and data cleaning is in progress, which will be done through filter facility in MS Excel, as well as by generating frequency tables in SPSS.

### **Data Coding**

Same unique but simple system, developed during the previous JBIC surveys, was used for data coding for each of the selected system, stratum, distributary, watercourse, and the respondent. This coding system is presented in the following coding scheme.

System,	Stratum,	Distributary,	Watercourses, WCID /	Farm	ID,
---------	----------	---------------	----------------------	------	-----

SYID	STID	DID	Rain fed Area	FRID
------	------	-----	---------------	------

Three main systems in the study area are namely Upper Jehlum Canal (UJC) , Gujrat and Rainfed were coded as 1, 2, and 3, respectively. Then all the four strata were coded from 1-4 to represent the respective strata. The selected distributaries were coded from 1-9 and the selected rain fed villages were coded as 1-6. The selected watercourses were coded as 7-42 for identification purposes.

Table 5 gives identification codes for the system ID, Stratum ID, Distributary ID, Watercourse and Household ID.

### **11.0 Data Organization**

Entire data for the current household level survey is being organized into EXCEL/SPSS files. To be consistent, and considering the limits of the EXCEL package, the cases/respondents are being organized in rows and variables in columns.



Table 5: Identification codes for the system ID, Stratum ID, Distributary ID, Watercourse and Household ID

Coding Item and Code	Study Areas	
System, SYID	1	UJC
	2	Gujrat
	3	Rainfed
Stratum, STID	1	Rain fed
	2	9-R,10-R
	3	13-R,14-R
	4	Kakowal, Phalia
Distributary, DID	1	Gujrat Town
	2	Jalalpur Jattan Town
	3	Karianwala Town
	4	9-R
	5	10-R
	6	13-R
	7	14-R
	8	Kakowal
	9	Phalia
Watercourse, WCID/ Rainfed Area	1	Dherkay Rain fed
	2	Gigian Rain fed
	3	Mianwal Rain fed
	4	Jalalpur Sobtian Rain fed
	5	Chak Kamala Rain fed
	6	Baru Rain fed
	7	9580-L
	8	9700-R
	9	20830-L
	10	14600-L
	11	28288-R
	12	29500-TL
	13	8780-R
	14	9900-L
	15	20049-L
	16	22500-R
	17	27940-R
	8	23000-L
	19	18040-R
	20	17017-L
	21	21642-R
	22	18060-R
	23	38537-L
	24	42640-TL
	25	86090-L
	26	81090-L
	27	97539-L
	28	94996-L
	29	132416-R
	30	129915-L
	31	24400-L
	32	24000-L
	33	67500-R
	34	68798-R
	35	77650-L
	36	77129-R
	37	33610-L
	38	31000-L
	39	125392-R
	40	125061 - L
	41	203000 - R
	42	200103 - R

## PART-D

### PROJECT PROGRESS AND FUTURE PLAN

#### Activities Completed

Following project activities have been completed during the project period starting from May 2002.

- Review and revision of questionnaire and data entry program
- Survey planning, preparation and organization
- Completion of household level survey of sample households for Maha/Rabi 2001-02 in order to establish the panel database.
- Completion of data entry, cleaning and organization
- Production of Mid Term Report

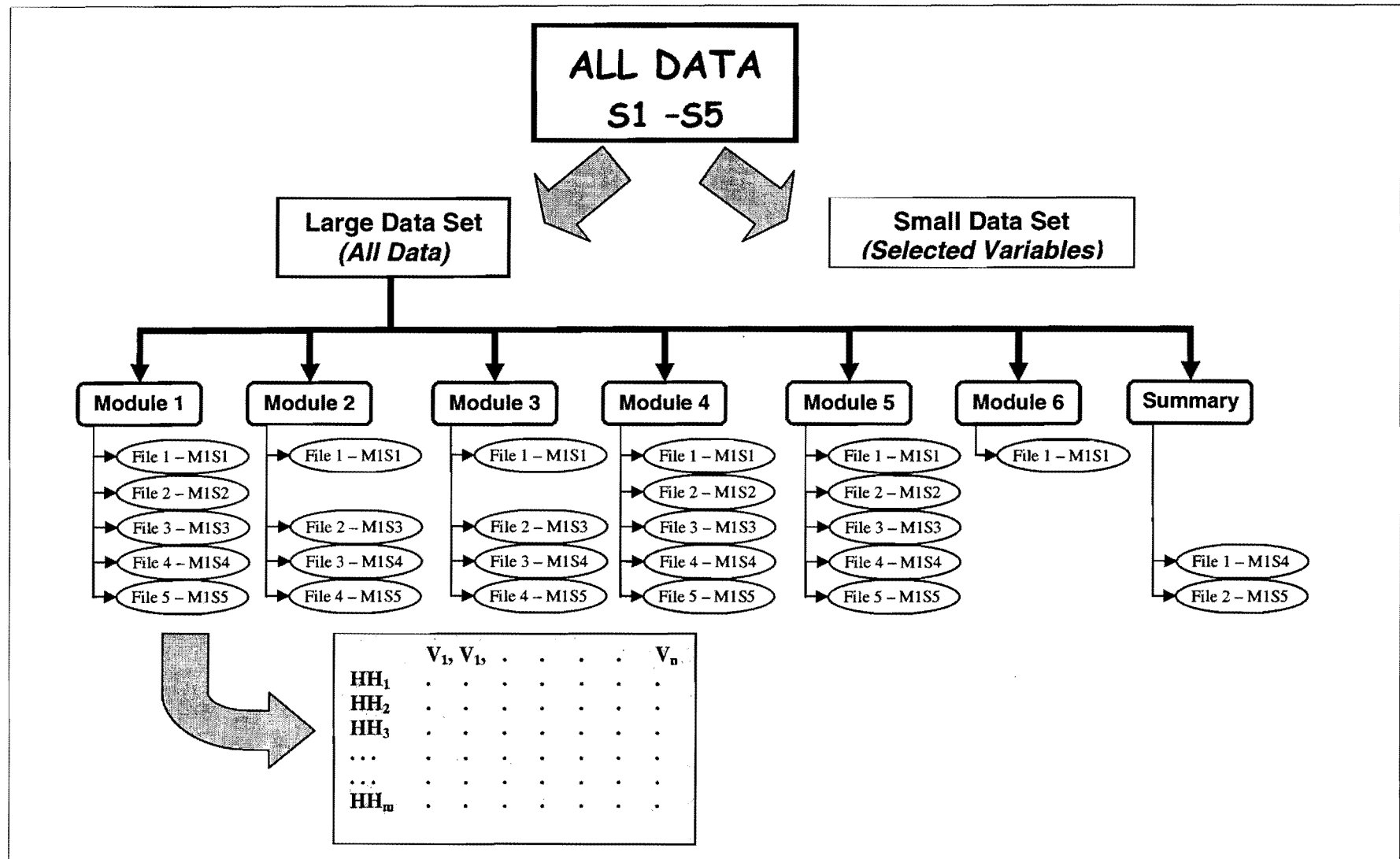
#### Data Organization

##### Second Phase – First Survey (Survey 4)

Entire data for the Phase-II survey are organized into 22 SPSS files. To be consistent, and considering the limits of the SPSS package, the cases/respondents are organized in rows and variables are given in columns. Details of the files are as follows:

- |           |             |  |           |                        |
|-----------|-------------|--|-----------|------------------------|
| • File 1  | – MOD101-S4 | – Contains data for 827 cases with 24  | variables | (YRSETL to WMHHIN)     |
| • File 2  | – MOD102-S4 | – Contains data for 827 cases with 220 | variables | (HHHWT to HHMPSI13)    |
| • File 3  | – MOD103-S4 | – Contains data for 827 cases with 240 | variables | (HHHHWYD to HMSWLS12)  |
| • File 4  | – MOD104-S4 | – Contains data for 827 cases with 249 | variables | (HHDWLS to HMIRVU12)   |
| • File 5  | – MOD105-S4 | – Contains data for 827 cases with 208 | variables | (AIHWLS to MIHOAMAY)   |
| • File 6  | – MOD106-S4 | – Contains data for 827 cases with 174 | variables | (EXOIRP1 to SIPOTL1)   |
| • File 7  | – MOD107-S4 | – Contains data for 827 cases with 19  | variables | (MTEXWL to QKRHOU03)   |
| • File 9  | – MOD201-S4 | – Contains data for 827 cases with 167 | variables | (DCLPMH to FOOMSYS)    |
| • File 10 | – MOD202-S4 | – Contains data for 827 cases with 193 | variables | (WSHHLGT to TTNOTMF)   |
| • File 11 | – MOD301-S4 | – Contains data for 827 cases with 221 | variables | (AG11R01 to MVLVS)     |
| • File 12 | – MOD302-S4 | – Contains data for 827 cases with 117 | variables | (ACPDY to TCLPDY)      |
| • File 13 | – MOD303-S4 | – Contains data for 827 cases with 117 | variables | (ACSGC to TCLSGC)      |
| • File 14 | – MOD304-S4 | – Contains data for 827 cases with 117 | variables | (ACBAN to TCLBAN)      |
| • File 15 | – MOD305-S4 | – Contains data for 827 cases with 234 | variables | (ACCHL to TCLONO)      |
| • File 16 | – MOD306-S4 | – Contains data for 827 cases with 234 | variables | (ACOC1 to TCLOC2)      |
| • File 17 | – MOD307-S4 | – Contains data for 827 cases with 234 | variables | (ACOC3 to TCLOC4)      |
| • File 18 | – MOD308-S4 | – Contains data for 827 cases with 117 | variables | (ACOC5 to TCLOC5)      |
| • File 19 | – MOD401-S4 | – Contains data for 827 cases with 244 | variables | (QPRICE to EXPFDMAY)   |
| • File 20 | – MOD402-S4 | – Contains data for 827 cases with 32  | variables | (ORICEOCT to QCRMAY)   |
| • File 21 | – MOD403-S4 | – Contains data for 827 cases with 225 | variables | (XHSROOT to MVHHAS)    |
| • File 22 | – MOD501-S4 | – Contains data for 827 cases with 106 | variables | (USBRMLS to RPCTFLS)   |
| • File 22 | – MODSUM-S4 | – Contains data for 827 cases with 128 | variables | (INPDYOCT to DONATMAY) |

All data from Phase-I and Phase-II surveys is being organized into **Seven** SPSS files as below:



## **Preparation of the Final Reports**

As mentioned earlier, data collection for the final survey data for Sri Lanka component is in progress and is expected to be completed by mid November 2002, with data entry expected to be completed by late December 2002. This will be followed by rigorous analysis using entire panel data collected. Data collection for the final survey for Pakistan component will begin on 13 December (after Kharif harvest is completed and Eid festival is over), followed by data entry and cleaning which is expected to be completed by the first week of February, 2003. Final analysis and report writing will begin soon after. At this point in time, no delays are anticipated and we expect to complete the final analysis by project completion date.

The contents of the final report will be based on the following materials and analyses – using panel data collected during the five surveys:

- Review of literature on irrigation infrastructure and poverty (with expanded coverage to supplement the review presented in the earlier report)
- Study design, approach and sampling framework; details of survey procedures followed for the study
- Details of analytical procedures followed for the study
- Basic socio-economic profile of sample households; analysis of household assets and livelihood systems
- Estimates of household incomes and expenditures (1) analysis of quarterly movements of income components through decomposition of income into various components (farm, non-farm, transfer income etc); (2) analysis of quarterly movements of expenditure components through decomposition of expenditure into various components (i.e. durable, non-durable expenditures); and (3) income distribution patterns and income inequality;
- Poverty analysis – using quarterly data for estimating FGT measures of poverty
- Poverty analysis using non-monetary indicators of poverty including Body Mass Index (BMI) based on analysis of heights and weights data.
- Econometric analysis of seasonality in incomes and expenditures using quarterly data
- Econometric analysis of impacts of irrigation infrastructure on household incomes and expenditures using quarterly/annual data

## **Structure of the Final report**

The overall structure of the Phase-II final report will be similar to that followed for the Phase-I final report, with appropriate modifications and adjustments. Tentative format is given below.

### **Part 1**

- |           |   |
|-----------|---|
| Chapter 1 | Study Background  |
| Chapter 2 | Review of Literature on Irrigation Infrastructure and Poverty |

### **Part 2**

Chapter 4	Study Design, Approach and Sampling Framework
Chapter 5	Household Survey Administration and Data Collection
Chapter 6	Analytical Framework

### **Part 3**

Chapter 7	Basic Socio-economic Profile of Sample Households: Asset Base and Livelihood Systems
Chapter 8	Estimates of Household Incomes and Expenditures Distribution Patterns and Income Inequality
Chapter 9	Dynamics of Poverty: Estimating Chronic and Transient Poverty
Chapter 10	Seasonality in Incomes and Expenditures: Quantifying the Impacts of Irrigation Infrastructure Development
Chapter 11	Impact of Irrigation Infrastructure Development on Poverty: Conclusions and Policy Implications

## **Appendices – Sri Lanka**

## **Appendix 02: Training Program for Data Enumerators**

**Venue:** Development Centre, Sooriyawewa

**Date:** June 2 – 3, 2002

**Participants:** IWMI Team, Data Entry persons, Data Enumerators, GPS Data Collector

### **Program – 2 June 2002**

6.00 – 6.30 pm	Opening - introduction of participants (I. Hussain)
6.30 – 6.45 pm	Brief introduction of the project (I. Hussain)
6.45 – 7.15 pm	Project background (I. Hussain)
7.15 – 7.45 pm	Ethics and code of conduct for surveys (I. Hussain)
7.45 - 9.00 pm	Introduction of questionnaire – English version (I. Hussain)

### **Program – 3 June 2002**

8.00 am – 1.00 pm	Introduction of questionnaire – Sinhala version (J.K. Somasiri/D. Wijerathne/S.Thrikawala)
1.00 – 2.00 pm	LUNCH
2.00 – 3.00 pm	Question/answer session (IWMI Team)
3.00 – 3.15 pm	TEA BREAK
3.15 – 5.00 pm	Hypothetical situation – filling up the questionnaires (with data enumerators)
5.00 – 6.00 pm	Group discussion
6.00 – 7.00 pm	Closing/summing up, questions and concerns, actual survey schedule

### **Program – 4 to 5 June 2002**

Field level training

### Appendix 03: Schedule of Field Activities

Working Day No.	Date	AREA						Total
		Seven a gala	Sevena gala rain fed	Kirri Ibban wewa	Sooriya wewa	Extension area	Ridiya gama	
1	3-Jun-02	In house training						0
2	4-Jun-02					26		26
3	5-Jun-02					22		22
4	6-Jun-02					41		41
5	7-Jun-02	38						38
6	8-Jun-02	37						37
7	9-Jun-02	In house training and correcting shortcoming of entries						0
8	10-Jun-02	10	27					37
9	11-Jun-02	37	1					38
10	12-Jun-02	3	1	33				37
11	13-Jun-02			1	35			36
12	14-Jun-02				34			34
13	15-Jun-02	11	10	13				34
14	16-Jun-02			25	9			34
15	17-Jun-02			28	2			30
16	18-Jun-02				29			29
17	19-Jun-02			14	3			17
18	20-Jun-02				36			36
19	21-Jun-02	13	12	5	1			31
20	22-Jun-02				29			29
	23-Jun-02							0
	24-Jun-02							0
	25-Jun-02							0
	26-Jun-02							0
21	27-Jun-02				18		18	36
22	28-Jun-02						36	36
23	29-Jun-02						36	36
24	30-Jun-02						34	34
25	1-Jul-02	8	2	8		7	6	31
26	2-Jul-02	2	2	7	16			27
27	3-Jul-02	1	1	10	4		9	25
28	4-Jul-02		1		1			2
29	5-Jul-02			2		2	1	5
30	6-Jul-02							0
31	7-Jul-02				1	2		3
32	8-Jul-02		1		5	1		7
Total		160	58	146	223	101	140	828
Total Sample		167	60	151	229	105	146	858
# left out		7	2	5	6	4	6	30