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RATIONALE AND STRATEGY FOR INITIATING WATER SUPPLY AND SANITATION PROGRAMS IN SUB-SAHARAN AFRICA

WASH TECHNICAL REPORT NO. 19

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Prepared for the Africa Bureau of the U. S. Agency for International
Development under Order of Technical Direction No. 107

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Rationale and Strategy for Initiating
Water Supply and Sanitation Programs in Sub-Saharan Africa

I. Introduction

The Audience. This strategy should be read in conjunction with the Africa Health Strategy Statement, dated January 1983, since this statement is designed to reach the same audience, namely in-country mission personnel charged with developing, monitoring and evaluating health, nutrition, population, human resource and rural development programs, and their host country counterparts, and USAID personnel in Washington and in regional offices who are responsible for programs contributing to health development in Africa.

Objectives. This brief statement will suggest the rationale for investing in and implementing water supply and sanitation programs in rural and peri-urban areas of sub-Saharan African nations. It will also summarily outline the strategies by which such programs can be introduced and the manner in which these interventions complement and enhance the impact of other USAID programs (e.g., health, agriculture and rural development) and increase the prospects and rate of socioeconomic growth. Finally, this paper will propose the manner in which the process of formulating policies, defining and implementing programs, and developing/strengthening institutions in support of water supply and sanitation programs can be initiated.

This paper is intended to encourage USAID personnel to investigate the potential that water supply and sanitation programs have for stimulating overall improvements in the quality of life of the people in sub-Saharan Africa. It is not a specific "how-to" manual since specific programs are the prerogative of individual missions. This statement, however, does suggest how

to begin. It recognizes that although most water supply and sanitation programs share common components, individual programs are country-specific and must be tailored to meet specific development objectives of the host government.

II. Rationale for Investing in Water Supply and Sanitation Programs in Sub-Saharan Africa

Brief Overview of the Socioeconomic Situation in Sub-Saharan Africa.

Sub-Saharan Africa, an area containing more than 350 million inhabitants increasing annually at a rate of 2.7 percent, is the poorest region on the globe in terms of average annual growth rate per capita (0.8 percent), adult literacy (28 percent), life expectancy at birth (47 years), and death rates of children aged 1-4 (25 per 1,000). Already in a very precarious position, current trends suggest that the situation in the region is worsening. Indeed, in the last two decades the region has experienced declining rates of economic growth, a drop in per capita productivity and, in the urban areas, an increasing dependence on imported foods.

While this paper refers to sub-Saharan Africa as a whole, the region is not a unified entity where one set of interventions is likely to have a uniform impact. Each of the 47 countries in the region has certain political, economic, cultural, social, climatological and geographical elements that make it unique.

Still, there are some common characteristics among the countries. The average GNP per capita for all the countries is less than 1,000 U.S. dollars; in 28 countries the average is less than 400 U.S. dollars. There is a scarcity of educated people and a critical dependence on the export of agricultural products. Thirty-seven of the countries in the region, for example, are wholly dependent on the sale of one or two agricultural items.

These common characteristics are constraints to development in many ways, because they limit the rate at which new ideas and programs can be absorbed and implemented. Since the countries of the region are the least developed and some have at best a precarious existence, the ability of governments to embrace programs that might threaten an already delicate balance--that is, to risk changes in policies--is severely limited. Therefore, development programs that can overcome these constraints must be designed and implemented in a manner that builds on and improves the limited natural and human resources without undermining either. At the same time, the governments must come to see that any new programs prepared have minimum risks and prospects for significant returns.

The U.S. currently provides less than 10 percent of official development assistance (ODA) in Africa, but is still the third major donor. USAID works in 37 of the 47 countries of sub-Saharan Africa and financially supports the work of private voluntary organizations in most of the other countries.

The general focus of USAID- and AID-assisted programs has been to improve the agricultural productivity of the region and to increase the prospects for long-term economic, social and political stability. The thrust of U.S. assistance has been to unleash the productive potential of the African farmer. In cooperation with the governments of the region, USAID has developed and supported programs designed to diversify and increase agricultural output and to improve the productive potential of the individual African.

Health, population and nutrition programs have been employed as one means of improving the status of the individual African. The link between improved health status and increased productivity is often acknowledged and frequently documented. Since independence the governments of the countries

of the region have invested heavily in basic health programs. The international donor community has funded in the past, and continues to support primary health care programs in many of the countries of the region.

Yet, in spite of concerted efforts by the governments and significant donor assistance in terms of grants, loans, goods and technical assistance, poor health status persists and is pervasive in the region. Moreover, given the rapid increases in populations of most of the countries, the governments' ability to meet the demand for basic services and to improve overall health status by intensifying or extending some existing programs is limited at best.

Currently, the governments have limited resources available to improve productivity and overall health status and well-being. Moreover, it is unlikely that the international donor community will be able to increase aid or that the governments will be able or willing to borrow the funds needed to fund and expand the existing programs. The governments and the donor community have, therefore, begun to consider launching or, if they exist, emphasizing programs that can achieve desired objectives without placing additional burdens on government services or the national treasury.

Ideally, these programs call for more community involvement, in terms of labor and contributions (cash and kind), and less government supervision/control. Most importantly, these programs lead to improvements in health status and human and agricultural productivity. These interventions are regarded by the people of the community as essential goods, and for their benefit. Water supply and sanitation programs fall among these development interventions.

The Role of Water Supply and Sanitation Programs in the Development Process. It is the thesis of this strategy statement that the governments of sub-Saharan Africa are taking reasonable risks to improve socioeconomic well-

being while insuring political order. It is also acknowledged that the means at the governments' disposal to improve existing conditions are limited and already heavily committed to support existing policies and programs. Introducing new programs or expanding existing ones, or changing current policies, can be done only if such actions enhance the stability of the existing order and do not require sizable, new development interventions in terms of investments or long-term recurrent expenditures. Water supply and sanitation programs take these realities into account. Also, supporting these interventions offers the governments of the region the opportunity to improve productivity and socioeconomic well-being in the rural areas where the problems are most pressing and the government has the least direct influence.

- a. Water supply and sanitation programs decrease morbidity and mortality and offer the promise of improved levels of productivity

WHO estimates that approximately 80 percent of all sickness and disease in the world can be attributed to inadequate supplies and poor quality of water, and to improper sanitation practices. While many of the diseases are manifested in the form of specific water-related maladies such as trachoma, schistosomiasis, malaria, and cholera, general diarrheas linked to water supply through personal and domestic hygiene kill more than 6 million children in developing countries and contribute to the death of up to 18 million.

(International Drinking Water Supply and Sanitation Decade, Case History #6 - Impact of Water Supply and Sanitation Programmes in Developing Countries, UNDP, December, 1981.)

Past epidemiological studies have shown that improving the quality and quantity of water can break the cycle by which pathogens enter and weaken the body and lead to decreases in the prevalence of diarrhea and other water-related diseases. Breaking the fecal-oral cycle offers the promise of

potential improvements in the levels of productivity of the individual and the community.

(F. Eugene McJunkin, Water and Human Health, USAID Contract AID/DSAN-C-0063, July 1982, pp. 7,87).

As indicated much of the sickness and death in the countries of Africa can be attributed to inadequate supplies of water for domestic use and to lack of hygiene practices in handling water, food, and excreta. Ill-health can have a drastic effect on the individual's ability to be productive. For example, in parts of sub-Saharan Africa where Guinea worm infection is rampant, farmers may be incapacitated for extended periods of time and unable to participate in planting and harvesting. While this illness can represent a significant loss of earnings to the individual, it is also a loss of revenue to the community. This disease is only one among several water-related debilitating diseases in sub-Saharan Africa which may affect as many as 50 percent of the residents of some areas. Reducing the incidence and prevalence of this disease can contribute to improvements in health status and overall economic productivity.

(Ward, William, "The Impact of Drancunculiasis on the Household: the challenge of measurement." Paper presented at an International Workshop on Opportunities for Control of Drancunculiasis, Washington, D.C., June 16-19, 1982, Washington National Academy of Sciences.)

b. Water supply and sanitation programs increase the productive capability and status of women

Women and children in sub-Saharan Africa are the principal collectors and carriers of water. Water collection often places an enormous demand on a woman's energy, especially when great distances must be covered to locate and transport water. Making water more accessible frees women and gives them more time for other tasks, especially child-rearing and household chores. With more time available, women are better able to contribute in

other ways to the social and economic enhancement of the community. Women are also potentially able to choose the manner in which their time will be used.

Since it is women who most frequently collect, transport, store and use water, they have the greatest degree of interest in improving existing practices. Water supply and sanitation programs offer an opportunity to involve women directly in development. While the results of involving women in these programs are difficult to estimate in general, it is suggested that unleashing their productive potential can have a very positive affect on the development process. If less time is spent finding and carrying water, women can have more time to care for children, educate themselves, and participate in the cash economy, e.g., by selling the increased production of their household gardens.

(Raymond B. Isely, "The Relationship Between Accessible Safe Water and Adequate Sanitation and Maternal and Child Health--Looking Forward to the Drinking Water and Sanitation Decade," Water Supply and Management (5)(6), 249-313, 1981; Gilbert F. White, David J. Bradley and Anne U. White, Drawers of Water: Domestic Water Use in East Africa, Chicago: University of Chicago Press, 1972; and John Briscoe, "Water Supply and Health in Development Countries: Selective Primary Health Care Revisited." Paper presented at the International Conference on Oral Rehydration Therapy, Washington, D.C., June 7-10, 1983).

c. Water Supply and Sanitation Programs Enhance the Prospects for Community Cooperation and Rural Devevelopment. Communities in sub-Saharan Africa are perhaps more immediately aware than most that water is an absolute necessity for life. The Sahelian people know as do few others the debilitating effects of drought. At the same time, the damaging effects of a surplus of uncontrolled water in the form of floods are recognized by communities of all parts of Africa.

Water is a common element needed by all members of the community. Each has a high degree of interest in ensuring access to a close, clean and adequate supply. In essence, community viability is closely related to the degree to which individuals within the communities cooperate to locate and protect an adequate supply of water.

Unlike their immediate response to other development interventions, communities in sub-Saharan Africa are predisposed to cooperate to obtain improved access to increased quantities of water. The concern for more or more accessible water makes communities more likely to accept programs that secure these objectives. In time, the effects of cooperation in developing and maintaining the water supply programs can have a positive effect leading a community to accept and implement other development activities. For example, the relationship between protected latrines and good water may not be readily understood. Water supply activities will, however, be readily embraced. If programming links the one with the other, the community learns to think of these interventions as one. In time, this cooperation can lead the community to have greater confidence in its own ability to improve local conditions. Indications are that this development phenomenon has occurred in parts of Asia and Latin America. There is evidence to suggest that this approach is occurring in Africa as well, where the need to cooperate in order to ensure access to water is many times more urgent.

d. Water Supply and Sanitation Programs Are Cost Effective and Capable of Being Financially Self-Sufficient. It is frequently argued that water supply and sanitation programs are too expensive, in comparison with other health care interventions, e.g., oral rehydration therapy. Capital costs are often regarded as exorbitant and recurrent costs beyond the consumer's ability to meet, yet it is logical to eliminate the sources of diarrhea rather than to only treat the victims.

There are indications, however, that the poor in developing countries--especially those who purchase water directly from vendors and/or walk several miles to a water source--pay a proportionately higher percentage of their income, measured as cash or loss of time, for water than do their wealthier countrymen. In peri-urban and rural areas the poor pay dearly for an inferior quality of water. Such data tend to counter the argument that rural and peri-urban dwellers do not have the means or the willingness to pay for water.

Whether the ability to pay is sufficient to offset the cost of providing service is unclear. It seems apparent, however, that consumers will pay something for good water and perhaps an amount sufficient to maintain a system if an appropriate one is put in place.

It is difficult to quantify the direct effect of investing in water supply and sanitation programs, or to measure the differences between this investment and other primary health care interventions. Still, water supply and sanitation programs would seem to benefit mothers and children most directly, and this group represents the productive potential of the nation. Improving the health of women and children would tend to ensure future productivity, measured as either increased direct economic activity or decreased cost to the society, i.e., curative health care.

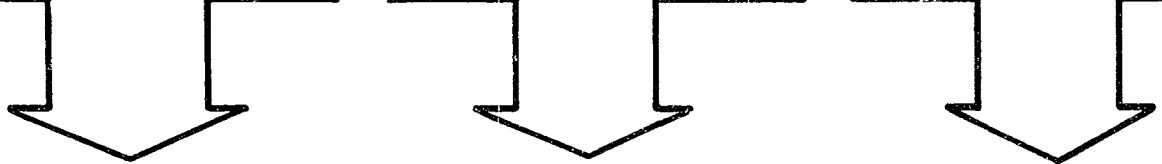
Figure 1 summarizes the impacts of water supply and sanitation programs. While the reasons noted above are incorporated in this figure, other relationships are suggested as well.

Primary Impacts

- 1. Health**
- Reduced water-related disease
 - Decreased mortality
 - Improved nutrition
 - More surviving, and healthy, children
 - Reduced natality
 - More energy for work and learning

- 2. Social**
- Less burden, more convenience for women and children
 - More time for productive family, leisure, community activities
 - Greater satisfaction with rural life

- 3. Environmental**
- Cleaner home and community environment
 - Less stream and groundwater pollution
 - Reduced flooding and soil loss
 - More rational, conserving water use



Secondary Impacts

- 4. Economic**
- Less work time lost from sickness
 - Improved labour use
 - Enlarged farm/factory output
 - Higher income and purchasing power
 - Increased employment
- Added income and greater confidence for further social and economic improvements**
- 5. Other Activities**
- Health care
 - Nutrition
 - Education
 - Housing
 - Family planning
 - Farming/animal husbandry, etc.



Long-Term Impacts

- 6. Cumulative, reinforcing impacts can include:**
- | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Health: | Reduced medical costs; health services redeployment |
| Social: | Better use of human resources; improved community development/self-help prospects |
| Environmental: | Better natural resources management; population/water balance |
| Economic: | Increased production and public revenues; slowed rural/urban migration and more productive rural use of government funds; reduced rural/urban income disparities |

SOURCE: "Impact of Community Water Supply and Sanitation Programmes in Developing Countries, UNDP, December, 1981.

Figure 1. Impacts of Clean Water and Adequate Sanitation.

III. Strategy for Introducing Water Supply and Sanitation Policies and Programs

The strategy set forth below consists of two fundamental steps. Section IV following sets forth the specific activities that can be conducted to accomplish this strategy.

The first step in this strategy is to encourage and support policies that take into account the rationale summarized above and can lead to the development and introduction of water supply and sanitation programs. This step needs to be undertaken in countries where water supply and sanitation programs are not a high priority or where the government policy on water supply and sanitation is undefined. The second step, taken in countries where water supply and sanitation programs are underway and supported by the government, but perhaps incompletely integrated into the total development program, is to examine existing programs in health, agriculture, education and community development to ensure that there is a degree of cooperation and complementarity. It is necessary to emphasize the fact that as water supply and sanitation programs benefit communities they are a catalyst for further development.

In implementing this strategy, three general analyses need to be conducted. First, it is necessary to understand the prevalence of water-related mortality and morbidity and to analyze the constraints to developing policies supportive of water supply and sanitation interventions and/or to define the deficiencies in the current programs. Without a policy supportive of water supply and sanitation it would be difficult to find the resources needed to implement a program. It is essential to understand fully the development objectives of the government and to frame a policy supportive of water supply and sanitation in ways likely to secure those objectives.

Both Malawi and the Central African Republic have made a close connection between overall national development and investments in water supply and sanitation programs. In the case of the Central African Republic the government is just beginning to define a policy on water supply and sanitation that will draw the disparate regions of the country into a process by which common objectives will be achieved through formulating policies and implementing programs in water supply and sanitation. In the case of Malawi, the government has made a major investment in a rural water supply and sanitation programs in order to achieve multiple objectives, among which are improved community productivity and health status.

In overcoming deficiencies in the programs themselves, it is useful to examine initially those measures that appear to be working well before attempting to define and resolve the problems. For example, if community education programs are well received and operating effectively, it would be wise to determine the elements that make them effective. It would be useful as well to build on what is working rather than try to correct what is not.

In general, water supply and sanitation programs succeed or fail depending on the degree to which technical issues, and social and cultural issues are taken into account. These issues are noted below. Among the technical issues are:

- 1) the convenience, reliability, quantity and quality of water;
- 2) the process by which sites are selected and the sources developed;
and
- 3) the technology utilized to make the water available.

The social and cultural issues are more critical to program success and encompass the following:

- 1) the degree of community participation in the program; and
- 2) the extent of integration with other primary health care or community development programs. (See the Water Supply and Sanitation Policy Paper, Health Policy Series, USAID, March, 1982, pages 17-29).

A second step in the basic strategy is to define the in-country institutions capable of formulating policy, correcting program deficiencies, or building on program successes, including national institutions training key personnel. While this is an obvious step, it is frequently overlooked. Too often attention is drawn to the one or two dynamic individuals who may have an interest in the program rather than to the institutions which can offer long-term support. While water supply and sanitation programs are highly desired by individual communities, their most important impacts are only noticeable after several years of implementation. It is essential, therefore, to have complete institutional involvement in the programs. Concern for support of logistics and more complex maintenance tasks alone warrant their involvement.

It is important at this juncture to isolate in particular the role of most Ministries of Health. Ministries of Health in most sub-Saharan African countries are under-financed, understaffed, and often poorly managed. Most Ministries of Plan, Public Works, Agriculture, or Rural Development, who are charged with rural water supply programs, are relatively better endowed with both financing and personnel. Donor agencies prefer to work with them for these very reasons. Yet, Ministries of Health are charged with two aspects of a water supply and sanitation program that no program can afford to neglect, namely: (1) sanitation in its multiple ramifications (not just latrine construction, but improved hygiene of water, food, and housing; personal hygiene; and control of solid wastes, rodents and insects), and (2) education

in health for proper use of facilities. These two services differ in their general staffing pattern. Sanitation services have generally more qualified personnel and better coverage of rural populations, while health education services are usually understaffed and limit coverage to mass media campaigns. One aspect of the assessment of in-country institutions, is a review of existing and potential relationships of Ministries of Health to Ministries in charge of water supply, with a particular view to bringing them into programs.

The success of water supply and sanitation programs is directly attributable to the success to which all concerned private and public institutions have taken an active and continuous part in designing programs, training users and staff in operations and maintenance, and monitoring operations. This has been the strategy followed by the C.A.R.E program in the Cameroon with commendable results.

Finally, since the resources of the governments of sub-Saharan Africa are limited while the need for improvements, especially in rural areas is great, the degree to which international donors are interested and capable of participating in water supply and sanitation programs needs to be assessed. USAID plays a relatively small part in terms of the total dollars invested in development activities in sub-Saharan Africa. USAID's interest may be sufficient to marshal interest in formulating policies and designing programs supportive of water supply and sanitation, but it may not be sufficient to ensure sustained involvement and long-term impact. Therefore, the interest of other donors needs to be taken into account in order to determine whether there are mutual country-specific or regional interests that could lead to some form of donor cooperation. This has happened in response to drought in the Sahel, and in the C.A.R. and Malawi in connection with water supply and sanitation programs.

The activities suggested are admittedly general and could apply to other development interventions as well as water supply and sanitation. The strategy needs to be couched in these terms because each country and region has specific characteristics and can only be addressed on a case-by-case basis.

IV. Resources/Aids Available to Help USAID and Host Country Counterparts

Take the Initial Steps in Policy Formulation and Program Definition and Implementation

The activities suggested in this section are more specific to sub-Saharan Africa. Their implementation will produce information specific to water supply and sanitation programs in the countries and the regions. These activities are suggestions of what might be done to enhance the process by which water supply and sanitation can be implemented and extended.

1. As a first step, this strategy paper could be circulated among the personnel of AID Missions and shared with host country counterparts, other donors, and PVOs and NGOs active in the region. Mission staff might also request materials developed by the WASH staff (AID project no. 931-1176), as well as other materials on water supply and sanitation, and circulate them among the same group. Mission staff could also conduct a careful review of the Country Development Strategy Statements (CDSS) and the country's development plan to determine whether there is a role for water supply and sanitation activities in USAID and country development projects. For example, since USAID is interested in encouraging the prospects of food self-sufficiency in sub-Saharan Africa attention might be given to the extent to which small scale water projects (e.g., garden wells) can foster this objective.

2. Missions might also wish to convene an Africa Bureau Health Conference at which the results of water supply and sanitation programs in Africa (and elsewhere) could be brought to light and where staff (health officers, rural development officers, etc.) could receive in-service training in water supply and sanitation. The conference could also be used to train in-country personnel in specific technical areas (e.g., construction of appropriate latrines or wells) as well as a forum where policymakers would have a chance to review data and share ideas and information with one another.

3. In countries where water supply and sanitation programs are underway or about to be implemented, Mission personnel might request assistance in reviewing the projects or plans, and could ask for assistance in strengthening key components that can ensure project success. For example, training in community organization/participation, user (health) education, and personal and domestic hygiene are elements, as key as is ensuring the operation and maintenance of the specific water supply and sanitation technology. Since trained personnel and good training institutions are indispensable for achieving long-term impact, Missions will need to solicit the resources necessary to insure capacity building.

4. Finally, it is increasingly recognized by the governments of the region that the private sector has an important role to play in development. The private sector should be encouraged to participate in the manufacture of equipment and the training of local personnel. In Malawi, private local contractors and masons are already being trained to install and maintain the rural water system. This practice could be replicated elsewhere. The private sector in the region may also be able to extrude the plastic pipe and the fixtures needed for the water supply systems. (This has already been done in parts of Latin America and Asia.)

Naturally, while the private sector should be encouraged to participate and may want to, the degree of involvement will be related to market size and an estimate of the venture's profitability. Since the market size may not be large enough to support national production in certain countries, regional entities might be the answer. The more that can be done to involve all segments of the economy in the design, installation, operation, and use of the water supply and sanitation systems, the greater the prospects that these systems will remain operational over the long-term and contribute to the well-being of the communities of the country and the region.