Community Participation Towards Greater Self-Reliance in Rural Water Supplies

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INTRODUCTION

The past thirty years have witnessed significant attempts by governments in Third World countries to provide clean drinking water to their populations. These attempts have been accelerated at different periods in their history, beginning in the early years following independence from colonial rule as part of the 'modernisation' process. These programmes continued in the 1970's using low interest development loans from the oil producing countries.

In particular these efforts were accelerated during the period 1981 to 1990, the United Nations International Water Supply and Sanitation Decade (IDWSSD). Its goal was to provide "worldwide availability and use of readily accessable, safe, reliable and adequate community water supplies and sanitation by the year 1990" (McJunkin:1982). This encouraged national governments to focus huge resources in pusuit of this goal.

Despite this massive injection of capital, technology, technical assistance and efforts by governments and the beneficiaries themselves there is great difficulty experienced in keeping these water supplies operational (Pacey:1985;Roth: 1987). Nowhere is this more evident than in Sub-Saharan Africa where lack of maintenance for reliable water supplies is more acute. This is exacerbated by the fact that three quarters of the population live in rural areas with poor infrastructure.

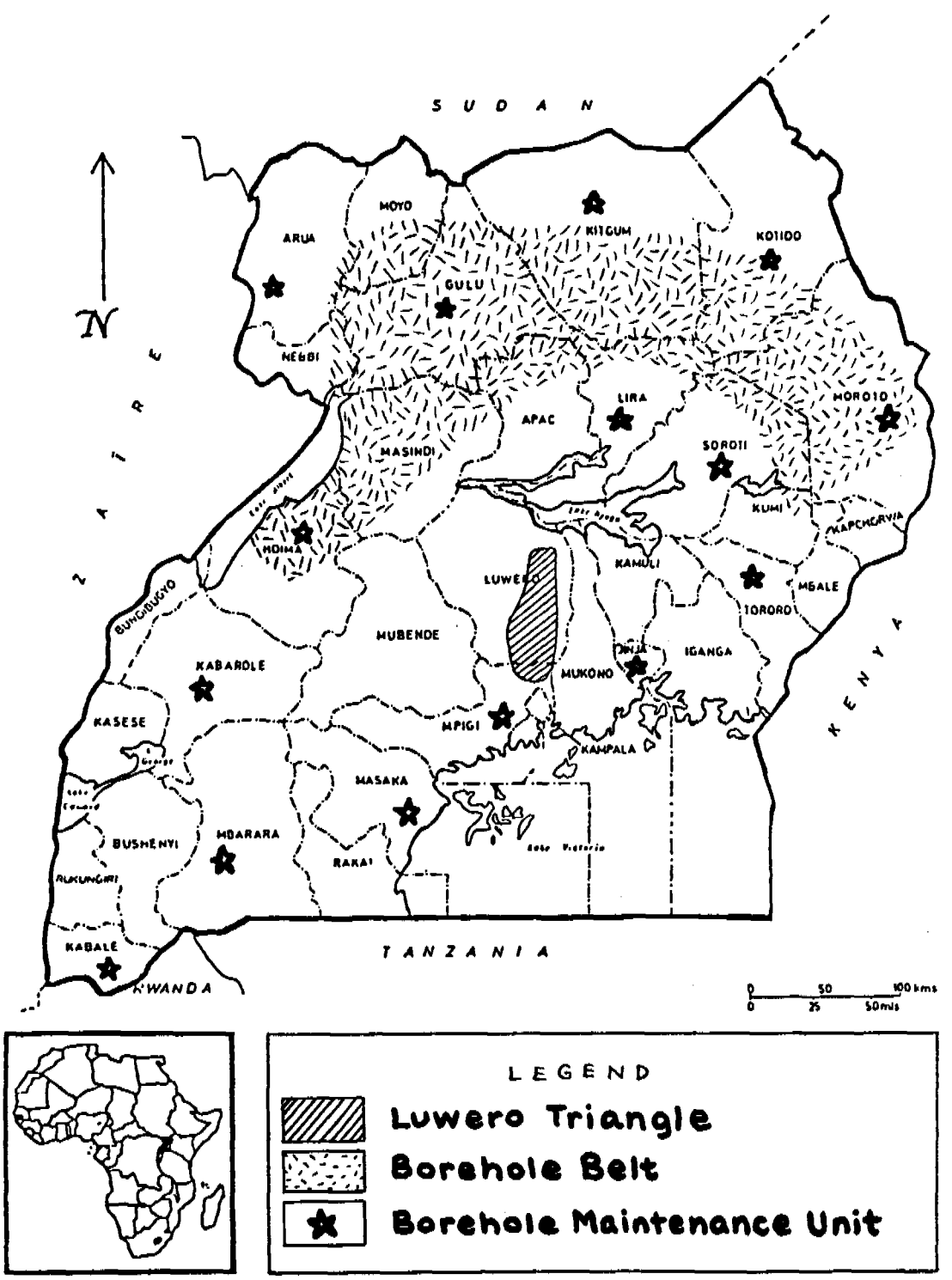
It is the contention of this paper that in order to have a positive effect on the health of the people in rural areas in developing countries, their water supplies need to be improved

in terms of quantity, access, quality and reliability. In order to ensure that such water schemes are delivered, practical solutions need to be implemented using technology appropriate to the physical, political and social climate of each area. Special emphasis needs to be put on cultivating authentic community participation so that community-financed, managed and maintained water sources provide permanent benefits. The provision of safe, reliable and adequate water supplies is not just a technological problem but one requiring careful collaboration and balance between technology, institutions and beneficiary communities in the planning, implementation and operation of such projects.

Although Uganda experienced similar problems of other Third World countries in appropriate technology, lack of true community involvement and ownership of water supplies, an opportunity arose in 1986 through a change in government that enabled a new approach to solve these problems. The history of the events leading up to and the solutions adopted by the Ugandan Government shows the possibilities of correctly applied aid, community participation and positive political will.

The difficulty in finding solutions for any problems in Third World countries lies in the fact that every country is different. This paper will offer general directions for those seeking solutions towards greater self-reliance in community water supplies.

Map of Uganda



Chapter One

IMPORTANCE OF WATER SUPPLY TO RURAL COMMUNITIES IN THE THIRD WORLD

1.1 Water and Health: Basic Human Needs, Water Quality and Quantity

Everyone has to have water as a basic physiological human need. Although it varies slightly from person to person, all adults require about two litres a day (McJunkin:1982) without which we can only survive for three days (Pickford:1985;Roth: 1987). Unless it is a case of complete drought or disaster, every community has got a water supply so that the real problem is therefore not whether people have got water, but whether it is in quantities beyond basic needs for survival, located at convenient distances within their communities, whether they control the supply and whether the water they have is safe to drink and use.

Water polluted by human waste can spread serious diseases such as cholera, typhoid, polio, endemic syphillis, hepatitis A, schistosomiasis, guinea worm, diarrhoeal and other diseases, causing death, disability or chronic debilitation. Infestation by parasites such as lice, ticks and fleas which carry typhus, mites which cause scabies, various worms which cause malnutrition and anaemia and others, can be assisted in their spread for lack of water with which to keep clean. Unprotected water sources can harbour vermin and insects such as mosquitos which spread malaria and yellow fever, tse tse flies which carry sleeping sickness, and black flies which transmit river blindness. Water contaminated by animal waste can spread tapeworm and beef/pork worm. Water polluted by industrial waste, through runoff from fertilisers, herbicides and insecticides, or water which is naturally

contaminated with heavy metals, fluorides or nitrates (Pickford: 1985) can lead to death or permanent disability.

As well, water in insufficient quantities with which to bathe, wash clothing, cook, keep surroundings and latrines clean, operate toilets or maintain other standards of hygiene can contribute to poor health (MacPherson & Midgley:1987). The frightening statistics on water related diseases which affect the world's populations, particularly those living in the Third World cannot be overemphasised. Almost half of the most prevalent diseases found in the world are transmitted through water (Behrman:1988), and 80% of all diseases are water related (Bourne:1987). In 1980 an estimated thirty thousand people were dying every day, many of them from diseases attributed to lack of safe water or adequate sanitation facilities (Arlosoroff:1987;Smith:1988)

1.2 Global Issues: The Economic Crisis, Population Pressures and Appropriate Technology

Governments in Third World countries have focused on provision of clean water as an important part of their development plans. But an estimated 1,800 million people globally still need improved water supplies in 1990 (Arlosoroff:1987). This means that less than half of the Third World's population actually has a decent amount of safe water within easy reach of where they live. People living without basic water standards are concentrated in the rural areas of the Third World where approximately 70% have no access to safe water. Considering these realities, the future for those yet unserved populations looks bleak in the face of the global economic crisis of the late 1970's and "structural adjustments" of the 1980's (Arlosoroff:1987). The crisis has reduced Third World

country incomes, purchasing power and external development assistance, while still responsible for servicing foreign debts, often utilising 80% of their new loan money to do so (Breathnach: 1989). Much of Sub-Saharan Africa is literally starving while trying to make such payments (Redclift:1987).

Global estimates of meeting water supply needs by the year 2000 is as much as US $75 - 100,000 million depending on the choice of technology. For example the per capita costs range from ground-water schemes with handpumps at US $10-30, standpipe supplied water may cost from US $30-60 and yard tap services cost as much as US $60-110, escalating with more sophisticated systems (like those found in developed countries) (Arlosoroff:1987).

Therefore because of limited financial and technical resources, governments of Third World countries will need to use the lower cost alternatives available or they will only be able to provide for a selected part of their population.

This shortfall remains formidable and is rising in the face of expanding populations, with some countries growing faster than three percent every year. For example 100 million more people drank unsafe water in 1980 than in 1975 (Roth:1987) Coping with these new populations alone has proved for many governments to be an almost impossible task. Unfortunately populations already supplied with improved water have additional problems: keeping these sources in good order, and designating responsibility for maintaining them so that safe water is constantly available for use.

Another concern for both national governments and aid agencies has been the experience of poor maintenance performance

in many communities which have already received improved water supplies with their help. The majority of improved water sources, especially those in remote areas, fall into disrepair within a few months in operation (McNeill:1983) and may remain so for weeks, and in extreme cases, for years (Arlosoroff:1987;Pacey:1980).

Technological problems arise from a general lack of adequate research performed on the use and maintenance of water systems in conditions normally found in the Third World. The Third World market is extensive but international manufacturers of water-related equipment are based in industrial countries and are geared to cater for their own more lucrative home market. Almost 98% of research and development is carried out in developed countries (Hardiman & Midgley:1989). Emphasis is therefore placed on developing high-cost, sophisticated equipment which requires high levels of maintenance easily available in their own world.

Aid agencies, especially bi-laterals, tend to supply ready-made technology from the manufacturers because of the relative ease of direct transfer of technology as opposed to developing local custom-made intermediate technologies. In some instances this 'tied aid' boosts the donor agencies country industry and economy and is a stipulation of the aid package. This creates the desired spin-off effect of recipient dependence on additional equipment, spare parts, technical training or assistance in maintenance, a luxury which few Third World countries can afford without additional aid assistance programmes or development loans (Todaro:1989;Riddell:1987;McNeil:1983).

In addition, some Third World governments view low-cost appropriate technology as 'backward' insisting on more

sophisticated techniques in their efforts to 'modernise', in spite of the fact that the governments know they are unable to afford the cost of maintaining the systems once they are installed. The triple combination of lack of manufacturers priorities, dependency directed aid policies and poorly reasoned internal politics conspire to keep appropriate water technology out of the reach of the majority of the rural poor.

1.3 Social Issues: Women, Education and Community Costs

As well as its relation to health and politics, water has an important role in the social aspects of rural communities in the Third World. Water sources located at far distances from where people live limit amounts which communities have available to use, restricting the precious commodity to the bare essentials of maintaining human life (McJunkin:1982). Also, the time and human energy spent collecting water can occupy a large proportion of a community's work resources restricting possibilities for the pursuit of other occupations. In the majority of the Third World water collection is the responsibility of women, which is not socially recognised as formal employment or rewarded with wages (Worsley:1984;Moser:1989(a)). The amount of energy a woman spends collecting twenty litres of water can equal twice the amount of energy gathering and cultivating food, or of collecting firewood and four times the amount of energy used in household chores or in commercial activities (White:1972).

In rural Africa women spend approximately one and a half hours per day collecting twenty litres of water and in extreme cases this can range from several hours to a full working day (Brydon & Chant:1989;Momsen & Townsend:1987). This represents a weight of

approximately twenty kilos, the average amount an average woman can carry given the most commonly used container size, its bulk and her strength. In example, in Uganda it is widely recognised that women bear the brunt of water collection duties. This heavy work, compounded by malnutrition as a result of diarrhoeal and other water borne diseases, discriminatory eating habits, poor health services and overwork further increases women's susceptibility to even further disease (Hebert & Ssentamu:1985; Smith:1982). Women and girls are known to have a higher fatality from diarrhoeal diseases in developing countries. Immunity lost in pregnancy as a result of malaria causes abortions or retards the growth of the foetus. Genital tract infections acquired through poor hygiene at times of menstruation, childbirth and abortions lead to debilitating fatigue, and rates of maternal deaths are high due to infections from poor hygiene at these times. Women also face hazards such as exposure to schistosomiasis when washing clothes or fetching water, and carrying dangerously heavy loads of water can cause prolapsed uteruses, dislocated pelvic joints, damaged ligaments and muscles (WHO:1984).

The minimum standard of water requirement set by the World Health Organisation is twenty litres per person per day (Brown: 1985), which multiplied by the average family size of six persons (eight in Uganda), means the average woman would need to spend approximately nine hours per day collecting water, expending 2,160 out of her average daily intake of 2,840 K/calories to do it (White:1972;McJunkin:1982).

Needless to say, in reality the WHO minimum standards cannot be met under such circumstances. The farther the source from the

average distance the more the woman must forsake time spent balancing her 'triple role'. For this reason women have been shown to be willing to pay 20% more for improved water services than men (World Bank:1989).

Women fortunate enough to have the assistance of their children to lessen their own burden may obtain more water per household. But this may be achieved at the expense of their children's as well as their own education. Time and energy spent is inverse to time spent on homework or in the classroom. In many cultures, such as these in Uganda, boys are given preference over girls to attend school precisely because of the importance of the girls work at home (Kajubi:1989), a large part in collecting water. Time spent by women could be spent in literacy classes, women's cooperatives or associations, health education and other non-formal education to meet her 'strategic gender needs'.

As regards the quality of the water collected, the less protected the source the greater the likelihood of the family being subjected to debilitating diseases. These diseases are known to have a negative effect on mental and physical abilities to take advantage of education. For example, chronic diarrhoea has been shown to contribute to malnutrition (Chen:1980;Cook:1985;Chandra & Newberne:1977), which in turn has been shown to have direct effect on a person's ability to learn (Swift:1983;Ebrahim & Rankin:1988; Parizkova:1982) and on low birth weight which can contribute to cerebral palsy (Jolly & Levene:1985). It is estimated that the provision of clean water alone can reduce water related diseases by more than 50% (McJunkin:1982). This statistic can be improved when coupled with a health education and sanitation component.

Chapter Two

COMMUNITY PARTICIPATION, INTERNATIONAL INFLUENCES AND NATIONAL PROGRAMMES

2.1 Conceptual Framework

At this point it is necessary to clarify differences in the concepts of "community participation" (CP) due to varieties and extremes in meanings of the term in the literature. These variations and its history are especially of importance to the planner and policy-maker in order to make an analysis and to utilise the appropriate concept.

This paper adopts Midgley's (1986:pp38-44,151,154) classifications of 'participatory modes' in order to define community participation; utilises Moser's (1989(b):pp81-89) 'fundamental questions' to determine the importance of community participation; and Paul's (1986:pp2-10) 'conceptual framework' to both analyse and evaluate projects with community participation components.

Midgley's modes of community participation

James Midgley proposes different levels in which communities are allowed and encouraged to participate under various styles of government. The four modes are:

The "anti-participatory mode"- the government supresses CP for fear of losing control of political power to the masses. Programmes for community development are characterised by government's full power over direction and responsibility. These include oppressive regimes such as the military dictatorship of Idi Amin in Uganda.

The "manipulative mode" - CP is advocated rhetorically by the government but for purposes of political and social control. In

reality, community leaders are co-opted to further government's objectives at community level without genuine power sharing in decision making. This mode is characterised by very top-down approaches in planning, provision of resources and implementation, so that CP is used as a manipulative device, not necessarily to meet the community's objectives. For example, in Obote's Uganda, community projects largely benefitted those who supported his political party.

The "incremental mode" - CP is officially advocated but actual participation hindered due to massively centralised bureaucracy. It is unplanned, haphazard and implemented on an ad hoc basis. The government has little faith that communities can understand or solve their own problems and considers it their responsibility to effect community development. Typical of many former colonial countries where a *laissez faire* approach to modernisation is taken, policies about CP may not be clearly formulated or there may be poor mechanisms to implement them.

The "participatory mode" - the mode which can be termed as "genuine" community participation. It is characterised by full government approval and committment through the creation of the necessary resources and the institutional framework which aid in its realisation. These include power sharing in decision making, facilitation or provision of materials and training, coordination of activities at all levels and allowance of local control over budgets. There is little evidence to show that governments have supported this mode, however this does not preclude the possibility that certain projects have used public resources for community participation and played a major role in planning,

managing and implementing such projects to the communities benefit (Midgley: 1986). Although some may argue that state guidance is incompatible with 'authentic participation' (Marsden & Oakley: 1982), Midgley proposes abandoning this concept and accepting the more realistic definition as used above. This definition recognises the state's role in modern societies and the difficulty of getting people to have complete control over all of their own social services with full participation of all its members. It emphasises communities obtaining as many resources and services as possible from government in order to improve their own social conditions, even at the cost of not holding absolute control.

Moser's Fundamental Questions

Caroline Moser offers four questions for use in evaluating the importance of community participation. They are:

"Why participation?" to determine reasons why participation is being advocated as well as what causes communities to participate. The question is whether CP is being used as a *means* or as an *end*.

"When participation?" to determine when in the project cycle communities actually participate in the project process.

"Whose participation?" examines who in the community is actually participating in the project.

"How participation?" analyses how CP is achieved.

Paul's Conceptual Framework

Samuel Paul suggests drawing on the World Bank experience which looks closely at the mix of each CP project's objectives, intensity, instruments and their interrelationship. Paul argues that the use of CP is only appropriate under certain conditions, that it can be difficult to successfully promote under other

conditions, and that it not advisable or even neccessary in all circumstances. The following is Paul's framework in brief:

"Objectives"- the five main objectives of CP are towards empowerment (to give the community political/social power); building beneficiary capacity (giving communities a share in the management/operation of the project); increase project effectiveness (involve community contribution to improve project design/implementation); project efficiency (involving community to improve output/minimise overall costs); and cost sharing (involve community to provide contributions to overall project costs).

"Intensity"- the intensity at which CP is encouraged can vary from information sharing (the lowest level in which designers/ managers share information with the community in order to achieve objectives); consultation (community is consuted on important issues throughout project); decision making (communities make important decisions with others or by themselves about the project); initiating action (communities take the lead in making decisions regarding action, the highest level of intensity).

"Instruments"- are the organisations/agencies to manage and keep community participation going. They are field workers of the project agency; community workers/committees; or user groups.

"Interrelationships"- are the combination of objectives, intensity and instruments and could result for example in an optimum situation where the objective is empowerment, the intensity is initiating actions and the instruments are user groups. At the other extreme the objective is efficiency, intensity is information sharing and the instruments are field workers. The various combinations of these scales can provide an

analysis of the use of community participation.

2.2 A Brief Current History of Community Participation

The various concepts of community participation were utilised during the community development programmes in the 1930's through the 1950's. As we shall see, "community development" became a necessary catch word for development programmes although no critical analysis was made during this time as to whether or how communities really were participating.

British colonial and US aid agency experience and influence

The very concept of "community development" was rooted in the rural reconstruction programmes of British Colonial India in the 1930's, when positive results were believed to be experienced because the community was participating in its own development (Holdcroft:1984). The idea was fostered by this and other experiences in the US and the UK. Theoretically, once the communities realised that they would benefit, they would actively and willingly participate and make the programmes succeed.

The term "community development" (CD) referred to a method applied to help British colonies in Africa improve local government and develop their economies in preparation for independence. The concept caught on during the 1950's, and by the 1960's over sixty nations had CD programmes established. They were used as part of a plan during the 'cold war' to directly oppose revolutionary doctrines through 'grass roots democracy', and its philosophy was consistent with modernisation theories, insisting on the use of democratic processes to allow people to solve their own community problems using modern technology. The goals were to get people to raise their standards of living to

create stable social, political and economic conditions for self-reliance, falling into line with the colonialist and donor agencies basic "free world" (free market and anti-Communist) principles. It also fit the needs of some governments of Third World countries by promising modernisation without threatening their political and economic authority (Holdcroft:1984).

British, US and UN aid agencies sent teams of CD 'experts' to help governments plan national and pilot community development programmes, provided long-term funding for material and technical aid, supposedly leaving the communities to provide direction, physical and moral support to eventually control and manage the programmes themselves. Many countries such as Kenya, Sudan, India, Zambia and Uganda had Ministries of Community Development with representation from national down to district level. The Ministries set up Community Development Institutes, where "Multi-purpose village level workers" were trained who acted as a catalyst through active village leaders, getting people to say what they needed. For example in the 1960's in Uganda every sub-county built its own community meeting hall which was used for adult education, social events, health centre and so on, under the direction of the CD worker (Scanlon:1964).

However, CD programmes never met fully their stated objectives, especially in encouraging self-reliance in food production and other economic factors. The programmes expanded far too quickly to establish themselves properly. After 1960 assistance from major external donors declined following a negative project evaluation made by the Ford Foundation of the Indian CD programme, summarising all the problems of this era: it had not shown to be able to

alleviate poverty, increase food production, or reduce the disparity of wealth between larger and smaller farmers, it relied too much on the CD worker instead of the people themselves and was strongly linked to participation by and for the elite, bypassing genuine participation of the community as a whole as well as being very bureaucratic in its 'top-down' structure.

It can therefore be seen that community participation under community development projects was of the *manipulative mode*. The reason *why* CP was used was as a *means* to deliver social services and develop the infrastructure and the country in general, not to share political power. People participated at the implementation phase *when* projects had already been designed, and *how* they did so was on a non-voluntary basis when CD workers coerced all people *who* participated to the disproportionate benefit of the elite.

The major *objectives* of CD were to increase project efficiency and to share costs with the communities, having *intensity* closer to the information sharing level than to decision making, and using CD workers as the *instruments*. The *interrelationships* were therefore closer to the lower end of the Paul's spectrum.

French colonial experience and influence

In 1953 the French government issued directives to create "rural associations" in its colonies which would bring technical cooperation between rural communities and government officers, the central aim of "rural animation" (RA). In 1955 in anticipation of Independence, the French government put greater emphasis on social and educational aims in this cooperation so that the peasantry would become a more active partner.

The philosophy of RA was to ensure that a permanent education

programme was established at various levels within any Ministerial body, with priority being given to those effecting production, economic organisation and planning, technical and administrative leadership, local institutions and community participation. RA was aimed at strengthening communities ability to work with national development programmes more than at developing local communities, from the lowest up to national levels. For example, project leaders were sent in by government to familiarise themselves with the community and provide advice on suitable candidates to be trained as "local animators", who were then trained, and technical or cooperative community organisations created.

A review of the literature has not provided overwhelming evidence that RA schemes have provided community development in any great measure, but then again it was only intended to help strengthen education towards national development goals using CP as a tool, which identifies rural animation with the manipulative mode. People participated on a non-voluntary basis after projects had already been designed, and project efficiency and cost sharing was the goal rather than power sharing. Interrelationships were similar to those of community development projects.

The problems had been that the schemes were in the awkward position of owing loyalty to government, yet trying to promote the community's development at the same time. Even pro-RA writers feel that in practice it is very difficult to plan effective strategies for "popular participation" when the network cannot be separated from local agents of government departments (Goussault:1968).

Cost coverage and recovery programmes

Current global economic crises have put pressure on Third

World governments and donors to re-examine strategies and policies for development to deliver social services more economically and efficiently. Although there may be much rhetoric to support CP as an inherent 'right' of the people, the bonus of getting communities to contribute to their own programmes highly attracts both governments and donors and threatens to overwhelm ideas of empowerment such as in the participatory mode.

In the 1970's commercial banks with large deposits from oil-exporting countries placed large loans or induced developing countries to borrow heavily. In the early 1980's world-wide economic crisis, brought on in part by the 1970's 'oil shock', led to sharp declines in commodity prices, increases in interest rates and subsequent falls in developing country's revenues. Drops in foreign aid at the same time as increasing debt payments coming due forced many of these countries to submit to International Monetary Fund (IMF) "stabilisation policies" or World Bank "structural adjustment" policies or both, in order to reduce their deficits. Structural adjustment is basically the introduction of a range of measures into a country with a high debt in order to reduce internal and external deficits, increase efficiency in the economy and reduce government expenditure, through the removal of excessive government controls and promotion of "free market" or "market economy" values (Hardiman & Midgley: 1989). Structural adjustment and stabilisation policies vary but generally consist of a combination of changing the exchange rate (devaluing the currency) closer to its true value; reducing government payrolls; dismantling government owned enterprises or privatising inefficient companies; raising agricultural prices closer to world

market levels; and reducing subsidies on food and to producers.

Many developing countries have to cut government expenditures by reducing social services, which has renewed interest in a manipulative type of community participation in order to get communities to pay for social services that the governments can no longer support. Debtor governments have little 'room to manoeuvre' (Seers:1981) in refusing to abide by the banks policies, as for example when Tanzania refused to do so, the IMF and World Bank delayed 'tiding over' and structural adjustment loans for four years (Raikes:1988).

A series of international meetings have brought forth numerous 'declarations' to affirm the renewed interest in CP. In 1977 the United Nations established policies for providing the world with safe water supplies and adequate sanitation facilities at the Mar del Plata Conference, declaring 1981-1990 to be the International Drinking Water Supply and Sanitation Decade (Cairncross et al: 1980). One of the main strategies was to involve communities in all stages of its programmes (WHO:1984).

In 1978 the WHO and UNICEF discussed ways to improve the health of the world's populations through Primary Health Care programmes at the international conference in Alma Ata. The resulting 'Alma Ata Declaration' promoted "maximum community and individual self reliance and participation in the planning, organisation, operation and control" of the programmes (MacPherson:1982).

And in 1988 in Geneva, the WHO, donor agencies (including the World Bank) and representatives of over 30 industrialised and developing countries finalised guidelines for sustainable

community water supplies and extended household sanitation programmes in a consultative meeting. They clearly stressed community participation in all phases of the project (WHO:1989).

In essence these declarations state that they want the participatory mode of community participation to be effected but they also have very strong, pre-conceived ideas about how, who, when and why it should be used. This in itself does not preclude the possibility of participatory participation, but each government's interpretation of the statements according to its mandates, open or hidden, will eventually determine what mode is used. If governments do not allow full power sharing at community level then CP will not evolve farther than the modes during colonial times, community development and rural animation.

Chapter Three

CASE STUDY: UGANDA'S "U-TWO" HANDPUMP MAINTENANCE PROGRAMME

In the first chapter the importance of safe drinking water was established to have important health consequences on rural populations in developing countries. An examination was then made of various modes of community participation to understand how these might effect the provision of essential social services such as household water supplies. To understand the current policies adopted by the Government in the "U-Two" Handpump Maintenance Programme, this chapter will summarise Uganda's current general demographic and physical information, then analyse CP within its history from colonial times, through Independence and seven subsequent governments.

3.1 General Demographic and Physical Information

Uganda's current population is approximately 16 million, with an annual population growth rate of 2.8%. 9% are urban and 91% rural, stressing the importance to supply more services to the rural areas. The capital city Kampala has only slightly more than half a million population, and the second largest city Jinja, only 50,000. Approximately 48% of the population is less than 15 years of age, of which 18% are under 5 years and in the group most vulnerable to diarrhoeal diseases. Health indicators in 1989 put the infant mortality rate at 104/1000, and the cumulative under-five mortality rate at 172/1000 (UNICEF:1989).

Uganda is a 'landlocked' country which increases its pressure to be self-reliant. Its total land area consists of 17% swamp and open water, 12% forest reserve and national park, and 71% central

plains, only 5% of which is under cultivation because of lack of rainfall or irrigation (compared with 13% in 1958) (McMaster: 1962). Altitudes range from 609 to 5,122 m above sea level, with the majority Central Plains lying between 1,312 and 1,524 m., ideal altitudes for malaria (Pringle:1962). These factors limit the type of water sources that can be developed in each area.

Uganda's climate is tropical, varying with altitude and corresponding to seasonal rains, ranging from an average low of 5 degrees C in the Southwest to an average high of 35 degrees C in the Northeast. The Central Plain ranges from between 17 to 31 degrees C. Temperatures above 20 degrees C promote bacteria which affect crops (and subsequently human nutrition) (Harrison:1979), and bacteria and ova detrimental to human health (Carothers:1981). Diarrhoeal diseases increase with the advent of rains because of poor sanitation polluting unprotected water sources (UNICEF,1989). In addition, distances to water sources increase during the dry seasons. For example in Northern, Northwestern and Northeastern areas, seasonal rivers, water holes in dry river beds or man-made valley dams at far distances from settlements are utilised.

The Southern half of the country has greater availability of surface water but constraints of distance, quantity and quality still significantly effect their morbidity pattern (Feachem, McGarry & Mara:1977). The total open water area consists of five major lakes and the swamps, where a deliberate policy was made in the past not to develop protected sources because water was 'available'. Extremely high incidences of water borne diseases are found among people who live around these open water sources, including guinea worm (dracunculiasis), estimated at 40% of the

work force in 1983 (Fontaine:1984), or 40% of farmworkers as a whole in Africa (Hopkins:1986). Incidences of up to 100% infection with schistosomiasis in some villages and fishing communities around Lake Victoria have been recorded (UNICEF:1989).

Although water related diseases are certain to have a negative impact on rural populations in Uganda, no accurate data exist on the prevalence or incidence density of these diseases in the population (Hebert & Ssentamu:1985). However it is known that 43.7% of all admissions to health centres and hospitals in 1983 were related to water borne diseases and the same diseases accounted for 30.7% of all recorded patient deaths. Because these diseases and deaths afflicted mostly children, the disabled and the aged they were not perceived as serious by the government of the time. There was also a 'lower bias' to these statistics (Uganda:1982) as they went unrecorded (Turnbull:1973).

Uganda's hydrology has a major bearing on the types of water sources found and those likely to be developed. Its seven major water catchment areas forming the basis of its lakes and rivers vary considerably. For example, conditions in the drier Northern half of the country have predominantly underground sources, so that deep boreholes fitted with handpumps are the most appropriate technology with which to extract potable water. In contrast many natural springs are found in most parts of districts situated along the wetter mountainous areas of the East, West and Southwest and along the hilly, heavy rainfall margins of Lake Victoria.

Although the remaining areas have the potential for mixed technologies (springs, shallow hand dug wells, rain water catchment and deep boreholes), no district actually has full

coverage of safe water supplies. The majority of the rural population depend on unprotected and unsafe lakes, rivers, swamps, water holes, rain catchments or unprotected natural springs for their human, agricultural and industrialneeds.

Water has been found in all rock groups, however most boreholes have been drilled in gneissous rocks of the basement complex found in about 60% of the country. When struck, water in boreholes often 100 metres or more deep can rise to between 5 - 55 metres below the surface, requiring a pump to extract it. Borehole water is generally within the safe limits for human consumption (Uganda: 1986) and certainly safer than unprotected sources of any kind.

3.3 Historical Background to Uganda's Handpump Programme

Although Uganda has a much more extensive and obviously deeper history, this chapter will confine its description to the period and to those events which bear on community participation in rural water programmes in order to provide a background for the current "U-Two" Handpump Maintenance Programme.

Brief Colonial History

Although ethnic divisions existed before the advent of missionaries, traders and colonialists in the 1870's, their advent increased and heightened conflicts. They did this by artificially forcing previously unrelated groups into one 'nation' (Thomas: 1962); by converting different sections of the population into different and mainly antagonistic Christian religions (the present day estimates are 49% Catholic, 33% Protestant with the remaining groups politically subordinate to these); and by favouring one ethnic or religious group over another to form hierarchies in occupational classes within the eventual colonial administration

(Wrigley:1988). For example, the civil servants were mainly Central region Protestants, the army was recruited from the Northern Nilotic groups (with higher ranks Protestant and lower ranks mixed), and Southern Bantus left mainly to perform agricultural labour. These stratifications and their eventual consolidation in opposing polical parties have been at the root of all civil unrest throughout Uganda's history up to today.

The British colonial government did not launch a rural water development programme until the 1930's although the Protectorate was established in 1894. Colonial governments in Africa were noted to be extremely parsimonious in their provision of social welfare programmes, including those of water (Raikes:1988). It was assumed from the beginning that colonies should meet the costs of their own administration from internally generated revenues, as they wanted to exploit the countries resources but establish the minimal level of services possible needed for the optimal amount of labour (MacPherson:1982).

In Uganda the 'borehole belt' (the area with most handpumps) corresponded to cotton, tobacco, other cash crops and to cattle ranching areas. A particular problem which slowed down the labour force in the Central Plains was guinea worm, a disease known to be completely eradicable with provision of safe water supplies alone (WHO:1984). Uganda's Colonial Government therefore drilled new boreholes and fitted the cheapest handpumps available to them (some above ground parts being manufactured by prison industries to save even more), and protected natural springs and dug shallow wells wherever feasible close to cash-crop producing communities.

Borehole construction and handpump fitting was contracted out

to Craelius, a private company, who were also responsible for their major maintenance and repair. All communities were obligated to pay taxes to pay for the whole country's water protection services, even if they did not personally receive the services. Preventive maintenance of pump heads were made the responsibility of local government who employed the minimum possible amount of 'pump greasers' (mechanics) to do the work. 'Pump greasers' were responsible for 30 to 50 pumps spread over a geographical area of approximately 200 square kilometres which they were to service (lubricate and tighten fulcrum bolts) at least once a month. Poor road conditions (for a bicycle loaded with 10 kg of tools and grease), long distances and poor communications meant that in reality each handpump was only visited four times a year.

Moreover the U-One handpump was of inappropriate technological design, including heavy working parts ranging from 350 to 550 kgs reaching anywhere from 30 to 60 metres down the borehole. Its non-standardised components meant that replacement parts had to be custom-made. Major breakdowns required Craelius, using light diesel-operated drilling rigs to extract pump components, but again, poor communications and infrastructure, especially during the rainy season, resulted in long delays between repairs.

The U-One handpump could not therefore be considered a safe water supply because it was unreliable, breakdowns forcing a reversion to traditional, unprotected sources. At the end of the colonial administration, only 4,342 boreholes with "U-one" pumps, 1,205 protected springs and 50 shallow wells had been completed.

The Colonial Government therefore can be seen to have adopted the 'incremental mode' of community participation. Its

modernisation approach was laissez faire, it neither prohibited community participation nor clearly formulated policies promoting it, and it lacked faith in the communities understanding and ability to solve their own problems without Government playing a major top-down paternalistic role in order to fulfil what they perceived as their 'responsibility' (within budget and immediate labour needs) to provide social services.

The Colonial Government used participation as a *means* partly because it was in the very nature of colonialism to develop the country so that they could take advantage of its resources. They only involved communities *when* they needed labour or other assistance in implementation of the projects, not during the formulation of plans. Communities only participated out of coercion so that they might all have been involved but not voluntarily and they were not involved in decision making.

The Colonial Government's objectives in using CP were to improve *project efficiency* and provide *cost sharing*. Its intensity was low, being for *information sharing* purposes only. The instruments used were the *field workers* (Craelius contractors) and non-volunteer elements of the *user group*. The interrelationships between the intensity, objectives and instruments were therefore also at the lowest level so that CP could not even have been considered to have been attempted in its true sense.

Post Independance

In 1962 Uganda's first post-Independence government found it politically necessary to provide a variety of social services to their people because of the poor performance of the Colonial Government to do so (Raikes:1988). A Ministry of Lands, Mineral

and Water Resources (LMWR) was set up, within which the Water Development Department (WDD) was created to deal with provision of human, animal and industrial water supplies. WDD bought the Craelius company and retained its trained Ugandan staff. In addition it assembled 15 Borehole Maintenance Units (BMU's) throughout the country for the purpose of maintaining all existing boreholes and pumps (see map page iv), drill new boreholes and train new recruits for WDD as it expanded. By 1966 WDD had procured an additional £3 million worth of British drilling rigs, vehicles and equipment because it was being provided with 'tied aid' from its former colonial government (Uganda:1966). Preventive maintenance still remained the responsibility of Local Government through the 'pump greaser' system.

In the same year in an internal coup, Milton Obote came to power for the first time, promising an African Socialist-type government in his development plan which was called "The Common Man's Charter". This should have helped devolve power to communities but in reality was only an empty political gesture. Obote's Government was actually interested in accumulating power to keep control of the country so he and an elite band of followers could exploit its wealth (Kanyeihamba:1988). Although the period from Independence to the early 1970's saw rapid economic development and a marked improvement in social services compared to the colonial times, safe water at its peak was provided to only 17.5% of the rural population while 80-95% of urban dwellers had the priveledge which Lipton (1977) refers to as 'urban bias'. Civil servants benefitted most from the Obote Government and most were drawn from his ethnic or religious group. Government staff

morale and pride was high because salaries were tied to prevailing British civil service rates, giving more than sufficient ability to enjoy a comfortable lifestyle (Van Arkadie & Ghai:1969).

This 'good life' was particularly enjoyed by BMU staff who were highly regarded in social terms in the rural areas because of the premium placed by the people for protected water sources. During this period an additional 747 new boreholes were constructed and maintenance levels were at their highest ever: 79-80% of all pumps were working at any given time. A Ministry of Community Development had already been established during colonial times with representation down to District level (Scanlon:1964), however community maintenance of handpumps was never fully considered because such a job was decried to be too sophisticated and therefore best left to the highly technical BMU staff. Communities were successfully organised and trained to develop other, simpler and appropriate water sources (such as the protection of natural springs), shallow hand-dug wells and rainwater harvesting systems), but these simple technologies could not compare to the highly attractive, crowd-drawing sophistication of borehole drilling and pump maintenance. This resulted in the WDD ignoring low technology options, leaving it to the Ministry of Health, with the assistance of Community Development workers.

Obote's Government essentially adopted the *manipulative mode*. Their objectives were to modernise the country so that they could exploit it, only developing the new social services ministries to show that they were modern and to provide civil service jobs for their power base. Services were accelerated through this approach but CP was used as a *means* rather than an *end* to empower the

people. It was no closer to the *participatory mode* of CP than under the Colonial Government in that there was no power sharing in decision making, no local control over budgets and there was lack of Government committment to participation as seen in its lack of institutional frameworks to aid community participation.

Years under Amin

Obote was overthrown by the infamous Idi Amin in 1971 and went into exile in Tanzania. Amin established a military government and within a year expelled all non-citizen Asians (continental East Indians), many of whom had dominated businesses and other sectors of the economy. A large number of high ranking civil servants who had been associated with Obote also left (Southall:1988), including some of the best technically trained staff from WDD. In the same year, all foreign owned businesses were either Nationalised or handed over to Amin supporters, leading to a serious drop in professional standards morale, mismanagement and a low ebb in staff morale in all sectors of the economy and government services. Human Rights violations and the expulsion of the Asians led to a withdrawal of most bi-lateral foreign assistance and the reduction of multi-lateral aid.

These events along with other acts of political instability and social upheaval came at the same time as the world recession of the 1970's (Todaro:1989). WDD suffered severely during this period as budgets and staff salaries were cut to below operational levels. These cuts, the escalating war with Tanzania and rampant inflation in excess of 95% per year (World Bank:1989(a)) had a devastating effect on water supplies. No new sources were developed and both urban and rural existing supplies fell into

disrepair without maintenance. The population almost doubled between 1960 and 1980, the net result being that rural populations with safe water dropped to 4.7% and urban levels slid to 30%.

Amin's was an oppressive regime. Because handpumps were the property of the Government, communities were afraid to repair them when government services failed and were generally afraid to get involved in CP activities for fear of it being mistaken as a political assembly. This was definitely the *anti-participatory* mode which suppressed CP for fear of government losing political control. The government had full power over direction but failed in its responsibility to provide social services.

The Interim Governments of 1979-80

Amin was overthrown in 1979 by the Tanzanian army backed by Ugandan exiles, including Milton Obote. Obote did not immediately sieze power but three interim governments were established during great civil unrest following the 'Liberation War'. During this war, Amin's troops commandered and destroyed all government vehicles, including WDD's. Widespread 'looting' took place of government property and WDD lost tools, equipment, spare parts and office equipment and records. As a result of this and destruction wrought during Amin's years, WDD requested UNICEF for assistance to rehabilitate the 5,089 boreholes fitted with "U-One" pumps.

As mentioned earlier the U-One had serious problems. Its parts were not standardised, it was not village level maintainable and the down-the-borehole components were imported. Government estimates at that time showed 75% of all handpumps broken down, many for more than six months, thus forcing the rural populations to use polluted drinking water (Scheyer & Dunlop:1985). The

15 BMU's had to cover two districts each, with boreholes dispersed over 15,800 sq km on average. To repair a handpump a mobile team might travel in excess of 200 km round trip, necessitating several days travel due to poor roads. These problems, coupled with excessive wear and tear of vehicles made handpump repairs expensive and beyond the reach of government's general funding.

There was in essence no community participation during the interim year because of political turmoil.

Obote's Second Government

Obote finally regained power in 1980 in a well-known, rigged election (Southall:1988;Nabudebe:1988). By 1981, in response to WDD's earlier request, UNICEF had provided each BMU with vehicles, tools, equipment and spare parts, technical assistance and training to undertake all pump repairs. This assistance came to a total of approximately US $3 million by 1983. The same year a national survey jointly carried out by WDD and UNICEF (of which the author was team leader) revealed that only 32.2% of all "U-One" handpumps were working. Government had failed in its committment to provide recurrent costs including salaries, allowances and fuel causing only 36 out of 570 WDD staff to turn up regularly for work. Staff salaries represented only a meagre 1 - 2% of actual living costs had not been paid for several months. Staff morale was very low and corruption high (Lofchie:1988). WDD had no operational funds to run repair vehicles and only 31% of all pumps could be reached by vehicle because of the deteriorated road conditions (Doyle:1983). Moreover the inappropriateness of the U-One pump to enable village level operation and maintenance (VLOM), and the fact that they were government property prevented

local communities from trying to make repairs for fear of government reprisals (a carry-over from the Amin years).

Several hundred communities were interviewed in an attempt to explore a possible solution to the maintenance problem. The majority expressed dissatisfaction with government repair services and suggested that they themselves were willing to make repairs if only they were trained to do so and equipped with the necessary tools and spare parts. They also expressed a wish for community ownership of these handpumps so that they could have greater control over their use. But because these suggestions were taken as a criticism against the Government, this section of the survey was never published.

UNICEF proposed the following solutions to government:

- Replace all old "U-One" pumps with a standardised VLOM-type pumps to alleviate spare parts incompatibility problems, allow standardization of training and tools and allow in-country manufacture of the pump thereby reducing procurement problems.

Although this at first caused problems with 'tied-aid' purchases from other donors who wanted to promote their own technologies, the Government accepted this proposal in keeping with their ideas of modernisation. But they retained the maintenance system in order to keep political control over this very important social service as a manipulative device.

- Adopt a policy regarding in-country manufacture of the pump to be standardized throughout the country.

The Government also agreed to this because it boosted local industry, saved scarce foreign exchange and they received assistance from the African Development Bank to do so.

- Adopt a policy regarding community ownership of the pumps to instill a sense of responsibility towards maintenance, management and financing.

The Government rejected this idea. The official reason given was that it was Government's responsibility to provide free social services which the Amin Government had failed to do. In reality the Government could not afford to do this either, but by the promise of delivering social services and delivering limited services to their best supporters, they won some confidence. The fact of their keeping such tight control over political power, showed they had inclinations towards the *anti-participatory mode*.

- Redeploy and retrain the existing BMU staff towards developing new boreholes for communities not yet served. This suggestion was obviously moot since Government did not adopt the second point.

Over the next six months several different kinds of VLOM pumps were field tested by communities throughout Uganda to determine the most suitable pump to standardise, which McRobie (1981,p241) refers to as 'matching technologies'. The outcome of these trials favoured the India Mark II handpump, renamed the "U-Two" handpump in Uganda. From mid-1983 to mid-1985 2,500 U-One pumps were replaced with U-Two's. In addition, 600 new boreholes were drilled and fitted with U-Two's. Government was also provided with US $4 million worth of equipment and training partly to cope with the severe guinea worm problems in the dry North.

Despite this, government maintenance remained a bottleneck due to lack of government support to cover recurrent costs. Over 50% of pumps were still out-of-order at any given time and government response to repairs often exceeded six months. UNICEF had by then

provided US $5.5 million to provide pumps, technical assistance, tools, supplies, spares and improvement of WDD stores, workshops and offices in an attempt to improve operational efficiency.

The delivery system for social services was similar during these years to Obote's first term of office. UNICEF advocated community participation closer to the *participatory mode* by advocating full control over decisions regarding project design, management and control, standardisation to make pumps accessible to communities and empower people to help themselves. The Government was more interested in the *manipulative* mode because they rhetorically advocated community participation but in reality used it as a *means* for political gains. They did this through using provision of social services as a political reward to communities who supported them. For example priority for maintenance of pumps would be given to communities that supported the Uganda People's Congress (UPC:Obote's party). UPC party members were given control of services at village level. This meant that the opposition (DP:the Democratic Party), would be seen as failing in its attempts to attract social services thereby losing support to UPC.

Interrelationships between objectives, intensity and instruments were poor because of political manipulation. Although there were major constraints to the economy at the time, if a more genuine community participation 'mode' were in place, social services could have been improved. As it was they were not effectively delivered.

The Interim Government of 1985-86

The widespread social insecurity and corruption of the Obote

Government had forced some prominent political opposition leaders to unite and form a 'bush' (guerilla) army led by Yoweri Museveni (Museveni:1985). Their war against Obote was waged between 1981 and 1985 during which period a major part of the country was under seige, especially the "Luwero Triangle" (the West and Central areas north of Kampala). In an effort to supress this rebellion over the years, Obote's 'Liberation Army' systematically persecuted and killed several hundred thousands of civilians (Museveni:1985;Kanyeihamba:1988). This guerilla war destabilised Obote's Government enough to allow General Tito Okello to stage his own coup in July 1985.

The following six months were marked by total anarchy when Government troops and fleeing supporters loyal to Obote systematically looted the country of its material wealth, destroyed public buildings, hospitals, schools and wrecked development projects's infrastructure. Almost half of all newly rehabilitated pumps were deliberately destroyed by Okello's Government in an effort to demoralise people in the North who had traditionally supported Obote. WDD alone sustained 30% losses of its equipment and supplies estimated at US $1.5-2 million. At this time Museveni escalated his war in order to gain control of the nation, forcing the country into its worst military conflict, more expenditure and greater debt.

The NRM Government

Museveni overthrew Okello in January 1986 and quickly formed a broad-based coalition government aimed at restoring peace and security to Uganda. A series of national elections were held in 1989, the first free and fair polls in over 20 years. Museveni is

known to favour a form of African nationalism based on a grass-roots democratic movement, encouraging people to participate in their own development (UNICEF:1988). His Socialist ideology regarding self-reliance prompted UNICEF to again recommend the idea of a community-based maintenance system for handpumps. Museveni's National Resistance Movement (NRM) Government introduced a system of people's "Resistance Committees" consisting of tiers of democratically elected groups. This infrastructure combined with the Government's policy on self-reliance provided an opportunity to empower the people for the rehabilitation of social services, including a system of community-based pump maintenance, which Hall (1986,p101) suggests may improve the level of popular participation in government programmes.

The "Resistance Committee" system is organised in a series of councils and committees from Village up to National level. The system is the cornerstone of the present Government policy and represents real opportunity for community-based development. Each citizen over the age of 18 years is a de facto member of the Village Resistance Council. Councils are 'empowered' to identify local problems, find solutions and formulate and review development plans. To implement the decisions of the councils, the members elect Village Executive Committees from among themselves.

The Committees form a day-to-day administrative structure system and the Chairperson is considered the village leader. The Committee members are elected for specific responsibilities by serving as Secretaries for posts of Youth, Women, Information, Mass Mobilisation and Education, Security and Finance. The RC's are mandated to assist the police and chiefs in maintenance of law

and order; encourage, support and participate in all self-help projects and mobilise people, material and technical assistance; vet and recommend persons who should be recruited into the army, police and prison service; serve as communication channel between Government and the people; oversee the implementation of Government policy; and where necessary, elect ad hoc and other sub-committees to assist the Committee in its functions.

In April 1986, an emergency water project began in the Luwero Triangle, an area comprising 13 sub-counties which were brutalised by Obote's attempts to supress Museveni's guerilla movement (see map page iv). The project also provided the first opportunity to try out a community-based maintenance system. The Luwero District Administration, Central Government and UNICEF provided 'mobilisers' to help explain the Government's intention to provide 520 villages with boreholes. Knowing that over 80% of the Ugandan population attends religious services weekly, the mobilisers used this channel as well as other community meetings to reach the people. WDD also provided technical people to explain how the "U-Two" handpump worked and its maintenance requirements. Each Community (village) was asked to appoint 11 members plus the 9 Resistance Committee Members to represent it in a series of meetings on the project. This number equalled approximately 20% of Community adults, half of whom were women because special emphasis was put on encouraging women to attend. In addition, each community elected five of these members to a sub-committee specifically for Water and Environmental Sanitation (WES) issues.

Representatives of every 10 neighbouring Communities met to discuss the project with Government and UNICEF officials. Over 100

such meetings were held before the project began. The aim of these meetings was to discuss and learn from the communities how best to develop a community-based maintenance and management system for the handpumps, and enabled the Communities to fully participate in decisions regarding pump location and installation surroundings, the maintenance and management system and fund raising control procedures to cover maintenance costs and management. Chambers (1983) describes the process as 'reversals in learning'.

Records of ideas and suggestions from these meetings were kept and a general framework for the community maintenance system developed. The minutes from lower level meetings were copied at each stage and passed upwards for each higher level meeting in order to standardise the system as much as possible, yet allowing maximum flexibility to each Community to manage their own affairs. This was more in tune with a 'process' approach in contrast to the former 'blueprint' style, or 'participative planning' (Roy:1982).

In the meantime each group of Community representatives explained to their own people in the village what was discussed, and recorded ideas and suggestions for the next series of meetings. At the Community representatives meeting, three members were elected from their ranks to represent all ten Communities at Sub-County level. Here, all the ideas and suggestions from each of the previous meetings were discussed. The plan was to refine the system to suit the Sub-County while at the same time allowing maximum flexibility at Community level.

Five representatives were elected from among the Sub-County members to go forward to the District level at 5-day workshops to finalise the entire system. At District level 65 representatives

from communities in the 13 Sub-Counties met with Government representatives from the Ministries of Local Government, Finance, Health, Culture and Community Development, Planning and Economic Development, Rehabilitation, Water and Mineral Development, Women's Affairs and the National Executive Council of the Resistance Committees in addition to representatives from Luwero District Administration, UNICEF and local NGO's. This workshop refined all the ideas and suggestions of the previous meetings to the mutual satisfaction of both Government and Communities. As well, a series of information leaflets and a booklet with guidelines to help communities set up community maintenance were developed and printed in the local languages.

Each Community then selected a pump caretaker for training in preventive maintenance. Every twenty Communities selected two pump mechanics for training in major repairs and maintenance. The Communities also decided how they would pay the pump mechanics and compensate the pump caretakers. They also decided how they would manage the system and monitor pump use and breakdowns. WDD and Local Administration then trained the pump mechanics and caretakers. Successful mechanic graduates were issued with all the necessary tools and a bicycle, and caretakers issued with basic tools for preventive maintenance.

Each Resistance Committee at Sub-County level was given a years supply of free spare parts and management and monitoring forms and record cards by WDD for all the pumps within their Sub-County. These Committees, as well as the Village Sub-Committee members for WES were also trained in management and monitoring of the system by Local Administration and WDD. Health education was

also given to caretakers, pump mechanics, Resistance Committee members and District staff by the Ministry of Health.

At District level sales depots were established and managed by Local Administration to sell pump spare parts provided by WDD. Training in pump maintenance management and monitoring was also provided at this level for the District monitoring and support system. Communities were thus able to buy standardised spare parts locally when their free spares ran out. Tax-free prices were set and publicised to prevent corruption and price escalation beyond Community level affordability, and receipts issued for all sales.

The system was closely monitored by Government and participating Communities over the first two years of the project's inception, and refinements made to the mutual benefit of all parties in order to make it acceptable, efficient, effective and more manageable by the Communities, somewhat similar to the 'FSR' approach (Clayton:1983). Results showed that over the 18 months of the project cycle and for two years afterwards (up to the present), 98% of all pumps were working at any given time and that the breakdown-to-repair time did not exceed two days, with the majority of repairs made the same day of breakdown, a stark contrast to the former BMU's service level. Government has, since 1987, begun to replicate the system throughout the country.

An aid agency phenomenon in which successful development projects are sought after by aid agencies (McNeill:1983), provides testimony for the relative success of the project. Many foreign aid agencies have since been willing to contribute funding or technical assistance to the Uganda Community-Based Handpump Maintenance scheme, such as DANIDA, SIDA, CIDA, British ODA,

Italian Aid, LWF, Water Aid, Action Aid, OXFAM, VSO, and SCF(UK). The World Bank is interested in the system and hopes to replicate it in other African countries, particularly in Malawi, Zimbabwe and Kenya. Sudan has since adopted a similar system.

The NRM Government fits into the *incremental* mode from the fact of its top-down structure in directing community participation. However, it has elements of the *participatory* mode in that Government gives full approvals and commitment to community participation through the creation of necessary resources and institutional framework which aids in its realisation. The Resistance Committee structure exemplifies this. There is power sharing in decision making as seen in meetings held to decide issues of maintenance, management, design of the project, pump locations, design of the surroundings and the control over the pump use. Government provides materials and training and coordination of activities at all levels including monitoring of the project and a back-up system at District level for major repairs to the boreholes when desilting is required. This makes it a three-tier maintenance system where communities are given local control over budgets in raising and managing their own funds. This devolution of powers and functions enabling communities to have control over policy making and resource application reflects a 'reversals in management' style (Chambers:1983).

The reasons for community participation under the NRM Government are principally towards the *end* to empower the people towards better services with greater self-reliance in accordance with their socialist philosophy. The project helped people get used to the new form of government structure and has opened

opportunities to their tackling other social problems of health, agricultural education, women's issues and local security problems. Although participation has concurrently helped as a *means* to deliver services in the most efficient way, Government's willingness to share power by working with people in developing the process has shown its direction to be progressing away from the purely *manipulative*.

The *interrelationships* between the objectives, intensity and instruments are close to the 'optimum' level of Paul's scale. But as Moser (1989(b),p84) explains:

> "In reality it is not the evaluation of participation either as a means or as an end which is important, but the identification of the process whereby participation as a means has the capacity to develop into participation as an end."

Chapter Four

IMPLICATIONS FOR COMMUNITY SELF-HELP WATER PROGRAMMES

The first two chapters established the importance of clean and reliable water to all human health and how Community Participation has evolved in recent history, partly in an effort to provide water services. Chapter Three presented a case study of Uganda in which various modes of CP have been utilised, greatly influenced by the ideological philosophy of each of its successive governments, and which in turn has effected the access, reliability and technology of water to its rural population. From the case study the following implications can be drawn.

4.1 Technical and Financial Implications

- Communities should be given complete and *unbiased technical information* on options suitable to the physical aspects of their situation, including those of construction and maintenance. This is a prerequisite to enable communities to choose the best technology within their social, cultural and financial constraints.
- The technology chosen needs to be *compatible* with local skills and capabilities.
- Wherever possible, within variations of community choice, technologies should be *standardised* to promote in-country or local manufacture.
- Maintenance systems should be *decentralised* as much as technically feasible to allow maximum village level operation and maintenance.
- Comprehensive technical and managerial *training* at local level needs to be provided, with special training for women if

they are culturally responsible for the provision of water at household level.

- *Community access to a permanent source* of necessary materials, tools and spare parts, as well as technical back-up services where needed, is vital to ensure self-reliance.

- The system should be designed from the outset with an *in-built monitoring system* suitable to the community, and which enables continuous checking and allows for modifications as needed.

4.2 Political Implications

To ensure greater self-reliance for communities in rural water supplies, governments must be prepared to adopt policies towards:

- *Devolution of power* to the beneficiary communities regarding decision making and control over resources.

- Providing full *commitment and approval* of the concept of community participation, ideally in the 'participatory mode', which would include providing or facilitating through agencies, the provision of the *necessary resources, institutional frameworks, training, materials and coordination of activities.*

- *Reducing government bureaucracy* and *enacting or enforcing laws* which assist the facilitation of community maintenance and ownership, for example developing guidelines defining roles and responsibilities, protecting communities from exploitation, etc.

4.3 Social Implications

- *All social and economic levels* of each community must be given the opportunity to fully *participate in all phases of the project cycle*, which implies supplying full information and

providing ample time for decision-making to take place. It is vital that communities be given the *right to refuse or revise* options.

- Where culturally and socially feasible, *women should be involved* in all phases, especially if their water needs are different than those of men.

- Inasmuch as technological and physical constraints will allow, communities should be given *choice in selection* of technology, site location, training, management and maintenance.

- Emphasis should be placed on *capacity building* of local organisations for management and maintenance rather than creating new organisational structures.

- *Flexibility* should be built in to the *ongoing technical and social monitoring* process in order to prevent options from closing, and to allow modifications as needed physically, financially and socially.

- Provision of *health education* should be included during all phases of the process in order to promote the maximum benefits of clean water and possibly inspire self-help efforts towards other social services.

CONCLUSIONS

There are critical shortfalls in water supplies for rural populations in the Third World. Because of the high costs involved in developing these sources, coupled with the worsening conditions of their poverty with no immediate relief in sight, rural communities cannot afford to develop and sustain this basic need without assistance.

Although foreign aid agencies worldwide have committed themselves to providing technical assistance, technology, supplies and funding to alleviate the situation of the poor, they cannot fully implement this overwhelming task for many reasons: for one, the root of the problem lies in poverty caused by maldistribution of wealth; for another, the sheer cost of covering the world's water needs is beyond what is avilable from foreign aid donations; as well the agencies are not efficient enough to be able to manage a programme on the magnitude required; and more importantly, communities need to contribute to these services in order to have a sense of responsibility towards and control over their own development.

Governments of the Third World also need to be involved in the process of providing water for their own people. They, more than foreign aid agencies have the mandate and the power to redistribute wealth, if only they have the 'political will'. If a government utilises the technical definition of 'authentic community participation' (in which governments cannot be involved), it in effect would call for them to abdicate moral responsibility for helping to provide basic needs. Even if they do not have the

necessary financial resources to cover the needs of the rural poor, using Midgley's 'modified' definition of authentic participation to enable them to fulfil their humanitarian obligations while forging partnerships with their people.

The people in return would be empowered to assist in their own development as a basic human right. The global economic crisis may be in a small way a 'blessing in disguise' if it can force more governments to admit that they can no longer afford to provide social services, which in reality they never did. In anticipation of another global recession in 1990, with Iraq at the epicentre of troubles in the oil-producing countries, another 'shock' may be on its way. These situations with the advent of more democratic forms of government will hopefully bring about more participatory forms of development strategies.

BIBLIOGRAPHY

Arlosoroff, S et al (1987) Community Water Supply: The Handpump Option Washington DC: The World Bank

Behrman, N. (1988) Health in Developing Countries Cambridge: Hobsons Publishing

Bennett, J.F. (1985) 'Growth and Development pp 17-26 in Jelliffe, D.B. (ed) Child Health in the Tropics Suffolk: The Chaucer Press Ltd.

Bourne, P. (1987) 'Water and Sewerage' in Roth, G. The Private Provision of Public Services Oxford: Oxford University Press

Breathnach, P. (1989) 'The International Monetary Fund and the Third World Debt' pp 7-10 in *Third World Now* Issue 37

Brown, A. (1985) 'Goals of the IDWSSD' pp 26-27 in Pickford, J. Developing World Water London: Grosvenor Press International

Brydon, L. and Chant, S. (1989) Women in the Third World Hants: Edward Elgar Publishing Limited

Cairncross, S. et al (1980) Evaluation for Village Water Supply Planning Chichester:John Wiley and Sons

Carothers, R. (1981) 'Anaerobic Digestion as a Rural Sanitation Option' pp 34-40 in IDRC Sanitation in Developing Countries Ottowa: International Development Reasearch Centre

Chambers, R. (1983) Rural Development: Putting the First Last Essex: Longman Scientific and Technical

Chandra, R.K. and Newberne, P.M. (1977) Nutrition, Immunity and Infection New York: Plenum Press

Clayton, E. (1983) Agriculture, Poverty and Freedom in Developing Countries London: The Macmillan Press Ltd.

Cook, R. (1985) 'Diarrhoeal Disease in Early Childhood' pp 102-109 in Jelliffe, D.B. op cit.

Denham, J. (1989) 'The Debt Crisis Origins and Overview' pp 1-3 in *Third World Now* Issue 37

Doyle, B. (1983) Uganda National Borehole Survey Kampala: UNICEF

Ebrahim, G.J. and Rankin, J.P. (1988) Primary Health Care: Reorienting Organised Support London: Macmillan Publishers

Feachem, R. McGarry, M. and Mara, D. (1977) Water Wastes and Health in Hot Climates New York: John Wiley and Sons

Fontaine, R. (1984) 'Dracunculiasis Surveillance' p 118 in Dodge, C. and Wiebe, P. Crisis in Uganda Oxford: Pergamon Press

Goussault, V. (1968) 'Rural Animation and Popular Participation in French-Speaking Black Africa' pp 525-550 in *International Labour Review* Volume 197

Hall, A. (1986) 'Community Participation and Rural Development' pp 87-104 in Midgley, J. et al Community Participation, Social Development and the State London: Methuen and Co. Ltd.

Hardiman, M. and Midgley, J. (1989) The Social Dimensions of Development Hants: Gower Publishing Company Ltd.

Harrison, P. (1979) 'The Curse of the Tropics' pp 602-603 *New Scientist* 22 November

Hebert, J.R. and Ssentamu, S. (1985) 'Water Supply, Sanitation and the Effect on the Health Care Delivery System' pp 117-126 in Dodge, and Weibe (eds) op cit.

Holdcroft, L.E. (1984) 'The Rise and Fall of Community Development 1960-65' pp 207-231 in Jones, G.E. and Rolls, M.J. Progress in Rural Extension and Community Development Chichester: John Wiley and Sons

Hopkins, D.R. (1986) 'Guinea Worm' pp 31-32 in Briscoe et al Evaluating Health Impact: Water Supply, Sanitation and Hygiene Education Ottowa: International Development Research Centre

Jolly, H. and Levene, M.I. (1985) Diseases of Children Oxford: Alden Press

Kajubi, S. (1989) Education Policy Review Commission Report (Kampala: Ministry of Education)

Kanyeihamba, G. (1988) "Power That Rode Naked Through Uganda Under the Muzzle" pp 70-82 in Hansen, H. and Twaddle, M. Uganda Now: Between Decay and Development London: James Currey Ltd.

Lipton, M. (1977) Why Poor People Stay Poor: Urban Bias in World Development London: Temple Smith

Lofchie, M.F. (1988) 'Africa's Agricultural Crisis: An Overview' pp 108-123 in Farmar, A. The Developing World Dublin: DESC

McJunkin, F.E. (1982) Water and Human Health Washington DC: USAID

MacPherson, S. and Midgley, J. (1987) Comparative Social Policy and the Third World Sussex: Wheatsheaf Books Ltd.

MacPherson, S. (1982) Social Policy in the Third World Sussex: Wheatsheaf Books Ltd.

Marsden, D. and Oakley, P. (1982) 'Radical Community Development in the Third World' pp 153-163 in Craig, G. et al (eds) Community Work and the State London: Routledge and Kegan Paul

McMaster, D.N. (1962) 'Cultivated Land' pp 44-45 in Government of Uganda Atlas of Uganda Entebbe: Government Printers

McNeill, D. (1983) The Contradictions of Foreign Aid Australia: Croom Healm Ltd.

McRobie, G. (1981) Small Is Possible Glasgow: Sphere Books Ltd.

Midgley, J. et al (1986) Community Participation, Social Development and the State London: Methuen & Co. Ltd.

Moser, C. (1989)(a) Adjustment From Below: Low-Income Women, Time and the Triple Role in Guayaquil, Ecuador London: London School of Economics Mimeograph

..... (1989)(b) Community Participation in Urban Projects in the Third World Oxford: Pergamon Press

Momsen, J.H. and Townsend, J.G. (1987) Geography of Gender in the Third World London: State University of New York Press

Museveni, Y. (1985) Selected Articles From the Resistance War Kampala: NRM Publications

Pacey, A. (1980) Hand-Pump Maintenance London: Intermediate Technology Publications

Parizkova, J. (1982) 'Nutrition and Work Performance' pp 307-328 in Chandra, R.K. Critical Reviews in Tropical Medicine New York: Plenum Press

Paul, S. (1986) Community Participation in Development Projects: The World Bank Experience Washington DC: World Bank

Pickford, J. (1985) 'Refugees Without Water' pp 14-16 in Pickford, J. (ed) op cit.

Pringle, G. (1962) 'Malaria' pp 38-39 in Uganda, Government of Atlas of Uganda Entebbe: Government Printers

Raikes, P. (1988) Modernising Hunger London: Catholic Institute for International Relations

Redclift, M. (1987) Sustainable Development: Exploring the Contradictions London: Methuen & Co, Ltd.

Riddell, R. (1987) Foreign Aid Considered London: James Currey Ltd.

Roth, G. (1987) The Private Provision of Public Services in Developing Countries Oxford: Oxford University Press

Roy, P. (1982) 'Extension With the Disadvantaged: A Radical View' pp 71-85 in Jones, G.E. and Rolls. M.J. Progress in Rural Extension and Community Development Chichester: John Wiley and Sons

Scanlon, D. (1964) Education in Uganda Washington DC: US Government Printing Office

Scheyer, S. and Dunlop, D. (1985) 'Health Services Development in Uganda' pp 25-41 in Dodge, C. and Weibe, P. op cit.

Seers, D. (1981) Development Options: The Strengths and Weaknesses of Dependency Theories in Explaining a Government's Room to Manoeuvre Brighton: IDS Publications

Smith, G. (1982) 'Priorities for Medicine and Health in the Tropics' pp 1-26 in Chandra, R.K. op cit.

Southall, A. (1988) 'The Recent Political Economy of Uganda' in Hansen, H. and Twaddle, M. op cit.

Swift, C. (1983) Mental Health Nairobi: AMREF

Thomas, H.B. (1962) 'Evolution of Uganda's Boundaries" pp 74-75 in Government of Uganda op cit.

Todaro, M.P. (1989) Economic Development in the Third World New York: Longman Inc.

Turnbull, C. (1973) The Mountain People London: Picador Books

UNICEF (1988) Uganda Country Information Kampala: UNICEF

..... (1989) Children and Women in Uganda: A Situation Analysis Kampala: UNICEF

Uganda, Government of (1966) Geological Survey Department: Annual Report 1966 Entebbe: Government Printers

..... (1982) Revised Recovery Programme: 1982-1984 Entebbe: Government Printers

..... (1986) Evaluation Report of the UNICEF Assisted Emergency Water & Sanitation Project, Luwero Entebbe: Ministry of Health Printers

Van Arkadie, B. and Ghai, D. (1969) 'The East African Economies' pp 316-383 in Robson, P. and Lury, D.A. The Economies of East Africa London: George Allen and Unwin

White, G.F. et al (1972) Drawers of Water Chicago: The University of Chicago Press

World Bank (1989)(a) Sub-Saharan Africa: From Crisis to Sustainable Growth Washington DC: World Bank

World Bank (1989)(b) World Development Report 1989 Washington DC: World Bank

World Health Organisation (1984) Women, Water and Sanitation Geneva: WHO

..... (1988) Community Water Supply and Sanitation Geneva: WHO

Worsley, P. (1984) The Three Worlds London: George Weidenfield & Nicholson Ltd.

Wrigley, C. (1988) 'Four Steps Towards Disaster' pp 27-53 in Hansen, H. and Twaddle, M. op cit.