

FOR PERSONAL USE ONLY

COMMUNITY PARTICIPATION INCLUDING THE INVOLVEMENT OF WOMEN

IN

WATER SUPPLY AND SANITATION PROJECTS

A Compendium Paper prepared for the Development Assistance Committee
of the Organization for Economic Co-operation and Development
on request of
the Directorate General of Development Co-operation
of the Kingdom of the Netherlands

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Summary

A study of community participation in water and sanitation projects has been carried out at the request of the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD). This paper seeks to clarify community participation forms and methods, reconsider its value and limitations, and to indicate areas for further knowledge development through pilot projects, research or other means.

Community participation, the organized involvement of a community in a development effort, is increasingly expected to reduce project costs, increase service coverage, encourage technical and administrative flexibility, improve operation and maintenance, and stimulate broader socio-economic development. Evidence has been collected which support these expectations, although only limited amounts of data are currently available which demonstrate its cost-effectiveness. The danger is also noted that community participation may be used to absolve governments from their responsibilities, placing undue demands on local resources.

A number of salient issues concern planners who seek to build community participation components into water and sanitation projects. Ways need to be found to expand the roles of women in all project stages in that they take major responsibility for securing and using water, and in promoting household and personal hygiene. While there are numberless forms of participation, the central issue to planners is the extent to which communities will have responsibility and authority for changes in their environment. New modes of planning, training and supervision need to be developed which are consistent with community participation principles. Excessive emphasis must not be placed on participation in construction or maintenance stages at the expense of involvement in pre-planning, planning (including technical and administrative decision-making) and evaluation.

Techniques of community organization, manpower selection, training, supervision and logistical support are primary determinants of successful community participation. There is a need to make community participation information available to donor and national agency officials, and to develop suitable training programmes for planners and project implementers. Evaluation procedures need strengthening, including cost-effectiveness data. Donors must agree on compatible indicators of effectiveness for measuring inputs and effects.

Six appendices provide detail on rural water programmes in Burkina Faso and Ecuador; the rural water programme of Agua del Pueblo in Guatemala; Malawi's rural and urban water programmes, urban sanitation projects in Karachi, Pakistan, and; the Barangay water programme in The Philippines.

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1. INTRODUCTION

"We drilled a well and installed a handpump but no one maintained it and it was quickly broken".

"People were encouraged to drink water from the new protected supply but they don't seem to understand".

"Even though we paid for all of the capital costs, people are unwilling to pay for chlorination and pumping".

"We spent a lot of time building model latrines but few people built their own".

"People appreciate their new water distribution system but there are still high levels of flies, rodents, garbage; poor food handling and storage practices, and faeces from children in most compounds.

Incidence of infant diarrhoea remains as high as before".

Complaints such as these can be heard in almost any office with responsibilities for water and sanitation development. Greater community participation is often viewed as the solution to such problems but there is little agreement about the forms it can take, the costs in time and manpower, and disruption in traditional decision-making procedures.

Just as communities differ in their social, economic, political and cultural characteristics, community participation also differs. A single set of guidelines cannot be applied to all communities. This compendium paper seeks to present insights into community participation in water supply and sanitation programmes. These are based on experience over the past few decades, and are linked with examples from the field.

Community participation in this report refers to organized involvement of a community in a development effort with all major population groups being represented, as opposed to person-to-person relationships. Relationships are entered into voluntarily rather than by compulsion, with education and information being primary motivating methods.

This document has been prepared at the request of the Directorate General of Development Co-operation of the Netherlands. It is intended for donor agencies which support community-based water supply and sanitation programmes and which work together in the follow-up of the 485th meeting of the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD) held in Paris, May 13-14, 1985. The document is based on previous studies of community participation and women's involvement carried out at IRC.

The purposes of the document are:

- (1) to clarify the value, forms and methods of community participation as part of drinking water supply and sanitation improvements in rural and low-income urban areas;
- (2) to provide planners and policy-makers with a framework to review community participation components of existing and proposed programmes;
- (3) to indicate areas for further knowledge development as part of project implementation as well as through specific research.

To the extent possible, emphasis has been placed on concrete issues, including possible advantages and disadvantages of community participation in water supply and sanitation projects, a brief historical review leading to the present situation, and a fairly detailed presentation of community participation experiences and opportunities during each project phase. Finally, two special issues of particular importance to community participation are discussed: human manpower requirements, and determination of cost-effectiveness. Six case studies are included. These were selected on the basis of their addressing community participation in projects which have governmental and non-governmental support; their location in major geographic regions of the world; descriptions of rural and urban community participation; and coverage of water and sanitation changes. Reference citations are limited mainly to major studies or bibliographies which may be of interest to some readers.

2. DESIRABILITY OF COMMUNITY PARTICIPATION IN WATER SUPPLY AND SANITATION PROJECTS

Main advantages of community participation in water supply and sanitation projects put forward by White (1981) include:

- Participation reduces the costs of improved facilities;
- With participation, more people can be served;
- Participation allows for adaptation to local situations and needs;
- Participation increases the chance of proper use and continuous functioning of improved facilities;
- Participation can be a catalyst for further socio-economic development.

These advantages, which are discussed in more detail below are increasingly referred to in national and international policy documents. However, the participation strategies, field procedures and training to produce these benefits still need to be developed in many cases. Donor-supported projects provide excellent opportunities to develop community participation and health education components through field-level experiments, in particular when the various projects are co-ordinated at national level and include support for adapting institutional development and training programmes to a greater participation of the communities in local planning, maintenance, financing and evaluation.

2.1 Reduction of costs

Involvement of the community as voluntary labour in construction can reduce agency investment costs. This is especially the case with facilities where unskilled labour and local materials are a major part of the costs. Reports of the value of contributions vary from 3% to 44% of the total construction costs, with the highest values for piped gravity systems (Van Wijk, 1981, 101; White, 1981, 66). Some of these figures are based on either monitoring of labour inputs (see Ecuador and Guatemala cases) or on estimates of hours of work associated with total length of pipe installed (Malawi case). Less is known about agency costs made for adaptations and guidance for effective community labour participation. The few data available indicate that these costs take about one-third of the savings. Because women are most directly concerned with water supply and sanitation, they have greatly stimulated community support for construction and maintenance. A pre-condition is that they have been adequately informed about the project and have been organized to participate (Van Wijk, 1985, 63, 66).

Because of the rapidly increasing number of improved facilities over wide areas, recurrent costs are a growing problem. Many agencies demand that these costs are fully or partly met by the community. Communities may also become directly responsible for the operation, maintenance and management of their water supply and sanitation system. In this way, part of the burden of providing basic services is transferred from the agency to the community. However, a number of issues are associated with such transfers of responsibility. The priorities of families and of the community in general may differ from those of the development

agency. Real or perceived benefits may also differ. Demands for labour and cash to build and maintain new facilities may compete with household needs for food, fuel and other basic necessities. Nevertheless, in many water-short areas, households spend considerable amounts of money to purchase water from vendors. Hopefully, these households will also benefit from lower medical costs associated with treatment of diarrhoea and other water and sanitation related diseases. Where there are considerable differences in incomes, contributions should be proportional to the capacities and benefits of the various user groups. Requiring equal contributions can constitute an extra burden for those who are in a weaker position, and may have negative consequences for family well-being. Households which use much extra water for income-generating purposes should thus be charged accordingly. Requiring equal contributions from male and female household members also increase existing inequalities in cases where the women have to use their own, smaller incomes for these payments.

2.2 Wider coverage

With the capital saved through participation in construction and maintenance, more funds are available to serve those without improved water supply and sanitation. Moreover, payment in the form of free labour can reduce the investment cost individual families may be required to make for private facilities, such as yard, group and house connections and sanitary latrines. Thus more families can participate. This is one reason for the success of the Latin American water supply programme in concentrated rural settlements (See Guatemala and Ecuador cases).

Nevertheless, many communities cannot be served because of high costs, low technical feasibility or lack of payment capacities. More people can, however, be served by assisting them to improve their traditional system with local means (self-reliant development), as is done by primary health care programmes, women's organizations and programmes, community development programmes, centres for appropriate technology, and non-governmental organizations (Pakistan, Orangi Pilot Project case is an example).

2.3 Adaptations to Local situations and needs

Almost invariably villagers, including both men and women, have a detailed knowledge of their physical and social environment. This knowledge can contribute to the quality and long-term results of the project. Participation is used to avoid design mistakes, for example, in selecting water sources that are unreliable or culturally unacceptable (Malawi), and for working out acceptable sharing of water sources (Guatemala).

Participation in design and in planning of local maintenance and financing also allows for adaptations to the various needs and circumstances of user categories. Design and siting of water points and latrines have to be adapted to user preferences to ensure general use for all needs in the various seasons, to reduce time and energy expenditure, and to allow equitable access to facilities. For example, in Malawi washing facilities at hand pump wells had to be adapted so that the women would use them. Also, some payment systems are more realistic than others. For example, in agricultural communities payment can be made after the harvest rather than on a monthly basis (Burkina Faso).

Community needs and expectations may be unrealistic or incompatible with engineering requirements, or may result from unresolved community conflicts. Therefore, in many cases a best-fitting compromise will need to be worked out.

2.4 Increased chance of use and maintenance

Without full community participation, it is likely that some groups will not have access to improved facilities, or will not take advantage of them. This may result in continued high rates of death and disability from diarrhoea and from communicable diseases. Similarly, full support of improved sanitation and hygienic practices is essential for the investment in water supplies to have a significant health impact. The activities are time-consuming and should not be put off until after water improvements have been made.

In addition, involvement in those aspects of the project which concern the community directly creates a sense of ownership and responsibility which cannot be engendered by the mere performance of physical tasks in a project perceived of as belonging exclusively to the government or the executing agency. A sense of pride and ownership is not however, sufficient to maintain facilities; periodic training, monitoring procurement of spare parts, and other infrastructural arrangements should also be assured. (Cases of the Philippines, Burkina Faso, Malawi, Ecuador).

Studies carried out by the OECD in Mexico and several African countries indicate that community participation contributes to better functioning of facilities. In Mexico, 94 participatory water projects were compared with 46 projects without participation. Of those without community participation, 49% of the systems were out of order. Of those with participation, non-functioning varied from 15% to 38%, depending on the degree of involvement. Unfortunately, no data were collected on participation in planning and on the involvement of women. The study in seven African countries indicated shorter duration of breakdown periods for water supply systems especially where communities were involved in project initiation, local planning and design. A management committee whether established or newly formed, and clearly defined responsibilities for maintenance also contributed to shorter periods of breakdown. However, some caution in interpretation of these data is necessary because of the limited sample size and lack of monitoring systems (Miller, 1979, 56 and 124-129).

2.5 Catalyst for further development

Local decision-making and strengthening of local analytical, technical and organizational capacities also stimulates further development. Increased self-reliance and possibly also increased water availability, time and energy for women can stimulate community activities to meet other felt needs. Such developments are more likely where non-governmental organizations are involved which can work intensively in a relatively small area for a longer period. The African Medical and Research Foundation, a Kenyan NGO involved in preventive health projects, for example, follows up other water-related felt needs. This follow-up often results in the establishment of vegetable gardens and tree nurseries at the wells and in construction of low energy stoves in the homes. These approaches are not necessarily limited to small-scale programmes. In Guatemala and Colombia, (but not Ecuador) communities are

encouraged to continue their own community improvements with surpluses from water funds. In Colombia, there were 1,630 community-managed rural water supply schemes in 1981. The programme keeps records of follow-up activities in these communities.

In addition to being a stimulus for further development through their participatory approach, water and sanitation programmes can also benefit directly from income generated from follow-up projects. In particular, additional income generated and controlled by women is spent on basic needs for their families, such as food, soap, household utensils and payment of water fees (Van Wijk, 1985, 100-102). Such expenditure can contribute to the continued functioning and general use of improved water supplies and the improvement of hygiene conditions and practices. However, effects on further community development and household incomes have not been effectively tested in any of the larger programmes.

2.6 Limitations and constraints

There is considerable danger in assuming that any or all of these benefits will automatically accrue by providing opportunities for community participation. Firstly, there is a possibility that community participation will be used to absolve governments from their responsibilities. Also, community participation is often seen as a threat of political change and a shifting of power from the centre to the community. In practice, it can give more power to local elites and increase the distance between the haves and have nots. Further, community participation can place undue demands on local communities for scarce human and material resources, create unrealistic expectations and foster disillusionment, thus inhibiting future co-operation (Martin, 1983).

Moreover, the decision of a governmental agency or voluntary organization to encourage community participation will not automatically yield desired results. Agency officials must have the understanding, skills, trained manpower, physical resources, bureaucratic flexibility, time allowances, patience and imagination necessary to work effectively with local communities. Changing traditional paternalistic attitudes of working for rather than with the community may not come easily, especially after initial stages of pilot or field-testing projects which are often carried out by a dedicated team. Constant and high-level political support is also essential. Table 1 offers a set of indicators of national readiness for community participation.

Table 1. Indicators of national readiness to support community participation

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1. Acceptance by national government of basic literature and philosophy of community participation.
 2. Media releases supporting community participation.
 3. Governmental publications supporting community participation.
 4. Permission for support of demonstration projects involving community participation.
 5. Political party approval of community participation.
 6. Inclusion of community participation in national health and economic policy.
 7. Organizational/agency readiness to integrate activities and respond to community requests.
 8. Revision of educational curriculum to promote community participation.
 9. Legislation action or executive orders (statutes, rules, regulations) regarding community participation.
 10. Willingness/capability to decentralize planning and decision-making.
 11. Budgetary/fiscal allocations or incentives for community participation.
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Source: Adapted from Sarn J.(1980). Workshop on planning for community participation in primary health care programmes, Washington, D.C., USA, APHA, 6 November.

At the community level, willingness and ability to participate in water supply and sanitation projects will also be limited by previous development efforts, its own decision-making and communications patterns, organizational and leadership systems, inclusion of women and more needy groups in its organizations, resource availability over various phases of a project, the strength of traditional water and sanitation practices, and the perceived advantages of new options. Nevertheless, in spite of these many inherent limitations and practical constraints, community participation continues to offer solutions to urgent needs of water supply and sanitation projects.

3. PRESENT INVOLVEMENT OF THE COMMUNITY

3.1 Development of community participation

Insights into community participation have been accumulated largely from the fields of community development and primary health care in developing countries. As early as 1962, a cross-cultural study of barriers to technical change found that villagers rejected improvements introduced by outsiders not because of any strange attitudes and beliefs but because these facilities had specific disadvantages for them (Foster, 1973). At the same time several countries started national rural water and sanitation programmes to serve large numbers of villages in relatively short periods. These communities were often prepared to care for daily operations and management (Pineo, 1976).

The first detailed studies on community participation, patterns of water use, and the impact of water supply and sanitation improvements on human health and social development were carried out in the 1970s. This led some to call for increased motivation and education of the users, so that they would more readily accept and use what was provided to them and improve hygiene practices. Others called especially for greater influence of the community on the design and maintenance of their improved facilities, to ensure that the projects are better adapted to the needs and circumstances of the users, so that change of hygiene practices is easier (White et al., 1985).

During the 1980s attention has been drawn to the special roles of women in water supply and sanitation projects. Women are most likely to draw and carry water, to use water for a variety of domestic purposes, and to take responsibility for sanitary and hygienic practices, including toilet training of children and food handling. As main users and initiators of changes in hygiene practices, they can play a valuable role in health education on water and hygiene. As traditional managers of water and waste in their households and neighbourhoods and the main beneficiaries of improved facilities, they can promote and contribute to community-based maintenance and management (Elmendorf and Isely, 1981).

Donor agencies and national governments have become very interested in the potential of community participation, particularly to solve problems of maintenance and financing of recurrent costs. However, community participation and the involvement of women are remedies for all problems nor a universal means to realize all objectives of drinking water supply and sanitation programmes. What community participation can do depends on how it is defined, how well it is organized and supported, how the people are approached, and whether the agencies involved are prepared to experiment with innovative approaches, and then to apply them on a larger scale.

3.2 Level of community involvement

Organized community participation can assume many different forms, therefore it is convenient to establish broad categories. A key element concerns power and control. The degree of community power and control will depend on a number of factors, including: types of technology and levels of local development; willingness to give communities not only

responsibilities but also rights; sufficient information and extension services for communities to make wise choices; and the development of institutional capacities at all levels to deal with a more participatory system of community water supply and sanitation improvements. Generally speaking, projects may be fully controlled by funding or implementing agencies, have joint or mutual decision-making powers, or be fully community controlled. This applies to projects in both rural and low-income areas. Table 2 indicates what type of community participation can be expected to be emphasized in projects with low or high levels of community control.

Table 2. Levels of community involvement

Low level of community decision-making	1. Community is asked to contribute labour, locally available material, land for wells, etc. for agency project.
↓	2. Agency delegates certain management and bookkeeping responsibilities; trains local craftsmen in basic water system maintenance and repairs.
	3. Options are discussed during each phase of project but final decision-making power remains with agency.
	4. Options are discussed and decisions made jointly. Compromises help to adjust project to realities of both agency and community.
	5. Final authority and decision-making rest with community. Agency technical support and advice is provided on request of the community organization.
High level of community decision-making	

3.2.1 Voluntary contribution of labour and materials

Projects which tend to be controlled by official or funding agencies commonly expect local men to contribute voluntary labour and sometimes locally available materials such as sand and gravel, and to take responsibility for minor repairs and maintenance. Sanitation, hygiene education and working with women and informal community leaders are usually not emphasized because more skilled and intensive community organization would be required over longer periods. The major forms of communication are instruction and advice from the top down, particularly in more extreme examples of agency-controlled projects. Local individuals or community representatives are less likely to be involved in planning or designing project components, or in their evaluation. Meetings with villagers serve to inform officials of local resources and to facilitate local involvement in construction, maintenance, management and cost-recovery. Ultimate decision-making remains with officials.

While this form of relationship may appear to be efficient, it does not by itself lead to optimal use and maintenance. Free labour and local materials, including cash contributions to capital and recurrent costs also entail costs of their own. Time-lags and inferior of work often follow. More importantly, such contributions do not stimulate a sense of local ownership and responsibility, and can too easily be carried out without essential educational components. User information through instruction rather than sound education could be expected. On the other hand, community involvement in planning and organizing voluntary labour can make it more effective. Closer consultation with community representatives in the participatory rural water supply projects in Mexico already mentioned resulted in a 21% increase in community participation in local construction. In the Waning'ombe Pilot Rural Sanitation Project in Tanzania, ventilated improved pit latrines are built by trained village craftsmen. Meanwhile the other villagers do the work on their farms. Piped water systems were successfully installed in low-income urban areas in Lusaka, Zambia, with the voluntary labour organized by the local branches of the national party, including the women's sections. These efforts led to a cost-savings of some 30%, but did not expand to community-based maintenance. The cases of Ecuador, Malawi and Guatemala further illustrate well-organized community participation for the construction of piped water systems with private and communal facilities.

3.2.2 Delegation of management and maintenance

In more limited forms of official community relationships, one or more community members may be recruited and trained for technical tasks associated with maintenance, repair and management. They are usually not paid and form the lowest tier of a government organizational structure. Alternatively, funding agencies may simply turn over new systems to the local authorities. Neither of these approaches succeed very often. Few communities are able to run water systems on their own without on-going technical and material support. The enthusiasm or sense of responsibility which initially motivates volunteers fades unless there is on-going support. The need for periodic support for community-based management is also apparent in urban areas, as illustrated by the case of the communal water point project in Malawi.

In cases reported to be more successful, such as Guatemala, the EDF programme in Burkina Faso and the Philippines, community maintenance, financing and financial management is part of community decision-making and training. Operators, mechanics and sometimes members of the administrative organization are paid by the community for work actually done and are responsible to the community. In Malawi, female volunteer hand pump caretakers have been trained because they are less mobile than village men and are motivated to keep the pumps in working order. The water agencies in these programmes also pay much attention to training community workers and organizations in technical and administrative skills, and continue periodic support and monitoring. However, to some extent these services are facilitated by the ongoing donor-supported construction projects.

3.2.3 Joint discussion, agency decisions

Project agencies consult communities to adapt local designs to the needs and capacities of the various user groups. This facilitates the

making of appropriate arrangements to involve the community in construction, maintenance and financing, and should enable everyone or almost everyone to use only improved water supplies and sanitation facilities.

The extent of local decision-making varies. In Ecuador the community organization decides on certain local administrative issues but is subject to the approval of the water agency on major points, such as rate setting. Other programmes give a wider range of authority to local organizations but always within a defined legal framework. Agency decision-making has certain disadvantages, such as less flexibility, increased local dependency and bureaucratic delays. But the possibility to interfere in community decisions also gives the project a means to protect the interests of the weaker population groups. In the Malawi rural water programmes for example, when a headman wants a water point in front of his house, although it is not a suitable position for others in the community, the project staff can overrule the location on technical grounds.

3.2.4 Joint discussion: mutual decisions

In general a consensus between the parties is preferable to unilateral decisions. Two types of programmes may be distinguished in a mutual decision-making approach. In the first type the community is offered a standardized package of technology, level of service, and community participation procedures. Within this package the community is involved in a number of decisions, such as siting of water points, formation of user groups, and size and form of compensation of community workers. Final decisions are based on mutual agreement between the two parties. The approach is followed by a number of large-scale programmes which offer one particular type of technology, such as hand pumps or piped gravity systems. Examples are the rural water supply programmes in Malawi, Guatemala and Ecuador.

In the second approach, a range of technologies and service levels is considered together with the community on the basis of technical feasibility and the needs, expectations and payment capacities of the users. Choices may include the upgrading of traditional sources or the construction of protected wells with pulleys or hand pumps, as in Guinea Bissau (Hofkes and Visscher, 1982). Other programmes described in the case studies such as the EDF project in Burkina Faso and the Barangay Water Programme in the Philippines give a choice between different types of wells or between hand pumps and piped systems with different service levels. In the same way, communities may also be given a choice of local financing systems to match their particular circumstances. This has become part of the national policy on community participation in rural water supply projects in Burkina Faso and is being developed in the Malawian programme for peri-urban communities.

3.2.5 Agency participation in community projects

In the other extreme, there are some examples of water and sanitation projects in which decisions are fully controlled by local community organizations, or in which full self-reliance is an overt goal of the project. The project "belongs" to the community. Outsiders are invited for technical consultations or to secure the resources needed, but decisions about what is to be done, where, when and how are taken by

the community. Project Piaxtla in Mexico and the case of Orangi Pilot Project in Karachi, Pakistan are examples of such projects. Other cases of self-reliant projects exist in low-income urban areas in Latin America. Local residents have formed their own associations which buy water in bulk from the water company and distribute it through a self-financed and managed network to their members. As far as known these cases have not yet been documented and analyzed.

Agencies can participate in community projects for water supply and sanitation improvements on several levels. Inputs may be limited to mobilization and education, for example the radio-listening campaigns in Tanzania and Botswana, and the mass campaigns for pest control and sanitation in China and Vietnam. Their nature makes them particularly suitable for large-scale physical improvements in a short concentrated period of time, such as building of household latrines using mainly local materials and expertise, and environmental clean-ups. Actual use and change of hygiene habits takes a longer period of co-operation with the community.

In most cases, community projects need technical and financial assistance from outside agencies to achieve significant changes in water supply and sanitation. In some countries more developed communities can hire the necessary expertise and equipment and implement their own projects. Technical advice from a specialist government agency on how to set up and administer a simple piped water supply or sanitation project has sometimes sufficed to stimulate local councils to organize their own improvements, for example, in the Sameul Undong programme in South Korea. This has enabled governments to focus rural water supply programmes on less developed communities in order to serve more people within the available budget. In Thailand, government sanitarians have taught village craftsmen to cast water-seal latrine slabs. Eventually demand increased to such an extent that shopkeepers started to stock and sell slabs in large numbers.

Thus emphasis is shifting from one-sided mobilization and instruction in construction and maintenance to increased community consultation, education and self-reliant development. The last approach in particular deserves strengthening to ensure some improvements for all instead of all improvements for some.

4. STRENGTHENING COMMUNITY PARTICIPATION

Communities can be involved in different stages of the project cycle. Table 3 is a summary of the present situation in the majority of water supply and sanitation projects.

Table 3. Level of community participation in project stages

Project stage	Levels of community participation	
	Water supply	Sanitation
1. Pre-planning	low	low
2. Planning		
1. Data collection, needs assessment	low	low
2. Identify technical options	low	low
3. Community organization	medium	low
4. Select goals, systems, technology	low	low
5. Decide on timetable	low	low
6. Plan financing	low	low
7. Determine manpower needs + resources	medium	low
8. Identify local hygiene education needs and strategies	low	low
3. Implementation		
1. Designs	medium	low
2. Construction	high	medium
3. Information, education, communication	low	low
4. Maintenance	medium	medium
5. Evaluation	low	low

Actual involvement in water projects tends to be rather low, and even lower in sanitation projects. Reasons for this are two-fold. First, sanitation usually lags behind water development and may only receive token attention. It is often viewed as the responsibility of individual households, thus requiring little organized community involvement. There are a few instances of nationwide sanitation efforts with strong community participation over the five project stages shown in Table 3. Thailand is one such country although experience has not been fully reported. More recently, the Government of Pakistan, with support from UNICEF, is stimulating both official and community support for improved sanitation in rural areas (IRC, 1984,68). One of the cases also describes mobilizing people for sanitation improvements in Pakistani squatter communities.

Although approaches to be taken depend on local situations, and no blueprint can be provided, suggestions can be given for each of the project stages.

4.1 Pre-planning stage

In this important stage, it must first be decided how and to what degree the communities can participate. Critical questions are:

- Is there a legal framework which permits community participation?
- What has been the background of community participation in the country and particularly in the region of the project?
- What is the likely level of "social readiness" for the changes envisaged and for the desired level of community support?
- What governmental and non-governmental organizations are concerned with water supply and sanitation, community participation and the involvement of women?
- Who can assist in preliminary designs of community participation?
- What is the variation in the country or region in terms of cultural traditions, language, felt need for improved water supply and sanitation?
- Will technological solutions influence levels of acceptance and community participation?
- What is the political climate which supports or constrains community participation? (See Table 1)
- How can existing social or developmental structures be best used for the new project?

It may be necessary to promote new community organizations if existing organizations are not suitable (see Table 1). A starting point is to review existing programmes and assess the functioning and use of facilities under present forms of community participation, including the involvement of women.

Some data may be available, while other information will have to be obtained. Socio-economic research in the pre-planning and project development stages may include:

1. Preliminary studies to facilitate general programme planning. Such studies are carried out mainly in large-scale programmes with little knowledge of community water and sanitation conditions and views. The results assist agencies in selecting communities with a high need and desire for improvements, and to build on existing community participation potential. These studies are costly in time, money and manpower, and their actual need should be carefully assessed.
2. Baseline studies to permit evaluation of the impact of the programme on water and sanitation conditions and practices, the roles of women, self-reliant community development etc. Preferably the same study is carried out in a comparable "control" community or area, where no water and sanitation improvements or health education are carried out, to make sure that any effects are caused by the project and not by more general development.
3. Action research to develop and test community participation procedures for application on a larger scale. Field-testing is carried out in selected pilot communities, which preferably represent the various socio-economic and ecological conditions in the programme area. Periodic follow-up takes place as the programme develops. This type of study helps the project agencies and governments to develop general procedures for community participation and to test their cost-effectiveness under actual field conditions.

4.2 Planning stage

4.2.1 Data collection and need assessment

Other studies are carried out as part of the community participation process itself. In most Latin American programmes, including those in Guatemala and Ecuador, socio-economic surveys, also called community studies, are carried out in addition to discussions with local leaders and general community meetings in order to determine the community's general support for the project. In Guatemala, and also in Peru and Paraguay, teachers and other community members take an active part in those studies. House-to-house visits, as in the Baldia project in Pakistan, ensures that project information reaches the women, and are used to get their views and support. Interviewers are often women who are trained to get individual opinions of the wives as well as husbands.

Local participation in community studies can also stimulate community self-analysis and self-improvements. For example, community studies can be carried out to identify remaining risks for the transmission of water and sanitation related diseases and to plan for their elimination through local hygiene education and action programmes.

Often however community interests in water supply or sanitation improvements are assessed in more informal ways, such as the general meetings organized in Malawi and the smaller neighbourhood meetings in more hierarchical societies, as done in the Orangi Pilot Project, Pakistan.

Participatory research is also carried out for more general needs assessment. In Thailand, villagers are taught to carry out their own needs assessment and establish their own priorities in terms of health services, agricultural services, education improvements, security, and water. These wishes are translated into government-supported programmes through local, sub-district and district development committees which work with representatives of developmental ministries.

In general, however, communities cannot choose whether they want a water project or some other type of development project, but get a water project allocated by the government. Alternatively they can request improved water supplies as part of an existing water supply programme. The community's request and a formal or informal assessment of the local socio-economic capacities give the agency an indication of the felt need for and socio-economic feasibility of the project. This approach has the frequent disadvantage that high-need communities with a low technical or economic feasibility for standard technology (such as a piped water supply) are totally excluded (Burkina Faso, The Philippines, Guatemala). These programmes offer a range of technologies and/or service levels to the communities, and assist them to make a well-reasoned choice on the most suitable option in their particular circumstances. When no direct options are suitable for a particular community or population group, water programmes might liaise with programmes for community development or appropriate technology to assist these populations in making improvements with local means.

4.2.2 Community organization

During initial meetings, information is usually discussed on project objectives and possible community choices, and a local organization for community participation in the project is established.

Review of over 800 documents on the roles and realities of women's involvement has shown that special steps are often needed to encourage them to attend and speak out, such as discussing the importance of their participation with the male leaders and holding meetings at times and places suitable for women. In areas where joint participation of women is less likely, separate women's meetings can be organized through local leaders and women organizations. This is less feasible in cultures where women live in seclusion, so that home visits by female intermediaries or meetings with small groups of women in each neighbourhood become necessary (van Wijk, 1985).

More detailed planning is usually done with a smaller community organization, and the outcome put to a general assembly for community agreement. Consultations may be with a suitable existing organization, an expanded or newly established organization. This body should be composed in such a way that it has both adequate authority and represents the interests of the whole community (White, 1981, 40). Some leaders, though formally representing only certain parties or groups have become real community leaders accepted by all, so that decisions made with them do not lead to opposition and conflict. In other cases, a specially formed or elected committee will be needed in which all community sections, including women and the poor, are represented. Where this is impossible, the agency can contact the unrepresented sections informally and protect their interests, so that the goal of safe and sufficient water for all will be achieved.

Women's participation in committees can be facilitated by making them responsible for activities related to women's traditional work, such as user communication and hygiene, and by giving them training and initial support. When women are office bearers, they are often treasurer of the committees for which they may need special training (van Wijk, 1985, 72). Sometimes involving women in public organizations and functions is difficult, and women have been asked to form separate women's committees. These committees have been effective when women acknowledged their common interests, have united and received project support.

Community organization is listed as an activity in Table 3 because water and sanitation project workers will often not find pre-existing health or development committees with which they can work. In an extensive review of community development, Coombs (1980) concluded that organized community involvement is not only essential to bringing about lasting behavioural changes but is more complicated to organize than assumed. Programmes which require uses of public and private land, sharing of pumped water, material and labour support for constructing public facilities, and systematic collection of funds will depend largely on well-organized community support. Therefore agencies should allot sufficient resources for developing effective community organizations.

4.3 Implementation stage

4.3.1 Design

Felt needs of the users and local knowledge must be taken into account to ensure that the new facilities meet these needs. Both men and women should be involved in design choices important for the success of the project, such as choice of technology (Burkina Faso, The Philippines), level of service (Guatemala, The Philippines), source selection and siting of taps (Guatemala, Malawi), design of washing facilities (Malawi), and type of local financing (Burkina Faso, Malawi).

4.3.2 Construction

Programmes which use voluntary labour as more than just physical inputs distinguish themselves by making voluntary labour part of the agreement with the community, and carefully plan their use with community representatives. Households expect direct benefits from their labour. In Malawi public taps or hand pumps are acceptable, while in Ecuador and Guatemala, 80% of the people are prepared to work for house connections, or group connections where private connections are too expensive. Most of these households could never have afforded a tap had they had to pay the installation cost in cash instead of labour. In Thailand, hand pumps and public taps were not acceptable because people wanted private facilities. Therefore, most piped water supplies have now been converted to systems with private taps. Other communities are encouraged to build private rainwater collection tanks for drinking purposes.

How community members are involved in voluntary labour is also related to the broader socio-cultural setting. In areas with a strong community spirit, labour for communal facilities can frequently be organized as a collective effort without rigid control of who has turned up for work on a particular day (Malawi, Pakistan). The authority of the local leaders and the social control of the people themselves are sufficient guarantee that duties are met and conflicts avoided. In most of the Latin American programmes, an adult member of each user household works one fixed day in a fixed work team until all voluntary work has been done and the private or shared taps are installed. This system ensures a degree of control which is particularly necessary in schemes located in larger and more commercially oriented communities.

4.3.3 Communication and participation for local hygiene improvements

Table 3 also lists information, education and communications (IEC) in the project implementation phase although these activities are clearly essential during all phases. A key component is communication about hygiene practices and the changes necessary to achieve maximal effect of the project for community health. Water and sanitation workers are asking people to change some of their most basic and intimate practices: what they drink, where they defaecate, how they toilet-train their children, how they prepare and store food, how they dispose of waste water and solid wastes. To have any hope of success, educational strategies will have to be carefully designed, and based on an intimate knowledge of and understanding for local beliefs and practices. These strategies will need to be carefully tested and skillfully implemented.

Past failures, which far outnumber successes, were probably influenced by the lack of organized committees or other support groups, dependence on one-way didactic communications to individuals rather than joint discussions and decision-making, use of poorly designed or inappropriate educational materials, and a lack of valid information about local culture, language, and beliefs. Community residents may not perceive that there is a health problem associated with water and sanitation, and thus may not feel that they are in jeopardy. Even when people realize that change is desirable, they may feel that the disadvantages are too great. Sometimes they lack the means or know-how to make particular changes but often there is practical local knowledge that could be applied more generally. More often than not, making significant changes will require support from other family members and from peer groups. Successful health education and community organization cannot be separated.

4.4. Maintenance stage

Relationship between types of systems, levels of socio-economic development and training inputs seems to have great influence on the effective functioning of improved water supplies. Pumped systems with full house connections, as in some Philippine communities, demand higher levels of socio-economic development and training than the open wells built in some villages of Burkina Faso. A community with few technical resources and situated in an isolated and inaccessible part of the country may be better off with improved open wells or with wells with hand pumps and manholes than with boreholes or a complex piped water system. Communities themselves know their local situations and are best suited to make well reasoned choices from the various options.

For each type of technology, the division of maintenance tasks between agency and community has to be considered and implications drawn for agency support. In doing so the role of the agency will in many cases change from direct implementation to becoming a technical and administrative support system of local governments and water organizations.

Monitoring of water system performance and use is a valuable tool in developing effective community participation. More intensive support from agency promoters, gave better system performance in Yatenga, Burkina Faso, and a more general use of safe water in Guinea Bissau.

It is important to involve women in maintenance because they are the traditional water managers and most directly affected by poor functioning. Individual studies in Guinea Bissau, Togo, India and Bangladesh show good performance of female hand pump caretakers, but so far reliable quantitative evaluations have not been carried out (van Wijk, 1985, 70). There are also indications that maintenance and use of water points benefit from greater involvement of women in community management decisions. Management of water supplies and local hygiene improvements is, in most cases, carried out by community water or health committees or by elected boards of users' associations (e.g. in Guatemala, Ecuador, Malawi, the Philippines). With hand pumps and shared taps there may also be waterpoint committees which determine and collect rates from user groups, as in Burkina Faso, and urban water projects in Malawi. It is not yet clear when this more decentralized management is more effective than overall community committees.

Training in administrative skills is very important and is an element which frequently needs strengthening in large-scale programmes. It is getting much attention in the construction phase of the Malawi rural programmes, and for operation and maintenance in the Philippines and Burkina Faso.

4.5 Evaluation stage

Joint involvement of project staff and community representatives in evaluating water systems operations, hygienic conditions and local sanitation practices has been a valuable learning experience in Guinea Bissau. Their findings determined what improvements the community would make by itself, and where agency support was still needed. Agencies can use this approach not only to achieve project goals but to also improve their general procedures. Community participation in local evaluation usually takes the form of discussion of results and ensuing action with the community or its water or health committee. In a few cases community members also have a say in what aspects will be evaluated, and are involved in data collection and analysis. Women should, in any case, be involved in interviews with other women and observe local practices concerning women's work.

5. SPECIAL ISSUES IN COMMUNITY PARTICIPATION

5.1 Human resource development and use

The most important determinants of successful community participation are likely to be related to manpower selection, training, supervision and logistic support. Decisions will be needed regarding categories of workers who have specific responsibilities for community participation. Three categories of manpower can be distinguished: (1) technical workers from water and sanitation agencies who have organizational and promotional responsibilities; (2) non-technical promoters working within this agencies, and (3) non-technical promoters from other developmental agencies such as health or agriculture. In Malawi and Guatemala, the first model is used. Here field staff have been recruited for their communication skills and interests, and are trained in both technical and social skills. In the Agua del Pueblo Project, training in health education skills is part of the basic pre-service training. In other countries in Latin America and elsewhere, water supply and sanitation programmes often establish separate promotion units with specific responsibilities for community participation. In Tanzania, projects are carried out jointly by field staff from the water, health and community development departments.

Which model is most cost-effective or applicable will be probably influenced by the government structure and "organizational culture". The Malawian piped water programme, for example, originated in the Ministry of Community Development and Social Services. This may have facilitated the combination of technical and social activities, and time spent on social organization by technical staff. A promotion service within the technical department combines separate specialization with ease of co-ordination. But projects originally financed by donors may have problems when national agencies take over financing. Some countries have therefore preferred to divide technical, health education and community organization tasks between existing services. This reduces costs but makes co-ordination of fieldwork more difficult.

In most programmes there has been a tendency to select men for community participation work. However, there are distinct advantages in also having female workers because they can easily communicate with local women and help organize their involvement in the project. In Guinea Bissau, a male/female team is used. In Zimbabwe and Zambia special efforts are made to draw upon the services of female community organization workers in various departments. In countries where women lead secluded lives, such as Pakistan, female workers are essential for the involvement of women.

A number of countries have developed field manuals for water supply and sanitation workers which also cover community participation. One of the earliest was published by the Thailand Ministry of Public Health in 1957 and has provided a solid foundation for all subsequent community health organization. In Colombia, Ecuador and Malawi manuals have helped to integrate community participation procedures into government systems, and are useful in training programmes. A guide on developing training programmes for community motivators was recently prepared for WHO (White and Gordon, 1985).

Training strategies to prepare workers for community participation responsibilities will strongly influence their performance in the field. Lecturing, which has a place in more technical training, is often inappropriate for training in community participation skills. Trainee motivation, functional communication skills, and specialized community organization and education skills are all required. Competency-based training is more appropriate than traditional subject-oriented or fact-oriented training. Special attention must be paid to the relationships between agencies which employ field workers for community participation, institutions responsible for their training, and local institutions which have direct responsibility for project implementation. A key issue is to assure that training content is consistent with the skills needed in the field. These issues are addressed especially in Malawi, Guatemala and Philippines case studies.

The number of person-days required to promote community participation and health education will vary greatly according to local conditions and resources. While some guidelines can be developed on the basis of prior experiences with community participation in the country, keeping track of manpower requirements during beginning months of the project will be important, assuming flexibility in project planning and budgets.

5.2 Cost-Effectiveness of Community Participation

Current attention to community participation is likely to generate more information on the costs of this programme element. At present, details are limited on: number of staff related to project size; geographic coverage and socio-cultural characteristics of the project area; on average number and length of community visits, and inputs for transport, training and materials. Lack of uniformity on other agency inputs in maintenance systems and indicators of system effectiveness also limit comparability of projects. Most available data describe wells and hand pump programmes in West and East Africa.

In a hand pump programme in Guinea Bissau, the costs of promoting community participation was 17% of the total programme cost. This includes the programme development costs by expatriate staff. Each team of promoters covered about 16 villages. A study on the effectiveness of the programme showed good results for preventive maintenance and well-site hygiene. It also showed that continued educational follow-up and feedback to the technical teams for further adaptations to village needs contributes to the exclusive use of hand pump water by almost all households. No further studies have been carried out to determine long-term effects on functioning and use.

In a pilot project in Tanzania the participation programme was developed by national staff, with a limited input from external support staff. The cost of the participation programme was 7.1%, assuming an average village population of 1500 and a total of six hand pumps per village. In this pilot project, each community development worker was responsible for 12 villages, and made four extended visits to each project village. Increased community participation resulted in a better distribution of water points for more general use, and community initiatives to improve functioning and local hygiene conditions and

practices, particularly in school sanitation. Legalization of community participation in planning and maintenance and establishment of a maintenance, support programmes are now under development.

The West African Development Bank reserves about 13% of the investment cost for "animation/sensibilization", hygiene education and maintenance training for ten well and hand pump programmes. Results are encouraging, especially in Burkina Faso (see case) and Benin. In Benin, central government maintenance was replaced by a system of trained village mechanics who pay about four visits to each pump per year. Village maintenance funds cover payment of mechanics, spare parts and depreciation of the pump, decreasing costs of maintenance by 18%. Moreover it is likely that, with more intensive maintenance, pumps will function longer than their ten-year design life and will be out-of-order for shorter periods. Previously, one-third of the pumps were out of order at any given time, 30% for longer than ten months (BOAD, 1985).

A study of the costs of community participation inputs in piped water supply systems in North and South West Cameroon gives an estimated cost of community participation inputs of 7%. This input has resulted in a contribution of the communities to construction in cash and kind of 17.8%. Experiences with maintenance are less positive, mainly because there is no formally agreed authority or framework for local participation which incorporates experience with voluntary maintenance in part of the schemes (Müller, 1978, Franklin, 1979).

In conclusion it can be said that more and better data are required to define the budget reservations for an adequate community participation programme. At present it seems that the reservation of 5% of the total investment costs advocated at the European Donor Consultation (WHO/BMZ, 1985, p.55) is on the low side, especially for low-cost technologies such as hand pumps and gravity water supplies. Lower cost systems with public water points are likely to demand a relatively greater effort to achieve adequate use and financing than private yard or house connections.

6. CONCLUSIONS

1. Need for community participation. There is overwhelming evidence that water and sanitation projects often fail to achieve their longer-term goals of reliable functioning, general use and progressive development. This paper generally confirms the theory that community participation based on joint planning and decision-making helps to serve more people with reliable and acceptable improvements in water supply and sanitation within the available budgets, and can be a catalyst for further community development. It is therefore recommended that project plans and evaluation proposals include a community participation component, and that future project proposals are reviewed in this light.
2. Development of models. The paper also shows that with adequate political readiness and sufficient support community participation models can be developed which are applicable in large-scale water supply and sanitation programmes. Measuring social and political readiness is suggested for various types and intensities of community participation. Although achieving desired levels of community participation is sometimes very complex, it appears to be cost-effective and to promote better use of facilities.
3. Information exchange. Better use can be made of existing community participation experiences with improved documentation and dissemination of results. Assessing results of varying levels of community participation in ongoing water and sanitation programmes in a particular country or region can promote acceptance and coordination among program planners and donors.
4. Planning and decision-making. Prior to the Alma Ata declaration and the proclamation of the International Drinking Water Supply and Sanitation Decade, it was generally assumed that a level of community participation equivalent to compliance with official requests would be sufficient. The present trend is toward joint decision-making between agency and community organization representatives in charge of water supply or health. Clearly defined rights and responsibilities and training are integral parts of this communal approach to improved water supply and sanitation.
5. Maintenance and use. Concern for and maintenance of water supply and sanitation systems is often associated with convenience and a pride of ownership which comes from early involvement in decision-making, rather than with considerations of health protection. Organized community action also puts peer pressure on residents to accept new technologies and behavioural patterns.
6. Involvement of women. An impressive amount of documents from the field shows that women can play important roles in achieving project success through participation in local planning, design and management. Nevertheless, they continue to have only limited involvement in large-scale programmes. Participation of women should be systematically encouraged by indicating how and for what purposes they will be involved in each phase of the project, and by allocating required resources for project staff, research, training and financing.

7. Community financing. More flexible approaches stressing community choice, affordability of options and locally appropriate financing systems are emerging to enable communities to meet the recurrent costs of improved water supply and sanitation. In some programmes communities also contribute to capital costs through long-term loans. Actual terms depend on local socio-economic conditions and may vary from zero to 100% repayment over a period of 20 years.
8. Project cycle. There is a danger in inviting local participation too late in the project planning and implementation process. Even during the pre-planning at the local level, organized community support in data collection and problem identification can influence future relationships.
9. Planning of community participation. The professional quality planning required for technical aspects of water supply and sanitation projects is also needed with respect to community participation. Social scientists have played valuable roles in vital data collection, in anticipating potential pitfalls, in developing and testing community participation procedures as part of new or ongoing projects, and in training field workers, including preparation of very useful field manuals.
10. Organizational demands and financing. Community organization and education processes leading to high and appropriate levels of community participation demand sufficient time, specially trained manpower and enough flexibility to cope with varying socio-economic and cultural circumstances. Each project plan should indicate how it will allow for this process, and earmark reasonable and separate funds for this purpose. Experiences of present field-programmes indicate that reservations of 5% of the total project budget for community participation and hygiene education, as recommended by a recent donor meeting, are on the low side for low-cost technology projects like hand-pumps, wells and piped gravity systems.
11. Change of attitudes. Achieving higher levels of community participation sometimes requires painful changes within agencies, requiring greater flexibility, sensitivity, and less paternalism; as well as within communities which have come to expect governments to take care of them.
12. Water and sanitation for all. Marginal groups, such as dispersed populations and people in low-income urban areas are too often excluded from large-scale programmes. Programmes which foster community self-improvements in water supply and sanitation, such as carried out by many non-governmental organizations, offer an excellent potential to serve these groups. They deserve greater and more co-ordinated support.
13. Urban areas. Community participation for improved water supply and sanitation in urban areas has received little attention so far in spite of the realities of rapid urbanization, inadequacy of present types of services and high risks to public health. There is a need for a systematic and extensive review of current approaches to develop greater insight in effective community participation for various types of low-income urban areas.

14. Research. There is still a lack of systematic operational research on community participation in water supply and sanitation programmes. Reliable data are needed describing the cost-effectiveness of various aspects of community participation, including various levels of local involvement in planning, forms of decision making, innovative educational and motivational techniques, manpower training and secondary benefits such as health and agricultural developments. To increase comparability of findings, donors should agree on a common definition of indicators used in such studies.

15. Follow-up of recommendations. A number of steps need to be taken to implement the above recommendations. Information about community participation and education should be made available in appropriate forms to officials in donor and national agencies with responsibilities for project planning and implementation. There is a need to generate additional information and promote the exchange of existing information about community participation. Finally, donor agencies with responsibilities for the support of water supply and sanitation programmes need to clarify their policies and co-ordinate them to ensure strong and consistent community participation activities.

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BURKINA FASO: RURAL WATER PROGRAMME

1. Background and history

Burkina Faso (formerly Upper Volta) is in the semi-arid Sahel zone of West Africa, where there is little surface water. Incomes are low and the national budget insufficient for any type of rural water supply requiring fuel for pumping. The main technologies used are therefore protected dug wells, and wells (dug, drilled or boreholes) with hand pumps. Levels of service are now 10 litre per capita per day for all, or one waterpoint for 500 people. By 1990, it is to be 25 l/c/d.

The villagers have traditionally dug their own wells, often to considerable depths. Given that water for domestic purposes and for cattle is a strongly felt need in villages with inadequate supplies, motivation is high to co-operate in water projects and to keep systems in working order.

Burkina Faso, with its combination of a strong need and being one of the world's poorest countries, has attracted sizeable donor funds for construction of water supplies. Donors are mounting different programmes in different regions, each to some extent introducing their own hand pumps and forms of community participation. References are made to projects supported by the European Development Fund (EDF), the Netherlands Government, USAID and the West African Development Bank (BOAD). These programmes are co-ordinated by the Ministry of Water through its Directorate of Wells, Boreholes and Hydrology. This Ministry is formulating national policies and procedures in the light of the experiences of the regional programmes.

2. The terms of participation

The EDF project, which is probably the furthest advanced in involving the community, offers a choice between a protected dug well and a drilled borehole with hand pump. The well demands more communal labour (700 man-days for an average type, or about 60% of total construction cost), has a greater risk of contamination but is cheaper to maintain, needs no pump replacement; has a high water storage capacity, and does not become unuseable when its pump breaks down. The borehole demands much less labour and local material for construction of the apron, drainage channel and animal drinking trough. But the community becomes responsible for all maintenance and according to the national policy must establish a fund to pay for spare parts, the fees of the mechanic to repair the pumps, and the replacement of the pump after an estimated period of 10 years.

3. How people are involvedIn planning and decision-making

Village selection is done on worst-first grounds, which is also reflected in the two-stage decade targets (first 10 l/c/d, then 25). Meetings often results in lively discussions, for example between villagers stressing water quality and villagers with other concerns. Normally a decision is made after two open meetings with programme

staff. Debate is reported to guarantee a firmer village commitment towards subsequent pump maintenance. In this programme, only 24% of the villages have opted for a dug well and 76% for a borehole and hand pump. It is clear from the available information whether dug wells are also provided with hand pumps, and whether the choice is made entirely by programme staff on technical grounds or if villagers are also consulted.

It is national policy that villagers decide democratically whether they will collect maintenance funds through regular monthly collection or collection at harvest time, a sum from each adult or from each family, an equal amount for all, or according to socio-economic status. A committee is formed for fund collection and management of each water point. The tasks of involving villagers, helping them to form the committee, and training committee members, is taken by a brigade d'animation, or promotion team, which is a specialized cadre within each programme.

In construction

Construction work only takes place in the dry season, which is the slack agricultural season. There is no difficulty in ensuring sufficient voluntary workers. Participation in construction is also seen as a means to promote a sense of responsibility for the water supply. Thus, in the EDF programme the villagers must complete the well cover and surroundings, before the hand pump is sent to the president of the water point committee. The pump is installed with the assistance of a local mechanic.

In operation and maintenance

The national system being adopted is that committees will themselves be responsible. Some members are trained for maintenance and minor repairs, and a local mechanic is given 6-days training to do more difficult repairs in a group of villages. The water point committee maintains a fund in the bank and pays the mechanic for work actually done. A mechanic may look after 9-10 pumps, but will spend most of his time repairing private items such as motorcycles. Installing pumps gives mechanics credibility for pump repairs in the eyes of villagers. EDF experience is that local mechanics perform their jobs well and charge reasonable fees to the committees. Committee members receive four days of training in management, and caretakers get a two-day course in maintenance and hygiene.

In hygiene education and sanitation

After introducing the project and assisting in community organization, promotional teams pay another visit to discuss community health. Themes of keeping the water point clean and the water safe to drink are discussed with the users, and practical methods of ensuring cleanliness are pursued with water point committees.

4. Involvement of women

In the Dutch-supported project, the water point committee almost invariably includes at least one woman. This may also be the case in other programmes but is not stipulated. Women in the EDF programme do separate construction jobs, such as laying the stone floor around the water point.

A study by a female social scientist carried out in the southwestern part of the country showed that women are traditionally actively involved in maintenance and management of wells. They do the daily maintenance and site management, and call on the male village council when the work is beyond their capabilities. If no action is taken, they will discreetly bring pressure on the council. Recently in another area, a women's group also took the initiative in building a small dam, organizing the work, and doing most of the construction themselves. Presumably, the hand pump programmes will benefit from similar female support in keeping the new facilities in working order and serving domestic needs, especially when programmes have succeeded in uniting the women and strengthening their organization. However, this has not been documented.

5. Results

The overriding necessity in Burkina Faso is to ensure community self-reliance in maintenance and repair. Government maintenance and replacement of the present 5000 pumps would be 70 times the total 1979 budget for rural water supply. The open wells installed solve this problem, but they have a higher risk of contamination. Thus, there should be increased follow-up to determine the effects of hygiene education on water handling.

In Yatenga, where villagers are given a choice, the majority prefer borehole wells with hand pumps. Maintenance systems work well where concentrated attention has been paid to their establishment, when there are adequate discussions and decisions made with or by the villagers, and where the local people have been given responsibility from an early stage. The average annual maintenance cost of 200 pumps of 1-3 years of age in the EDF programme was CFA 17,000, while committees had built up an average fund of CFA 50,000. In areas testing more intensive community participation approaches, all repairs had been completed within a week, even when expensive spare parts were needed. Availability of spare parts is the main problem and the Ministry of Water is addressing the question of ensuring adequate stocks in regional capitals. Participation also reduced the total annual recurrent cost by 18% in the programme supported by the West African Development Bank.

However, maintenance systems are not working well in other cases. It remains to be seen how well they will perform when construction projects end, when informal support is reduced, and when pumps become older and require more expensive repairs and replacement.

On the whole, community participation approaches seem well-suited to reducing costs and thereby maximizing numbers of hand pumps. It is a matter for speculation whether the formation of water point committees and the collection of funds will lead to other developments. Most programmes have focussed narrowly on water, with health education limited and mainly concerned with keeping water clean. Community participation has been less successful in the USAID project, which has trained a health leader in each project community, and a village health worker for each five communities. It is reported that there have been problems with the implementation of this programme, perhaps because of divergent approaches.

The felt needs of people are probably best met in the EDF programmes which offers a choice in technology. National guidelines seem oriented mainly to explaining technical constraints. However EDF found these constraints less limiting than assumed, and a reasoned community choice was found to be possible in almost all cases. By the same token, the EDF programme is likely to foster the greatest community problem-solving capacity.

Pumps, as compared with open wells, inevitably require greater dependence on outsiders, if only for spare parts. The system adopted in Burkina Faso has reduced this dependence to a minimum.

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ECUADOR: RURAL WATER PROGRAMME

1. Background and history

The Ecuadorian Institute for Sanitary Works (IEOS) established a participatory rural piped water supply programme in 1974, using the Colombian programme as a model. Trained promoters assist technical staffs to mobilize and organize communities and to give assistance and exercise control in technical and financial matters after system are completed. A large number of hand pumps have also been installed by the same agency but without using participatory methods.

The mainland of Ecuador has three very distinct geographical zones: a coastal zone with groundwater as the main water source; Andean mountain zone, the sierra, which contains most of the population centres and is well-watered; and a tropical rain forest zone with a low and dispersed population.

Most of the piped systems have been built in the sierra where the majority of communities are American Indian in origin. This area formed part of the Inca empire and still has traditionally strong community feelings. This has undoubtedly been a valuable asset for promoting community participatory.

2. The terms of participation

Ecuador follows Latin American piped community water supply patterns. Each household contributes an equal share of labour in construction, and in return receives a yard connection without having to pay an installation fee. The community then manages the system through a water board, with agency supervision and following agency regulations. The Water Board collects water fees from each household at a rate sufficient to pay for all recurrent expenditures. Where connections are metered, rates are flat for the first 10 m³. Households can get a two year loan to finance meter installation. All remaining capital costs are met by the government through municipalities. Households which decide to join after installation have to pay an entrance fee at twice the cost of the original labour contribution. Generally, 85-90% of families participate. Houses that are too dispersed for yard connections can get group connections, with each household contributing equally. Costs are relatively low as generally no pumping is required. Where pumping is required, as in the coastal zone, alternatives, including water sold from tankers, are scarce or costly.

Board fees pay for operators, water treatment (all water is chlorinated, and some communities also have slow-sand filters), and administrative costs. They cover office rent, and a small part-time fee for the board's secretary and treasurer. A reserve fund is established for repairs and extension. Boards are not permitted to use or lend surplus income from water fees for community development activities other than water and sanitation, which could lead to abuse.

A great advantage of participatory projects is that operators are members of the community who are responsible to their own people, have other sources of income, can be employed for a few hours per day or week, and are not bound by minimum wage legislation.

3. How people are involved

In planning and decision-making

After preliminary project allocation, and a technical and socio-economic feasibility study, various public meetings are held at area and community levels. It is usually not difficult to get positive responses as most capital costs are subsidized. A committee of five members is elected or an existing organization built upon to organize participation and it becomes the water board after construction. Usually about two further public meetings are held during construction to take into account community observations and opinions.

General policy is laid down by the agency but water boards make local decisions such as rates (in agreement with the provincial office), how to handle households which are more than threemonths behind in rate payments, and charging single entrance fees to households with valid reasons for not having participated in construction.

In construction

The number of workdays per participating household varies with the physical difficulties of the scheme, ranging from as little as 20 to as many as 300 days. Communal work is done on one weekday, generally on Saturday, following customs dating back to Inca times. Agency supervisors keeps records of attendance and may give out tickets of attendance which can be exchanged or traded between households. Otherwise, there is a roster for attendance on different days of the week. In both cases, each household sends one person, 5 hours for heavy work, 8 hours for lighter jobs.

In operation and maintenance

Direct responsibility for operation and maintenance is with the community and its water board. The agency and its promotion team act as support system, visiting the communities periodically or when there are major problems, and maintaining a monitoring system. The boards have to organize a general users' assembly twice a year and give a financial account once a year. Board members are elected for a period of 2 years and can be re-elected for a second term.

In health education and sanitation

A sanitary education programme is carried out by the same agency which has as its main goal the construction of latrines by the community. Information was not found describing how community members and water boards are involved in hygiene education and sanitation.

4. Involvement of women

Women in the sierra are traditionally involved in physical work, including communal work; on the coast this is less common. Involvement in physical work does not necessarily imply involvement in decision-making: there is no agency policy on involvement of women as community board members. When they are members of water boards women are often secretaries or treasurers, reflecting their interest in part-time work and in community service to a programme in which they have a personal interest. In Ecuador, women are not currently chosen as operators. Only one promoter was a woman on the agency's staff as of 1982,

5. Results

By July 1980, 131 water and 5 sewerage systems had been completed, serving 110 000 people. It is likely that more systems were built than would have been possible without a participatory approach. Well-organized communal labour reduced construction costs by 17.5% and there were no reports of undue delays or other difficulties, apart from the impossibility of getting communal labour in 12 of the coastal communities. The actual value is likely to be considerably higher, because of wage inflation. All 131 communities had working water boards and, with periodic agency support visits, they are performing a satisfactory job. As of 1980, all systems were in the black, with funds available for repairs and maintenance. This is in sharp contrast to municipal systems where the rates often do not cover recurrent costs. Individual or group connections are highly convenient, making it likely that they are used for all purposes throughout the year. No studies have been carried out to determine success in meeting health goals. A 1979 report, mentions that latrine coverage is about 80% in communities where programmes have been completed.

Full subsidy of remaining capital costs, relatively expensive designs and the limited state budget during the current economic crisis, means that construction will not be sufficient to achieve 100% coverage in the near future. There is a strong case for recovering part of the capital costs through the water tariffs, adapted to the economic capacities of individual communities. A further option would be joint decision-making on type of technology and levels of service based on local water needs and capacities for repayment, including possibilities for upgrading along with local economic growth in the community.

It seems unlikely that water projects will stimulate other development initiatives in the communities, particularly as water boards are not allowed to use the water funds for expanded development. With other countries allowing such uses, there is room for research to study these limitations. Payments by users are small and service levels meet community needs, as far as can be judged without evaluative studies. There has been no emphasis on building upon local knowledge, or developing community skills apart from those required in managing the water supply. Dependence on the outsider water agency will remain, but is not regarded as a drawback.

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GUATEMALA: AGUA DEL PUEBLO RURAL WATER PROGRAMME

1. Background and history

Agua del Pueblo ("People's Water") is a voluntary agency whose participatory methods are designed to be appropriate for use on a large scale by government water and sanitation agencies. Indeed, perhaps the main element in Agua del Pueblo's work has been its training programme which is also offered to government agency staff. It is hoped that the participatory methods taught will influence government programmes in the whole region. Some trainees have come from other countries and one course was carried out in El Salvador.

Agua del Pueblo is a political, founded in 1972 by a small group of young U.S. citizens associated with voluntary work in Guatemala, with the aim of handing over activities to Guatemalans as soon as possible. This has been done, and the organization now has Guatemalan's as director, administrator, engineer and technician-promoters.

The central concept of Agua del Pueblo's training programme is the combination of activities of technician and promoter. Noting that a gap existed between plumbers with insufficient training to design water supplies, and engineers unwilling to work in rural areas on tasks they consider beneath them, the founders saw a need for an intermediate level technician in rural water supplies who could also involve communities in projects.

At first the training was informal. Selected persons with secondary education and good organizational abilities were given on-the-job training in technical aspects, such as spring-flow measurement, water quality testing, surveying, hydraulic design and construction management. At the same time trainees improved their organizational skills by working with local committees and with people who were often distrustful at first, given Guatemalan social and ethnic divisions. It soon became clear that this type of technician could be very effective, and a regular 6-month course was established. The first 16 students graduated in 1981. Thirteen of them had already been trained as rural health technicians, who, in Guatemala, supervise the village health workers.

2. The terms of participation

Trained technician-promoters work in Agua del Pueblo's own rural water supply programme as well as in Ministry of Health, USAID, and the Behrhorst Clinic Foundation programmes. It is the general aim of Agua del Pueblo that communities should be as self-reliant as possible. To this end, it provides communities with information, and assists in technical tasks. Communities are asked to provide voluntary labour for construction, pays 10-15% of estimated capital costs as individual financial contributions by households joining the scheme. At least 80% of the households need to do so for projects to go ahead. A high percentage of remaining capital costs is then advanced to the community

as a soft loan, to be repaid over 8-12 years through household water fees. In addition, these fees also cover recurrent costs. Low-cost technology (piped gravity systems and hydraulic rams, without water treatment) facilitates a high degree of self-reliance in these schemes. Loan repayments generate a revolving fund to supplement donations for new constructions.

3. How people are involved

In planning and decision-making

When the community decides that it will work with Agua del Pueblo, it commits itself to the conditions described above. In return, Agua del Pueblo offers the community a choice between a water system standposts group connections, and a more expensive system with household connections. The community is involved maximally in planning the physical and organizational details of the water projects. Usually, there needs to be considerable discussion about water source, including the question of acquisition for community use. With help of technician-promoter, the water committee is also responsible for planning the project, for carrying out a census, making a map to be used in construction, and for organizing the latrine campaign. The site of the waterpoints is decided by the committee, with advice from the project. Final agreement is reached after extensive discussion, which greatly contributes to simplified sharing and payment by groups of neighbours. This process takes time, during which Agua del Pueblo staff visits other communities which have made project requests.

In construction

Like other Latin American agencies, Agua del Pueblo keeping records to ensure that each user household contributes a fair share of the voluntary labour. Although a member of the actual family is preferred, to foster a spirit of collective work, communities themselves may also allow families to hire labour instead. Seasonal migration and agricultural activities are taken into account in planning this work.

The technician-promoter supervises construction and trains people for in semi-skilled tasks, such as joining of pipes. A local craftsman is contracted, for construction of masonry tanks and similar skilled work. He works with community labour under supervision of the technician-promoter.

In operation and maintenance

Technician-promoters also train water committees in financial management and in arranging for maintenance. The committee collects the water rates, remits the loan repayment and employs a local resident (or two part-time) for maintenance. Technician-promoter train two men in each community. If larger numbers are needed for repairs, it is up to committees to offer payment or call for voluntary labour.

In hygiene education and sanitation

Hygiene education is a prominent part of the work carried out by the technician-promoter during planning and construction phases of a water

project, and there is emphasis on building of latrines by each household. Installation of a latrine by each household is another condition for the water project to go ahead.

4. Involvement of women

Perhaps the only aspect in which the agency has lagged behind in developments is the involvement of women. Women are seldom members of the water committees, and are perceived mainly as a target group for hygiene education. In the siting of the standposts they may have some informal influence. A very limited number have been trained as technician-promoters.

5. Results

The overall objective of Agua del Pueblo at its founding was "to promote the integrated development of rural communities", with water projects as an entry point. This has coloured the approach used in many respects. For example, there is emphasis on health education and latrine construction, on stimulating water committees to get involved in other development projects for the community, and on using any surplus from the water rates for these purposes. Agua del Pueblo also co-operates with organizations involved in other aspects of community development. It, and four other voluntary organizations have formed a National Federation for Rural Drinking Water Supply and Sanitation. This includes the Central American Centre for Alternative Technology (CEMAT), with whom Agua del Pueblo is trying out the double vault composting latrine.

Between 1972 and 1981, Agua del Pueblo has helped build 49 rural piped water supplies. As of 1980, a project for a village of 450 cost an average of \$ 35,000, or about \$ 78 per capita. Of this, an average of 14.2% is voluntary labour by the user-households, and 10-15% represents their initial contribution in cash. The proportion of capital cost finally contributed by the community varied from 50% to 80% in past projects and is set at 60% in current plans, including a 36% loan repayment.

All completed water systems are operational. Encouragement of progressive development initiatives has led to other community projects: schools, roads, bridges, irrigation systems and afforestation. But the main contribution of Agua del Pueblo has been the training of multidisciplinary project fieldworkers. Engineers need only to spend one-sixth of the time on a given project that the technician-promoter does, and therefore can supervise a much larger number of projects at the same time. There has been a problem, however, of integrating trained technician-promoters into existing government programmes, such as those of the Ministry of Health, from which many of the trainees come, and making full use of their training.

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MALAWI: RURAL AND URBAN WATER PROGRAMMES

1. Background and history

Malawi's programmes for piped gravity systems and handpump-wells show how principles of community participation apply to different technical situations. Malawi has certain advantages for participatory water projects. It is densely populated and well-watered and therefore costs can be low. There are no great differences between rich and poor in the villages, which means that the same level of service is acceptable to all. Traditional chiefs and headmen look after the general interests of their villages and their influence is recognized by modern political and administrative leaders. Therefore communities are generally undivided, and co-operation between them is easy to obtain within the boundaries of the chiefdoms. This is important in the larger piped projects.

The gravity piped water supplies programme began on a small scale in the Ministry of Community Development and Social Work in 1968, and its manpower and methods of working have been built up gradually with field experience. Since building its first smaller scheme serving about 5,000 people, some schemes have been built providing for over 50,000 people from a single water source.

Because no more than one-third of the population can be served by gravity systems, the remainder will be provided with adequate and safe water from dug and drilled hand pump wells. Since 1982, this programme has been organized for 100% coverage in areas of about 60,000 people. One hand pump or tap is provided for 125 people (one borehole for 250 people) at an average distance of 500 metres. Both programmes have developed field manuals, which are used also for training and integrating lessons learned.

Since 1981, and with the assistance of WHO, UNDP and UNCDF, Malawi also carries out a programme of metered communal water points to serve low-income groups in 48 urban centres.

Community participation in this programme has been further developed since 1985 by a demonstration project with financial assistance from the Netherlands government and in co-operation with IRC.

2. The terms of participation

As much as possible is done with voluntary village labour in rural programmes in construction, maintenance and repair. From the beginning it is made clear that water systems are for the communities not for the government, and that the quality of the system will also depend on the care taken by communities to build and maintain them. In this process, the community is guided and trained by technical assistants, they are recruited locally for their social skills and trained on the job in community mobilization and education. No financial contribution is required and up until now water has been provided free of charge. However, some communities have decided to pay their community workers. Communities also pay for new taps and are responsible for repairing

aprons and leaks in pvc pipe. In urban projects, low-income households are offered paid group connections as extensions of the inner city water supply. They do not have to contribute to construction.

3. How people are involved

In planning and decision-making

Insufficient community support for the second pilot project showed that it is essential to stimulate a genuine demand for a participatory project rather than merely responding to requests from local leaders for government help. Showing what participation means and what it can achieve in a neighbouring community was found to be very effective. When there is popular demand and a project has been found to be technically feasible, local leaders are asked to organize a public meeting in areas covered by a project. The project supervisor explains what is required in terms of committees and self-help labour and both leaders and people are asked whether they accept the commitment. Leaders are taken on visits to committees of current nearby projects. An overall project committee is set up by the village headmen and other respected local leaders, or elected in a general meeting.

Communities are consulted in selecting water sources and they determine where water points are to be located but project staff will intervene when there are technical problems or undue personal advantage. A community can request expansion when the number of users per waterpoint surpasses design criteria.

In urban projects, technical and socio-economic feasibility studies are carried out. Local leaders are asked to invite families to form tap-user groups. Each group forms a tap committee and sign a contract with the water agency. Tap sites are decided on jointly with the agency, using criteria of accessibility, equity and social control.

In construction

Rural projects give much attention to guiding and supervising community labour, explaining labour standards and assisting committees in community organization and work control. Through periodic meetings with field-staff and monitoring of completed projects, weaknesses in technical and participatory procedures are identified and resolved. On large piped projects, 150 km of trenches may be dug in a period of 6 months. Voluntary labour is organized by a hierarchy of a main project committee and section, branch and village committees. Daily work-schemes and the respected authority of traditional leaders are essential elements. All villages are involved in digging the main line trench. A letter is sent to each village to remind it of its obligations. Social pressure from widespread publicity helps to correct villages with a poor attendance. Other village work, such as harvesting is taken into account when planning a project.

Geological conditions determine whether wells are dug or drilled, villagers clear the sites, make access road and bricks for lining and apron, do the digging, keep a 500 litre tank full of water for drilling, make food and guard the equipment at night.

Participation in construction is not sought from urban households receiving regular or group connections.

In operation and maintenance

Each village has a water committee, and each water point has its own tap or pump committee. Its members carry out small repairs, see that water-points are kept clean and regulations on use observed, and organize village labour for larger jobs. A villager selected by the committee is trained during construction to repair pvc pipes.

A new maintenance system was introduced in 1983 for the groundwater programme. It consists of: a well committee responsible for pump operation and surroundings; a voluntary village caretaker who is given half a day's training in preventive maintenance; and, for each group of 10-20 villages, a repair team (two mechanics) who are given one day's training in doing basic repairs and keeping a logbook. Large repairs, periodic surveillance of the intake, pipelines, taps and wells, and record keeping are done by project assistants who are appointed as maintenance assistants. Given support from the committees, one assistant suffices for piped systems serving approximately 40,000 people or for 150-200 pumps. Government district teams have been proposed for each 1,000 pumps and regional teams 8,000 pumps.

In hygiene education and sanitation

Originally, hygiene education was limited to a talk at tap ceremonies. In 1982, a training programme for participatory hygiene education was started with support from USAID in the piped rural programme. Since then, policy makers, supervisors and trainers have also been trained. In villages, health committees are elected or revived, often being the same as water committees. They are trained in environmental health, local problem analysis and community organization and education to eliminate disease transmission risks. Sanitation campaigns during cholera epidemics have brought latrine coverage to about 50%. An important goal of participatory health education programmes is to raise coverage and maintenance of latrines to 90%.

The urban programme has recently established an interministerial team to link hygiene education and sanitation with the communal water point programme.

4. Involvement of women

Although, ultimately, decisions are made by men, women are the greatest motivators and supporters of the projects. They may be members of all committees but are best represented on tap/pump committees. However, they are more involved in physical tasks than in decision-making. They have, for example, no formal say in establishing user regulations. Laundry facility designs at the pumps were changed following comments from the women that designs were not practical. Women participate a great deal in construction work. Teams of one man and one woman dig a length of three meters in some areas, and provide water and food. In some schemes women have done 70% of the labour. Women are recommended

and increasingly trained as voluntary caretakers in that, they are less mobile than village men, and are motivated to keep pumps in working order. Resistance from some headmen was overcome when they learned that other headmen were sending women trainees. At the first training course, women came to watch the training of the pump mechanics so that they could make sure that repairs were done properly. At present there are no women field workers in the programme. A suggestion has been made to train homecraft workers or nurses to take part in training the village health committees, in which women are well represented.

5. Results

Participatory methods were initially developed to economize on financial costs to government but the "partnership approach" has also been very helpful in creating community commitment to take care of their water system. Total coverage is likely to be achieved within a few more years. Calculations of the value of voluntary labour in pipe laying in the rural areas showed savings of 11%, but total savings may be as much as 30%. Communities contributed 66% of the estimated annual maintenance cost in Mulanje (460,000 users). The remainder of the recurrent costs is met mainly from donor-supported construction projects. It has been recommended that the government gradually phase recurrent costs into their annual budget, and investigate other community financing options. Training needs to be strengthened for committees in effective group-work and in administration, leadership and simple accounting.

Evaluation of performance in nine rural schemes showed that the taps deliver water for 90% of the year or more. Several studies confirm almost universal use (about 95%) of tapwater for at least drinking and cooking, even when taps are slightly further away. Water handling in the homes seems to vary more. A study on infant diarrhoea showed that the risk of diarrhoea is reduced 3-8 times with piped water, latrines, and breast-feeding, and 2-5 times when supplementary food is given. Children from families where only tapwater or latrines are used as a single intervention had the same risk as children in families where no water or sanitation improvements are available.

The urban water points are, in general, operating satisfactorily but recently some problems have occurred with rate payments and group functioning. Social scientist attached to the Water Department for the demonstration project found the main course to be a lack of skilled assistance for community organization, a tendency of staff and tap committees to impose regulations rather than making reasoned joint decisions, and a need to train committees in administration and financial management. A series of training seminars for field-staff, central water councils, tap committees and users is being developed to strengthen the programme on these points. Groups will be encouraged to vary flat rates to achieve more general use of safe water by the lowest income groups.

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PAKISTAN: KARACHI URBAN SANITATION PROGRAMME

1. Background and history

One-third of the more than 6 million people of Karachi, Pakistan, live in one of the 362 katchi abadis or "temporary settlements". Many of them are Muslim refugees who came from India after the Partition in 1947. The initial policy of demolishing these slums and settling people in low-cost housing schemes proved expensive, inadequate and destructive to the lives inhabitants built for themselves under difficult circumstances. After a period of passive acceptance of the situation, a programme of slum improvement was started in 1981 under the authority of the Karachi Metropolitan Corporation.

Two of these slums are Orangi and Baldia, with populations of 200,000 and 800,000 respectively. Baldia consists of 39 closely knit neighbourhoods with people from each unit having the same ethnic background and often coming from the same rural area. Both settlements suffer from a very unhealthy environment. Excreta are disposed in bucket latrines or drain directly through a hole in the outer wall of the houses into open street sewers, which end in nallas, or stormwater drains. About a fifth of the households have no latrines at all and use the street.

In Orangi, a team of three university graduates developed a system to replace the open sewers with underground pipelines connected to water-seal latrines through a simplified interceptor chamber, the haudi. The technology is designed in such a way that a group of households can do the installation with locally available materials and craftsmen. Motivation, community organization, training, supervision and technical assistance are provided by the team. Secondary level drains are now mainly built on the same basis. Government support for organic waste treatment remains urgently required, however.

In Baldia, the Junior Chamber of Commerce built 70 soakpit latrines free of charge for interested households. Thereupon UNICEF engaged the Social Work Department of the University of Karachi. Its members stressed the importance of involving the people in sharing the cost and building the latrines, and developing a local support organization. Baldia already had a traditional welfare society but its leadership limited activities to the cultural sphere. The programme began with a group of young cricket players in Turk colony, one of the poorest parts of Baldia, whose game in the lanes was hampered by the dirt and open sewers. Their organization developed into the Turk Welfare Society which helps motivate latrine construction, has UNICEF-trained masons to do the contract work, and has expanded into wider community development.

2. The terms of participation

Sanitation needs are assessed in Baldia by household surveys and in Orangi by informal meetings with heads of households. Information is given on the improvements offered and how users have to participate with cash and labour. The Baldia soakpits cost between Rs 1,050 and 1,350 (US\$ 80) of which UNICEF pays two-thirds. Households costs are

about half a month's income for those who have a job. Poor households can reduce their share of the costs by digging the pit and making the bricks themselves. In Turk colony, poor widows and old couples are given free labour by the Turk Welfare Society. In Orangi, the full cost of material and skilled labour is paid by the participating households.

In the beginning, motivation took time because previous mistrust had to be overcome. Evidence that the solutions offered worked, were affordable, and did not involve bureaucracy or extra payments to officials, have greatly increased requests for participation.

3. How people are involved

In planning and decision-making

In Orangi pilot project, the basis for community participation is the one closest to the people, the lane. Heads of household get together to discuss the project and when all agree, they request a technical feasibility study. The project informs them about possible designs and their implications. Residents raise the necessary funds and give money to elected lane managers.

In Baldia, motivation is through door-to-door visits and meetings in the homes of participants. New neighbourhoods form their own health committee which begin by organizing a community survey for project information and motivation.

In construction

Lane managers in Orangi buy construction materials and organize voluntary labour. They keep accounts of contributions and send copies to the project office. The Baldia health committees purchase materials for pit construction at wholesale rates, arrange for delivery and for skilled labour. Both project agencies train local craftsmen, loan equipment, and supervise work quality. The Orangi pilot project has introduced plastic scale models for visual demonstration of how the technology works and how common construction mistakes or shortcuts hamper effectiveness.

In operation and maintenance

Maintenance is mainly a matter for individual households, and training on use and maintenance is included in the project.

In hygiene education

In Baldia, women's groups have been formed to discuss health and hygiene. All health committees have women representatives among their most active members. In Orangi, female project staff organize neighbourhood meetings on preventive health, nutrition and horticulture.

4. Involvement of women

Initially, both projects liaised only with male heads of household. In Baldia, involvement of women evolved naturally because men were away

during the day. The women stayed at home, supervised construction, and sometimes did the digging. Surveys also informed the women about the project. Women look after household hygiene, care for children and the sick, and are most affected by a lack of privacy. They therefore became strong promoters of the project in their families and neighbourhood. They also started to improve hygiene in the lanes outside their homes, and some have become involved as women motivators in other neighbourhoods. Two factors which have contributed to the active and productive involvement of women in Baldia are the hiring of female staff and the absence of a project office. Meetings took place at the homes of active families in the neighbourhood. In the Orangi pilot project, technical and women's programmes were originally separated. They were linked after three years when it was found that educating women had a strong effect on uniting households in their mutual interest, and on mobilizing financial contributions.

5. Results

The two projects make clear that with the right type of support, including especially a formal or informal right of settlement, low-income urban neighbourhoods are willing and capable of improving their living conditions with own means, including installation, use, and maintenance of improved sanitary facilities. People of Baldia pay about one-third of capital costs themselves. UNICEF provides technical assistance for training and logistics, a team of social workers, one social organizer and one engineer. Orangi people pay all direct capital costs and get only small inputs of motivation, advice and training from the project. By eliminating kickbacks and profiteering, users' investment costs have been reduced by two-thirds.

Men as well as women have gained confidence in their own capabilities, and have developed technical and organizational skills. Coverage of sanitary latrines has reached 80% in Turk colony and almost 50% in Orangi. Sewerage lines have been built in over 40% of the more than 3,000 lanes. Fourteen Baldia communities have followed the example set by Turk colony. The Orangi pilot project approach has been selected for a large-scale programme of the government and the UN Centre for Human Settlements. However, because of differences of opinion about the degree of emphasis on an open-ended, exploratory and sociological approach versus a target-oriented and standardized system with emphasis on technology, the two groups have decided each to go their own way.

In both areas, community-based projects have also stimulated further development. The traditional society in Turk colony has amalgamated with the youth club to form the Turk Welfare Society. It has breathed new life into a derelict welfare centre, and established its own office in a rented room. A women's club has been set up and there are plans for a local health centre. Pavement of roads and alleys and improvement of stormwater drainage have been organized. Visiting city officials were shown these achievements, and requests for four more public taps and a water storage tank were met. But perhaps the most significant new initiative is the establishment of classes in local homes for women and girls who would normally have few educational opportunities. By 1983, there were already 42 of such home-schools, with 1333 students, and separate mothers' classes.

In Orangi also, new projects (drainage improvement, low-cost housing and sewing classes) have been developed, based on the needs expressed by the people or observations by project staff. But there may also be a negative side-effect to these projects. Replacement of smelly and unhygienic bucket latrines by convenient, prestigious and relatively low-cost water-sealed latrines has reduced the need for men and women sweepers. Their monopoly as sweepers comes from social and religious stigma and gives them a fairly good economic position. But the same stigma will exclude them from other jobs once the service latrines have been replaced, especially for women who have much less chance of getting another municipal job.

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THE PHILIPPINES: BARANGAY RURAL WATER PROGRAMME

1. Background and history

Barangays are the smallest administrative units in the Philippines. In rural areas, they may be small towns, concentrated villages, or areas of dispersed settlement. Only 15-20% have an improved water supply system. Before the programme began in 1977-78, little had been done to organization repair and maintenance services, and most systems fell into disuse.

The Barangay Water Programme has introduced a new system to provide for full community ownership and management of completed facilities. About 300 reticulated (piped) supplies and 1,000 hand pumps have been installed under the programme, with support from USAID. More importantly, training has been carried out and a model established which is being adapted by the Rural Waterworks Development Corporation for application on a larger scale.

Administratively, the Barangay Water Programme has only a small staff. Systems are built by the provincial authorities which bear training costs, construct repair workshops, and provide full-time training officer, water resource analysts, fiscal analysts, technical staff, and community development officers. The programme provides training, technical assistance and monitoring.

2. The terms of participation

The users must agree to pay costs of operation and maintenance, repay the loan for part of construction cost, establish and staff a Rural Water and Sanitation Association, and make a first deposit. Because repayment of 25-30% over 10 years at 4% was impossible for some otherwise eligible communities, repayment of capital costs may now vary from zero to 100%, over a period of 20 years, depending on the Programme's estimate of capacity to pay. To be eligible for a project, the average family income must be within the lower 60% of the nation's income. For this purpose provincial development staff and a central programme staff member survey of community houses with the help of local people and barangay leaders. Income levels are assessed through housing quality indicators.

A principle of the programme is that communities chooses levels of service according to what they can afford: a piped system with metered standposts for 7-10 households, a system with unmetered house connections at restricted flow rate of .1 gpm, or wells with hand pumps.

3. How people are involvedIn planning and decision making

All heads of households are involved in planning through a series of meetings. The provincial and programme staff emphasize responsibilities which users will be taking on, rather than benefits of the water

supply. There is no need to convince people of these. The only problems have been with distrust of government projects as such and worries over the need to pay. Minimum membership is 80% of households. Through discussion, the level of service is adapted to community needs and payment capacities.

Preparations include a "pre-organizational teach-in", to teach residents in detail about how to organize an association, and a three day "pre-operational training" for the association's board of directors and its three employees. A general meeting is called to ratify billing rates and the fee collection plan devised in the course of working with the community.

In construction

Programme officials feel that it is fairer to pay people for their work, although this may be changed in the community planning process. Occasionally barangays may decide to contribute voluntary labour in order to reduce costs.

In operation and maintenance

Following construction, water systems are handed over to the users' Rural Water and Sanitation Association, which then owns it and is fully responsible for its upkeep. Training includes a five-day "post-completion course", on technical skills and administrative procedures. There are leadership seminars for board members, staff, and also potential leaders, since elections are held annually and a pool of people must be trained. Follow-up courses for bookkeepers are given and meetings are held for presidents of at least ten associations in a given area to discuss common problems.

Board and committee members are unpaid, but community workers receive small salaries. Elected public officials are not supposed to be board members, to avoid complications with party politics, but they may be advisors. An office is built and equipped as part of the construction programme. Board and staff are thoroughly trained on how to run the system, including administration, operation, maintenance and minor repairs. For other repairs, requests for paid help must be made to the provincial workshop. Frequent membership meetings are held to encourage regular rate payments.

Programme and provincial staff make regular follow-up visits early in the project. Later, if there are no problems, visits are reduced to once a year. The need for outside support is also reduced by forming federations of the associations which meet to discuss problems and organize group purchases.

In hygiene education and sanitation

One of the tasks of the Associations' Education Committee is to give health information and to promote sanitation. Mothers' Clubs are a common way of organizing health education in the Philippines and there

are also programmes on water and sanitation for the two highest classes of primary schools. No detailed information was available on the hygiene education and sanitation activities in the Barangay programme itself.

4. Involvement of women

Women are, in general, excluded because the Association membership consists of heads of households, despite the fact that they strongly support the projects and often attend membership meetings. Only female heads of households can formally be elected to the Board of Directors, but they may be members of the separate committees (election, education, audit). A study of 53 piped water systems in Surigao showed that women often initiated projects and their contributions were equivalent to 14% of construction costs.

5. Results

A system has been developed and implemented on a large scale by provincial authorities which contains a good guarantee of increased construction and better maintenance. Sixty-five of the 73 provinces have participated in the programme, their staff trained in its methods, and a provincial capacity to co-operate with barangay associations has been established. There may be scope for using more community labour, perhaps in the pattern of Latin American programmes described in this document.

There is no evidence as to whether the water projects have stimulated other developments in the communities. Projects are rather narrowly focused on water, and due to high operation costs for pumping, there is little possibility of the associations' using surplus funds for other community initiatives.

The outstanding success of the Barangay Water Programme lies in establishing an adequate system for maintenance based upon community responsibility and a system with provincial authority support for major repairs. Donor support and its leverage effect continues. Provinces receive financial support for future projects based on good performance and repair of existing facilities. It is still too soon to see how well provincial arrangements will continue after this support has been phased out, or how well the Programme will serve as a national model.

Full discussions with communities appear well designed to ensure that people's felt needs for improved water supplies are met. The problem of poorer people not being able to afford house connections is tackled by optional metered group connections. A group of users are collectively responsible for paying bills, and it decide internally how to divide costs. Additional studies are needed to measure the consequences of restricting women's roles, and of giving secondary emphasis to hygiene education and sanitary improvements.

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