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# Methods for Gathering Socio-cultural Data for Water Supply and Sanitation Projects

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Technology Advisory Group (TAG)



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and World Bank Contribution to the International  
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PREFACE

"Methods for Gathering Socio-cultural Data for Water Supply and Sanitation Projects" by Mayling Simpson-Hébert is mainly intended to help engineers who need to obtain socio-cultural data in the course of planning and designing low-cost water supply and sanitation projects. It describes data requirements, key data-gathering techniques (observer participation; key-informant interviewing; open-ended questionnaires; and surveys), and how these techniques can be modified to suit particular circumstances.

It is one of a series of informal technical papers prepared by TAG<sup>1/</sup> which are being published informally by the World Bank, as a joint contribution with the United Nations Development Programme to the International Drinking Water Supply and Sanitation Decade. The papers were originally prepared as internal discussion documents and the views and interpretations in them are those of the author(s) only. The wider distribution of these documents does not imply endorsement by the sector agencies, government, or donor agencies concerned with the programs, nor by the World Bank or the United Nations Development Programme.

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Cover photo: Philippine urban barangay

Trained interviewer discussing resident's  
priorities for water and sanitation.

## I. INTRODUCTION

1.01 To respond to the needs of low-income families in developing countries the field of water supply and sanitation engineering has taken a major shift in emphasis, from sophisticated piped water and sewer systems to simpler low-cost water supply and sanitary disposal of excreta. The current challenge is to find quick and cheap ways to provide satisfactory quantities of clean water, acceptable latrines and drainage, using local materials, expertise and resources. These, when combined with training in systems operation and maintenance, and with promotion and education activities designed to encourage proper use and care of facilities, should result in improved health status for millions of people.

1.02 The task of planning and implementing water and sanitation projects for low-income communities is complicated by the diversity of cultures, ethnic groups, and settlement and residence patterns found in most developing countries. This diversity calls for an understanding of the local context of water and sanitation projects; this in turn requires that people such as sociologists and anthropologists become involved early in the design stage of the project.

1.03 Engineers increasingly find themselves working in interdisciplinary teams which may include anthropologists, sociologists, health educators or a combination of these. They may be asked to hire such people to play a part in project design, implementation, monitoring or evaluation. In many cases, however, the engineer himself may be asked to gather social science data on the community to be provided with water supply and sanitation improvements, or to direct other team members untrained in methods for gathering social science data. In such cases, it is useful for the engineer to have a guide to the various types of data-gathering methods that social scientists use, to help him either in hiring and in communicating with social scientists and in planning for their activities in the project cycle, or in undertaking these activities himself in the absence of social science colleagues.

1.04 This paper is therefore intended primarily for engineers, as a source of basic information about social science methods of data gathering, and secondly for social scientists who may work with engineers, to improve their mutual communication. The orientation of this paper is toward projects for smaller communities, although most of these methods can be adapted for use in larger areas and under more severe time constraints. A number of engineers may have only limited need for such guidance because of their experience in working in other cultures and with social scientists. Some engineers are clever at rapidly extracting information about the local culture, and are acute and sensitive observers and excellent at engaging local leaders to organize community participation. On the other hand, for engineers who know little about social science data gathering and how to fit it into project development, this paper is intended to demystify that process. Given the wide range of engineers' exposure to the social sciences, it is difficult to prepare a paper which is comprehensible to the newcomer but not too superficial for more experienced workers; decisions on what to include in this paper are based on discussions between engineers and social scientists in formal settings, together with the experience of the author in working with multidisciplinary teams in the field.

1.05 Anthropological methods are emphasized here because they seem to be the appropriate ones for data-gathering on small-scale projects and in diverse cultures. The techniques for designing promotion, motivation or health education programs from the data gathered are not described here, for that is a field in itself.<sup>1/</sup> It is worth noting, however, that the modern health educator utilizes many of the data-gathering techniques described here as a basis for design.

1.06 Each project is unique; it has its own time and budget constraints, and involves different personalities. Thus, the approaches described in this paper must be adapted to suit each particular project.

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<sup>1/</sup> See TAG Technical Note No. 2: "Planning of Communication Support (Information, Motivation and Education) in Sanitation Projects and Programs" by Heli Perrett. IME activities designed to support the project are here taken together under the general category "Communication Support".

## II. SOCIO-CULTURAL DATA REQUIREMENTS

2.01 Designing low-cost water supply and sanitation projects for developing countries often requires information on several aspects of community life. This is because low-cost designs should, as far as possible:

- (a) use local materials and local expertise;
- (b) depend upon cooperation from community leaders;
- (c) meet local preferences and values; and
- (d) fit in with traditional patterns of water use and excreta disposal and associated practices or beliefs.

2.02 In addition, the design of a communication support program to promote the project and bring about behavioral change will need to take into account such matters as:

- (a) local beliefs and attitudes regarding water, sanitation and health;
- (b) traditional water use or defecation habits and excreta-handling practices; and
- (c) current levels of knowledge in the community (especially among community leaders and other influential persons) about disease transmission.

2.03 Since all knowledge, values, beliefs and practices vary according to social class, ethnic group, educational attainment, and family tradition, and since communities are rarely homogeneous, project designers also need to know something about the diversity and prevalence of the various beliefs. For example, what percentage of the people believe that infant diarrhea is caused by "the evil eye", and what percentage believe it is caused by "germs" from somewhere? Do people believe in both causes and fit them according to the situation? How are children bowel- and bladder-trained? Is there much variation in age of training or methods of training? Is it acceptable to share a latrine with persons other than members of one's own immediate family? Should a latrine be located or oriented in a particular way to be satisfactory to the user?

2.04 Since projects greatly depend upon cooperation from local leaders and from residents, project designers need some knowledge of the social and political structure of the community power groups, political factions and lines of authority. Some of the political information should be available even before initial contacts with communities are made, in order to avoid making serious errors at first contact. The planners must know how to work with the community, and how things get done.

2.05 A wealth of experience of the kinds of socio-cultural data needed already exists. Table 1 summarizes the range of socio-cultural information that may be required by low-cost water and sanitation projects.

Table 1

RANGE OF USEFUL SOCIO-CULTURAL DATA

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1. DEMOGRAPHY - S<sup>1/</sup>
  - population size, growth rate, mobility;
  - household size and composition (special features such as women heads of households, sharing, individual or family renters).
  
2. HEALTH - KI
  - major health problems in the community and relative importance of water/sanitation-related diseases;
  - seasonal variations.
  
3. OCCUPATION - KI, S
  - major occupations and approximate distribution;
  - seasonality of employment.
  
4. ORGANIZATION AND PARTICIPATION - KI
  - major local organizations and type of membership;
  - community and family level leadership in decision-making;
  - major local political or social factions which might affect participation;
  - extent of previous interest and participation in water/sanitation or other development activities;
  - important characteristics that would determine the acceptability and influence of outsiders working on projects in the area.
  
5. LEVEL OF INTEREST - KI, OE
  - evidence of popular interest in improving water supply/latrines, compared to other potential improvements in the community;
  - evidence of leadership commitment to improvements.

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1/ KEY: usual means of obtaining data:

- P - Participant-observation
- KI - Key-informant interviewing
- OE - Open-ended interviewing
- S - Survey

These methods are described in paragraphs 3.01-3.36 below.



Table 1 (continued)

6. PHYSICAL STRUCTURES - P, KI, S
  - types of dwellings, their physical condition and layout;
  - types of building materials used;
  - existing water supply and sanitation facilities;
  - space availability inside and outside dwellings.
  
7. WILLINGNESS AND ABILITY TO PAY - KI, S
  - ownership of land and house;
  - income;
  - expenditure patterns;
  - borrowing and savings customs.
  
8. WATER USE PATTERNS AND PRACTICES - P, KI
  - preferred sources of water (by purpose);
  - quantity and uses;
  - water-source-related activities (e.g., laundry, animal watering);
  - possibilities for contamination of drinking water.
  
9. DEFECATION HABITS AND ASSOCIATED PRACTICES, UNDERLYING BELIEFS, ATTITUDES - P, OE, KI
  - existing practices (noting important differences between: castes; religions; men, women and children; different age groups);
  - cleansing and ablution materials and practices (e.g., anal cleansing materials; prevalence of bathing in latrines);
  - underlying causes of above;
  - important taboos, beliefs, related to locations, sharing, etc.;
  - latrine emptying and sludge reuse practices;
  - general household cleanliness.
  
10. LOCAL TECHNOLOGY AND RESOURCE AVAILABILITY - P, KI
  - local availability of building materials;
  - availability of skilled and unskilled labor (noting seasonal variations);
  - availability of technology-related inputs (such as water for pour-flush latrines).
  
11. EDUCATION ACTIVITIES AND POTENTIAL - KI, S
  - literacy level;
  - mass media access in area;
  - coverage by field workers, volunteers;
  - ongoing formal or non-formal health education activities.

### III. METHODS FOR SOCIO-CULTURAL DATA GATHERING

3.01 Traditionally, social scientists have allowed themselves months, if not years, to study the social systems of communities. Typically, an anthropologist may live for some time in the community while gathering research data. However, the data-gathering phase for action or development projects may be as short as a few days or weeks, with reports due shortly after the fieldwork. Since these projects rarely have the luxury of time, the data-gathering methods must be adapted to these constraints.

3.02 Four basic kinds of data-gathering methods are discussed below:

- (a) participant-observation;
- (b) key-informant interviewing;
- (c) open-ended interviewing; and
- (d) surveys.

Each will be described first as it is ideally used, then as it may be used in small-scale water and sanitation projects that provide limited (but adequate) time, funds and manpower. (For larger projects, and projects with extremely limited time and budgets, see Section IV - Choice of Methodologies under Various Circumstance - for further suggestions.)

3.03 The discussion of methods begins with the qualitative methods - participant-observation, key-informant interviewing and open-ended interviewing. This is then followed by a discussion of surveys and sampling. The order of discussion follows the logical order of use. The proper design of surveys usually must be preceded by a preliminary gathering of qualitative data upon which the survey is based. Under ideal conditions, then, data-gathering moves from qualitative to quantitative (when the latter is needed, which may not be the case in every project).<sup>2/</sup>

#### Participant-Observation

3.04 Participant-observation is one of the most basic and widely used social science methods of data-gathering. The researcher establishes residence in the community to be studied and remains there weeks or months, observing and recording the activities and events of daily life; he<sup>3/</sup> is an active observer, searching out information relevant to the data

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<sup>2/</sup> At other times, they may be used almost in parallel (see Annex I for an illustration from draft Terms of Reference prepared by TAG for an urban sanitation study).

<sup>3/</sup> The use of "he" in this context does not imply any preference for a male researcher. The choice of the investigator needs to be based on a careful analysis of all the factors affecting his or her effectiveness and acceptability, and in many communities gender may be an important factor (see also discussion in para. 3.31).

needed. He asks questions, entering houses and public buildings, attending public events, and seeking out the gossip. He also participates in community life - collecting water, fishing, house-building, and attending prayer-meetings. All the while, detailed notes are kept on what is heard, seen, and felt about the subject under study. These notes, as far as possible, are categorized and filed according to topic.

3.05 Participant-observation is a basic ground-level technique that is often combined with key-informant interviewing (discussed next) but usually precedes all other kinds of data-gathering methods. It can provide the details of daily life that are necessary for designing survey questionnaires or holding group discussions.

3.06 An abbreviated form of this method, mainly observation, can be adapted to water and sanitation projects by taking an "environmental sanitation walk" through the community, visiting water sources, noting street conditions, visiting inside homes and public buildings, asking to use the latrine, to get a general feel for conditions. Questions can be asked about sanitation problems, how many times per day water is collected and so forth. A great deal of information can be collected in this way, even in a one-day visit, if the observers are sensitive, experienced, keenly observant, and do not anticipate the answers to questions. In many low-income communities, a number of key activities concerned with environmental sanitation (fetching water, defecation, bathing, dumping refuse) take place at dawn or dusk, and these are also the times when households and the community as a whole meet and discuss matters. The investigator has to time his work to cover these periods: a "9 to 5" study will miss much of the sanitary life of the community.

3.07 If time will allow, a member of the research team could take up residence in the community for a short period of time, to count the number of trips women make to collect water, to see how the water is handled and used in the course of a day, to find out about washing and toilet habits, and question people further on their practices. A week of participant-observation can yield a great deal of factual data, and a month may yield important details on interpersonal relations, authority figures, and political structure, which are essential in projects that require community participation.

3.08 The presence of a participant-observer residing in a community can also benefit the project in other ways. It is likely that government teams have come through the community before, looking around and asking questions, but without a project being undertaken. In some instances, this may have left a legacy of mild hostility towards talk of new projects. If a team member lives in the community, even for a short time, residents are likely to feel that this project is a serious one that will be carried through, and that opinions of residents really matter. In short, it serves to build rapport with the community. However, this should not be done if there is any doubt about the viability or prompt execution of the project, as it will raise hopes and expectations.

#### Key-informant Interviewing

3.09 Another classic data-gathering method is the use of "key-informants"; these are people in the area itself who are particularly

knowledgeable about certain matters. This method has been used mostly by anthropologists, usually to help reconstruct past ways of life (such as that of the American Indians prior to colonization). Key-informant interviewing is also employed by many social scientists studying living cultures, but it needs to be used with awareness of its limitations. One or two key-informants may provide only a distorted view of the society under study. Young and Young (1961) found that key-informants were most reliable in giving information about:

- (a) Physical geography and public buildings ("Is there a health unit here?" or "What are your main sources of water here?").
- (b) Institutions and institutional roles ("Do you have a latrine-builder here?").
- (c) Dates of important community events ("When did you get a well in this town?").

When it comes to more evaluative questions, such as "what is the size of the average household?" or "what percentage of people here would like to have latrines?", researchers have found that there is a much lower degree of agreement (and hence of reliability) among informants. Where it is important to have exact quantitative information, surveys are more reliable than key-informants.

3.10 Key-informants also are not particularly accurate in reporting their own daily behavior. They may be asked about their own beliefs, attitudes and values and those of the community, but their answers should be viewed as preliminary and biased information. And it almost goes without saying that fieldworkers influence what key-informants tell them by their own social characteristics and the way in which they present themselves.

3.11 Key-informant interviewing can be most useful when combined with participant-observation. The fieldworker can question and probe while residing in a community, but at the same time must remember to cross-check to ensure that he does not record the views of only one informant.

3.12 In the development of water and sanitation projects, it is inevitable that key-informant relationships will naturally develop with persons who occupy specialized positions in the society. People whose cooperation with the project will be sought - community leaders, health workers, school teachers, local engineers or well-diggers - will provide, if rapport is good, information in order to be helpful. Piecing together these various viewpoints and facts not only helps to fill data gaps, but, more importantly, cements relationships between the project team and the community.

### Open-ended Questionnaires

3.13 While participant-observation and key-informant interviewing are useful data-gathering techniques, their validity is often open to question. They are criticized because one never knows whether the interpretation of the facts by the fieldworker is credible, or whether the key-informants' statements are truly representative. Surveys have the advantage of

overcoming this problem. But, when working in an entirely new cultural or community group or planning a new kind of development program, it is usually difficult to design a meaningful structured interview schedule for conducting a large-scale survey because of lack of reliable knowledge about what is or is not relevant. In this situation open-ended interviews help to elicit information comparatively unbiased by the investigator. Data gathered from open-ended interviews can then be used to design survey questions, if a survey is deemed desirable.

3.14 One method that is especially good at removing interviewer bias and which can be administered to a number of respondents to check validity is "heuristic elicitation." This description means simply that the next question is based on the answer to the previous question. As a result, the questions are respondent-generated rather than investigator-generated, and so are likely to be more comprehensive. For example, much of our socio-cultural research in sanitation deals with latrine choice or preference. What type of latrine would residents prefer? What type of superstructure should it have? Where should it be located? Should latrines be communal or private? How much money or labor would individuals contribute to construction? These seem like simple, straightforward questions to which any investigator could get honest answers. While this may be true, they may not be all the questions about latrines one should ask in this particular culture or community. There may be other important considerations never dreamed of by project designers. Therefore, rather than designing a questionnaire that asks a person about what type of latrine he prefers, where he wants it located, etc., one way the interviewer could begin is by asking the respondent to describe all the attributes (characteristics, use-situations) of all of the places that he habitually urinates and defecates, and then how he feels about each one, relative to the other attributes and in relationship to each other. In addition to receiving information on his preferences, other salient considerations of the respondent may be brought to the attention of the investigator (such as a reciprocal relationship with a neighbor with whom he shares a latrine; the people with whom one can or can not share latrines; or preconceived ideas that latrines are always dark and dirty places).

3.15 Annex II contains sample questions and data sheets for using this type of open-ended questioning, with some hypothetical answers. It is desirable to use very large answer sheets that contain plenty of space for writing, or to allow one page for each answer. The sample questionnaires shown are condensed for illustrative purposes only.

3.16 The design of heuristic elicitation question forms must necessarily go through a series of steps. First, investigators must list the topics about which they need knowledge. Question sheets are then designed, translated into the local language, and then back-translated by a third party to check for translation errors in meaning or content (for example, occasionally translators will put all present tense verbs into past tense, or make all questions negative; errors such as these will usually be caught by back translation). Next, each prospective interviewer should pretest the questionnaire on at least two people very similar to those he will be using it on eventually. This will serve to identify problems in question interpretation, inadequate writing space, and questions which are combined

but which ought to be separated. The questionnaire should then be modified to correct any problems and pretested again.

3.17 These open-ended questionnaires should be administered to a minimum of about thirty people; this should provide an adequate range of responses. In water supply and sanitation projects, it is important to interview men, women, and children, as the project must be designed to reach each category of constituent. The wider the variety of people interviewed, the greater the range of answers that will be provided.

3.18 The last step is to analyze the results. Responses to questions can be categorized, counted and listed in tables. Local terms for people, objects, events, ideas and values can be collected and made into a glossary. In many cases, especially if time is short, the project can proceed based on this information, combined with observations and key-informant interviews. If open-ended questioning is used, key-informant interviewing can be kept to a minimum, for the former will provide more reliable data on attitudes, beliefs and values. If a large-scale survey is deemed necessary, answers from the heuristic elicitation questionnaires will provide the sub-categories for classifying answers and local linguistic terms for the structured survey form.

### Surveys

3.19 Surveys are most useful for collecting demographic data, for systematically quantifying the occurrence of observable objects or characteristics (such as latrines with broken waterseals) and for estimating prevalence of particular attitudes, beliefs and values. Surveys have several drawbacks: they usually require more time; they sometimes cost more money; and they use pre-structured answers which tend to limit exploration into cultural beliefs and values and sometimes into personal practices (such as defecation). However, when properly designed and based upon an earlier heuristic elicitation study, they can be most valuable. Some examples of how to transform the answers from open-ended questionnaires into survey questions are given in Annex II.

3.20 Surveys may be either complete (100%) or based on samples drawn from the population. Complete surveys are usually done only in small communities numbering less than 200 households, unless manpower, budget and time permit complete surveying of larger communities. Complete surveys can have social and political advantages, as well as providing the statistical confidence gained from having surveyed all households.<sup>4/</sup> Every household is introduced to the project through the survey and absolutely no household is

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<sup>4/</sup> But they can also result in the reverse - as when it is impossible to find everyone at home, or when the numbers simply do not add up. There is also the problem that they are very rarely updated: having expended all that time and effort on reaching every household the project authorities are reluctant to repeat it. When the later stages of a large project come to be implemented, after a lapse of several years, the survey statistical data may be badly in error.

left out. If only a sample of a small community is taken, those not interviewed may feel as if they were not chosen for some reason - their opinions did not count, they are not to be included in the project, or the village head wanted to exclude them. Bad feelings can result that will follow the project to its end.

3.21 In larger communities and urban areas, where 100% coverage is impractical, choosing which households to survey can be a difficult problem. The main consideration is that the sample must be representative of the "universe" of households. This leads us to consider various types of sampling.

3.22 Sampling. The first step of sampling is to define the universe from which the sample must be drawn. Defining the limits of a community is often a problem for social researchers, because communities rarely form neat packages. Homesteads can be spread along a stream, or villages may have satellite villages that are socially distinct but administratively joined, or socially joined but administratively divided. Urban communities can be even more difficult to delimit. Fortunately, most water supply and sanitation projects will be forced to decide early in the project what geographical area will be served. After those limits are set, a sample can be more easily drawn.

3.23 The type of sample considered to be most representative is the random sample. By definition, it means that each household (the household will usually be the unit of sampling) has an equal chance of being selected. The procedure is as follows. If a total enumeration of families or households already exists, then each is assigned a number from 1 to X. From a random numbers table (found in the appendix of nearly every statistics text book) one starts at any point in the table and reads the numbers in sequence; numbers between 1 and X are chosen until the required total has been reached. These are the households to be interviewed.

3.24 If no enumeration of households exists, then a random sample can be drawn using an aerial photograph. The procedure is to number every house in the area on the photograph. Numbers are then selected from a table of random numbers, and the houses corresponding to these numbers circled on the aerial photograph.

3.25 A second way a random sample can be obtained, particularly in places where no prior enumeration exists, is to designate every nth house for interviewing. It may be every third, fifth, tenth, twentieth (or other nth), depending upon what percentage of the population is to be sampled. For example, if a community is believed to have 1,000 households, the decision to interview ten percent of them should result in 100 interviews, taking every tenth house.

3.26 Communities often vary by ethnic group, social class, caste, and wealth, so that the researchers may want to draw the sample in such a way that minority components are adequately represented. This is called stratified random sampling and is done by subdividing the groups and sampling each one separately. The smaller the group being sampled, the larger will have to be the proportion of households (or people) that are sampled to give a representative sample size. A sampling ratio of 1 to 6 for a large group

may be adequate, whereas a ratio of 1 to 3 may be needed for a smaller group. Also, for most water and sanitation projects, the attitudes, beliefs and values of men, women and children need to be obtained separately, requiring a separate sampling frame for each.

3.27 Sometimes random sampling is totally impractical - perhaps local informants indicate that it would cause great suspicion. In these situations quota sampling is sometimes used, although its drawbacks are recognized because it is non-representative. Local leaders could be asked to suggest 30 respondents typical of the community - ten high-income, ten low-income, and ten middle-income. Quota sampling should be classified as an informal data-gathering method, since its reliability will not be much greater than the other qualitative methods described.

3.28 Questionnaires. Before drawing up questionnaires, project directors should have a very clear idea of the kinds of information required and a plan for the use of each piece of data. Nearly every water and sanitation project will require a household survey, if one does not already exist, to collect quantitative information on questions such as the percentage of households that already have latrines or water storage tanks.

3.29 Knowledge of the ability of households to pay for such items as latrine superstructure or monthly water charges is generally important to projects, but direct questioning on income may be too sensitive to allow this information to be obtained by direct surveys. It may be useful instead - or as a check on information obtained through questioning - to estimate household wealth or income using indicators from house structure (such as presence or absence of a metal roof, a concrete floor, or electricity) or material items owned (such as a radio, bicycle or electric fan). In rural areas, ownership of land and/or livestock will generally be good surrogate measures of wealth. However, such ownership is not easily observable and in many cultures even asking for such information is highly impolite. Guidance even about questioning should be obtained from key-informants from different economic and social classes.

3.30 Whether attitudes, beliefs, preferences, and values need to be quantified depends mainly upon the extent to which differences in these characteristics will have an important effect on project design. That needs to be determined at an early stage.<sup>5/</sup> Whenever such questions are included in the survey questionnaire, great care needs to be taken to base the design

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<sup>5/</sup> For example, it may be found that one section of the population in the project area prefers a latrine with a squat slab and including provisions for bathing, whereas another part prefers a latrine with a raised seat, and a separate ablution room. This difference in preference between the two groups, while important during implementation, may not need to be quantified during initial design unless, for example: (a) components are in short supply and have to be ordered well in advance; (b) the differences affect water usage and hence disposal technology; or (c) the differences, with their different superstructure layouts, may be difficult to accommodate in some houses and so may need special pilot designs.



of the questions on the advice of key-informants and/or the results of a heuristic elicitation study. No questionnaire should be designed by one investigator alone, because what might be considered proper phrasing in one culture can be insulting in another. Survey questionnaires must also go through the steps of pretesting described for heuristic elicitation (paras. 3.16-3.18).

3.31 Selection of Interviewers. Two important considerations in every study are whether to use male or female interviewers (or both), and whether to use people from inside or outside the community to conduct a survey or otherwise collect data. The choice of the gender of the interviewer is directly related to the respondents that have been selected. As a general rule, if information is required from both male and female respondents, then both male and female interviewers will be needed.

3.32 In the past, there has been a tendency for development projects to elicit information only from "household heads" who are presumed to be males, and therefore to use only male researchers. For water and sanitation projects this approach is often inappropriate, since women in most societies are the water-carriers and are responsible for household cleanliness and for inculcating children's attitudes to sanitation. Seeking to change the sanitation behavior of women may be a major project goal that cannot be reached without good knowledge of their attitudes, beliefs and values.

3.33 The period of participant-observation will also reveal the cultural characteristics which determine who should speak for the family at the first interview. In many patrilineal societies, the oldest male represents his family to visitors, especially at first contact. Even although he may not know certain details of household management which are under the care of women, he feels obliged to be spokesman for the family. It is desirable to observe custom in this regard in the first few days of data-gathering, until enough rapport exists to ask permission to interview women and children. Female researchers may be needed in order to accomplish this successfully. For example, in some Egyptian and Iranian villages, it is considered shameful for a man to allow his wife to be interviewed by an unknown male, but impolite to refuse the interview to the stranger. Although outside males often accomplish interviews with women at first contact, such behavior may be so detrimentally regarded as to jeopardize the future of the project. Each cultural setting needs to be evaluated to determine (a) the degree of seclusion of women; (b) who in the household presents the "public face;" and (c) whether both male and female researchers are required.

3.34 The decision whether to use people from inside or outside the community will vary by country, cultural group and personnel available within each community. There are well-known instances of employing people from within the community to collect data and to be village communication representatives; the same people may also be trained to mobilize and educate residents later on. On other programs, experience has shown that it is preferable that a person from outside the community conduct the household survey, collect other socio-cultural data, and mobilize the community to action. In one particular case, in its early years the program began by training and employing workers who were then assigned back to their home villages, but it was discovered that these "inside" people had an established status and role within their home villages that militated against their

asking personal questions or taking any kind of leadership role. "Outside" persons from another region of the country more successfully defined their new roles in communities.

3.35 Timing of the survey. This is another important consideration. The period of participant-observation will reveal the best time of day to find people at home and able to receive visitors. Other timing factors may be the agricultural cycle and religious or national holidays.

3.36 Some of the methods discussed are better than others for acquiring the information listed in Table 1. The key to the table suggests which kind of methods might usually best be used for gathering the data in each category. This not only serves as a guide as to when a method might be used, but also shows how the methods might be combined.

#### IV. CHOICE OF METHODOLOGIES UNDER VARIOUS CIRCUMSTANCES

4.01 When social science expertise is not available. Many water and sanitation projects are undertaken in regions where little or no social science expertise is available to project engineers. In other areas, sociology or anthropology may be taught as a philosophy, but students are not trained in field methods and so the professionals available may have little experience of gathering original data. However, trained social scientists are not necessarily required on all projects. Sometimes a short-term consultant can be brought in to look over and discuss the field methods to be used, but engineers or other project staff will actually collect the data. School teachers, nurses, midwives, sanitarians, agricultural extension agents or other persons with some higher-level formal education, can also be trained as observers and note-takers, or even be trained to use open-ended questionnaires and administer surveys.

4.02 When funds are limited. Limited funds for the social science component of a project will usually translate into limited numbers of personnel. When only one or two field researchers can be hired, then participant observation, key-informant interviewing and heuristic elicitation techniques should be given priority. These methods can be carried out concurrently in a relatively short period of time while the researchers live in the community. Costs can be reduced even further, if necessary, by not having actual residence in all communities, but this of course sacrifices some of the scope and value of the observational activities. If needed, a household survey could be carried out later on by other personnel when funds become available.

4.03 When time is short. Sometime projects will allow only a very short time for socio-cultural data gathering. In this situation surveys are likely to be inappropriate, because normal time requirements for preparation and analysis usually run into weeks rather than days. Observations, key-informants, and a brief questionnaire administered to a sensible quota sample (the size of this sample depending on the total population size) might prove most useful. Projects should endeavor, however, to allow adequate time for socio-cultural investigation in the preparation stage, so that findings may be taken into account in engineering design and financial arrangements. The time so spent may be a good investment in preventing disastrous project results.

4.04 Large-scale projects. The previous discussion on sampling described ways in which socio-cultural information could be collected for populations in a single small community. But what if the project is large-scale in the sense of covering a thousand villages in a region, several large areas of a city, or several small cities? The sheer number of projects would preclude doing a study of each.

4.05 Again, good sampling techniques can be applied. If the one thousand villages are not too diverse culturally, then a small sample of them can be chosen for study, depending on time, funds and manpower limitations. A random sample of five villages may be chosen for study. Or, if the one thousand villages fall into five separate categories (e.g., in terms of topography, climate, etc.), one village from each district could be randomly

selected. If the project involves large urban areas that are economically, socially, and culturally diverse, then manpower and time for a larger study must be allotted. It is important to remember that, even in the case of large-scale projects, surveys will be better when based on the preliminary findings of the qualitative techniques described. Such qualitative data gathering techniques are also important in large-scale data gathering activities for: (a) taking some of the weight off the survey (to handle information that is needed but does not have to be highly quantified); and (b) for explaining the findings of the survey.

## V. WORKING WITH SOCIAL SCIENTISTS

5.01 Many of the social science requirements now being placed on low-cost water and sanitation projects leave project planners or engineers wondering which way to turn and whom to hire. This paper has provided some information on methodologies for collection of socio-cultural information for project planning purposes. Still, when confronted with a particular project, the engineers may not be sure whom to hire, if they have funds for a professional.

5.02 There is a wide variety of social scientists, such as anthropologists, sociologists, social psychologists, political scientists, economists, communication specialists and health educators, all using slightly different methods in doing their work and with different skills. For example, most anthropologists feel comfortable working singly or with a small team, perhaps one or two field assistants, and focusing on in-depth studies of a few communities. Sociologists are usually more highly trained in statistics and are more accustomed to large-scale surveys and working with numerous assistants. They are usually more at ease with large projects than are anthropologists. Communication specialists and health educators are of course more specialized in planning of information, motivation and education activities.<sup>6/</sup> In addition to these broad differences in professional orientations, there are sub-discipline and individual variations in background and training. As social scientists in all fields acquire more experience, they tend to become more flexible and begin to use the best and most appropriate of each other's methodologies. Considerable field experience in developing countries and in a project planning context, a knowledge of a variety of methodologies and an ability to communicate well with other team members are qualities that may outweigh the professional's particular field of orientation. A working knowledge of the language or languages to be encountered in the project area is an enormous advantage, and is of course essential if no local translator can be found. The ideal, naturally, is to find someone with prior research experience in that particular geographic area and culture, who has previously worked in development planning.

5.03 In societies where there is a rigid social segregation of the sexes, it may, as noted earlier, be essential to hire a male and female team of researchers if they are going to do most of the field data collection themselves. Even in societies where the sexes are not so socially segregated, a male/female team will usually yield better information than a single individual.

5.04 Finally, if a professional is to be hired, it is important that the person be brought in at the beginning of the project, before the engineering components are designed and before design of any communication support or health education activities.

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<sup>6/</sup> These differences are discussed in more detail in Technical Note No. 2.

5.05 Engineers and social scientists need to work closely together to identify clearly the kinds of information required, the best methods to collect them, and time, personnel, and budget requirements. Social scientists can best design a study when they clearly understand the goals, technology and strategies of the project, and engineers are more likely to feel comfortable with the results after having expressed their own information needs right at the beginning and knowing how the data were collected and analyzed.

Eight-town Sanitation StudyTerms of Reference forBackground Data Collection, Analysis and Interpretation

(Excerpt)

Procedures

It is expected that the contractor, in carrying out the research, will make use of a combination of data collection techniques such as: household interviews; observation; in-depth interviews with key-informants; and collection and analysis of existing data, studies and records.

1. A preliminary review of project needs and research possibilities and problems suggests that the study would proceed along lines similar to those below:
  - (a) a sample survey of households in project towns, using an acceptable sample size and sampling frame (sample size 5% to 10% depending on town characteristics; estimated number of questions: 5);
  - (b) observation of these same households to note physical aspects (estimated number of items: 9);
  - (c) town-level collection of more qualitative data, review and interpretation of existing data, in-depth interviews with informants (possibly averaging thirty per town, depending on preliminary findings; estimated number of items: 25);
2. A preliminary list of the type of information which is expected to be relevant is attached, together with the general approach to data collection which appears appropriate. This list should be reviewed as additional data are collected about the eight project towns, and in discussion with the Sanitation Unit.
3. In addition, it is expected that the contractor will ensure the following:
  - (a) thorough pre-testing of questionnaires, and any adaptation necessary to reflect linguistic or idiomatic differences in or between the project towns;
  - (b) training of all interviewers hired, and testing of them in the field prior to releasing them for the actual data collection;
  - (c) use of professional or semi-professional staff as needed for in-depth interviews of key-informants and for other (open-ended) interviews which require greater technical competency, seniority, or experience;

- (d) use of skilled professional staff for interpretation of findings in terms of the specific operational needs of the project, in order to arrive at practical recommendations for:
- (i) Selection and Adaptation of Latrine Technology, including special conditions or preferences in project towns (e.g., in terms of existing defecation practices; ablution and cleansing materials; preferred siting and sharing arrangements and latrine design; location and orientation preferences; water, space or other constraints; etc.).
  - (ii) Definition of the Nature and Timing of People's Participation (e.g., in terms of access to ready cash; existing borrowing and savings customs; availability of labor for pit digging; willingness to undertake self-help construction; locally available materials and construction skills; etc.).
  - (iii) Emptying and Reuse of Pit Contents (e.g., in terms of access to people willing to undertake emptying activities; existing reuse practices and related taboos; etc.).
  - (iv) Prediction of the Likely Rate of Response to the Program (including probable response differences among different towns or sub-groups within towns, e.g., on the basis of past related experiences; leadership commitment; modernity; attitudes towards government programs; etc.).
  - (v) Strategy for Promotion and Education Activities Needed to Ensure that the Program Works (noting, e.g., literacy level; age distribution; population dynamics; coverage by traditional and modern media and by field workers; past relevant experience; etc.).

#### Types of Data to be Collected

4. The types of data to be collected are listed below. This list is not exhaustive: it should be modified in the light of visits to the project towns and of review of material as it is collected, and among the first tasks of the social scientist will be identification and review of factors affecting program design, acceptance or use which have not been or could not be foreseen by the technical planning staff.



5. Household interviews:

- size of household;
- primary source of income;
- existing water source and sanitary facilities;
- preference for latrine siting (inside/outside);
- renter or owner.

6. Household observation:

- location (possibly using old place names to designate sub-areas);
- house type and condition;
- space availability, inside and outside;
- check of existing water source and sanitation facilities responses;
- electricity connection (indication of income).

7. Informant interviews:

To be complemented by observation and other data collection activities. The categories shown below are not exclusive, but indicate the main uses of the data.

## (a) relating to technology choice;

- existing sanitation practices and locations;
- cleansing and ablution practices;
- religious or customary constraints affecting siting or other aspects (e.g., placing pits under roads, orientation and location of latrines).

## (b) relating to prediction of acceptance rate;

- demonstrated response to other similar development programs;
- modernity (estimated from, e.g., access to other large urban centers, or travel patterns);
- attitude towards government services and programs;
- attitude towards existing private latrines.

## (c) relating to household contribution;

- willingness to undertake self-help construction;
- nature of local borrowing and saving customs.

## (d) relating to strategy for promotion and education;

- literacy level;
- age distribution;
- population dynamics;
- media access;
- activities of field workers, voluntary groups, etc.

(e) relating to emptying and reuse;

- existence of sufficient lower caste persons to empty pits;
- willingness to undertake emptying;
- existing reuse practices.

(A) Sample Open-ended Questionnaires, and (B) Sample Survey Questions derived from them.

A1. WATER SOURCES

<p>What are all the different places for obtaining water that you know of?</p>	<p>What are the different reasons that people obtain their water in _____ (place) _____ ?</p> <p>(PROBE: Any other reasons?)</p>
<p>1. The drainage canal 2 km away.</p>	<p>1. (a) In the dry season, the hand pump dries up.</p> <p>(b) It is free. If we have to buy water it costs 3 pesos per liter from the vendor.</p>
<p>2. The hand pump in the court yard.</p>	<p>2. (a) It is convenient.</p> <p>(b) It is too salty for drinking but it is fine for washing clothes.</p>
<p>3. Collect it off the roof in the rainy season.</p>	<p>3. (a) This water is cleaner, not salty like the ground water.</p> <p>(b) It tastes good.</p>
<p>4. Buy it from a vendor.</p>	<p>4. (a) We only buy from a vendor in the dry season.</p> <p>(b) Some people say the drainage canal water is not clean and makes you sick. The vendor water comes from the towns where it is treated.</p>

A2. INFANT ILLNESSES

<p>What are the different kinds of illnesses that babies and children under the age of five experience in this village? (PROBE: Any other kind?)</p>	<p>What are the different causes of illness? _____  (PROBE: Are there any other causes?)</p>
<p>1. Coughs, colds, pneumonia.</p>	<p>1. (a) The evil eye. (b) Going out in the rain. (c) Eating too many "cold" foods.</p>
<p>2. Diarrhea.</p>	<p>2. (a) Do not know.</p>
<p>3. Worms.</p>	<p>3. (a) Eating dirt.</p>
<p>4. Fevers.</p>	<p>4. (a) The evil eye (accidental from jealousy). (b) Bewitching (purposeful).</p>

(Additional forms can be used to accommodate an unlimited number of responses.)

A.2 (Infant Illnesses: continued)

<p>What are the different possible cures for illness (1) caused (1 [a], [b], [c]) (PROBE: Any other kind?)</p>	<p>Who can administer the cure? (PROBE: Anyone else?)</p>
<p>1.(a) Have sorcerer determine who cast "the eye" on the child. (b) Keep baby warm, feed him warm foods, no milk. (c) Feed him this potion made from herbs. (d) Give him modern medicine.</p>	<p>1. (a) Local midwife. (b) Local sorcerer. (c) Nurse. (d) Doctor.</p>
<p>2. (a) Do not feed the baby anything. (b) Give baby our local medicine for diarrhea. (c) Ask the doctor for medicine.</p>	<p>2. (a) Local midwife. (b) Doctor.</p>
<p>3. (a) No cure.</p>	
<p>4. (a) Only cure is determining who bewitched baby or gave it the evil eye.</p>	<p>4. (a) Sorcerer.</p>

A.3. DEFECATION HABITS  
 (Respondent, a woman with no latrine)

Where are the different places you usually defecate? (PROBE: Any other place?)	What do you like or dislike about using each of these places?
1. In the cow shed (at night).	1. I do not like or dislike - I just go there.
2. Behind the house (at night).	2. I do not like it because somebody might pass by and see me, especially if a man sees me it is very shameful.
3. At my cousin's house who has a latrine (daytime).	3. (a) My cousin's latrine I like but it is very far from here. If I have diarrhea, which we get from time to time, I sometimes cannot make it there on time.  (b) Also, I am ashamed to use her latrine if I have diarrhea.
4. On Tuesdays and Fridays I can use the latrine of the family for whom I bake bread.	4. I also like using this latrine on the day I bake bread.

A.4. CHILD STOOL CLEAN-UP

Where are the different places that your small child (children) defecate(s)? (PROBE: Any other place?)	When your child defecates in _____ (1) do you remove it, and if so, where do you put it? (PROBE: Any other place?)
1. In the house.	1. (a) Yes, throw it in the cowshed. (b) Throw it in the street.
2. In the courtyard.	2. (a) Yes, brush it to one corner. (b) Throw it in cowshed.
3. In the street.	3. No, I just leave it.

B. Sample Survey Questions Derived from Open-ended Questions

1. What are the different places where you obtain water for drinking and cooking?

- drainage canal
- hand pump (note distance from house \_\_\_\_\_)
- roof-collection
- vendor (at what price \_\_\_\_\_)
- other (specify) \_\_\_\_\_

2. Where are the different places you usually defecate? (Not a suggested wording)

- cow shed
- behind the house
- at a relative's latrine (distance \_\_\_\_\_)
- at another person's latrine (describe relationship) \_\_\_\_\_
- 
- fields
- other (specify) \_\_\_\_\_

3. Where are the different places that your small child (children) defecate(s)?

- in the house
- in the courtyard
- in the street
- in our latrine
- other (specify) \_\_\_\_\_



B. (continued)

4. Where do you encourage your small child (children) to defecate?

- in the house
- in the courtyard
- in the street
- in our latrine
- in a neighbor/relative's latrine
- other (specify) \_\_\_\_\_

5. Do you encourage your small child (children) to use your latrine?  
(If latrine is present)

- Yes                       No

IF NOT, why not? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





