WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTÉ

International Drinking Water Supply and Sanitation Decade

WHO/DANIDA WORKSHOP ON WATER SUPPLY AND SANITATION INFORMATION FOR SECTORAL MANAGEMENT

Mangochi, Malawi 10-14 November 1986

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Gregor Watters
J.W. Kwamina Duncan
Mary Mabviko

A. INTRODUCTION

1. The WHO/DANIDA workshop on Water Supply and Sanitation for Sectoral Management was organized and managed by WHO headquarters (CWS/EHE) and WHO/AFRO (SRHDO III Harare) with funds provided by DANIDA. Additional technical backstopping was provided through participation in the workshop of staff members and consultants from UNDP, UNICEF, IRC and USAID. Two consultants were provided by WHO headquarters.

2. The workshop was attended by participants and observers from Member States of WHO Sub-Regions II and III, namely: Botswana, Kenya, Lesotho, Malawi, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. Representatives of UNDP, UNICEF, IRC, USAID and DANIDA also attended as observers. The full list of participants is annexed to this report (Annex 1).

B. OBJECTIVES OF THE WORKSHOP

3. The main objectives of the workshop were:

(i) to review country information collection, storage and retrieval systems for water supply and sanitation services, compare these with the sector needs for planning, management, stimulation of investment and promotion, and develop a strategy for a system which will respond to the identified requirements.

(ii) present and review the methodologies developed by WHO for national and global water supply and sanitation monitoring and those set out as guiding principles for the establishment of national monitoring systems, and

(iii) review the information requirements of selected bilateral, international development agencies; compare these with the national capabilities for information generation and develop proposals for appropriate systems which will, as far as possible, satisfy the different requirements. Emphasis would be given here to information needs to support the stimulation of funding to the sector and how realistic are the present requirements in relation to national information systems capabilities.

C. TOPICS COVERED BY THE WORKSHOP

4. During the workshop the topics discussed (see Annex 2) included:

(i) Country papers providing information on data collection systems, capabilities of countries, and levels of service coverage.

(ii) An overview of objectives on country information collection, storage and retrieval systems for water supply and sanitation services.

(iii) An overview of objectives on methodologies developed by WHO for national and global water supply and sanitation monitoring.

(iv) Observers' papers presentations.

(v) An overview of objectives on information requirements of bilateral and multilateral funding agencies active in the sector.

(vi) Bilateral and multilateral funding agencies' presentations.

(vii) Development (by groups) of strategy for a system which would respond to the identified requirements.

(viii) Recommendations and follow-up plans of action.

5. In addition, a conducted field visit was undertaken to the following:

(i) Livulezi Groundwater Integrated Project where several villages were visited and activities of the water point committees were studied.

(ii) Dombole Rural Gravity Fed Piped Water Schemes - featuring slow-sand filters, village tap installation and tap committee performance.

D. OPENING SESSION

6. The workshop was officially opened by the Guest of Honour, the Principal-Secretary for Works and Supplies, Mr Charles Clark. The Director of WHO Sub-Regional Health Development Office III (SRHDO III), Harare, Zimbabwe, Professor Umaru Shehu then made a statement on behalf of the WHO Regional Director for Africa, Dr Gottlieb Lobe Monekosso.

7. Professor Shehu welcomed distinguished guests and participants and requested self introduction by all present. He thereafter expressed sincere gratitude to His Excellency, the Life-President, Ngwazi Dr H. Kamuzu Banda, the Party and Government for hosting the workshop and for the warm welcome accorded to the workshop participants. He then stressed some aspects of the subject matter of the workshop which encompassed a whole discipline of monitoring, reporting and evaluation of activities common to all sectors. He noted that an important element of this monitoring process is support to governments in developing their own capability for information collection, analysis, retrieval and dissemination, and hence improve management and planning within the framework of national institutional arrangements.

8. Professor Shehu said that one of the topics of the workshop was to review the guiding principles for National Monitoring of the Water Supply and Sanitation Sector, WHO document WHO/CWS/86.6. The guidelines therein are designed to assist national authorities in creating and maintaining a regular mechanism for monitoring the water supply and sanitation sector. The need for such a mechanism at the national level became apparent during the global monitoring exercise, carried out by WHO of the International Drinking Water Supply and Sanitation Decade (IDWSSD). The full text of the statement is included in this report as Annex 3.

9. The Guest of Honour, the Principal Secretary of Works and Supplies, Mr Charles Clark in delivering his keynote address welcomed participants to the workshop. He then commended and thanked WHO and DANIDA for the workshop and for providing the essential financial support for a successful workshop. He also thanked the other agencies - UNDP, UNICEF, IRC and USAID for their generosity in meeting the costs of some of the participants and of their staff members, who were attending the workshop.

10. Referring to the subject and objectives of the workshop, the Guest of Honour stated that the aim of the workshop was indeed data collection. Most of the information required would not be supplied by the participants, but would come from the field, from a man or a women who may not even have a blunt pencil. It was therefore necessary to make requests for information and data collection in a language that was simple and comprehensible to field workers. He emphasized that there was no point in grandiose resolutions and decisions being taken at the workshop if they were misunderstood by the man responsible for the collection of the basic data. (Full text of the Secretary's address is annexed to this report as Annex 4.)

11. In offering a vote of thanks to the Guest of Honour, Professor Shehu thanked the Principal Secretary for his encouraging and inspiring words reflecting the great support and interest for the workshop's deliberations. He assured him that simplicity would be the watchword for the workshop, and self-reliance could truly be promoted if the people at the field level understand the basic concept of information and data collection. In closing, Professor Shehu thanked the Honourable Members of Parliament and representatives of the Women's League from Mangochi for their presence in the opening session of the workshop.

E. PROCEEDINGS OF THE WORKSHOP

12. The workshop technical sessions began with the election of the following officers:

Chairman	Mr Stanley Ruston Phiri **(Malawi)** Proposed by Zambia and seconded by Tanzania
Vice-Chairman	Mr Jacob B. Sibiya **(Botswana)** Proposed by Tanzania and seconded by Uganda
Rapporteur	Mr Josuah Gecaga **(Kenya)** Proposed by Zimbabwe and seconded by Botswana

13. The workshop Chairman thanked the participants for his nomination and outlined the approach to conducting the workshop in accordance with the proposed agenda. It involved an introduction on the objectives and programme content of the workshop, country presentations; WHO and consultants' presentations of the topics of workshop objectives; and bilateral and multilateral funding agencies' presentations. These presentations would be followed by plenary discussions. After the first two days of work, the participants would undertake field visits. The final two days of the workshop would be devoted to group discussions on: recommendations of strategy for a system which would respond to the identified requirements; plans of action for follow-up to the workshop; and reporting and adoption of the workshop report.

14. The participants were then requested to comment on the agenda and timetable prepared by the Secretariat. A need was expressed for the participants to give an input into what they felt were the objectives of the workshop, vis-à-vis the objectives presented by the Secretariat. The agenda

was accepted in principle with the proviso that the participants should feel free to amend it after presentation of country papers. A request was made to include a sanitation facility in the field visit. The delegates from Malawi however pointed out that there was a problem of transport and time to get to the nearest rural sanitation project area. It was then agreed that the visit should be confined to the two water schemes.

15. The above approach was then accepted, and the workshop programme adopted with the amendments agreed upon. The adopted workshop timetable is annexed to this report (Annex 2).

STATEMENT BY WORKSHOP COORDINATOR

16. Dr G. Watters, the WHO workshop Coordinator, discussed the purpose of the workshop. The March 1977 UN Water Conference at Mar del Plata, recommended that governments prepare realistic programmes to bring safe and adequate water and appropriate sanitation to as many of their population as possible by 1990, with the ultimate goal of providing services and access to facilities by all. The first prerogative for planning was to assess the current situation to provide the basis from which to move forward. At the same time the UN Water Conference reqested that the international community intensify its cooperation with the ongoing activities of WHO globally to collect data and monitor progress in the water supply and sanitation sector. These activities at the international level relied entirely on information from contries and therefore were closely related to and dependant on the national information system capability.

17. The workshop Coordinator noted that largely because of the diversity of national agencies responsible for providing water supply and sanitation services, the difficulties in collecting information on a national, regional and global level was quickly amplified; and the need for improved capability was identified. In response to this the World Health Organization had developed a methodology outlined in "Guiding Principles for National Water Supply and Sanitation Information Systems".

18. The objective of the workshop was to review the document and, based on the experience of national sector monitoring, consider how closely it reflects national needs and how it will support actions at the decision-making level in governments and also improve sector management and planning. The workshop recommendations are expected to promote utilization of the "Guiding Principles" in the participating countries and also to draw on the first-hand experience of the participants to identify areas where the document can be modified or improved to correspond more closely to perceived needs.

19. With the objectives of the workshop in mind, Dr Watters proposed that participants addressed themselves to the following three points in analyzing the document:

(i) What data/information should and can reasonably be collected?

(ii) What mechanism/institutional arrangements are required for data collection, processing and dissemination?

(iii) How will the information system be utilized for promotion of the sector and for improved management?

20. Dr Watters also suggested that participants study the following documents from the workshop reference materials:

- National and Global Monitoring of Water Supply and Sanitation, WHO, 1982
- Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector, WHO, 1986.

21. After the presentation the following points were raised by participants:

Arrangements should be made to ensure proper follow-up of the workshop deliberations. Dr Watters responded by saying that WHO and DANIDA were aware of this and that appropriate measures will be taken.

- It was pointed out that some of the WHO publications referred to above have not reached the intended readership.
- It was noted that the documents, i.e. (WHO Guidelines) were aimed at stimulating the Member countries to produce the required information on the water and sanitation sector.
- Participants were informed that information on water and sanitation Decade activities were available in UNDP offices.

PRESENTATION OF COUNTRY PAPERS

22. The following country papers were presented:

BOTSWANA

23. Mr Selotlegeng gave an historical account of the coordinating mechanism of Ministries of Finance, Health, Mineral Resources and Water Affairs, and Local Government and Lands for the water and sanitation sector. Government concern had been on reduction of the incidence of diseases associated with water and improper sanitation practices. Most importantly he observed that only 25 per cent of the rural population had proper human waste disposal facilities. This predisposing factor was contributory towards the formulation by the Government of corrective efforts that gave credence to the establishment of data collection, storage and retrieval systems in order to keep track of the intervention impacts.

24. Mr Selotlegeng indicated that in the water and sanitation programme information is fundamental to cost-effective implementation. He provided a laundry list and matrix of occurrences from which pertinent statistical data had been obtained and noted that this represented acceptable data documentation. The Certificate of Rights for example was an acceptable land tenure document issued only to a plot allocated by the self-help housing management committee who fully constructed a sanitation unit of choice.

25. International organizations have been helpful in supporting Government activities, and some examples of their involvement were given by Mr Selotlegeng. The Netherlands Government is sponsoring the Self-Help Environmental Sanitation Project (SHESP) supervised by UNICEF. A project management institution would shortly be studying aspects of interministerial water supply and sanitation coordination. All pre-emptive conclusive recommendations would be presented to the Government for acceptance, financing, and implementation, while also generating data collection and storage.

26. In contributing to the country paper Mr Jacob E. Sibiya noted that the supply of piped water to communities only becomes an investment if it has the components of organized water quality surveillance and water hygiene education for consumers. The absence of these components in any community water supply scheme defeats the purpose of the scheme where the overall intention and purpose of the scheme is to safeguard the health of the community against waterborne diseases. Community participation has the important element of the felt needs of individual/community and has its limits depending on tasks to be carried out. Community participation should therefore not be seen to be imposed on communities in rural areas or used by those in authority in lieu of carrying out their responsibilities and obligations to rural communities.

KENYA

27. Mr Joshua Gecaga presented the Kenya country paper. He said that six separate entities are responsible for the provision of water supply and sanitation facilities, and minimal coordination amongst them has hampered the development of strategies and data flow. The Central Bureau of Statistics prepares an annual abstract covering economic, financial and social aspects of life, but surprisingly water supply and sanitation information and data are not included. The Ministry of Water Development, the major water supply undertaking, produces annual reports on ongoing projects as well as past construction evaluation reports, while the water pollution control section collects data on quality of natural water bodies (potential/actual sources). In addition the Hydrological Section collects data on water quality, on water levels and flows, and on all public and private boreholes. These are well documented and readily available.

28. Mr Gecaga continued by saying that the Water Apportionment Boards in the country issue and keep records of permits for extractions, although these are not required for small domestic abstractions. Local government and larger municipalities (Nairobi and Mombasa) report on revenues and expenditures, however data covering the population connected to services is badly documented. In the large municipalities data on communicable diseases is published annually and is readily available.

29. In conclusion, Mr Gecaga said that the available data on water supply and sanitation is mainly used for: design purposes, annual development statistics, support to external funding and annual mandatory reporting. The major constraints to the establishment of a more comprehensive information system are: lack of awareness of the need for a system, lack of coordination, lack of excreta disposal service (unfelt need), political constraints to publication of adverse figures, lack of systematic procedures and guidelines, and haphazard storage and retrieval of information and data.

LESOTHO

30. Mr Dan Mofokeng Makhetha in his presentation of the Lesotho country paper highlighted the sector responsibilities as distributed amongst various Government ministries/departments. Four sections in three ministries are involved in the water and sanitation sector namely:

(i) The Water and Sewage Branch of the Ministry of Water, Energy and Mining (MWEM) is responsible for urban water supplies.

(ii) The village Water Supply Section in the Ministry of Interior, Chieftainship Affairs and Rural Development (MICARD) oversees the rural water supplies.

(iii) The urban sanitation improvement teams in the MWEM and MICARD concentrate on urban sanitation and low-cost on-site sanitation facilities.

(iv) Rural sanitation is undertaken by the Ministry of Health through its Environmental Health Section.

31. He then outlined the coordination mechanism amongst these four sections through the National Steering Committee, which periodically reviews the achievements and constraints and sets targets for the International Drinking Water Supply and Sanitation Decade programmes.

32. As far as information flow was concerned Mr Makhetha listed the various Government institutions involved. The Bureau of Statistics is the focal point and publishes the socio-economic and cultural data. The Water Affairs Departments are mainly responsible for data collection, storage and retrieval on water resources. The urban and rural sanitation units maintain information on urban and rural sanitation, chiefly for monitoring and evaluation purposes.

MALAWI

33. Mr Peter A. Chindamba presented the Malawi position paper which included: piped water, groundwater and sanitation programmes. Information for rural water supply begins at the project level with project request forms which are submitted to the District Development Committees to initiate actions. Normally other readily available support data include topographic maps (1:50,000), aerial photographs, census (national statistics office), hydrological data, information of existing systems, data on water quality from periodical analyses (bacterial) and half-yearly monitoring reports. There also exists individual evaluation reports of specific projects - Zomba district, Zomba West and institution building for operations and maintenance are examples.

34. Mr Chindamba said that the main constraints are information gathering, shortage of staff at senior level, lack of aerial photographs and obsolete population figures (last census was in 1977). Groundwater data consists of old records contained in sixteen sets of files and include old borehole location maps. A system of revised borehole numbering has now been introduced, and borehole data compilation is done using the cardex system. He concluded that very limited information is available on most of the existing dug wells; however, new data sheets have been developed and the system is being expanded. Consideration is currently being given to transferring the cardex system to a system of computer storage and retrieval.

35. On sanitation data collection and recording systems, Mr Chindamba stated that the information flow is from village level to central level through village Health Committees, Health Surveillance Assistants and Health Inspectors. Other sectors of the Ministry of Health such as maternal and child health, communicable diseases (control of childhood communicable diseases), bilharzia control project health centres, hospitals and private clinics send statistical reports and monthly return forms. The data is processed, and results are disseminated to interested parties and to the field staff. Data on water/sanitation-related diseases and sanitation facilities in the communities is collected through the referral system from village level to central level. The Ministry of Health recently acquired a computer system which processes, stores and retrieves information on health and related sectors.

SWAZILAND

36. The country paper for Swaziland was jointly presented by Mr Emmanuel Lukhele and Mrs Precious Thandie Dlamini. Mr Lukhele described the geography, population, and health statistics and expanded on the responsibilities of the Rural Water Supply Board (RWSB) in planning, management, construction, maintenance and water quality surveillance activities. He listed some of the constraints and emphasized that the periodic analysis and utilization of data is part of the planning and implementation process for sectoral management. He then referred to the inventory that was established for rural water supply systems in the RWSB. This enabled the proper presentation of 1986 levels of service coverage. Strategies have been established for meeting the needs, especially in community reporting of information on water and sanitation activities.

37. Mrs Dlamini outlined the various responsibilities of the institutions involved in urban, peri-urban and rural sanitation programmes. She then elaborated on the methods of information collected by the Health Assistants throughout the country and the compilation of this data into monthly reports. She listed in detail the objectives of collecting this information, the types of information needs, and their utilization and the management of materials purchased for the water and sanitation sector. She mentioned that the National Action Group which coordinates the International Drinking Water Supply and Sanitation Decade programmes, regularly asesses sectoral needs, and records progress of project implementation. In conclusion Mrs Dlamini listed some constraints which included lack of transport for health inspectors, health assistants and others.

TANZANIA

38. Mr R.M.A. Swere presented the Tanzania paper introducing first the country's physical and regional features. He then outlined the institutional arrangements with respect to the water and sanitation sector. The Ministry of Lands, Water, Housing and Urban Development is responsible for water and urban sanitation, while the Ministry of Health and Social Welfare is responsible for rural sanitation at the national level. At the regional and district levels, the respective water and health offices under the Regional and District Commissioners' offices are responsible for the water and sanitation affairs.

39. Mr Swere pointed out that other institutions which are responsible for water and sanitation include the Prime Minister's Office and the Ministry of Local Government and Cooperatives Development, because of their responsibility for the regional and district authorities respectively; and the Ministry of Community Development because of its role in community mobilization and participation.

40. With regard to service levels, Mr Swere said that water supply coverage is about 42 per cent, urban sanitation is 50 per cent and rural sanitation is 45 per cent. The collection of information on water and sanitation involved several kinds of data and these include:

- data which indicate or assess the capability for undertaking projects
- data which is used to show demand for providing services
- data on operational conditions and serviceability of the utility
- data for monitoring the performance of the service
- data required for planning purposes.

41. Mr Swere noted how the data is collected, transmitted, analyzed, stored and used. He noted that lack of appreciation for data collection and lack of central reporting and monitoring systems tend to make the exercise of data collection ineffective. Other problems include lack of expertise in data management, lack or shortage of software and hardware materials required for collection, storage and dissemination of data.

UGANDA

42. Mr J.M. Kiwanuka presented the Uganda paper, describing the country background with respect to geographic position, climate, population and economy. He then named the responsible national agencies for water supply and sanitation and their scope of responsibility. The Ministry of Water and Mineral Resources (MWMR), through its Department of Water Development, is responsible for the provision of adequate and good quality water to all Ugandans; and the National Water and Sewerage Corporation, a parastatal body under the same Ministry, is responsible for water and sanitation in Kampala, Entebbe, Jinja and at a later stage Mbarara, Tororo, Mbale and Lira.

43. He pointed out that the implementation of water and sanitation programmes would have been very difficult for the Government had there not been donor agencies such as UNICEF, World Bank, European Economic Community, African Development Bank, Islamic Development Bank, etc., to assist. He said that Uganda has undergone considerable hardships in the past, but with peace and stability prevailing in the country at present, the Government, with support from external funds, would endeavour to construct pit latrines, protect springs and wells, drill new boreholes and rehabilitate existing water and sanitation facilities.

44. Mr Kiwanuka further said that the MWMR liaises with other related ministries in the operational activities of water supply and sanitation programmes, principally with the Ministries of Health, Local Government and Culture, and Community Development. All information provided to the ministries originates at the grassroot level through the village, parish and sub-county committees. The procedure was described with the example of provision of a borehole to a village. Information gathered includes: location, depth, worktime, registration number of borehole, pump installed, data completed, water analysis, etc.

45. He concluded by describing other data collection by hospital, rural medical units, population census and the community. Collection is effected through monthly returns from hospitals and the field staff, planning of services by community committees, and returns from plant operators. The storage for the information is at each level of collection in the individual ministries, and centrally by the Ministry of Planning and Economic Development.

ZAMBIA

46. The country paper of Zambia was presented by Mr Peter C. Mphande, starting with a brief introduction of Zambia as regards location, area, rainfall, population, growth rate, life-expectancy, etc. Mr Mphande then named the institutions responsible for the water supply and sanitation sectors, and summarized the water supply and sanitation levels of service coverage as at 1985. Other information and data on the sector were given, as well as the 1981 assessment for rural sanitation. In spite of the collection of a lot of information on water supply and sanitation as a result of the Decade planning exercise recently completed in Zambia, no system has yet been followed for regular collection of data on both water and sanitation sub-sectors.

47. Mr Mphande then outlined constraints to the establishment of information systems which included: the general manpower shortage; lack of sufficient funds; and lack of coordination among the many institutions dealing with the sector. He pointed out however that plans were underway to set up a computer-based data bank at the Department of Water Affairs during the fourth National Development Plan period.

ZIMBABWE

48. Mr Nason Shadreck Mtakwa presented the Zimbabwe country paper by first noting that Zimbabwean colonial inheritance has been a markedly heterogeneous socio-economic structure, particularly reflected in a sharp imbalance between levels of development in rural and urban areas. Three Government agencies are, therefore, centrally involved in the institutional responsibilities for the water and sanitation sector - the Ministry of Health, the District Development Fund of the Ministry of Local Government Rural and Urban Development (MLGRUD), and the Ministry of Energy and Water Resources and Development (MEWRD). Municipalities, on the other hand, are responsible for operation of all urban water supplies and sewered and non-sewered excreta disposal systems.

49. With respect to information management Mr Mtakwa listed the resources of information utilized by the various Government agencies - Ministry of Health has national health information systems serviced by Primary Health Care workers. The Central Statistical Office use national samples and census; MEWRD use the national data bank with respect to hydrological records; MLGRUD obtains information through District Administrators and District Development Funds.

50. He then concluded that the existing systems are deficient in several respects:

- lack of integration
- emphasis on implementation rather than information collection
- delays in passing information
- little consensus and no guidelines as to what information should be gathered.

He indicated that future plans would concentrate on encouragement of district level planning, standardization of the flow of information by the National Action Committee coordinating IDWSSD, and improved plans for more extensive computerization.

ELEMENTS OF NOTE IN THE COUNTRY PAPERS

51. Mr Antonio Tomassi, WHO/Consultant, summarized some elements of note in the country presentations. A common problem cited by the participants was the number of institutions with varying degrees of responsibility in water supply and sanitation, and the lack of coordination and information exchange amongst them. In one case, information on water-related diseases available in the Ministry of Health was not readily accessible to the water authorities. In another instance, the responsibility for water supply and sanitation information systems rested with a Steering Committee for the IDWSSD but in general information was collected and analysed by the individual technical agencies.

52. He noted that in another case it was mentioned that the Office of Statistics annually published a comprehensive yearbook giving social and economic information; unfortunately, water supply and sanitation were not included in the sections dealing with housing, health and population. Another element was that every Ministry concerned with water supply and sanitation had a Statistical Planning Unit. However, interministerial coordination and exchange of information were lacking.

53. Mr Tomassi also listed other elements in the country presentations; in one case, data on rural water supply and sanitation were collected at the village level by environmental health personnel or through village health committees which were key components of Primary Health Care. In another country presentation, the mechanics of data storage through recording on maps or on card systems was described, and the possibility to upgrade this study to computer operation was under study. Reference was made to standard forms developed for boreholes and water systems in rural areas and to difficulties encountered in their completion.

54. A recognized constraint to information collection at the community level was either insufficient community health personnel or lack of transport coupled with insufficient or no field allowances. In one case it was anticipated that the collection of water supply and sanitation information would considerably improve in conjunction with the gradual development of Primary Health Care.

55. Mr Tomassi also noted that in one case it was said that motivation of persons collecting data should not be overlooked and this could be accomplished through appropriate briefing on the reasons for data collection and adequate feedback on how the data are used. Cases were reported where the Decade had led to the undertaking of comprehensive surveys of the entire rural sanitation sub-sector with the National Action Committees playing the lead role. Although usually taken at ten-year intervals, consensus could provide a useful baseline for water supply and sanitation information which could then be updated and expanded through more frequently spaced water supply and sanitation oriented data collection exercises. If the community to be served has a non-monetary economic base, projected cost estimates should not be based on average unit costs but should take into account the input in kind from community participation.

56. Mr Tomassi finally listed the following subjects which were not or only marginally reported in the country papers:

(i) the institutional upgrading necessary to establish and operate a water supply and sanitation information system (personnel, human resources development, facilities and costs)

(ii) use made of the information on water supply and sanitation

(iii) difficulties in transferring data and information from the peripheral to the more central levels

(iv) the role that public information departments can assume in promoting the interest of the people for water supply and sanitation programmes

(v) the experience, if any, that participants have had with the UN Survey of Household Capability Programme.

REVIEW OF WHO METHODOLOGY FOR NATIONAL WATER SUPPLY AND SANITATION INFORMATION SYSTEMS

57. Mr A. Tomassi introduced the topic and made a brief mention of WHO's involvement in global monitoring, leading to important events such as the designation of the period 1981 to 1990 as the International Drinking Water Supply and Sanitation Decade. Later WHO became involved in guidance documents for national systems and the blue book "Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector" WHO/CWS/86.6 was the result of work done in 1983, including a consultation held in Geneva in November 1983. It was believed that additional work was required to make the document more suitable for distribution to and use by countries.

58. He believed that WHO's expectation from the workshop was to take advantage of the actual working experience of the participants to improve the document especially in the sense of making it less central and more community oriented. Under "General Considerations" it was believed that the subject treated in the document should be given a definition and that the objectives and outputs of a Water Supply and Sanitation Information System should be sharpened. Also the Guiding Principles should not address themselves to situations where no information existed or where systems worked perfectly, but rather to situations in between.

59. Mr Tomassi then suggested that for a modest start scaling-down would be required and this could mean less reporting, fewer information items, limited area coverage, data collection based on sampling, or a combination of all of these. Definitions were proposed to differentiate data from information - whereas data are numbers that indicate certain requirements, information is an elaboration of this data. It was pointed out that collecting data that does not give information is a waste of resources.

60. He listed the major purposes of information. The information categories proposed in the Guiding Principles were mentioned and the question was raised whether a new category of "Constraints" should be added. It was also put to the participants whether one level of information rather than three, should be kept in Part IV of the Guiding Principles.

61. On mechanisms and resources, the complexities and diversity of the administrative set-ups for dealing with the subject were mentioned, together with the necessity for governments to identify an institution which would have the main responsibility for collecting, processing and producing water supply and sanitation information. The designated institution would probably require strengthening in terms of personnel, facilities, and financial resources.

62. Mr Tomassi also mentioned the various ways to collect data at the community level, and the resources needed for this operation, and for recording and aggregating the data. Output tables and diagrammes were seen as information results and the following sequence was suggested:

- determine what information was necessary
- determine how it should be presented
- design the output tables
- design the forms for data collection.

It was important to know where the authority rested to clear the information produced before it could be distributed.

63. He then briefly mentioned the design of the information system which could be construed as a project at the end of which the system would become institutionalized within the government. A note of caution was given on weighing the costs of an information system against the benefits which it would produce.

64. During the discussion on the topic several important points were debated by the participants and a consensus was reached that information collection should accomplish the following:

- improve the foundation for planning
- integrate water supply and sanitation sector in overall planning
- monitor progress
- identify constraints
- adjust targets or accelerate efforts
- promote resource allocation, both internal and external
- identify project cost differentials
- assess community benefits, i.e., health, social and economic
- disseminate sector information, i.e., public, sector agencies, external support agencies and government.

65. With respect to data on water supply and sanitation, the following are some of the points raised by the participants:

- The role of data collection in the overall planning strategy in Primary Health Care
- Coordination of institutions - should the responsibility of data collection be under a central statistics office or under individual institutions?
- What are the shortcomings of the existing data collection and retrieval systems and what remedies are required?
- It was difficult to explain why data on other sectors like transport, agriculture, etc., was well documented but that in the water and sanitation sector was neglected.

66. In concluding the presentation and the discussions on the topic, Mr Tomassi elucidated on the points raised by the participants and summarized them further as follows:

- means to effect coordination between the agencies concerned
- need to connect the information system with water supply and sanitation planning
- the advisability to change the title "information system" which connotates a much broader system of resources and facilities

- to build a matrix of priorities based on the various purposes of water supply and sanitation information in relation with governments' expressed priorities

- the suggestion of measuring trends, thereby offsetting the need for very accurate and hence costly information

- interrelation between sanitation and other health elements (assessment of health impact) or non-health elements such as social and economic benefits

- in data collection within a country, differences should be introduced to allow for different accountability and independence of action in different communities

- advantages and disadvantages desired from "indirect" collection of information.

INFORMATION REQUIREMENTS FOR EXTERNAL FUNDING ON WATER SUPPLY AND SANITATION PROJECTS

67. Before the presentation of the topic by WHO/Consultant, Mr S. Serdahely, the Chairman called on three international agency participants (IRC, USAID and UNDP) to make brief statements on the information requirements of their agencies.

68. Mr M. Seager of IRC highlighted the areas of involvement of IRC and explained that IRC classifies "information" into three broad groups - public information, management information and information knowledge. Since the workshop emphasizes management information, IRC's own interests in this area include: information knowledge gaps that need to be filled; information on ways in which this can be handled and used; who needs knowledge, of what type and how packaged; transfer through publications demonstration projects, training, etc.

69. Mr D. Warner, USAID/WASH Project said that information systems are important to both bilateral donors and to host countries. The donors need such systems in order to develop effective development assistance programmes, and host countries need them to direct their resources towards development needs. He continued by saying that at the level of implementing agencies in host countries, information systems can be divided into three main categories: inventory information, computer design aids and technical library. USAID views water and sanitation as an integrated process involving technology, health, community participation and education.

70. Mr H.T. Mwanza stated that UNDP was interested in the workshop in order to learn how information is collected and utilized. This knowledge would enable UNDP in collaboration with the executing agencies and respective governments present at the workshop to formulate and develop better and more meaningful projects in the sub-regions. He then explained some of the functions of UNDP in respect of fundings for sector development projects and for technical assistance. In this respect UNDP in collaboration with WHO and DTCD has funded four projects in Malawi:

- national water resources master plan
- domestic communal water points project
- borehole maintenance
- sanitation project in urban areas

71. Mr Serdahely followed up the statements of IRC, USAID and UNDP by noting that the wide variety of agencies which provide external funding creates a considerable spread in information requirements. At least half the bilateral donors as well as all the international banks and funds require some kind of appraisal report. Some agencies do not provide investment capital and, therefore, do not need detailed information or analyses.

72. Mr Serdahely said that international and regional banks may assist the borrower in the identification, study preparation, financing and execution of projects and programmes. In response to specific requests, bilateral donors also assist frequently through the provision of grants. UN organizations' assistance helps governments procure funds and also provide technical assistance. Volunteer organizations provide qualified young professionals for assistance in countries. Reference centres generate and transfer information; while non-governmental agencies' activities range from research to construction of systems.

73. He mentioned that information requirements for sector planning represent the basis for external funding, particularly those based on the service level concept. Thus all projects share the framework in which they are planned and executed - "the project cycle"; and this includes identification, preparation, appraisal and execution. Evaluation is also an element in some cases.

74. Mr Serdahely explained that identification is the initial stage, and information requirements would include such items as: level of existing services, development of new services, approximate costs and institutional information. Project preparation follows, and this requires the information which is utilized in feasibility studies. Appraisal is the most exhaustive stage, covering technical, financial, economic and institutional elements, and depends upon compilation of detailed information for analysis.

75. He continued that project implementation includes the preparation of progress reports by the borrower. The incorporation of monitoring indicators in the appraisal report, facilitates progress report preparation. The final documentation required from the borrower is the project completion report which compares the actual project as finally executed with that described in the appraisal report.

76. Mr Serdahely concluded that probably the most important information requirements are those which affect demand forecasting - not only the physical design, but the entire design of the investment programme depends on realistic demand forecasts, upon which the financial projections are also based.

77. In the discussions that followed the presentation, the particiants expressed reasons for some of the failures and successes of external funding agencies and governments in the cooperative ventures of executions of sector development projects. It was pointed out that sometimes governments resort to political decisions when accepting donors' assistance, even if such projects are not geared to be locally serviced and sustained after the withdrawal of the external support.

FIELD VISIT

78. A field visit was undertaken to projects that provided the participants with the opportunity to learn from experience at the Malawi grass-root level information collection on water supply and sanitation projects. The following water projects were visited:

(i) Livulezi groundwater integrated project
(ii) Dombole rural gravity-fed piped water schemes

LIVULEZI GROUNDWATER INTEGRATED PROJECT

79. The project provides groundwater extraction points for villages at a maximum walking distance of 500 metres. These extraction points are of two types: boreholes fitted with one type of handpump based on the VLOM system; and shallow wells or hand-dug wells fitted with another type of handpump also with minimum village level operation and maintenance system. The extraction points comprise both newly constructed and rehabilitated water points.

80. The participants first visited Kendeu - one of the pump maintenance centres in the Livulezi project. Mr Robinson D. Kaundu, Senior Hydrogeologist, participant from Malawi, explained the importance of the project as the centre for the Global Handpump Project of the World Bank in Malawi. Participants were later taken to see a few of the different types of pumps being tested at the following villages:

- Kamphulusa to see Indian Mark II
- Kambadya to new MarK V shallow-well pump
- Sitolo to see NIRA pump (made in Finland)
- Kumbuwa to inspect VLOM Africa Dev. Pump (modified). Here participants saw one of the caretakers (woman) repair the pump.

81. In general participants noted the sense of organization and of community self-help in the management of the water points visited. The water posts were accessible, functioning and fully utilized. There was considerable involvement of women in the tap committees. It was noted that a sanitation project did not appear to have been tied to the groundwater integrated project. The problem of overflow and pollution aspects were noted also and could be tackled by fencing the water points areas and developing vegetable and horticultural gardens around in order to tap the overflows.

DOMBOLE RURAL GRAVITY-FED PIPED WATER SCHEME

82. The scheme provides gravity-fed piped water to a population of about 22 000 through 107 km of piping and 140 standposts. There are four intakes from two different rivers: Dombole and Sanjike. The speciality of the water scheme is that it uses slow-sand filters, unlike the other gravity-fed systems. Mr Newton Chaya, Water Engineer and participant from Malawi, conducted the participants at the filters and storage tank sites. He explained that the project cost at the time of completion in 1984 was Malawi Kwacha 287 000; and that slow-sand filters were adopted because the water from Dombole river is at times highly turbid and of poor bacterial quality.

83. From the slow-sand filters, the participants were conducted to Bale village where they met the Tap Committee and the Project Committee. Participants observed that the distribution and layout of villages in Dombole makes it possible for water to be made accessible to many people in the area. There was evidence that the women have been much involved in the management of the scheme.

84. Of note during the return trip from Dombole to Mangochi was a brief stop at the Ulongwe Primary Health Care Unit where participants viewed the making of pit latrine concrete slabs on a self-help basis, with financial assistance from the Liwonde Agricultural Development Division.

GROUP DISCUSSIONS ON STRATEGY FOR A SYSTEM WHICH WILL RESPOND TO THE IDENTIFIED REQUIREMENTS

85. On the fourth day of the workshop, the participants formed three working/discussion groups, and each group undertook indepth examinations and discussions on development of strategies for systems which would respond to the identified requirements. At the beginning of the group work, Dr G. Watters provided participants with guidelines on approaches and lines of attack to the issues proposed for the group discussions with the view that meaningful solutions would be found for making concrete recommendations and follow-up plans of action. Thereafter, the groups worked according to their terms of reference and later reported to the plenary on their work; and further critiques and discussions were held on the different strategies developed.

86. The reports of the groups are presented in Annex 6. Recommendations on key guidelines/strategies that emanated from the plenary and group discussions are summarized below, heading by heading.

A. Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector

The participants mindful of the fact that one of the objectives of the workshop was to review the WHO's Guiding Principles of National Monitoring of the Water Supply and Sanitation Sector thoroughly discussed the various elements of the document.

It was considered that considerable revision and some additions were required to make the document more suitable for distribution to and use by countries.

WHO was encouraged to take into account the suggestions made by the workshop and included in Annex 6 of this report in its approach to improving the document especially in the sense of making it less central and more community oriented.

It was recommended that:

1. As a prelude to the appropriate amendments and innovation on the guidelines and to avoid repetition and duplication of effort in the collection of data only one level of information (the third level) be adopted as national blue prints for information collection.

2. WHO guidelines should also include other agencies' guidelines where applicable.

B. Data and Information Content of National Water Supply and Sanitation Information Management System

The workshop was unanimous that water supply and sanitation information exists already in most countries but is not integrated.

It recognized the need for data banks or, alternatively, co-opting the active involvement of Central Statistical Unit which exists in most countries for collection, storage and retrieval of information on water supply and sanitation.

It also considered the usefulness of effective coordination and dissemination of information between the data bank and the users - WSS institutions.

It recommended therefore that:

1. Reviews be made on data and information collected from time to time such as population growth rates, GNP, classification of rural peri-urban and urban areas, etc., in order to ensure that it is accurate and necessary.

2. Governments should look into possibilities of establishing data banks and information collecting units where these do not exist.

3. WHO should make resource mobilization information readily available to governments for dissemination.

C. Infrastructure and Organization at National Level Necessary for Practical Operation of a Water Supply and Sanitation Management Information System

The workshop having exhaustively reviewed the current and planned national systems as presented in country papers and comparing them with the guiding principles, recognized some areas which were not or only marginally reported.

It identified that institutional upgrading was necessary to establish and operate a water supply and sanitation information system (personnel, human resources development, facilities and costs), and recognized the difficulties in transferring data and information from the peripheral to the more central levels.

The role that public information departments can assume in promoting the interest of the people for water supply and sanitation programmes was underlined.

It recommended therefore that:

WHO undertakes further activities/research to develop a typical management information system for a hypothetical country and prepare this as an annex to the Guiding Principles. Solutions proposed could be used as example for improvement of infrastructure and organization of national systems.

D. External Support Information Needs

The workshop, using the objective 3(iii) of the "Aide Memoire WHO/DANIDA Seminar/Workshop on Water Supply and Sanitation", the National and Global Monitoring of Water and Sanitation booklet, Publication No. 2, IDWSSD, October 1982, in conjunction with WHO's Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector of June 1986, thoroughly considered external support information needs under the following:

- What do donors ask for in terms of information?

- What data and information can countries reasonably provide using existing resources?

- Do donors ask for too much information or unnecessary information?

- What extra information might help stimulate investments from donors?

It considered the importance of information for sectoral management and the inherent difficulties and incapacity of most governments to embark, develop or improve on national information systems.

It was believed that governments should enter and continue to foster cooperative ventures with bilateral, multilateral and international agencies in finding effective solutions for information systems.

It recommended therefore that:

1. Frequent reviews be carried out of donors' requirements and country information capacity through workshops, meetings, seminars, etc.

2. Donors should strengthen existing information centres in terms of equipment, materials, staff training, etc.

3. Donors should help recipient countries to collect data where information is lacking, as part of the development of national capability.

4. Donors should be prepared and countries should take initiative to schedule meetings to discuss information needed to stimulate investment.

5. Donors should include information system components when funding projects.

6. Donors and countries should see the need and encourage feedback on how the information is used.

FOLLOW-UP ACTION

87. Participants were of a view that WHO could prepare guidelines and suggest follow-up plans of actions for consideration of governments. Additionally extra-budgetary funds could be mobilized for consultancy visits to the countries to assist in mapping out sub-regional and country follow-up plans of action.

88. The workshop was in agreement that other follow-up action at regional and international level could include:

- organization of similar workshop in a Francophone country

- holding workshops at national levels in rotation amongst countries of Sub-Region II and Sub-Region III to monitor and review progress made in development of information systems

- exchange of information through correspondence amongst participating countries.

89. At national level the workshop proposed that for effective institutionalization of the Guiding Principles, follow-up action through National Action Committees and other interested organizations should be carried out at district, provincial and national levels.

F. WORKSHOP EVALUATION AND CLOSURE CEREMONY

90. Participants completed a questionnaire form (end-of-workshop review) which included options on: the appropriateness of the objectives of the workshop; the design; organization, management and conduct of the workshop, and possibilities for follow-up.

91. During the informal closing of the workshop, Dr Watters, the workshop coordinator, summarized the activities carried out from the opening session, highlighted the important issues discussed, and the consensus reached on others. He thanked the WHO consultants Mr A. Tomassi and Mr S. Serdahely for their competence, dedication and commitment which contributed to the success of the workshop. He then expressed particular gratitude to the Director, SRHDO III, Professor U. Shehu, and the WHO Representative for Malawi, Dr S.H. Siwale for supporting the workshop with their participation and contribution to the deliberations of the workshop.

92. He also thanked the three elected officials of the workshop, the Chairman, Mr S. Phiri, the Vice-Chairman, Mr J. Sibiya and the Rapporteur, Mr J. Gecaga. He noted that the preparation of the draft workshop report would not have been possible without their inputs, and also the considerable and dedicated efforts of the secretarial and support staff.

93. Dr Watters also expressed gratitude to the officials of the two Government Ministries - Works and Supplies and Health for their logistic support. He then expressed appreciation to the Management of Club Makokola for their custodial and catering services throughout the duration of the workshop. Thereafter, he called upon the participants and observers (UNDP, UNICEF, IRC, USAID) to ensure follow-up action to implement wherever possible the workshop recommendations and urge them to utilize their Governments' services and also take advantage of potential donors based in their countries for such follow-up work.

94. In his closing remarks the Chairman, Mr Phiri, thanked WHO/DANIDA for organizing the workshop which had facilitated considerable learning among participants. Many thanks go to the WHO Secretariat and WHO Consultants for the excellent work and their untiring efforts and dedication to the workshop programme work. There is great need for unity, solidarity and cooperation among water supply and sanitation workers within the overall broader multi-disciplinary and multi-sectoral structure for national management as a whole. This unity will be possible if we have opportunities to meet, consult and exchange ideas and views. The success of the workshop was indeed attributed to the able coordination of Dr Watters as well as the high quality of the other factors involved in the organization and management of the workshop. Last but not least - he commended Dr J.W. Kwamina Duncan for assisting the rapporteur in preparation of the draft report of the workshop.

ANNEX 1

LIST OF PARTICIPANTS

BOTSWANA

Mr Kadise Abram Selotlegeng
Counterpart Senior Public Health Engineer
Ministry of Local Government and Lands
Private Bag 006
Gaborone

Mr Jacob B. Sibiya
Chief Environmental Health Officer
Acting Head, Community Health Services
Ministry of Health
Private Bag 0038
Gaborone

KENYA

Mr Joshua Gecaga
Senior Lecturer, Public Health Engineering
Department of Civil Engineering
University of Nairobi
P.O. Box 30197
Nairobi

Mr Fredrick Donde
Senior Executive Engineer
Ministry of Water
P.O. Box 30521
Nairobi

LESOTHO

Mr Katleho William Lesaoana
Senior Engineer, Village Water Supply
Ministry of Interior and Rural Development
P.O. Box 686
Maseru 100

Mr Dan Mofokeng Makhetha
Senior Health Educator
Ministry of Health
P.O. Box 514
Maseru 100

MALAWI

Mr Peter A. Chindamba
Chief Public Health Officer
Ministry of Health
P.O. Box 30377
Lilongwe 3

MALAWI (cont/d)

Mr Stanley Ruston Phiri
Acting Chief Water Supply Officer
Water Department
Private Bag 390
Lilongwe 3

Mr Hastings Amurani-Phiri
Administrative Officer
Ministry of Works and Supplies
Private Bag 310
Lilongwe 3

Mr Newton L.B. Chaya
Water Engineer
Water Department
Private Bag 390
Lilongwe 3

Mr Robinson Daimon Kafundu
Senior Hydrogeologist
Water Department
Private Bag 390
Lilongwe 3

Mr Fabiano Kwaule
PSWS Project Officer
Water Department
Private Bag 390
Lilongwe 3

Mr Priston Adam Ngoyera Msiska
Economist
Ministry of Works and Supplies
Private Bag 316
Lilongwe 3

Mr Adam Isaac Zithani Nkunika
Senior Community Development Officer (Planning)
Ministry of Community Services
Private Bag 330
Lilongwe 3

Mr Yohane Nyasulu
Health Superintendent
P.O. Box 30377
Lilongwe 3

Mr Harris Shadreck Vokhiwa
Principal Administrative Officer
Department of Water
Private Bag 390
Lilongwe 3

SWAZILAND

Mrs Precious Thandie Dlamini
Health Inspector
Ministry of Health
P.O. Box 110
Pigg's Peak

Mr Emmanuel Lukhele
Clerk of Works
Rural Water Supply
P.O. Box 961
Mbabane

TANZANIA

Mr Edmund Vincent Mapunda
Senior Health Officer
Ministry of Health
P.O. Box 132
Mwanza

Mr Robert M.A. Swere
Senior Principal Executive Engineer
Ministry of Lands, Water, Housing and Urban Development
P.O. Box 91543
Dar es Salaam

UGANDA

Mr Joseph Mugerwa Kiwanuka
Field Coordinator, Sanitation Project
Ministry of Health
P.O. Box 8
Entebbe

ZAMBIA

Mr Peter Chivunga Mphande
Assistant Chief Health Inspector
Ministry of Health
P.O. Box 30205
Lusaka

Mr Mathew Mwanankonde Tapson Mulipukwa
Senior Engineering Assistant
Department of Water Affairs
P.O. Box 50788
Lusaka

Mr David M. Kabumu
Water Engineer, PSWS/PSSC Project Engineer
Department of Water Affairs
P.O. Box 50288
Lusaka

ZIMBABWE

Mr Nason Shadreck Mtakwa
National Decade Officer
Ministry of Health
P.O. Box 8204
Causeway
Harare

Mr David Frank Williams
Project Officer (Water and Sanitation)
UNICEF
P.O. Box 1250
Harare

DANIDA

Dr T. Jonch-Clausen
Technical Adviser
Danish International Development Agency
Ministry of Foreign Affairs
2 Asiatisk Plads
1448 Copenhagen

UNDP

Mr M.B. Canda
Deputy Resident Representative
UNDP
P.O. Box 30135
Lilongwe 3

Mr Harvey Tyson Mwanza
UNFPA National Programme Officer
UNDP
P.O. Box 30135
Lilongwe 3

UNICEF

Mr Cooper Dawson
Resident Programme Officer
UNICEF
P.O. Box 30375
Lilongwe 3

Mr Rodolfo (John) Townsend
Project Officer (WES)
UNICEF
P.O. Box 30375
Lilongwe 3

IRC

Mr Michael Seager
Programme Officer
International Reference Centre for Community Water Supply & Sanitation
P.O. Box 93190
2509 The Hague
The Netherlands

USAID

Mr Charles Gurney
Health Development Officer
USAID
P.O. Box 30455
Lilongwe 3

Mr Dennis B. Warner
Project Director
Water and Sanitation for Health Project
WASH Operations Centre
1611 N. Kent Street Room 1002
Arlington, Virginia 22209
United States

WHO SECRETARIAT

Professor Umaru Shehu
Director
Sub-Regional Health Development Office III
P.O. Box 5160
Harare

Dr S.H. Siwale
WHO Representative
P.O. Box 30390
Lilongwe 3

Dr Gregor Watters
Community Water Supply and Sanitation
Division of Environmental Health
WHO Headquarters
1211 Geneva 27

Dr J.W. Kwamina Duncan
Environmental Health Management Adviser
WHO Sub-Regional Health Development Office III
P.O. Box 5160
Harare

WHO Consultants

Mr Steven Serdahely
Sanitary Engineer/Consultant
5 chemin Louis Dunant
1202 Geneva

Mr Antonio Tomassi
Sanitary Engineer/Consultant
1 chemin Marais Long
1217 Geneva

ANNEX 2

WHO/DANIDA WORKSHOP ON WATER SUPPLY AND SANITATION INFORMATION FOR SECTORAL MANAGEMENT, MANGOCHI, MALAWI, 10 - 14 NOVEMBER, 1986

WORKSHOP TIME TABLE

WORKING HOURS SUGGESTED

Morning Sessions	0800 - 1230 hours
Break	0945 - 1015 hours
Lunch	1230 - 1430 hours
Afternoon Session	1430 - 1730 hours
Break	1545 - 1615 hours

MONDAY - 10 NOVEMBER, 1986

Morning	0800 - 0930 hrs	-	Registration
	0930 - 1030 hrs	-	Opening Session
	1030 - 1100 hrs	-	Tea Break
	1100 - 1230 hrs	-	Election of officials
		-	Introduction, discussion of Objectives
		-	Adoption of Programme
Afternoon	1200 - 1430 hrs	-	Lunch Break
	1430 - 1545 hrs	-	Country Paper Presentation
	1545 - 1615 hrs	-	Tea Break
	1615 - 1730 hrs	-	Country Paper Presentations

TUESDAY - 11 NOVEMBER, 1986

Morning	0800 - 0945 hrs	-	Plenary discussions on Country Papers presentations
	0945 - 1015 hrs	-	Tea Break
	1015 - 1230 hrs	-	Overview of Objectives on Country information collection, storage and retrieval systems for water supply and sanitation services
		-	Plenary discussions
	1230 - 1430 hrs	-	Lunch Break
Afternoon	1430 - 1515 hrs	-	Overview of objective on methodologies developed by WHO for national and global water supply and sanitation monitoring
	1515 - 1545 hrs	-	Observers' papers presentations
	1545 - 1615 hrs	-	Tea Break
	1615 - 1730 hrs	-	Plenary discussions of objective on methodologies
	1730 -	-	Film Show - Water - Wildlife and Parks - Tourism
		-	Information
			16 mm

WEDNESDAY - 12 NOVEMBER, 1986

Morning	0800 - 0945 hrs	-	Overview of objective on information requirements of bilateral and multi-lateral funding agencies active in the sub regions.

	0945 - 1015 hrs	-	Tea Break
	1015 -	-	Field visits
			Luvulezi Integrated Groundwater Project
			Dombole Gravity Piped Water Supply Project

THURSDAY- 13 NOVEMBER, 1986

Morning	0800 - 0945 hrs	-	Bilateral and multilateral funding agencies' presentations
	0945 - 1015 hrs	-	Tea Break
	1015 - 1230 hrs	-	Group discussions on strategy for a system which will respond to the identified requirements
	1230 - 1430 hrs	-	Lunch Break
Afternoon	1430 - 1545 hrs	-	Group discussions
	1545 - 1615 hrs	-	Tea Break
	1615 - 1730 hrs	-	Group reports (plenary)

FRIDAY - 14 NOVEMBER, 1986

Morning	0800 - 0945 hrs	-	Reports on country level recommendations
	0945 - 1015 hrs	-	Tea Break
	1015 - 1300 hrs	-	Follow up plans of action
		-	Adoption of Rapporteur's Report of Workshops Proceedings
		-	Informal closure of Workshop
	1430 -	-	Departure from Mangochi.

ANNEX 3

STATEMENT BY DIRECTOR SRHDO III ON BEHALF OF
WHO AFRO REGIONAL DIRECTOR AT THE
OPENING OF WHO/DANIDA WORKSHOP ON WATER SUPPLY AND SANITATION FOR
SECTORAL MANAGEMENT

Mangochi, Malawi on 10 November 1986

The Guest of Honour, Mr Charles Clark
Distinguished Guests and Participants
Ladies and Gentlemen

I have the great pleasure, privilege and honour to deliver this statement on behalf of the Regional Director, Dr Gottlieb Lobe Monekosso of WHO Africa Region. On behalf of my colleague Dr S.H. Siwale the WHO Representative for Malawi and, indeed on my own behalf, I would like to express our sincere gratitude to His Excellency Ngwazi Dr Hastings Kamuzu Banda, the Party and Government for accepting to host this workshop on Water Supply and Sanitation Information for Sectoral Management in Mangochi, Malawi.

I would like to thank the guest of honour in his capacity as Permanent Secretary, Ministry of Works and Supplies and your Steering Committee for the cordial welcome accorded to participants and resource persons and the secretariat. We have travelled from afar and we commend the national organizers for the excellent arrangements and preparations made for this workshop. The very good facilities provided here at Club Makokola will go a long way in ensuring the smooth running of the workshop.

Guest of Honour, in your other capacity (this is as a distinguished personality in Malawi) I would like to express our sincere gratitude to you for having taken time off from your heavy schedule of work to come and officiate at the workshop. Your personal presence here is a great inspiration to the workshop and evidence of your interest and support for sectoral cooperation, coordination and management.

I would also like to thank all those who have responded to the invitation to attend this Opening Session - the Acting Resident Representative of UNDP, Mr M. Ganda, the UNICEF Representative, Mr Cooper Dawson, last but not the least, I would like to most sincerely thank and welcome all the participants and resource persons who have travelled this far in an effort to find ways and means of improving our understanding and knowledge in Water Supply and Sanitation Information for Sectoral Management. As you may know, I am a humble medical professor and my aspiration in chairing this workshop in the midst of reputable environmental health specialists and managers is very great indeed.

Now returning to the subject matter of the workshop, namely "Water Supply and Sanitation Information for Sectoral Management" - this subject is not new to all of us. In fact, it encompasses a whole discipline of monitoring, reporting and evaluation of activities and is common to all sectors. An important element of this monitoring process is support to governments in developing their own capability for information collection, analysis, retrieval and dissemination, and hence within the framework of institutional arrangements improve management and planning.

The workshop will review, among other things, the Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector, WHO document WHO/CWS/86.6. The Guidelines therein are designed to assist national authorities in creating and maintaining a regular mechanism for monitoring the water supply and sanitation sector. The need for such a mechanism at the national level became apparent during the global monitoring exercize, carried out by WHO, as part of the International Drinking Water Supply and Sanitation Decade activities. In particular we will study and critique the three levels of information detail proposed in the document, ranging from minimum to more sophisticated primary indicators of sector performance.

The decision to establish a monitoring system is in principle an interministerial concern and this should be conceived of as a project with well-defined objectives, activities, targets, financial and staff requirements and an implementation schedule. We would hopefully be able to examine in detail aspects of the monitoring system including design stages.

Finally, the gudelines proposed that to facilitate data collection and analysis, it would be convenient to classify our information into four main categories - general, institutional, existing services, and development of service for the three proposed levels I have mentioned before - the minimum, intermediate and higher levels of information. Indeed we are privileged today to have with us two eminent WHO consultants who would guide us in our deliberations to arrive at a good understanding of the subject.

I believe the workshop will respond to immediate needs of most countries of our Sub-Region in developing a strategy for a system which will be responsive to the identified requirements which in turn will also be compatible with those of bilateral and multilateral funding agencies, active in our countries.

On our part we believe that the workshop would stimulate the dissemination and application of WHO methodologies developed for national and global water supply and sanitation monitoring and even provide a format for the broader utilization within the context of Primary Health Care.

In closing, I would like to express WHO's sincere gratitude to DANIDA for co-sponsoring this workshop. DANIDA is active in several African countries and supports water supply and sanitation programmes within national IDWSSD plans. Their support to the workshop should underline commitment to render investment in this sector most effective with regard to national monitoring systems.

Thank you for your attention.

ANNEX 4

OPENING ADDRESS BY MR CHARLES CLARK, PRINCIPAL SECRETARY,
MINISTRY OF WORKS AND SUPPLIES
AT WHO/DANIDA WORKSHOP - CLUB MAKOKOLA, MANGOCHI, MALAWI
10 NOVEMBER 1986

Our distinguished guests, ladies and gentlemen, it is my great pleasure to welcome all of you to Club Makokola on the occasion of the workshop on Water Supply and Sanitation Information for Sectoral Management, a tribute to WHO. In addition, I would wish to welcome those guests from outside the borders of Malawi and would assure them Malawi's reputation as the Warm Heart of Africa is a deserved reality and we trust that in the days that lie ahead visitors will take very opportunity to prove the truth of its existence.

It was with a feeling of great foreboding that I approached my task of today for of all of you gathered here I am sure I am the least qualified to offer my comments on the subjects under discussion. Like any speaker asked to open a conference of which he knows little, I anxiously scanned the Aide Memoire covering the seminar looking for clues as to what I might say. I immediately received a major setback when I discovered on page 2 that the workshop language was English. Anyone listening to my accent will appreciate that having to use English is an extremely difficult task for me. However, my spirits rose when I reached the objectives for I realized that the layman had a message for your august gathering and that my foreboding was perhaps unnecessary. I had only to read the language in which the objectives were couched to realize that there is a danger even amongst this company of experts to use words that may be neither understood nor appreciated. I am sure you will forgive me if I say that I fear the tendency amongst experts to cloud their subjects in the mists of mystery by using word cliches and terminology understood only by them and are totally incomprehensible to the man in the street. I would rest my case for simplicity by quoting to you the first objective and I quote "to review country information collection, storage and retrieval systems for water supply and sanitation services compare these with the sector needs for planning, management, stimulation of investment and promotion and develop a strategy for a system which will respond to the identified requirements" end of quote. I read that three times before I understood it and when I had understood it I realized that it simply said what information have we got? What information do we need? And how do we get that we have not got? Ninety per cent of the missing information if it is to be supplied will not be supplied by those who are here. The information we require will come from the field, from a man or a woman who may not even have a blunt pencil and if we make the system more difficult by couching our requests for information in a language this is incomprehensible to the fieldworker the battle is lost before a shot is fired.

I am sure that during the days that lie ahead the same problems which we in Malawi already know will be highlighted, namely, again in simple terms, how many boreholes have we got? How many are working? How many do we need? What is our loss from leakage on our urban schemes? What is our ability to extend our communal water points? Can the people afford it if we do extend? Why does our sanitation implementation programme languish behind that of water development.

All these questions demand attention if we are to manage the existing services competently and extend them expeditiously. But ultimately the answers to all these questions come from the gatherers of information in the field. It must never be forgotten that in this highly technological advanced and computerized age the data and the information so desired and deserved comes from the man in the field working with or without a blunt pencil. I would appeal to you in your deliberations do not forget the necessity to sharpen his pencil metaphorically. Only when he understands properly the need for accurate information and data collection will the managers and implementors have the proper details that they need to do the job and only then will we be heading towards our main goal, the production of water and sanitation facilities in the right place, at the right time and in sufficient quantity to satisfy the needs of the ordinary man and woman in the village. I would ask you therefore Ladies and Gentlemen in your deliberations to remember the need for simplicity. There is no point in grandoise resolutions and decisions being taken at this seminar if they are misunderstood by the man resposnible for the collection of the basic data.

I am sure I talk to the converted when I say that all realize that inaccurate information is not only useless, it is positively dangerous. However, I am not so certain that we are all so appreciative of the fact that the accuracy of the information provided is directly related to the clarity and simplicity of the language with which it is requested.

Delegates, I do not intend to waste any more of your time. You have much work to do and a beautiful environment in which to do it. Once again I welcome you to Malawi and wish you an extremely successful seminar and in so doing declare the workshop open.

ANNEX 5

LIST OF WORKSHOP DOCUMENTS

1. Report of the WHO/DANIDA Workshop on Water Supply and Sanitation Information for Sectoral Management, Mangochi, Malawi 10-14 November 1986

2. List of Participants

3. Workshop Timetable

4. Statement by Director, SRHDO II on behalf of WHO/AFRO Regional Director

5. Opening address by Mr Charles Clark, Principal Secretary, Ministry of Works and Supplies

6. Country Papers:

Botswana	Kenya
Lesotho	Malawi
Swaziland	Tanzania
Uganda	Zambia
Zimbabwe	

7. Observers' Papers:

   UNDP
   UNICEF
   IRC
   USAID

8. WHO Publications - International Drinking Water Supply and Sanitation Decade

   (i) National Decade Plans: Eight Questions to Answer WHO, Geneva 1982

   (ii) National and Global Monitoring of Water Supply and Sanitation October 1982, Publication No. 2

   (iii) Project and Programme Information Systems Revision April 1983, Publication No. 1

   (iv) Action Lines 1984 October 1984, Publication No. 5

   (v) Minimum Evaluation Procedure (MEP) for Water Supply and Sanitation Projects May 1985, Publication No. 6

   (vi) Catalogue of External Support December 1985, Publication No. 7

   (vii) Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector June 1986 WHO/CWS/86.6

   (viii) Review of National Progress (as at December 1983) in press (photocopies of extracts)

9. WHO Documents

(i) IDWSSD Project Data Sheet CWS/81.3

(ii) Consultation on National Monitoring of Water Supply and Sanitation Geneva 14-16 November 1983 Report CWS/WHO November 1983

(iii) IDWSSD Sector Digest Form 1985 update returns from Botswana, Ghana, Kenya, Lesotho, Malawi, Nigeria, Swaziland, United Republic of Tanzania, Uganda, Zambia, Zimbabwe

(iv) Information Requirements for External Funding of Water Supply and Sanitation Projects CWS/Malawi/Doc.1

(v) Review of WHO Methodology for Water Supply and Sanitation Information Systems CWS/Malawi/Doc.2

(vi) Problems Constraining Data CWS/Malawi/Doc.3

(vii) Guide on Information Systems for Detailed Planning and Evaluation of Water Supply and Sanitation Programmes (1975 draft updated in 1986 to include recent developments) CWS/Malawi/Doc.4

(viii) Guiding Principles for National Information Systems for Water Supply and Sanitation

(a) Suggested discussion topics for working groups
(b) Terms of reference
(c) Proposals for participation in sub-groups

CWS/Malawi/Doc.5

(ix) International Drinking Water Supply and Sanitation Decade, Mid-Decade Progress Review. Report by the Director-General A39/11, 21 March 1986

ANNEX 6

REPORTS ON COUNTRY-LEVEL RECOMMENDATIONS BY GROUPS

GROUP 1

SUBJECT: DATA AND INFORMATION CONTENT OF NATIONAL WATER SUPPLY AND SANITATION INFORMATION AND MANAGEMENT SYSTEM

1.(i) The information exists already in most countries but it is disintegrated. To correct the situation we need a data bank or, alternatively, the active involvement of a central statistical unit since this already exists in most countries. The data bank should be commissioned to collect and store more information on water supply and sanitation. In close cooperation with the data bank, the WSS institutions should analyze and prepare information for wide distribution.

(ii) The Guiding Principles reflect a useful and adequate data collection matric. However their impact is diluted by some apparent vagueness, particularly in the definition of words. The principles have also been restricted to public institutions and therefore the potential impact from private data documentation is regrettably left out. It is desirable that public and private enterprise documentation is blended and consolidated together to build effective representation in the water and sanitation sections.

(iii) Effective coordination and dissemination of information should be carried out vertically, upwards and downwards and laterally to include the entire matrix of data collection with a view to encouraging the interest of other sectors.

2. As a prelude to the appropriate amendments and innovations on the Guidelines "Three-tier approach", Group 1 recommends that to avoid repetitiveness and duplication of effort in the collection of data, only the "third level" stage in reporting should be adopted and made national blue prints for information collection. It is also envisaged that national governments might wish to scale-down the information requirements as appropriate and in accordance with their capability.

Group 1 presents the following proposals for amendment and attention to the guidelines:

A. GENERAL INFORMATION

General comment: The general information appears to be quite adequate for planning purposes and some aspects may differ in accordance with national policies, e.g., electricity, PHC, etc.

Item 3: Housing: It has been noted that it may be difficult to obtain information on electricity connections.

Item 7: Sector-Related Programmes: The information is important but it may not be available in published form. It has therefore to be gathered by WSS personnel. Some of the information is unquantifiable, for example, health education (PHC).

B. INSTITUTIONAL INFORMATION

1. Sector Description

On sectoral description it was noted that authority responsible for integration of WSS for sector planning at national level may not exist and may probably be difficult to establish. We are aware that there are interministerial committees but these may not have the necessary authority or the appropriate mandate.

In addition to the listing, the guidelines should also contain a matrix of institutions versus functions as shown on page 26 of IDWSSD Publication No. 2.

2. Overall Sector Financing

The information should be available in all countries but may require extensive investigations to collect and collate.

3. Community Involvement

The section appears adequate.

4. Human Resources Development

The evaluation of performance should be identified.

C. INFORMATION ON EXISTING SERVICES

(a) Water Supply

The terms "potable and safe water" should be properly defined and the discrepancy should be corrected which exists with the definition given on page 14 of the Guidelines.

(b) Sanitation

'Public toilets' should read 'Public water-borne toilets'. Also an item on 'private water-borne toilets and latrines' should be added.

(c) Project Preparation and Implementation

Accepted.

2. INVESTMENT

We propose to change the heading to:

'Investment' (Capital Expenditure)

(a),(b) Water Supply and Sanitation

The following additional items are proposed: new private wells, new private water-borne toilets, latrines and ceptic tanks, although 7.3 appreciated that this may be the most difficult information to obtain.

(c) Buildings and Facilities of General Use

The terminology used under this heading is not easily understood and should be clarified.

3. RECOMMENDATIONS FOR FOLLOW-UP

- For effective institutionalization of the Guiding Principles, it is recommended that a follow-up through national action committees and other interested organizations should be carried out at district, regional and national levels.

- Under the auspices of WHO and other interested external support agencies, a follow-up regional workshop should be convened in the not too distance future to review progress made.

- Exchange visits between Member countries would provide an excellent learning opportunity both in terms of successor and failures.

- On the basis of the amendments and recommendations made, we propose adoption of the document under review and we further recommend that it be republished as a guidance document for national action.

REPORTS ON COUNTRY LEVEL RECOMMENDATIONS BY GROUPS

GROUP 2

SUBJECT: INFRASTRUCTURE AND ORGANIZATION AT NATIONAL LEVEL NECESSARY FOR PRACTICAL OPERATION OF A WATER SUPPLY AND SANITATION MANAGEMENT INFORMATION SYSTEM

The group would first like to pay tribute to WHO and DANIDA for the organization and funding of the workshop. Further, the group thanks WHO for the production of the "Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector".

The group looked critically at the section dealing with system design, collection and analysis of information on pages 10, 11 and 12 of the "Guiding Principles" and made recommendations which follow below. Then the group referred to current and planned national systems as described in the country reports, and made recommendations comparing these with the "Guiding Principles". These are also outlined below.

Recommendations were also made on the follow-up action at national level.

Recommendations on "Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector":

The first step in the development of a national information system should be slightly modified as below:

(a) Review of the existing system of information collection and analysis.
(b) Formulation of information requirements and identification gaps.
(c) A glossary of design.
(d) Specification of reporting requirements.
(e) Structuring the system.
(f) Assessing financial, human resources requirements.
(g) Personnel training.
(h) Preparation of forms.
(i) Operational manual.
(j) Initiation and evaluation of the system.

On the design stages diagramme the group suggested the following to be labelled below it "Suggested parallel implementation of activities".

Amendments in the wording of the Guiding Principles are as follows:

Page 10, first paragraph, line one, should be reworded as follows: The decision to integrate information systems and hence improve them is in principle an interministerial concern.

Page 10, last paragraph, first line should read: The annual sector reports compiled from annual sector agencies reports should ... .

Page 11: delete word "executive" where it appears before "report".

Page 11, Part III, the heading should read: COLLECTION, ANALYSIS AND DISSEMINATION OR INFORMATION.

The paragraph immediately following the above heading, put "Sector Agencies" where the words "information centres" appear.

Page 12, line six, to give an example of a non-numerical expression, e.g. "although no figures are available for water quality general observation on health studies of the population indicate that it is unsatisfactory in most areas.

Page 12, line eight to read: To increase clarity, maps displaying ... .

Page 12, line nine should read: "Overall, the presentation as well as indicating progress should ... .

The group strongly recommended that there should be one national information system for both water and sanitation. However, if this is not possible in a particular country, separate systems should be considered.

The group further noted that the "Guiding Principles" did not include anything on the dissemination of data and it was felt such information should be included.

In reviewing the current and planned national systems as described in country reports and comparing them to the Guiding Principles, the group felt that although all countries have some information systems, it is in most cases fragmented and inadequate. Nearly all countries have realized the need for a comprehensive information system and have plans to improve them. These plans include among others computerization at different levels. In addition, the group noted that the need and plans for improvement of the information system is generously directed towards smaller urban centres and rural sub-sectors.

Regarding recommendations on different approaches which could be appropriate under different national circumstances, the group felt that WHO should prepare an annex to the Guiding Principles giving an example of a relatively typical but hypothetical country, for developing water and sanitation information systems. The solution proposed for that country should contain sample forms.

Follow-up action at national and international level

(a) a similar workshop in a Francophone country

(b) workshops at district, provincial and national levels in the countries of the sub-regions

(c) exchange of information on progress by the participating countries. This could be done by written correspondence and a possible follow-up after two to three years to evaluation progress and developments in information systems development in and consequently managerial improvements.

REPORTS ON COUNTRY LEVEL RECOMMENDATIONS BY GROUPS

GROUP 3

SUBJECT: EXTERNAL SUPPORT INFORMATION

The group agreed to use workshop objective 3(iii) of the Aide Memoire WHO/DANIDA seminar/workshop on water supply and sanitation as a basis for discussion and recommendations. The group also agreed to use the National and Global Monitoring of Water and Sanitation booklet, Publication No. 2, IDWSSD, October 1982, in conjunction with WHO's Guiding Principles for National Monitoring of the Water Supply and Sanitation Sector of June 1986; the documents are complementary.

The group identified four discussion topics to lead into broader deliberations:

1. What do donors ask for in terms of information?

2. What data and information can countries reasonably provide using existing resources?

3. Do donors ask for:

   (i) too much information?
   (ii) unnecessary information?

4. What extra information might help stimulate investments from donors?

Discussions on these topics were summarized as follows:

1. What do donors ask for in terms of information:

   (i) Essential

   - general information
   - coverage and levels of service
   - unit costs and cost projections
   - investments and external contributions

   (ii) Useful

   - Decade planning
   - institutional responsibilities
   - manpower and training
   - major constraints
   - project pipeline

   (iii) Not always necessary

   - Decade approaches
   - sources of information

2. What data and information can recipient countries reasonably provide using existing resources?

   (i) Information required by donors should be linked with the everyday general information used in sector management.

(ii) Maximum use should be made of existing sources.

(iii) When donor requirements for information exceed national capacity to provide information, the gap could be closed by negotiation, instead of depending upon short-term assistance.

3. Do donors ask for too much information and/or unnecessary information?

(i) Donors tend towards seeking additional information because of their internal procedures for approval.

(ii) Donors require specific and detailed information because allocation of funds is generally inflexible.

(iii) Donor information needs, and country information capacity may change as the sector develops and standard formats may become outdated.

(iv) Where information is inadequate, donors may or may not fund the project hence good relationships and mutual understanding is a key component for project appraisal.

4. What extra information might help stimulate investment?

(i) operation and maintenance problems and needs and proposed solutions should be highlighted in the data package

(ii) software information on current projects is necessary

(iii) continuous evaluation results need to be disseminated to donors

(iv) not extra information, but accurate and realistic information should be provided to donors

(v) the need of some donors to know more about certain aspects of projects needs in providing the relevant information.

RECOMMENDATIONS

After lengthy discussions on the four discussion topics, the group formulated the following recommendations:

(i) review data and information collected from time to time, such as population growth rates, GNP, classification of rural, peri-urban and urban areas, etc., in order to ensure that it is accurate and necessary

(ii) frequent review of donors' requirements and country information capacity through workshops, meetings, etc.

(iii) Strengthen national ability in information gathering through training mechanisms.

(iv) WHO guidelines should also include other agencies' guidelines where applicable

(v) governments should look into possibilities of establishing data banks and information collecting units where these do not exist

(vi) donors should strengthen existing information centres in terms of equipment, materials, staff training, etc.

(vii) donors should help recipient countries to collect data where information is lacking, as part of the development of national capability.

(viii) donors should be prepared and countries should take initiative to schedule meetings to discuss information needed to stimulate investment.

(ix) donors should include information system components when funding projects.

(x) donors and countries should see the need and encourage feedback on how the information is used.

PRESENTATION OF COUNTRY PAPERS

22. The following country papers were presented:-

BOTSWANA

23. Mr. Selotlegeng gave an historical account of the coordinating mechanism of Ministries of Finance, Health, Mineral Resources and Water Affairs, and Local Government and Lands for the water and sanitation sector. Government concern had been in reduction of the incidence of diseases associated with water and improper sanitation practices. Most importantly he observed that only 25% of the rural masses had proper methods of human waste disposal facilities. This predisposing factor was contributory towards the formulation by Government of corrective efforts that gave credence to the establishment of data collection, storage and retrieval systems inorder to keep track of the intervention impacts.

24. Mr. Selotlegeng indicated that in the water and sanitation programme information is fundamental to cost-effective implementation. He provided a laundry list and matrix of occurences from which pertinent statistical data had been obtained and this he said had become an acceptable data documentation. The certificate of Rights for example was an acceptable land tenure document issued only to a plot allocatee, by the self help housing management committee, who fully constructed a sanitation unit of choice.

25 International organizations have been helpful in supporting government activities and some examples of their involvements were given by Mr. Selotlegeng. The Netherlands Government is sponsoring the Self Help Environmental Sanitation Project (SHESP) supervised by UNICEF. The HIFAB International (A Project Management Institution) would shortly be studying aspects of interministerial water supply and sanitation coordination. All pre-emptive conclusive recommendations would be presented before government for acceptance financing and implementation - a feat that will generate data collection and storage.

26. In contributing to the country paper Mr. Jacob E.. Sibiya also from Botswana said that the supply of piped water to communities only becomes an

investment if it has the components of organized water quality surveillance and water hygiene education for the consumers. The absence of these components in any community water supply scheme, defeats the purpose of the scheme where the overall intention and purpose of the scheme is to safeguard the health of the community against waterborne diseases. Community participation has the important element of the felt needs of individual/community and has its limits depending on tasks to be carried out. Community participation should therefore not be seen to be imposed on communities in rural areas or used by those in authority not to carry out their responsibilities and obligations to rural communities.

KENYA

27. Mr. Joshua Gecaga presented the Kenya country paper. He said that six separate entities are responsible for the provision of water supply and sanitation facilities, and minimal coordination amongst them has hampered the development of strategies and data flow. The Central Bureau of Statistics prepares an annual abstract covering economic, financial and social aspects of life, but surprisingly water supply and sanitation information and data are not included. The Ministry of Water Development, the major water supply undertakings produces annual reports on ongoing projects as well as past constructions evaluation reports, while the water pollution control section collects data on quality of natural water bodies (potential/actual sources) in addition the Hydrological section collects data on water quality, on water levels and flows and on all public and private boreholes. These are well documented and readily available.

28 Mr. Gecaga continued by saying that the Water Apportionment Boards in the country issue and keep records of permits for extractions, although these are not required for small domestic abstractions. Local Government and larger municipalities (Nairobi and Mombasa) report on revenues and expenditures, however the population connected to services is badly documented. In the large municipalities data on communicable diseases is published annualy and is readily available.

29. In conclusion Mr. Gecaga said that the available data on water supply and sanitation is mainly used for:design purposes, annual development statistics, support to external funding and annual mandatory reporting. The major constraints to the establishment of a more comprehensive information systems are - lack of awareness of the need for a system, lack of coordination, lack of excretal disposal service (unfelt need) , political constraints to publication of adverse figures, lack of systematic procedures and guidelines and haphazard storage and retrieval of information and data.

LESOTHO

30. Mr. Dan Mofokeng Makhetha in his presentation of the Lesotho country paper highlighted the sector responsibilities as distributed amongst various government ministries/departments - Four sections in three ministries are involved in the water and sanitation sector namely:-

(i) The Water and Sewage Branch of the Ministry of Water Energy and Mining caters for urban water supplies

(ii) The village Water Supply section in the Ministry of Interior, Chieftainship Affairs and Rural Development overse s the rural water supplies

(iii) The urban sanitation improvement teams in the MWEM and MICARD concentrate on urban sanitation and low-cost onsite sanitation facilities.

(iv) Rural sanitation is undertaken by the Ministry of Health through its Environmental Health Section.

31. He went further to outline the coordination mechanism amongst these four sections through the National Steering Committee which periodically reviews the achievements and constraints and set targets for the International Drinking Water Supply and Sanitation Decade programmes.

33. As far as information flow was concerned Mr. Makhetha listed the various government institutions involved - the Bureau of Statistics is the focal point and publishes the socio-economic and cultural data; the Water Affairs Departments are responsible mainly for data collection, storage and retrieval on water resources; and the urban and rural sanitation units maintain information on urban and rural sanitation chiefly for monitoring and evaluation purposes.

MALAWI

34. Mr. Peter A. Chindamba presented the Malawi Position Paper which included piped water, groundwater and sanitation programmes. Information for rural water supply begins at the project level with project request forms which are submitted to the District Development Committees to initiate actions. Other normally readily available support data include topographic maps (1:50,000), aerial photographs, census (national statistics office), hydrological data, information of existing systems, data on water quality from periodical analyses (bacterial water laboratory) and half yearly monitoring reports. There also exist individual evaluation reports of specific projects - Zomba district, Zomba West, institution building for operations and maintenance etc.

35. Mr. Chindamba said that the main constraints are information gathering, shortage of staff at senior level, lack of aerial photographs and absolete population figures (last census was in 1977) Groundwater data consists of old records contained in 16 sets of files and include old borehole location maps. A system of revised borehole numbering has now been introduced and borehole data compilation is done using the cardex system. He concluded that very limited information is available on most of the existing dug wells, however new data sheets have been developed and the system is being expanded. Consideration is currently being given to transferring the cardex system to a system of computer storage and retrieval.

36. On sanitation data collection and recording systems, Mr. Chindamba stated that the information flow is from village level to central level through village Health Committees, Health surveillance Assistants and Health Inspectors. Other sectors of the Ministry of Health such as MCH, CCD (control of Childhood, communicable diseases), Bilharzia control project, Health Centres, Hospitals and Private clinics send statistical reports and monthly return forms. The data is processed and results are disseminated to intersted parties and to the field staff. He continued by saying that data on water/sanitation related diseases and sanitation facilities provision in the communities is collected through the very referral system from village level to central level. Ministry of Health had recently acquired computer system which processes, stores and retrieves the information on health and related sectors.

SWAZILAND

37. The country paper for Swaziland was jointly presented by Mr. Emmanuel Lukhele and Mrs. Precious Thandie Dlamini. Mr. Lukhele described the geography population and health statistics and expanded on the responsibilities of the Rural Water Supply Board in planning management, construction, maintenance and water quality surveillance activities. He listed some of the constraints, and emphasized that the analysis and utilization periodically of data is part of the planning and implementation process for sectoral management. He then referred to the inventory that was established for rural water supply systems in the RWSB. This enabled the proper presentation of levels of service coverage (1986). Strategies have been established for meeting the needs especially in community reporting of information on water and sanitation activities.

38. Mrs. Dlamini outlined the various responsibilities of the institutions involved in urban, peri-urban and rural sanitation programmes.

She then elaborated on the methods of information collection by the health assistants all over the country, and the compilation of this data into monthly reports. She listed in detail the objectives of collecting this information, the types of information needed, and their utilization, and the management of materials purchased for the water and sanitation sector. She mentioned that the National Action Group which coordinates the International Drinking Water Supply and Sanitation Decade programmes regularly assesses sectoral needs and progress of implementation of projects. In conclusion Mrs Dlamini listed some constraints which included lack of transport for health inspectors and health assistants and others.

TANZANIA

39. Mr. R. M. A. Swere presented the Tanzania Paper introducing first the country's physical features and regional distributions. He then outlined the institutional arrangement with respect to water and sanitation sector. The Ministry of Lands, Water, Housing and Urban Development is responsible for water and urban sanitation while the Ministry of Health and Social Welfare is responsible for rural sanitation at the national level. At the regional level and district level, the respective water and health offices under the regional and district Commissioner's offices are responsible for the water and sanitation affairs.

40. Mr. Swere pointed out that other institutions which are responsible for water and sanitation include the Prime Minister's Office and the Ministry of Local Government and Cooperatives Development because of their responsibility over the regional and district authorities respectively; and the Ministry of Community Development because of its role in community mobilization and participation.

41. With regards to the service levels, Mr. Swere said that water supply coverage is about 42%, urban sanitation is 50% and rural sanitation is 45%. The collection of information of water and sanitation involved several kinds of data and these include:-

- Data which indicate or assess the capability for undertaking the project.

- Data which is used to show demand for providing a service (water or sanitation).

- Data on operational conditions and serviceability of the utility.

- Data for monitoring the performance of the service.

- Data required for planning purposes.

42. Mr. Swere went further to describe how the data is collected, transmitted, analysed, stored and used. He noted that lack of seriousness (appreciation to data collection) and lack of central reporting and monitoring system makes the whole exercise of data collection ineffective. Other problems included lack of expertise in data management, lack of shortage of soft and hardware materials required for collection, storage and dissemination of data.

UGANDA

43. Mr. J. M. Kiwanuka presented the Uganda paper. He started by explaining the country background with respect to geographic position, climate, population and economy. He then concentrated on the responsible national agencies for water supply and sanitation and their scope of responsibility. The Ministry of Water and Mineral Resources through its Department of Water Development is responsible for the provision of adequate and good quality water to all Ugandans; and the National Water and Sewerage Corporation a parastatal body under the same Ministry is responsible for water and sanitation in Kampala, Entebbe, Jinja and at a later stage Mbarara, Tororo, Mbale and Lira.

44. He pointed out that the implementation of water and sanitation programmes would have been very difficult for Government had there not been donor agencies like UNICEF, World Bank, European Economic Community, African Development Bank, Islamic Development Bank, etc to assist. He said that Uganda has undergone considerable hardships in the past, but with peace and stability prevailing in the country at present, the Government with support of external funds would endeavour to construct pit latrines, protect springs and wells, drill new boreholes and rehabilitate existing water and sanitation facilities.

45. Mr. Kiwanuka further said that the MWMR liaises with other related ministries in the operational activities of water supply and sanitation programmes - Ministries of Health, Local Government and Culture, and Community Development. All information by the ministries come from the grassroot level through the Village Parish and sub-county committees. The procedure was described with the example for provision of borehole to a village. Information gathered include:- location, depth, worktime, registration number of borehole, pump installed, date completed, water analysis etc.

46. He concluded by describing other data collections of Hospitals, rural and medical units, Population census and the community. The methods of collection is through monthly returns from hospitals and the field staff, planning of services by the community committees, returns from plant operators. The storage for the information is at each level of collection individual ministerial level; and centrally by the Ministry of Planning and Economic Development.

ZAMBIA

47. The country paper of Zambia was presented by Mr. Peter C. Mphande. The paper first gave a brief introduction of Zambia as regards location, area, rainfall, population, growth rate, life-expectancy etc. Mr. Mphande then outlined the institutions responsible for the water supply and sanitation sectors, and summarised the service levels of coverage on water supply and sanitation as at 1985. Other information and data on the sector were given as well as the 1981 assessment for rural sanitation. In spite of the collection of a lot of information on water supply and sanitation as a result of the Decade planning exercise recently completed in Zambia, no system has yet been followed for regular collection of data on both water and sanitation sub-sectors.

48. Mr. Mphande then outlined constraints to the establishment of information system which included:

- the general manpower shortage
- lack of sufficient funds
- too many institutions dealing with the sector resulting in lack of coordination.

He pointed out however that plans are underway to set up a computer based data bank during the fourth National Development Plan period at the Department of Water Affairs.

ZIMBABWE

49. Mr. Nason Shadreck Mtakwa presented Zimbabwe country paper by first noting that Zimbabwean colonial inheritance has been a markedly heterogeneous socio-economic structure, particularly reflected in a sharp inbalance between levels of development in rural and urban areas. Three government agencies are therefore centrally involved in the institutional responsibilities for the water and sanitation sector - the Ministry of Health,

the District Development Fund with the Ministry of Local Government Rural and Urban Development, and the Ministry of Energy and Water Resources and Development. Municipalitieson the other hand are responsible for operation of all urban water supplies and sewered and non-sewered excreta disposal systems.

50. With respect to information management Mr. Mtakwa listed the resources of information utilized by the various government agencies - Ministry of Health has national health information systems serviced by Primary Health Care workers. The Central Statistical Office use national samples and census; MEWRD use national data bank with respect to hydrological records; MLGRUD obtain information through District Administrators and District Development Fund.

51. He then concluded that the existing systems are deficient in several respects:

- lack of integration
- Emphasis on implementation rather than information collection
- Delays in passing information
- Little consensus and no guidelines as to what information should be gathered.

He indicated that future plans would concentrate on: encouragement of District level planning, standardisation of the flow of information by the National Action Committee coordinating IDWSSD, and improved plans for more extensive computerization.

ELEMENTS OF NOTE IN THE COUNTRY PAPERS

52. Mr. Antonio Tomassi WHO/Consultant summarised some elements of note in the country presentations. A common problem cited by the participants was the number of institutions with varying degrees of responsibility in water supply and sanitation, and the lack of coordination and information exchange amongst them. In one case information on water related diseases available in Ministry of Health was not readily accessible to the water authorities. In another instance the responsibility for water supply and sanitation information system rested with a Steering Committee for the IDWSSD but in general information was collected and analysed by the individual technical agencies.

PROJECT: NATIONAL WATER SUPPLY
AND SANITATION INFORMATION
FOR SECTOR MANAGEMENT

COUNTRY: BOTSWANA

MINISTRY: MINISTRY OF LOCAL GOVERNMENT
AND LANDS

PREPARED BY: KODISE ABRAM SELOTLEGENG

DATED; 3RD NOVEMBER, 1986

THE SANITATION PROJECT UNDER THE MINISTRY OF LOCAL GOVERNMENT AND LANDS - GABORONE, BOTSWANA

PREAMBLE:

The Ministry of Local Government and Lands (MLGL), the parent Ministry to all local councils, both urban and rural in Botswana, is charged with a responsibility to provide executive leadership in the replication to all local authorities, cost effective sanitation alternatives to reduce the incidence of diseases associated with improper sanitation practices. In fact this crucial and onerous responsibility came into being in the wake of what was nationally recognized as potential and impending adverse impacts in the environment especially against the fairly limited natural water resources. Most importantly, the MLGL's prominent role in sanitation came about as a result of the realization that only 25% of the rural households had proper methods of human excreta disposal with the rest of the rural population using insanitary traditional methods. The indiscriminate spreading of human waste in village areas because of lack of suitable and affordable sanitation facilities was identified as a major scourge contributing towards diarrhoea, intestinal diseases and hookworm infestations in the country. This exposure potential gave impetus to the Government of Botswana to mobilise its corrective efforts which gave credence to the establishement of data collection, storage and retrieval systems.

INFORMATION COLLECTION,STORAGE AND RETRIEVAL SYSTEMS - (URBAN AREAS)

Given the expansive nature of the country, the Ministry's vigilant strategy polarised Botswana into rural and urban centres. This polarisation helped in making Government tasks and intervention strategy manageable. The urban sanitation demands are provided for through a multi-dimensional and multi-sectoral approach embrasing conjunctive cooperation between the MLGL's public health engineer and the chief housing officers whose roles are to give good quality leadership and direction in sanitation activities under the rubric of the Self-Help Housing Agency (SHAA) schemes. Also, the existing cooperation between the urban and local authorities and urban planning officers is beneficial as it enables these officers make project memoranda and reviews to give positive impacts in urban sanitation planning strategies. At each phase of implementation urban councils through the SHAA management

committees collect and store for future use all pertinent statistical data obtained within the realm and scope of SHAA activities. (See appendix 'A' and a copy of the certificate of Rights at the end of the report). Appendix 'A' basically gives a laundry list and matrix of what has now become an acceptable documentation and storage of data in SHAA. Also, the land tenure system in SHAA areas requires that before an allocatee takes physical occupation of the plot he/she should satisfy the most important prerequisite: effective construction and completion of a sanitation unit. As a complimentary supporting arrangement in data collection, the public health engineer of the MLGL recently compiled an inventory of all sanitation units in SHAA to determine the micro and macro requirements in toilet emptying services. This arrangement also has a benefit in that it adds longevity in the useful lives of the sanitation units under reference.

Mandate towards total computerization of all SHAA activities will also help in the effective collection and storage of retrievable and easily accessed data. The MLGL's technical section has been working tirelessly to purchase and use computers for documentation of their activities. Together the two computer systems should strengthen data collection systems for future planning.

INFORMATION COLLECTIOON, STORAGE AND RETRIEVAL SYSTEMS IN RURAL COUNCILS

Programmatic needs for rural sanitation only started in 1980 as a result of coordination and cooperation between Ministries of Finance, Health, Mineral Resources and Water Affairs and Local Government and Lands. Between the historical Environmental Sanitation and Protection Project (ESPP) financed by USAID (1980 - 1982) and the Self Help Environmental Sanitation Project (SHESP) financed by the Government of the Netherlands (1983-1986) through the auspices and kind adjudication by UNICEF, concentration in sanitation activities was centred in four out of nine major districts and that cumulatively and through self-help motivations 1 500 latrines were constructed to date. Several constraints particularly drought and limited financing militated against effective implementation. It is presumed that with the current suggestion highlighted by the Economic Consultancy (PTY) LTD which was mandated to look into the national needs of sanitation project maximisation and replication of effective human waste disposal in other deserving districts would reach fruition. It is intended that the 13th National District Development Conference, a policy-reviewing institution of MLGL should consider the report in its totality for possible implementation. In its socio-economic and financial analyses, Economic Consultancy (PTY) LTD's weighted evidence revealed that the vast majority of rural households placed a high premium on latrine

construction. Because of the overwhelming evidence revealed by the study, recommendations derived from the exercise projected construction of 8,400 sanitation units at least by 1992.

With the aggressive conscientization of the rural masses on proper human waste disposal and the competing assistance from international agencies should come escalated inventory of sanitation units. Clearly therefore, information collection storage and retrieval are pivotal if tangible impacts in the construction of cost-effective sanitation units should be realized.

SEWERAGE SERVICES

In urban centres particularly in low, medium and high cost residential areas and even in major rural villages ,no sewerage services can be provided without proper project memorandum that give specificity in engineering designs., Also, no contract may be executed without proper justification and certainly without tangible design criteria. Within the context of the National Development Plan VI for instance major village and urban infrastructure services have been planned to take into cognizance the mushroom growth potentialand needs for sewerage services. To this extent therefore adequate designs and well documented mapping systems are a prerequisite before physical contractual implementation can ensue.

COMPARISON FOR SECTOR NEEDS IN PLANNING MANAGEMENT, STIMULATION OF INVESTMENT AND PROMOTION

Through the vigilance of the Urban Development Committees and the District Development Conferences, urban and district programmatic needs are kept under constant surveillance through consultancy services and where possible remediation processes are instituted. Such corrective measure are a function of investment and promotion. In particular, the Interministerial Basic Health Services Committee (MLGL, MOH), and UNEP recommended a comprehensive study of ways to improve planning, development, operation, administration and management of water and sector programmes in Botswana. A prelude to this study reveals that at least six ministries and parastatals are directly involved with sanitation and water issues. This situation is quite unsatisfactory since it is difficult to prepare and follow up well coordinated efficient water and sanitation sector development. This arrangement has contributed to duplication of efforts and inefficient use of scarce/limited resources. Because of this contributing outfit, HIFAB International, the project management institution, was commissioned by the World

Bank to undertake a study which will recommend not only investment financing but a cost recovery proposition in the sanitation subsector, and this study is schedulled for commencement early January 1987.

Improved water and sanitation in urban centres has been very attractive to the rural masses hence the rural - urban migrations. Sanitation facilities in urban centres are currently criticized for their lack of equity among urban populations. To correct this error, the Washfield report, an economic and affordability analysis was prepared to address sanitation alternatives for self-help housing areas in Botswana. The report is receiving the Urban Development Committee's attention. Excerpted conclusions and recommendations within the report are bound to stimulate investment and promotion.

DEVELOPMENT OF A STRATEGY TO RESPOND TO IDENTIFIED REQUIREMENTS.

Funded by the World Bank at the tune of US $40,000, the HIFAB study alluded to in the preceding references will certainly have an impact in the proper institutionalization of the water and sanitation sub sector in the Country. Methodologies that will convenience the introspection into the subsector have already been formulated to test the content and validity of pontential recommendations. The workshop will be held five weeks after HIFAB's inventory analyses and preliminary conclusions. HIFAB already anticipates a diversity of alternative proposals from the participating interministerial and local experts for plenary discussions. Findings of both sector management and cost recovery study will be a subject of the workshop and all evolving conclusive recommendations will be tabled before government ministries, and institutions for acceptance, financing and implementation.

A SUMMARY OF LEVELS OF SERVICE COVERAGE FOR SANITATION AT THE DECEMBER, 1985 BASELINE

The estimated population of Botswana according to the 1985 situational update, is reflected as 1,088 000 with the urban population estimated at 227,000. 125 000 people in urban settings are served by connections to public sewers. With rural- urban migrations the need for fully reticulated sewerage services will escalate. Other urban populations are served by such systems as aqua privies, pour flush latrines, septic tanks, communal toilets and a whole assortment of sanitation technologies all oriented towards proper disposal of human wastes. 86 000 urban population receive waste disposal services from

the sanitation scenarios depicted above. At only 245 000 the rural populations are extremely defficient of sanitation facilities. It is believed, however, that with the inventory of experiences collected and collated from UNICEF/Government of the Netherlands SHESP project, and with the full implementation of the Economic consultancies (PTY) LTD's report, accelerated sustainable development in sanitation would be achieved. Although Botswana has not in a wholistic sense formulated strategies to cater for the International Drinking Water Supplies and Sanitation Decade, the country is, cognizant of the irate (drought) and fiscal constraints, realising steady progress in pursuit of the decade's objective. Perhaps it was prudent not to enter into elaborate unachievable targets given the magnitude of constraints in the country today: country-wide drought, geotechnical conditions, inadequate district financing, etc.

APPENDIX "A"

MONTHLY PROGRESS REPORTS

AREA	NO. OF PLOTS	UNSUIT PLOTS	ALLOCATED PLOTS	VACANT PLOTS	HOUSES UNDER CONSTR.	HOUSES COMPLETE	SANITATION			
							NO. OF REC PITS	REC IIS UNDER CONSTR.	REC IIS COMPLETE	OCCUPANCY PERMITS

APPENDIX "B"

NUMERICAL REPRESENTATION OF SANITATION UNITS IN URBAN CENTRES - BOTSWANA

GABORONE	FRANCISTOWN	S/PHIKWE	LOBATSE	JWANENG
5201	2699	4853		166
		GRAND TOTAL - 12-919 EXCLUDING LOBATSE		

NUMERICAL REPRESENTATION OF SANITATION UNITS IN RURAL DISTRICTS

KGATLENG DISTRICT	SOUTHERN DISTRICT	KWENENG DISTRICT	CENTRAL DISTRICT
600	442	471	A new entrant into the Rural Sanitation Project
		GRAND TOTAL - 1513	

LG. COR. 5

REPUBLIC OF BOTSWANA

CERTIFICATE OF RIGHTS

..... Town Council

CERTIFICATE OF RIGHTS issued on the ..... day of .....

19..... by the ..... Town Council under authority of the President of the Republic of Botswana in terms of the State Land Act (Cap. 32:01).

The..... Town Council (hereinafter referred to as the "Council") grants to:

Name (Print).....

Address:.....

.....

.....

(hereinafter referred to as the "Occupier") the Rights set out below, and subject to the obligations, terms and conditions therein, in respect of Plot No.....

.....

.....

as shown in Plan No..... held by the Department of Surveys and Lands.

1. This Certificate of Rights is the property of the Occupier but may be pledged, ceded, assigned, transferred or made over with the written consent of the Council.
2. On the death of the Occupier the rights granted to him under this Certificate shall be inheritable.
3. The Occupier shall not give up occupation or possession of the plot or any portion thereof without notifying the Council in advance.
4. The plot shall only be used for residential purposes, provided however, that the Occupier shall be entitled to use the aforesaid plot for any other purposes which are authorised in writing by the Council.
5. The Occupier shall be entitled to reside on the plot himself and with members of his family and with his friends and with any of his lodgers.
6. Should the Occupier wish to lease the plot he shall obtain written permission of Council.
7. The Occupier shall develop on the plot at least one habitable room and a toilet of a type approved by the Town Council within ..... months from the date of issue of this Certificate, failing which the Council shall have the right to cancel this Certificate and re-take possession of the plot.
8. (*a*) The Occupier shall pay to the Council a regular service payment in consideration of the rights hereby granted to him and for the services to be provided by the Council to the plot for which this Certificate is granted and to the locality in respect of which this plot is situated.
   (*b*) The payment referred to in sub-clause (*a*) above shall be such sum as Council may from time to time determine subject to approval of the Minister.
   (*c*) The Council shall give the Occupier 60 days' notice of any variation of the amount of payment by publishing such notice once in the Gazette and a newspaper circulating in Botswana.
9. (*a*) In the event of the Occupier being aggrieved by a decision of the Council made in terms of this Certificate, the Occupier shall have the right to appeal to the Minister within 30 days of the date of such decision or any longer period as the Minister may determine.
   (*b*) The Occupier must exercise his right of appeal through the District Commissioner. It shall be the duty of the District Commissioner –
      (i) to assist the Occupier in drafting and framing any appeal;
      (ii) to transmit the appeal forthwith to the Minister;
      (iii) to advise the Minister if applicable, of all the circumstances relevant to any appeal not having been made within 30 days;
      (iv) to assist the Occupier to obtain any necessary information to enable him to draft and frame the appeal in terms of sub-clause 9 (*b*) (i) above.

SIGNED at ..... on this .....

day of ..... 19....

As witness: ....
for the Council

SIGNED at ..... on this .....

day of ..... 19.....

As witness: ....
Occupier

NATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

SECTOR DIGEST FORMS

1985 UPDATE Situation: December 1985

Country BOTSWANA

FORM 3: COVERAGE AND LEVELS OF SERVICE

	Population in thousands as at 31 Dec '80	31 Dec '83	31 Dec '85
1. Estimated population			
Urban		182	227
Rural		848	861
Total		1030	1088
2. Population served with water			
(a) Urban population served by house connexions		72	76
(b) Urban population without house connexions but with reasonable access to public standposts		106	114
(c) Rural population with reasonable access to safe water		~~395~~ 391	~~513~~
3. Population served with excreta disposal facilities			
(a) Urban population served by connexions to public sewers		91	125
(b) Urban population served by household systems (pit privies, pour-flush latrines, septic tanks, communal toilets, etc.)		73	86
(c) Rural population with adequate disposal such as pit privies, pour-flush latrines, etc.		210	245

4. Per Capita Water Consumption

(a) What is the estimated per capita water consumption?

Urban * l/c/d Rural 30 l/c/d

(b) What is the per capita water consumption used for project design?

Urban * l/c/d Rural 30 l/c/d

Source of information: - WATER UTILITIES CORPORATION FOR URBAN SUPPLIES
- DEPARTMENT OF WATER AFFAIRS FOR RURAL SUPPLIES

* High Cost Housing - 300 l/c/d
Medium Cost Housing - 200 l/c/d
Low Cost Housing - 125 l/c/d
Standpipes Areas - Gaborone - 50 l/c/d
others - 30 l/c/d

Note: If a definition of reasonable access or safe other than that proposed on the reverse of this form, please provide definition.

Rural definition of Access - Not more than 400 metre from a supply point.

COUNTRY PAPER ON WATER SUPPLIES IN BOTSWANA

BACKGROUND INFORMATION

The Republic of Botswana is 598,000 square kilometres in area and it lies at the centre of Southern African plateau at a mean altitude of 1,000 metres above sea level.

POPULATION

The population was 970,000 according to the 1981 population census.

GEOPHYSICAL FEATURES

Eighty percent of the population live in the eastern part of the country where soil and rainfall are suitable for dryland farming.

Rivers in this part flow into the Limpopo River, which marks the border with South Africa.

The north west and northern parts of the country are covered by the Okavango River Delta.

The water in this delta drains into the centre of the country into the Makarikari Salt Pan and Lake Ngami.

The Chobe River in the north marks the border between Botswana and Caprivi and flows into the Zambezi River.

WATER RESOURCES

There are no permanent lakes. In the eastern part of the country all the rivers are ephemeral and flow after heavy rains. Most streams eventually flow into the Orange, Zambezi or Limpopo Rivers.

The Okavango Delta drains into the Makarikari Salt Pan and Lake Ngami in the centre of the country.

During periods of excessive rains the Okavango River flows also into the Chobe River.

About 75% of the population and livestock is totally or partly dependent on underground water.

There are more than 150,000 boreholes in the country for both domestic water supplies and stock watering.

DOMESTIC WATER SUPPLIES

Domestic water supplies in Botswana are divided into two district sectors, namely Urban sector and the Rural sector.

THE RURAL SECTOR

The Rural sector consists of seventeen (17) major

villages and three hundred and fifty four (354) small or rural villages.

The whole rural sector is under the Department of Water Affairs in the Ministry of Mineral Resources and Water Affairs and the whole project of rural water supplies if funded by the Swedish International Development Agency (Authority).

For the current year, 1st April to 31st March 1987 the budget is P3.5 million (1 U.S. Dollar = P.5265).

In the whole programme, the surveying, siting, drilling and equiping of boreholes in all the villages in the rural water sector is done by the Water Affairs Department.

In the major villages, operation and maintenance of water schemes is the responsibility of the Water Affairs Department, whereas in the 354 rural or small villages, after the boreholes have been drilled, equiped and tested, they are handed to District Councils for operation and maintenance.

Water supplies from elevated tanks are reticulated to various points in each village in such a manner that no villager is further than 400 metres from a standpipe.

The population in the 354 villages was 426,800 (1981 census) 277 villages which have a population of 396,924 are served with piped water supplies.

The village water supply programme constructs 30 water supply schemes per annum, though this target was not reached because of occurances occasioned by acts of God, namely, drought and the appearance of locusts.

Some of the boreholes dried up and drilling of replacement boreholes and rehabilitation and augmenting of water supply schemes slowed down the programme.

In the 17 major villages the Water Affairs Department drills, equips, operates and maintains all water schemes. The population of the major villages was 184,220 (1981 census)

URBAN WATER SECTOR

The authority responsible for urban water supplies is the Water Utilities Corporation; a parastatal organisation.

Water Utilities Corporation is supplying water to the following urban centres:-

Gaborone
Lobatse
Francistown
Selebi-Phikwe
Orapa
Jwaneng

All urban centres obtain their water supplies from dams.

The Water Utilities Corporation obtains soft loans from the World Bank.

The most recent investment by the Corporation was raising of the wall and enlarging of the catchment area of the Gaborone Dam at he cost of P56 million to cope up with water demand for the rapidly growing city.

The authority responsible for housing in the urban centres is the Botswana Housing Corporation and freehold plots are available where owners build their own houses. All such houses rented or owned by private individuals have house connections and are metered.

For the lowest income groups, an organisation within Councils namely, the Self Help Housing Agency exists to serve the law income groups, with serviced plots.

In the SHHA areas the communities are served by standpipes- a standpipe for every twelve plots.

In the urban centres the level of service is 100%.

All efforts to provide water supplies for communities are meaningless if the important components of:-

Water quality surveillance, water hygiene and health education are not included.

In 1982 a programme of water quality surveillance was implemented after training Regional Health Teams and laboratory staff on water collection and analysis for bacteria and chemicals.

The water quality is monitored throughout the country.

A Water Hygiene Programme was started in 1983. The purpose of the programme is to teach communities about the storage and hygienic handling of water supplies for human consumption.

J. B. Sibiya
Acting Principal
Community Health Services
Ministry of Health, Botswana

P U L A!

WHO/DANIDA SEMINAR/WORKSHOP ON WATER SUPPLY AND SANITATION INFORMATION FOR SECTORAL MANAGEMENT MANGOCHI, MALAWI : 10 - 14 NOVEMBER 1986

COUNTRY PAPER : LESOTHO

PREPARED BY:

D. MAKHETHA

K. W. LESAOANA

NOVEMBER 1986

WATER SECTOR RESPONSIBILITIES

The responsibility for Water and Sanitation in Lesotho falls under four sub-sectors in three Ministries.

A. Urban Water Supplies is the responsible of the Water and Sewage Branch of the Ministry of Water, Energy and Mining. The services extend to ten district centres and six urban areas as defined in the Land Act of 1979.

B. Rural Water Supplies is the responsible of Village Water Supply Section of the Ministry of Interior, Chieftainship Affairs and Rural Development.

C. Urban Sanitation is jointly undertaken by the Ministry of Interior, Chieftainship Affairs and Rural Development and the Ministry of Water, Energy and Mining with latter focusing on water-borne sewage. The Urban Sanitation Improvement Team Concetrate on low cost on-site sanitation facilities.

D. Rural Sanitation is undertaken by the Ministry of Health through its Environmental Health Section. The Rural Sanitation Unit within the section promotes the construction of VIP latrines for rural households.

SECTORAL ACTION PLANS

On the NATIONAL Level, the Steering Committee for Water and Sanitation decade was formed in October 1980, and its Terms of Reference were endorsed by the Government in 1982. Its main objective is to facilitate interminesterial co-ordination and further the aims of water and sanitation decade.

The Committee commissioned the preparation of the Sectoral Action Plan in 1982 where data regarding coverage was compiled and targets set. At mid-decade, (December 1984) the Committee prepared a position paper to review achievements and constraints and set targets for the remaining part of the decade. These are best illustrated by the following tables:

	1980		1985	
	1000 Pop	%	1000 Pop	%
Total	1331	(100)	1496	(100)
Urban	127	(10)	187	(13)
Rural	1204	(90)	1309	(87)
Total water	239	18	401	27
Urban water	80	63	121	65
Rural water	159	13	280	21
Total Sanitation	160	12	185	12
Urban Sanitation	28	22	41	22
Rural sanitation	132	11	144	11

	1985		1990	
	1000 Pop	%	1000 Pop	%
Total	1496	(100)	1694	(100)
Urban	178	(13)	244	(15)
Rural	1309	(87)	1432	(85)
Total water	401	27	1108	66
Urban water	121	65	244	100
Rural water	280	21	864	60
Total sanitation	185	12	856	51
Urban sanitation	41	22	212	87
Rural sanitation	144	22	644	45

At the same time, both the financial needs and programme priorities were identified The priority attention will go to the following:

- Drilling of boreholes and installing handpumps for lowland villages and gravity systems in the foothills.

- Extending water services with stand-posts to newly urbanised communities.

- Promoting, guiding and assisting technically and financially rural and urban householders to instal sanitary excreta disposal.

- Providing drinking water, hand washing and excreta disposal units for public schools and health centres and ensuring their maintenance.

- Completing the construction of improved water supply and sanitation facilities through the country by an intensive effort through education and demonstration, to encourage hygienic behaviour of individuals including frequent bod washing, clothes and utensils washing, protection of food and water and sanitary dispoal wastes.

- Increased staff training at all levels and monitoring health impacts of sector activities.

DATA COLLECTION, STORAGE AND RETRIEVAL

Various Government Ministries are involved in data collection for National Plans.

BEAREAU OF STATISTICS

The basic Socio-Economic data is collected by the Beareau of Statistics. According to the cencus of 1976 the population of Lesotho was estimated at 1.2 million and of this 11% live in Urban areas while the remainder live in scattered villages of sizes ranging from 200 - 1000 inhabitants. The growth rate was estimated at 2.3% bringing the projected population in 1985 to 1.5 million. In 1981, the per Capita GDP was estimated at M249.00 with Annual Growth Rate of 0.08%.

B WATER RESOURCES

The Water Affairs Department of water, Energy and Mining, collect data on both surface and ground water resources for the country. While data for surface water has been collected for a reasonable amount of time, recently being addressed by the recently established ground water division of the Water Affairs Department.

C THE VILLAGE WATER SUPPLY SECTION

Takes an effort within its limited resources to provide suplementary information for starage to the above mentioned Departments. The latter collect information concurrently with its implementation of new Water Scheme as for as the inventory on existing and newly constructed systems, the village water suppply section keeps a file within reflects among other things information regarding their location, type and date of construction for rural schemes, water quality is carried out only prior to construction of the systems and where there is doubt, the sources are monitored periodically.

D RURAL SANITATION

Like in many other developing countries, in Lesotho Sanitation has been lacking behind and information especially for rural sanitation was practically non-existant until 1983 when rural sanitation Pilot Project was started. It is sponsored by UNICEF and UNDP. This was intensifed to determine the form and needs for a National Sanitation system. At its conclusion, VIP latrine has been determined as the appropriate system for sanitation, and todate, district based programmes are undertaken in one district in the South and three districts in the North.

A draft plan of operation for monitoring and evaluation of the rural sanitation programme has been prepared in 1985 and is presently being field tested. Its objective is to maintain on-going record of National Rural Sanitation Programme (NRSP) progress while at the same time providing data for periodic review and evaluation of the NRSP adopted strategies.

4 copies read

-V-

MALAWI GOVERNMENT

MINISTRY OF WORKS AND SUPPLIES

WATER DEPARTMENT

PRIVATE BAG 390, LILONGWE 3

MALAWI

****

INFORMATION FOR SECTORAL MANAGEMENT OF RURAL WATER SUPPLY IN MALAWI

****

A PAPER TO BE PRESENTED AT WHO/DANIDA SEMINAR/WORKSHOP ON WATER SUPPLY AND SANITATION INFORMATION FOR SECTORAL MANAGEMENT

MANGOCHI -- MALAWI

10-14 NOVEMBER, 1986

1.0 BACKGROUND INFORMATION

The organisation of the Water Supply and Sanitation Sector in Malawi had initially been fragmented as a result of its haphazerd historical development. Until some years ago. The water-related activities of various Government Ministries and Departments were thinly spread across the sector so that duplication of effort was not uncommon.

Since the early 1970s however an increasing level of activity and a strengthened Government emphasis on development of the sector had resulted in a need for a more rational and planned approach.

In 1979, a decision was made to integrate the water-related functions of 14 departments. In 6 Ministries under a new department of Lands Valuation and Water. Again in 1984 the Department was split into two separating Lands and Valuation and Water Department coming under the Ministry of Works and Supplies. A greater degree of centralised planning and co-ordination was further enhanced with tighter water supply management facilitating the attainment of the government's goal in response to the International Water Supply and Sanitation Decade (IDWSSD).

Not every aspect of the sector of Water Supply and Sanitation had been transferred to the Water Department. The Blantyre and Lilongwe Water Boards continue to remain parastatal-statutory authorities responsible for supplying water within Blantyre and Lilongwe cities respectively.

In this paper, efforts have been made to outline information collection, storage and retrieval systems for Water Supply Service in Malawi including some of the major problems encountered.

The first part of the paper has dealt with information for sectoral management of Rural Piped Water Supply while as the second part dwells on Groundwater Data Collection, Storage and Retrieval.

PART 'A'

RURAL PIPED WATER SUPPLY

2.0 INTRODUCTION

There are now 55 Rural Pipped Water Projects in Malawi supplying water to 1,200,000 rural people which people thenselves have installed by laying 4,500 kilometres of piping.

The information collection for planning and management of the Rural Piped Water Projects in Malawi has developed through experience since the installation of the first scheme in 1968.

3.0 SOURCES ON INFORMATION

3.1 Project Request Forms:

These forms are sent to all the Chairmen of District Development Committees (by the Department) to be filled in if there is any request for a Piped Water Scheme in an area. The informations which are provided by the D.D.C. Chairmen are :-

(i) Name of the perenial stream

(ii) Grid Reference of the river where water can be abstracted and

(iii) Names of villages expected to benefit from the proposed scheme.

These forms (duly filled by D.D.C. Chairmen) become a part of the records used by the Department in planning for Rural Piped Water Projects.

3.2 Topographical Maps 1:50,000

The Department has cabinets filled with 1:50,000 topographical maps covering the whole country. These maps are used to locate intake site and the area required to be covered by proposed Water Supply Scheme. Another cabinet contains topographical maps showing reticulation of the completed projects and maps for projects under construction as well as future projects already designed.

Three copies of each project are made. One copy is sent to the Department of Survey (on request) for inclusion of tank positions in new maps. The second copy stays at field office and the third lies in the Headquarters of the Department.

3.3 Aerial Photographs

The photographs provide some insight into the proposed project area and are essential during design stage. A nation wide set of aerial photographs is kept at the Department of Surveys in Blantyre. Aerial Photographs are ordered from D.O.S. (Department of Survey) in Blantyre. When ordering, it is always important to keep in mind that the sets are overlapping for stereo-scopic viewing.

An order for one set provides enough photos for two project layouts. Normally two complete sets are ordered. These are then used as:-

(i) Office Copy

(ii) Field Copy

(iii) Field Office Copy and

(iv) A final fair copy which is handed over to maintenance when the project is commissioned.

3.4 Census Maps and Census Books

Maps and books are available in the Department's Design Office. These are purchased from the National Statistical Office in Zomba. The Census Maps are useful at the design stage in that they show positions of villages.

3.5 Hydrological Data

The information on hydrological data for the streams of proposed schemes as well as the existing schemes are obtained from Hydrology Section within the same Water Department. The hydrological data is of much importance in determining the maximum and minimum flows.

3.6 Information on Existing Water Supply

It is very important to know the existing water supply in an area before a Piped Water Scheme can be installed. Where do people find their water? Is there a great deal of travel involved in collecting water? What is the quality of water? Is it perenial? These questions can best be answered after a site visit. The answers are used in assigning priorities to the project. Information on existing boreholes is obtained from Groundwater Section within the same Department.

3.7 Water Quality

Although Rural Piped Water Schemes in Malawi are not chemically treated, the water is periodically tested to monitor its quality. The testing which includes both biological and chemical is done by Central Water Laboratory run by the Department.

3.8 Agricultural Potential

The information on agricultural potential on areas proposed for a water project is obtained from the Ministry of Agriculture. The information such as general quality of land, good or poor agriculturally? is a large percentage of the land unsuitable for agriculture? The answers for all these are obtained which are required in the planning stage.

3.9 Half Yearly Monitoring Reports

The Department developed a monitoring system for the completed Rural Piped Water Projects (started in 1981). The reports are produced every 6 months and they reveal overall performance of the projects. Are the projects technically operating as per the design? Are the communities active in the maintenance of the projects? All these questions are answered in the Half Yearly Monitoring Reports. These reports act as a basis for improvement in the design of the future projects. Augumentation is carried out on the basis of the information gathered from these Half Yearly Reports. The reports also act as a check on the performance of the committees. If the committees are reported to be weak, a follow up is made in order to improve the situation.

3.9.1 Evaluation Reports by Independent Bodies

A number of evaluations were carried out on the performance of Rural Piped Water Projects in Malawi by Independent Bodies. WASH (Water and Sanitation for Health) conducted two evaluations in 1983 and 1986 respectively. The Centre for Social Research (University of Malawi) conducted three evaluations on:

(i) evaluation of the Rural Water supply Programme in Zomba District;

(ii) Health Impact on Zomba West Water Project; and

(iii) Institutional Building for Maintenance of Rural Piped Water Schemes in Malawi.

All these evaluation reports are of vital importance in the improvement of the existing Water Supply Schemes and improvement in planning of future schemes

4.0 CONSTRANINTS IN INFORMATION GATHERING

4.1 Shortage of members of staff at Senior Level

Preliminary designs for future projects have always been required to be ready for the prospective donors.

It has now become difficult for the Water Department to prepare the project designs in

4.2 Lack of Latest Aerial Photographs

At times it has not been possible to get latest aerial photographs for a particular area requiring a Piped Water Scheme. Photographs made say, 1972 may not include developments that have taken place recently. Latest road infracture and new settlements cannot be revealed in photographs made in 1972.

4.3 Lack of Latest Information on Population

The National Population Census is carried out once in every ten years. The current designs of Water Schemes rely on 1977 census figures and then projected to 20 years. It is felt that the population projection may not represent a true figure because people have shifted from highly populated areas in the south to less density populated areas.

PART 'B'

GROUNDWATER DATA COLLECTION, STORAGE AND RETRIEVAL

5. INTRODUCTION

Groundwater development started in Malawi around the 1930s. There are at present some 5500 boreholes, 80 percent of which are equiped with handpumps serving the rural communities, 10 percent with motor pumps. About 10 percent were abandoned because of either low yields or poor quality water.

There are also about 2000 protected dug wells, all equiped with handpumps. It is estimated that 76 percent (5.5m) of Malawi's projected 1990 population of 7.2m will depend on groundwater for domestic supplies. This represents a total annual demand of 55million cubic metres from about 25,000 handpumps.

The capital and recurrent costs of such an expansion in the provision of rural water supplies are enormous. Much of the current efforts of the Water Department of Ministry of Works and Supplies are being devoted to establishing an expansion programme of rural water supply projects along the lines of the successful projects such as the Upper Livulezi Valley and Dowa West, and those underway in Lilongwe North-east, Mzimba and Karonga.

The projects are characterised by the concetration of construction activities in one area to allow efficient and cost effective implementation and keep down capital costs. Also the establishment of an effective and reasonably cheap village-based maintenance system to keep down cost.

It is from these projects that abundance reliable groundwater information is gathered.

6. GROUNDWATER DATA COLLECTION

6.1 Old Records

There is available an archive of hydrogeological data from the old boreholes and wells stored in numerous files and reports of varying ages now housed within the Department of Water. Many of the records are incomplete and some of the data is suspected to be unreliable. Often the records are sole original copies, some over 40 years old, and they are commonly torn or illegible. Some of the original records have been lost.

Data has however been compiled from these old records and the standing rule is that all records not required for routine use be archived to avoid any further losses or deterioration.

For easy reference to the large volume of old data files, the Groundwater Section has sub-divided the Malawi Map into Groundwater units. An up-to-date filing system of borehole data has also been developed to allow for quick retrieval of required information.

TABLE 1

List of available Groundwater Data Files:

1. Borehole construction files (listed by siting geologist).
2. Summeries of borehole details (listed by siting geologist)
3. Annual borehole construction records (listed by date of siting).
4. Borehole fund accounts construction records for invoicing (listed by date of submission).
5. Borehole maintenance records (listed by siting geologist).
6. Borehole geophysical siting files (listed by siting geologist).
7. Colonial Development Water Supply Schemes (listed by date of construction).
8. Water chemistry laboratory analysis (listed by local sampling area).
9. Water chemisty analysis (listed by water resources unit).
10. Borehole locations maps (sited at 1:50,000 scale).
11. Borehole test pumping records (listed by area).
12. Dug well construction reports (listed by project area).
13. Dug well location maps (sited at 1:50,000 scale).
14. Dug well maintenance inspection reports (listed by project area).
15. River discharge records (listed by Water Resources Unit)
16. Rainfall data (listed by map sheet).

6.2 Water Resources Units

A unified storage system for both surface water records and meteorological records has also been developed by also dividing the country's map into 17 physiographic regions known as Water Resources Units.

This is a modification of a system of Groundwater Units proposed by Wilderspin (1973) and Chilton (1979).

Each water resource unit comprises a single large catchment or compatible group of small catchments. A unit is divided into sub-units which join at a river confluence and either comprise a small catchment or a clear physiographic division. On the map Units are indicated by numbers and sub-unit by letters.

6.3 Revised Borehole Numbering System

A revised numbering system for all boreholes has been devised in order for the numbers to convey information on location. These new numbers are replaced by the old Geological Survey systems based on initials of the siting geologist.

The boreholes are now categorised according to the Water Resource Sub-unit and are numbered in chronological order of drilling. A full list of the known existing boreholes for which records are available together with locational details and cross reference with old Geological Survey numbers has now been finalised.

There could however be a small number of boreholes omitted either because the original records are missing or were privately drilled and locational plus construction details are unavailable. The list will continue to be updated with the new boreholes being drilled.

6.4 Borehole Data Compilation

A borehole data cardex card (figure 2A and B) system was designed in order to record all available data for each borehole on one record card for easy reference (Chilton et al 1982). This system has greatly assisted in the preparation of maps for water resources work and borehole data has been assembled for other purposes such as project planning.

Metrication of all existing records was also undertaken at the same time as the transfer of information and virtually complete set of cardex cards is now available for consultation in the Water Department.

The cards have been designed with future computerised storage system in mind. In the near future, it will be much easier for designers and planners to call up urgent information on locations, water levels, water chemistry and any other necessary data for water resources management.

6.5 Hydrogeological Maps

Hydrogeological information from the cardex cards has been used to compile a master set of maps for each water resources unit at a scale of 1:100,000. The information shown on the maps include:-

(a) borehole location and number

(b) borehole test yield and specific capacity

(c) minimum rest eater level with piezometric form lines

(d) depth to bedrock (for alluvial aquifers)

(e) electrical conductivity (where available)

By using these maps, the Groundwater Section has prepared nine hydrogeological maps at a scale of 1:250,00 for publication. In addition there is also a 1:1,000,000 hydrogeological map for planning purposes.

6.6 Dug-well Data

There is very limited information available for most of the existing protected dug-wells. The available data include:-

(a) Well number

(b) Village

(c) Grid reference

(d) Depth of well

(e) Diameter of slab

(f) Depth of water in well

(g) Date of construction

(h) Type of handpump

(i) Diameter of rising main

(j) Length of outlet pipe

(k) Date of installation

A construction report form for dug-wells has also been designed (Figure 3A and B)

7. REMARKS ON DATA STORAGE

Consideration is currently being given to the computerised storage and retrieval of hydrogeological data. This would permit the location and correction of many of the remaining errors in the cardex system, and would permit selective access to the data other than by borehole number.

Compilations could easily be made according to district, aquifer, yield, water chemistry or other parameters and the application of statistical methods would greatly be facilitated. Consideration should be given to initiating computer storage on a limited trial basis using the Department's existing mini-computer facilities.

8. REFERENCES

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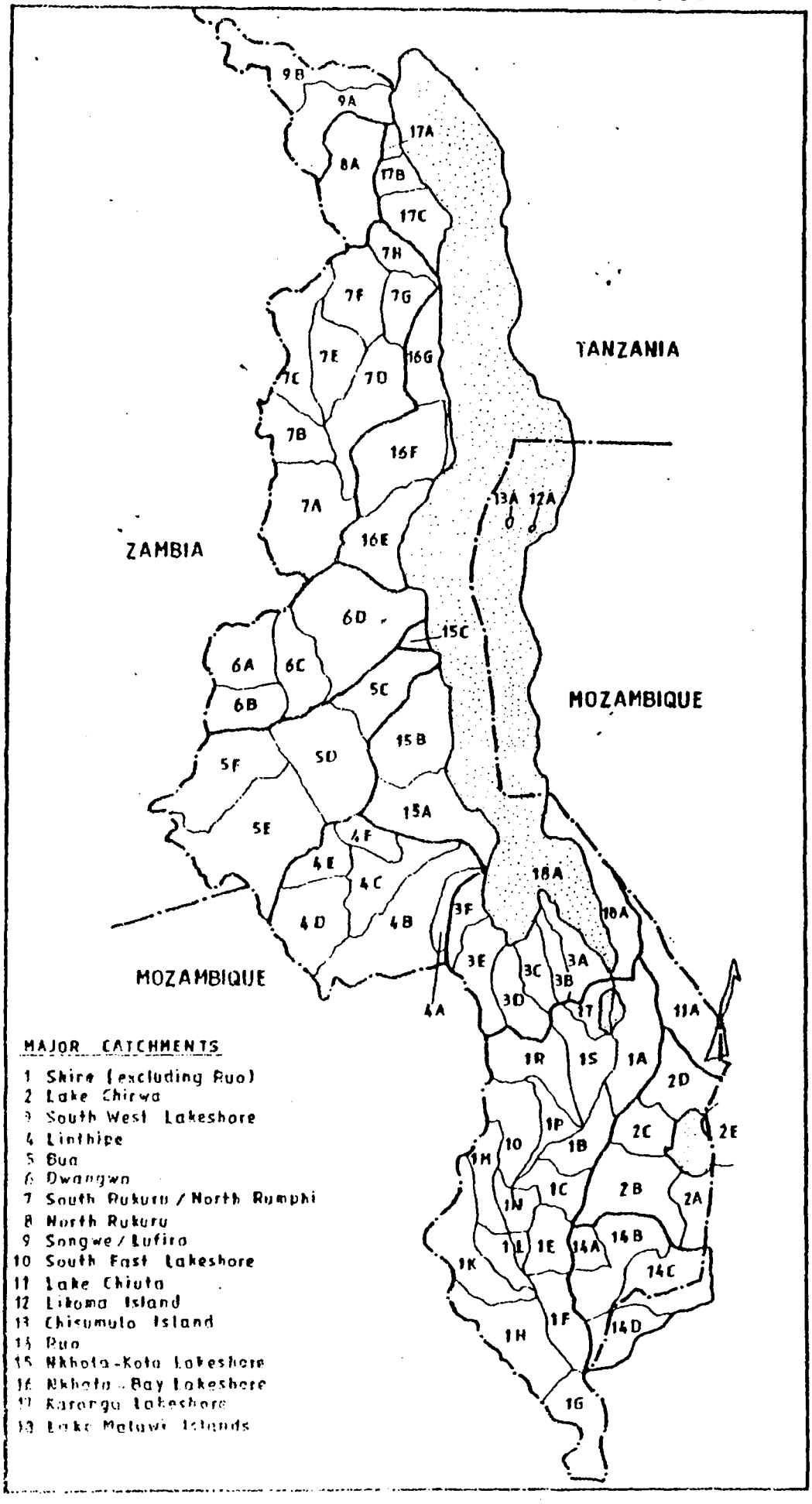
Mainala, S.M. 1986 - Development Operation and Maintenance of Low-Cost Rural Water Supplies in Malawi. A paper presented at the International Seminar on Low-Cost Rural Water Supply Systems - (Unpublished) PP8-9.

Smith-Carington, A.K. and Chilton P.J. 1983 - Groundwater Resources of Malawi (Unpublished) PP3-12 and 161.

Wilderspin, K. 1973 - A general outline of Groundwater resources of Malawi. Geological Survey, Malawi (Unpublished).

FIGURE 1 WATER RESOURCE UNIT BOUNDARIES



MAJOR CATCHMENTS

1 Shire (excluding Ruo)
2 Lake Chirwa
3 South West Lakeshore
4 Linthipe
5 Bua
6 Dwangwa
7 South Rukuru / North Rumphi
8 North Rukuru
9 Songwe / Lufira
10 South East Lakeshore
11 Lake Chiuta
12 Likoma Island
13 Chisumulo Island
14 Ruo
15 Nkhota-Kota Lakeshore
16 Nkhota - Bay Lakeshore
17 Karonga Lakeshore
18 Lake Malawi Islands

Figure 2 Cardex Record of Borehole Information

a) Front

BOREHOLE DATA FORM BDF1

DESCRIPTORS		CONSTRUCTION				PERFORMANCE	
Locality	Chisuzi Village	Driller / Contractor	WCL JOSIA				
Grid Ref.	WIV 5113 8118	Drilling Method	Percussion				
Map Sheet	1 3 3 3 C 2	Start	23 03 72	Drilling Finish	05 04 72	Driller's Pump Test	
Depth b.d. (m)	45.75	Drilling	diam (mm)	from (m)	to (m)	5 hour yield (l/min)	136.8
RWL (construction) (m)	9.15	1.	203	00.00	33.55	5 hour drawdown (m)	16.10
Datum altitude AOD (m)	1128.5	2.	152	33.55	45.75	5 hour Spec. Cap (l/min/m)	12.24
RWL AOD (avg min) (m)	1119.5	3.				Detailed pump test	
RWL AOD (avg max) (m)		Water Struck (m) 1.	12.20	rising to	19.15	Transmissivity (m^2/d)	
District	Lilongwe	2.		rising to		Storativity	x 10^{-}
Client	LCDP	3.		rising to		See file no	N/A
Detailed Geology		Casing	diam (mm)	from (m)	to (m)	SITING	
0-32.9 Colluvium		Plain 1.	152	00.00	21.35	Geologist	D Pascall
32.9-45.7 Basement gneiss		2.				Date	06 03 72
		Slotted 1.	152	21.35	33.55	CST Spacing interval (m)	22.9
		2.				(10 Ωm) Point resistivity	10.2
		Casing Material: Plain	MS	Slotted	MS	DP ρ_1 (10 Ωm)	114.0
		Slot Size (mm)		Open Area %		ρ_2	12.5
GS Ref No	DP 111	Pump: Type	Climax	Suction (m b d)	37	ρ_3	
Borehole No	5 E 199	Filter: quantity (m^3)	1.5	d50 (mm)	9.5	Recommended drill to (m)	61.0
		Q	RWL bd	SC	EC		

16.1 m

m

Figure 2 Card for Record of Borehole Information

b) Reverse

5 E 1 9 9 C

PLUMBED DEPTH and WATER LEVEL 1.			PLUMBED DEPTH and WATER LEVEL 2.			CHEMISTRY					
Date	Depth (m)	W.L. (m)	Date	Depth (m)	W.L. (m)	Date	10/72			Date	EC (μS)
07 04 72	45.75	9.15				Ion	mg/l	mg/l	mg/l		
23 09 76	45.75	5.19				Ca	30				
11 11 76	45.75	8.54				Mg	11				
11 10 79	45.45	4.57				Na	22				
13 03 80	45.45	3.66				K	13				
27 09 80	30.50	4.82				Fe	1.8				
09 11 80	30.50	3.36				HCO3	152				
03 02 81	45.75	4.27				SO4	70				
16 05 81	44.23	3.66				Cl	10				
04 01 82	44.23	5.49				NO3	<1				
						F					
						TDS	268				
						EC					
						pH	6.0				
						T°C	25.0				
						NOTES					

Checked

ITEM I.

COUNTRY PAPER ON SANITATION.

Information collection is through a standardized format known as Monthly Reports, which is definately compiled by the twenty-six (26) Health Assistants of the country. These Health Assistants submits the reports to the four Senior Health Assistants of country, who are located in each region. The Senior Health Assistants asses the reports if they are correct and they are according to what they have seen in the field during their visits. The reports are thereafter submitted to the Health Inspectors who supervises these health assistant. Each Health Inspector compiles together these reports and submits his monthly report to the Deputy Senior Health Inspector.

The Deputy Senior Health Inspector compiles all the reports from health Inspectors, and produce a monthly report of the country, and is copied to all the health Inspectors in the various catchment areas.

The information covered by the monthly reports can be obtained from the attached copies. This information is kept in files, and at the end of the year an annual report is extracted from the latter and is produced by all health Inspectors and the Deputy Senior Health Inspector produced an annual report for the sector.

ITEM II This system of reporting was developed to provide background for planning and programme development, management and identification of government and external funding, needs because they furnishes the following required and vital aspects:-

(1) Assessment of productivity, output, programme needs and planning.

(2) Supervision of the efficiency of the sector's personnel in their catchment areas.

(3) Identification of the community standard of motivation, community need and problems.

(4) Identification of the status of co-ordination with other field workers.

(5) Inventory and management of material purchases.

(6) The linkage with other water projects undertaken by voluntary organization.

(7) The demand of Transport utility in the follow-ups of project, health Education, material conveyance, and inspections of shops and Butcheries.

(8) Evaluation of the utilization of knowledge, attitudes and practices "KAP".

ITEM III

A strategy have been developed based on the above data which will respond to the identified requirement. Assessment of the sectoral need have been undertaken by the "National Action Group" which consist of the relevant skilled interministerial personnel. A draft which contains national policies and strategies for national sectoral development is prepared known as "Development of water Supply in Swaziland" now it is awaiting ministerial and cabinet approval.

The purpose of this document is to provide a framework within which sectoral development can take place in a smooth and continuous fashion according to national priorities and in a manner which will optimize benefits.

Another Document have been drafted known as "Two Year Action Plan" also based on the above said data meeting guidelines established in the policy and strategy document and it

(a) Identifies projects to implements development programme in the Urban, Peri-Urban, and Rural Areas.

(b) Identifies internal and external funding requirements.

The "Two Year Action Plan in the Urban and Peri-Urban areas consist of planning elements which includes:-

(1) Construction of water and sewerage schemes in urban areas.

(2) Construction of water and Sanitation schemes in the Peri-Urban areas and water quality suiveillance.

(3) Operation and maintenance of water and sewerage in the Urban and Peri-Urban areas.

(4) Immediate staffing needs in Water Supply Board.

(5) A manpower assessment of entire water and Sanitation sector.

(6) Planning of water and sewerage schemes.

(7) Industrial waste and effluent management.

(8) Training management.

(9) Co-ordination of planning, design, construction and operation and maintenance of water and sewerage schemes in urban and Peri-Urban Areas.

...AL REPORT ON SANITATION AND SPRING PRO...
...ALTH INSPECTORATE - JANUARY - DECEMBER, 1985.

DISTRICTS AND NAMES OF HEALTH ASSISTANTS	COMPLETED TOILETS	UNCOMPLETED TOILETS	COMPLETED SPRINGS	UNCOMPLETED SPRINGS
HHOHHO DISTRICT				
C. MALINGA	65	24	-	-
I. MHLANGA	28	39	-	-
S. GININDZA	31	38	-	-
E. GAMA	18	49	-	-
H. MAKHANYA	38	24	-	-
D. FAKUDZE	9	11	-	-
P. MBHELE	9	20	-	1
W. NKAMBULE	14	33	-	2
TOTAL	213	238	-	3
UBOMBO DISTRICT				
C. KUBHEKA	51	52	-	-
M. MAGAGULA	37	19	-	-
T. DLAMINI	24	30	-	-
M. MAKHANYA	28	9	-	-
A. NXUMALO	21	24	-	-
H. MAVUSO	15	60	-	-
TOTAL	176	194	-	-
SHISELWENI DISTRICT				
M. DLADLA	8	9	-	-
N. MANANA	20	18	1	-
R. DLAMINI	12	16	-	-
W. NZIMA	29	13	-	1
S. MAVUSO	55	8	2	1
E. TSABEDZE	123	12	3	2
A. MATSEBULA	21	30	-	1
S. MDLULI	62	10	3	1
TOTAL	330	116	9	6
MANZINI DISTRICT				
F. NZIMA	18	11	1	2
S. MSIMANGO	34	9	1	1
Z. DLAMINI	15	8	-	-
N. TSABEDZE	11	12	1	1
E. CINDZI	29	18	2	-
A. NKONYANE	26	21	2	-
F. ZIYANE	10	14	-	2
P. NTSINI	-	-	-	-
TOTAL	143	93	7	6
COUNTRY TOTAL	862	641	16	15

Results varies with the state of motivation of the community & the availability of EHA. (83.5%)

Sanitation a/o Urban Rural - 25%

- Septic tank 66%
- H_2O sewerage System 20%

The Summary of levels of service coverage for Sanitation at December, 1986 is as per attached copy titled, The Annual Report on Sanitation and Spring Projection. The total completed latrines is 862 uncompleted 641, completed springs 16 uncompleted 15. The low output is due to these courtraints that are presently existing to the countrys sectors.

(1) Delay in the supply of material deliveries from the central stores to various region storerooms, which due to the unserviceable truck and difficulties of borrowing from other ministries for replacement.

(2) No transport to distribute the material from regional storeroom to various health Assistants storerooms.

(3) Uneven distribution of Health Assistants and Health Inspectors which allows for a very wide catchment area to be covered whilst there is no transport, only public transport are used where available. Personnel are not given field allowance they pay from their own pockets without being refunded.

(4) Community have lost confidence of sectors personnel due to the above constraints.

(5) In the Urban Areas there is always the complaints of overflowing septic tanks while the ministry of health have only one which caters for the whole country as a result it is unserviceable and so the Urban people are loosing confidence of the Health Inspectors.

66% of urban pop. served by Septic tank

MONTHLY REPORT ON
SANITATION AND SPRING PROTECTION PROJECTS
BY HEALTH INSPECTORATE 1985

Districts & Names of Health Assistants	Completed Toilets	Uncompleted Toilets	Completed Springs	Uncompleted Springs
HHOHHO DISTRICT				
C. Malinga				
I. Mhlanga				
S. Ginindza				
E. Gama				
H. Makhanya				
D. Fakudze				
P. Mbhele				
W. Nkambule				
TOTAL:				
LUBOMBO DISTRICT				
C. Kubheka				
M. Magagula				
T. Dlamini				
M. Makhanya				
A. Nxumalo				
H. Mavuso				
TOTAL:				
SHISELWENI DISTRICT				
M. Dladla				
N. Manana				
R. Dlamini				
W. Nzima				
S. Mavuso				
E. Tsabedze				
S. Mdluli				
TOTAL:				
MANZINI DISTRICT				
F. Nzima				
S. Msimango				
Z. Dlamini				
N. Tsabedze				
E. Cindzi				
A. Nkonyane				
TOTAL:				
COUNTRY TOTAL:				

MINISTRY OF HEALTH - HEALTH INSPECTORATE DIVISION

HEALTH ASSISTANT & HEALTH INSPECTORS MONTHLY SUMMARY REPORT

·trict: _____ Month: _____ Year: _____

me of HI/HA: _____ Station: _____

TOILET CONSTRUCTION

1. Number of projects carried over from previous month
2. Number of new projects started this month
3. Number of projects completed during this month
4. Number of projects incompleted at end of this month

SPRING PROTECTION

1. Number of projects carried over from previous month
2. Number of new projects started this month
3. Number of projects completed during the month
4. Number of projects incompleted at end of month

HI	RHM Motivated	At RDA	With RWSB	Schools	TOTAL	Cement Slab	Local Materials

COOPERATING AGENCY

CONSTRUCTION MATERIALS

1. On hand at start of month
2. Used for toilets during month
3. Used for springs during month
4. Total material used
5. Materials received
6. On hand at end of month
7. Material requested

Pockets Cement	6m Reinforcement	13m Reinforcement	Vent Pipes	Flyscreen (6" x 6" pcs.)	Galvanized Pipe (metres)	Meters of Plastic Pipe	Elbows	Nipples	Taps	Sheets of Corrugated	Lengths of Timber (metres)	Nails and Washers	Saw Blades

D. MEAT INSPECTION

	Beef	Sheep	Goats	Pigs
1. Number of carcasses inspected				
2. Number of carcasses passed				
3. Number of carcasses in deep freeze				
4. Number of carcasses condemned				

5. Reason for condemning carcasses: _____

6. ORGANS condemned:

	BEEF										SHEEP									GOAT								PIG							
	Lung	Liver	Heart	Kidney	Spleen	Intestine	Udder	Head	Pancreas		Lung	Liver	Heart	Kidney	Tongue	Intestine	Udder	+ Head		Lung	Liver	Heart	Kidney	Tongue	Intestine	Udder	Head		Lung	Liver	Heart	Kidney	Tongue	Intestine	Udder	Head
Measles	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Flukes	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Necrosis																																				
Hydatid Cysts																																				
Abscess																																				
Hydronephrosis																																				
Nephritis																																				
Cirrhossis																																				
Emphyzema																																				
Pneumonia																																				
Pimply Gut																																				

(+) Specify pathology: _____

E. FOOD ESTABLISHMENTS

	Visited	Foodstaffs Seized (-)	Warnings	Prosecutions	Closures
Shops					
Butcheries					
Restaurants					
Bakeries					
Hotels					
Others					

(-) List items seized here: _____

F. NON-FOOD ESTABLISHMENTS

	Visits	Warnings
Hardware store		
Clothing store		
Barber shop		
Other(specify)		

G. MEETINGS

1. Schools - Names of new schools contacted by HA's in district

Number of meetings with school committees

2. Rural Water Supply Board - Community meetings where HA's attended with RWSB Community Development Officer

Name of Locality or Community	Date	Status of Project

Are there any new RWSB supplies being considered in your district?

Name of Community/Locality	No. of Homesteads served	Contact Yes	Contact No

3. (RDA) Community Meetings with RDA's

Name of RDA	Date of Meeting

Are there any new RDA water supplies being considered in your area

Name of RDA	No. of Homesteads to be served	Contact Yes	Contact No

4. RHM's - Meeting with RHM's in your area

Date	Location	Comments

COMMENTS: _____

Signature: _____ Date: _____

RURAL WATER SUPPLY AND SANITATION

The two-year action plan for development of water supply and sanitation in rural areas consists of nineteen (19) planning elements, the most important of which include:

- construction of new water supplies to serve 63,000 people and implemented by Government agencies and non-governmental organizations;
- rehabilitation of inoperable water systems to serve 12,000 people;
- construction of 3,000 latrines;
- maintenance of water systems;
- manpower assessment and planning, training, and establishment and filling of positions to meet immediate needs;
- supporting activities required to implement projects and programmes, including linkage of health education, and community participation with water supply and sanitation, and coordination among agencies;
- preparation of a five year sectoral development plan.

Budget estimates have been prepared for the plan period amounting to E6,984,565.

In general, the two-year action plan calls for a level of capital investment in water supplies under the RWSB which is in line with past level of activity and which will provide safe water to an additional 39,000 people. This is consistent with national five year goals established in the national policy. It also calls for an increase in the level of investment in rural sanitation to serve an additional 60,000 people which will require external support. The cost of maintenance, which is essential to continued operation will increase as the number of water supplies grows and as systems age. The plan calls for a study of funding mechanisms to reduce the burden on Government in the long term.

WHO/DANIDA WORKSHOP ON WATER SUPPLY AND SANITATION INFORMATION FOR SECTORAL MANAGEMENT

COUNTRY PAPER

1 INTRODUCTION TO TANZANIA

Tanzania is a United Republic comprising of Tanzania Mainland, formerly known as Tanganyika, and Tanzania Island, formerly known as Zanzibar. By the 1978 sensus, the Republic had a total population of 17,527,000 people. At an average growth of 3.3% the population now is estimated to be 21 million people.

Tanzania has an area of 945,000 Sq Km. Distribution of the population is such that about 88% of the people live rural areas and the remaining 12% live in urban areas. The trend is for many people to move from rural areas to urban areas in search for employment and better basic social services.

Tanzania is basically an agricultural country with majority of her people being employed in farming. Few industries, most which are agricultural based are found in towns. Mining industry also plays an essential part in earning foreign currency for the country.

2. INSTITUTIONAL ARRANGEMENTS WITH RESPECT TO WATER AND SANITATION

Water and Sanitation affairs are handled by different organisations in the country as follows:-

(a) Water

Ministry of Lands, Water, Housing and Urban Development is responsible for water affairs at National level.

At the Regional level water falls under the responsibility of the Regional Water Office which adminstratively is under the Regional Commissioners Office but still maintains technical responsibility to the Ministry respossible for water.

In the same way, District Water Offices are responsible for water at District level. District Water Offices administratively report to District authorities while at the same time maintaining technical responsibility to the Regional Water Officer.

(b) Sanitations

As for sanitation we make distinction between the Urban Sanitation and rural sanitation.

(i) Urban Sanitation

Urban sanitation is the responsibility of the Ministry of Lands, Water, Housing and Urban Development. However in many of the urban centres, the sanitation department of the Ministry of Lands, Water, Housing and Urban Development have not been established.

In urban centres where such a department has not been established, Health department continues to handle urban sanitation.

(ii) Rural Sanitation

Rural sanitation is the responsibility of the Ministry of Health and Social Welfare.
As it is for water, the Regional and district health Offices are responsible for rural sanitation in their respective areas.

(c) Other Organisation responsible for Water and Sanitation

(i) Prime Minister Office

Regional functions are controlled by the Prime Ministers Office. Therefore Regional Water and Sanitation Plans, budgets and administration fall under the control of the Prime Ministers office.

(ii) Ministry of Local Government and Cooperative Development

Local Government (District Councils, Urban Councils, Village Councils) functions are under the control of the Ministry of Local Government and Cooperative Development. The Ministry of Local Government has a control over the water and sanitation activities in the Districts in the same way as the Prime Ministers Office has control over regional water and sanitation affairs.

(iii) Ministry of Community Development

This Ministry plays the role of community mobilization and participation for water and sanitation projects.

Village Councils:

The village councils are in contact daily with the people and therefore has an important role in advocating and mobilising people for water and sanitation projects.

3. SERVICE LEVELS

(i) Water

It is estimated that about 42% of the total population are covered with a water supply system. About seven million people out of those served with water supply are found in rural areas. It is important, however, to point out here that not all of the completed water supplies are operating satisfactorily. It is estimated that as many as 50% of the completed water supplies are not operating satisfactorily due to various reasons including unsatifactory maintenance, lack of spare parts, lack of fuel, problem with pumps, shortage or lack of qualified technicians, poor construction and/or poor design.etc

(ii) Sanitation

Urban Sanitation

It is estimated that 50% of the urban household have some kind of latrine accommodation.

Seven out of the 20 regional towns have some sewerage system serving about ten percent of people in those towns. Septic tanks and pit latrines serve 10 percent and 80 percent respectively of the remaining people.

In remaining towns without sewerage system, septic tanks and pit latrines are exclusively used with septic tanks covering about 20% and pit latrine 80% of those people served with some kind of latrine accommodation.

Several projects under implementation in some urban areas aim at improving and enhancing the service levels currently offered. These projects include:-

(a) Dar es Salaam Sewerage and Sanitation Project - which is a World Bank Project covering the following main components

(i) The rehabilitation and upgrading of the sewerage system in the City Centre of Dar es Salaam.

(ii) Low Cost Sanitation Programe covering

- Construction and/or upgrading of 3600 pit latrines in Temeke areas
- Improvement of pit emptying facilities by constructing new dumping stations
- Rehabilitating 14 and acquiring new 16 pit emptying vehicles.

(iii) Establishment of the Sewerage and Sanitation Department (DSSD) in the City Council of Dar es Salaam.

(iv) Carry out studies with an aim of:-

- Establishing tarrif structure for sewerage and sanitation.
- Formulating proposals for future development.

(b) Plant for Production of Pit Latrine components:

A plant capable of producing cheaply and on a large scale VIP kit components has been established in Bugururni with financial assistance from West Germany. People around Bugururni area,

other parts of Dar es Salaam, and other towns, are now buying their requirements from the plant.

(c) Morogoro Sewerage Project

Construction for the Morogoro Town Sewerage System is in progress. Low Cost Sanitation Programme is about to be introduced in this town before the completion of the construction of sewerage system.

(d) Capital Development Authority (CDA) - Dodoma:-

Capital Development Authority has constructed sewerage and storm water disposal system for Dodoma Capital. CDA is now in consultations with the Low Cost Sanitation Unit of the Ministry of Lands, Water, Housing and Urban Development for the purpose of starting Low Cost Sanitation Programme in the Capital.

(e) Other Towns

Proposals for Sewerage and sanitation projects are in various stages of implementation for the towns of Moshi, Iringa, Arusha, Mbeya, Tanga, Mwanza and Kigoma.

Rural Sanitation

In rural areas households with latrines are estimated at 45%. This low coverage has been attibuted by the following:-

- Ignorance
- Environmental health staff are not enough to cover health programmes in the rural area.
- Tranfortation and funds are not sufficient

However this situation is going to be improved by the year 2000 under the concept of:-

- Primary health care (PHC)
- HESAWA (Health, Education Sanitation and Water)
- Wangingombe Project
- Other projects(International and Local funded) which are being implemented throughout the country among at the training of village healths workers in each village who will in return teach or educate in the proper construction and the use of latrines. In so doing this will help to reduce the current incidences of fecal deases.

4. DATA COLLECTION

(a) Kind of Data Collected

Several kinds of data are usually collected in the field of water and sanitation. But the following may represent, in general, the kind of data usually collected:

(i) Data which is used to indicate demand for providing a service (Water and/or Sanitation).

- Population of the area under study
- Availability or non availability of the service
- Whether the people feel the need for the service
- Ill health caused as a result of absence of the service or as a result of having unsatisfactory service.
- Social/Economic benefit to be derived from the service.
- The community will be in the village for undertaking the work of providing the service.
- etc.

(ii) Data which indicate or assess the capability for undertaking the project.

- Investment cost of providing the service
- Availability of the construction materials.
- Capability of the people to undertake the work of providing the service
- The organisation available for undertaking the work of installing the service.
- Availability of technical guidance
- etc.

(iii) Data which indicate operational conditions and serviceability of the utility.

- Running of spare parts cost
- sufficiency of operational funds
- availability of technical advice
- availability of operations manuals
- number of times the service under repair per given time
- the common problems of the service
- to charge or not to charge for selling or providing the service
- provision of training for beneficiaries and attendants.

(iv) Data which is required for monitoring the Performance of the service.

- Designed capacity of the service
- Percentage of the capacity utilized now
- Number of people intended to be served at full capacity.
- Number of people served now.
- Reliability of the service
- System used in the management of the service.
- Difficulties, if any, encountered in operating the service.
- Comparison between the cost of providing the service and the revenue accrued from selling the services.
- Answerability of the beneficiaries.
- Effectiveness of the training provided for the beneficiaries and attendants.
- Any impact brought about by providing the service.

V Data required for planning purposes

- Total population/villages/towns in the area under study
- Percentage already covered
- Percentage not covered
- Total cost of providing service to cover total population/villages/towns in area under study
- Total cost of providing service for population already covered
- Total cost of providing service or remaining population
- Span (period) required for providing service to remaining people.
- Number of people to be provided with service per year
- Running cost of the existing utilities
- Social/economic change expected as a result of providing service o the people.
- etc.

(b) Method of Data Collection

Data is usually collected by one or more of the following ways:-

(i) Attendants at health centres, hospitals, water points, pumping stations etc do record daily information related to the type of service he or she is attending.

(ii) Village governments keep record of the number of people in their respective villages.

(iii) Field officers in their daily work colect data and submit to heir office.

(iv) Information flows in to the water and sanitation offices from other organisations.

(v) Distribution of reports pamphlets, bulletins etc by institutions (national and international).

(c) How Information (data) flows

The flow line of information is from villages and from the service installations to the district ~~water~~ offices, district ~~water~~ offices to the regional ~~water~~ offices, and from the regional ~~water~~ offices to the Ministry's headquarters. Similarly information flows from the Ministeries downwards through the regional offices, district offices to the villages. There are also horizontal flows of information to and fro at various levels, viz national, regional, district and village levels.

(d) Use of the data

As mentioned earlier in para 4(a), data collected is made use of in:-

(i) Determining the need for providing the service

(ii) Assessing whether the resources (financial, labour, technical equipment and materials etc) are available for undertaking the project (development)

(iii) Assessing whether or not the service installed/to be installed will be workable, operational or serviceable

(iv) Monitoring the performance, the impact of the service to the people.

(v) Providing basic information required for planning purposes, for budgeting purposes and for soliciting assistance (financial, technical mangeral etc) from a donor.

(vi) Preparing reports to be submitted to political, and government and other organisations (national and internationals) as may be needed.

(vii) Providing information to institutions, such as the central statistical bureau, which are responsible for collection, amalgamation and dissemination of data.

(e) Effectiveness in the data collection and amalgamation

Data collection is not effectively done as one would have wished to see it done. Lack of seriousness (appreciation to data collection) and mix-up in the administrative responsibility for water and sanitation could be pointed out to be among the causes for the present unsatisfactory situation in data collection.

Other causes could be lack of expertise in data management, lack or shortage of soft and hard ware materials required for collection, storage and dissemination of data.

VIII

WHO/DANIDA WORKSHOP ON WATER SUPPLY AND SANITATION - INFORMATION FOR SECTORAL MANAGEMENT - MANGOCHI, MALAWI 10TH - 14TH NOVEMBER, 1986

COUNTRY PAPER ON WATER SUPPLY AND SANITATION INFORMATION - UGANDA

BY : J.M. KIWANUKA

1. INTRODUCTION

1.1 Uganda is an Agricultural East African state situated between latitudes 4°N and 1°S and longtides 30°E and 35°E. It shares a common border with Sudan in the North, Rwanda and Tanzania in the South, Kenya in the East and Zaire in the West. It is thus a landlocked country having her only access to the Indian Ocean through Kenya (Mombasa Port) and Tanzania (Port of Dar-es-Salaam).

1.2 It has a population of 14.5 million with an annual growth rate of 2.9 per 1000 people. 50% of the population is below the age of 18 years. The life expectancy is 54 years. 90% of Uganda's population live in the rural areas and generate 80% of the Countries economy.

1.3 It has an area coverage of 236,400 sq. Km of which about 44,000 sq. Km is covered by water and swamps and 192,400 sq. Km by land. The altitude is about 1000 metres above sea level and the temperature ranges between 15°C and 30°C but usually much cooler on higher altitudes.

1.4 The average annual rainfall ranges between 102 cm to 152 cm distributed in 4 seasons a year i.e. March to May, September to November. But virtually most parts of Uganda receive rains all the year around.

1.5 It depends on Coffee, Cotton, Tobacco, Tea and Copper for her foreign exchange earnings. However, of late the Government has diversified the economy by encouraging Commercial growth of groundnuts, Sim Sim, Beans, Maize, Soya-beans and other traditionally available food crops which are of foreign market value.

1.6 It is divided into 33 administrative units referred to as Districts. Each district is sub-divided into counties which are also composed of sub-counties. The sub counties are made up of Parishes which are in turn composed of Community units known as villages. Each district is administered by a District Administration which is fully autonomous and by the law of the land, is fully responsible for rendering most of the social and developmental services in the district.

1.7 In addition to Kampala, which is the Capital City, Uganda has other six major towns:-
Entebbe, Jinja, Mbale, Masaka, Mbarara and Tororo and a number of smaller towns scattered in different areas of the country. The six major towns are fully autonomous and are responsible for rendering social services to their peoples. They are also divided into parishes and villages or zones.

1.8 In addition to the administrator at each level of administration, the affairs of each unit are managed by Committees of nine people known as Resistance Committees. These Committees are elected by the people and responsible for identification of people's needs and communicate them to higher responsible authorities. They plan for their areas and receive technical guidance from Government extension workers and disseminate the same to the Community for the benefit of that Community's development.

1.9 District Administrations, Municipal and Town Councils are under the Ministry of Local Government.

RESPONSIBLE NATIONAL AGENCIES FOR WATER SUPPLY AND SANITATION AND THEIR SCOPE OF RESPONSIBILITY

2. **WATER SUPPLY**

2.1 The Ministry of Water and Mineral Resources is legally responsible for all the water masses in the country i.e. its quality, quantity chemical composition etc. Through its Department of Water Development, it is responsible for provision of adequate and good quality water to all Ugandans. However, the National Water and Sewerage Corporation, a parastatal body directly under the same Ministry is responsible for water supply in Kampala, Entebbe, Jinja and at a later stage, Mbarara, Tororo. Mbale and Lira.

2.2 The Water Development Department is headed by a Commissioner and assisted by the Deputy Commissioner. Under the Commissioner are Assistant Commissioners in charge of Operation and Maintenance, Administration, Design and Planning and Water Resources and a Director of Drilling. Under the Assistant Commissioner Water Resources are Executive Engineers in charge of Hydrology, Hydrometeology, Hydrogeology and Water quality analysis.

2.3 The task for provision of water supplies to the needy Ugandans Communities would have been very difficult for the Government had there not been Donor Agencies like UNICEF, World Bank, European Economic Community, African Development Bank, Islamic Development Bank, etc to assist. For example, UNICEF has assited the Government to drill 1100 boreholes in seven districts, to protect 2100 springs and hand dug wells in more than 16 districts and rehabilitational schemes in the Western, South Western and Eastern Regions of the country. World Bank, E.E.C., African Development Bank have financed for the rehabilitation of waterworks in towns of Uganda i.e. Kampala, Entebbe, Masaka, Mbarara, Jinja, Mbale and Tororo. Other smaller towns are also in the programme for provision of piped water supplies.

2.4 The Ministry of Water and Mineral Resources liaises with other related Ministries in the operational activities of Water Supply programmes. For example it has to liaise with the Ministries of Health, Local Governments and Culture and Community Development in the implementation of the Springs and Wells protection programme. The Ministry being the executive national agency for this programme receives

materials, tools, equipment and transport from the Donor Agency (UNICEF). They are distributed out to the operational area districts. The Environmental Health Control Division of Ministry of Health which has staff at all levels (district, county and sub county) who are technically knowledgeable with protection of Springs and wells, receives the materials, tools equipments and transport and organises protection of the water supplies in the districts. The division has to closely liaise with the Ministry of Culture and Community Development staff who are solely responsible for mass mobilisation and education. The Ministry of Local Governments through her District Administration is responsible for payment of staff allowances and purchase of fuel for programme vehicles. Community participation is ensured through closely working with Resistance Committees at village Parish and sub county levels. The Committees identify the sources of water to be protected and organise the Community to actively participate in the protection of the Sources. There are also water source Committees which are responsible for maintenance of the water sources. They are composed of members from the beneficiary community and usually chaired by the person on whose land that water source is located.

2.5 On the side of borehole drilling programme, the sites for boreholes are selected by Resistance Committees which are Peoples Committees under the Ministry of Local Governments. They are forwarded to the Ministry which organises the drilling and installation of U-2 pumps (Indian Mark 2 pumps). On completion the community assumes all responsibilities for that borehole. Through the resistance committees, the community selects the care taker. A community based pump maintenance system has been established. The Community selects a pump mechanic and forwards him to the Ministry of Water and Mineral Resources for training. On completion he is provided with a tool kit and a bicycle and he becomes responsible for maintenance of all boreholes in his area. The community is responsible for renumeration of the pump mechanics maintenance of the bicycle and purchase of borehole spare parts on exhaustion of those provided by the Ministry.

2.6 the National Water and Sewerage Corporation (NWSC) which is a parastatal body directly responsible to the Ministry of Water and Mineral Resources is managed by a Board of Directors. Its daily functions are run by an organisational structure headed by the Managing Director under whom are Chief Engineer on the Engineering side, Corporation Secretary on the administration wing and Chief Accountant on the accounts. Under the Chief Engineer are Area Managers in charge of Kampala, Jinja and Entebbe.

2.7 It should be noted that the Military rule of 1971 to 1979 coupled with the civil wars that followed destroyed all the social services in Uganda; hospitals had no drugs and equipment, factories were not producing to full capacity and roads were full of pot holes. The water supplies and sanitation services were equally affected. Sewage and water pipes leaked and could not be repaired; pumps broke down, etc. The plant outputs were too far below the expectation.

2.8 The Ministry of Water and Mineral Resources through the N.W.S.C and with the assistance of the European Economic Community (EEC), has since 1982 rehabilitated Kampala Water Supply (Gaba Water Works). The out put has increased from the then 3-4 million galls/pay to 8-10 million gallons/day. With more rehabilitation which is now under way Gaba Water Works originally designed to have an output capacity of 25 million galls/day will be able to process 17 million galls/day. Kampala with its estimated population of 574,000 people has a water supply demand of about 22 million galls/day. Even with an output of 17 million gall/day there will still be a shortage. However, plans are being made by the Ministry to augment the plant to attain its level output of 25 galls/day in a period of 5 years.

2.9 African Development Bank is assisting the Ministry to rehabilitate or provide water supplies in 5 smaller towns i.e. Gulu, Lira, Kamuli, Kaberamaido and Mbarara. Work is in progress.

2.10 The World Bank under the World Bank Project is assisting the Ministry to rehabilitate water supplies and sanitation in seven towns i.e., Kampala, Entebe, Jinja, Masaka, Mbale, Mbarara and Tororo. The World Bank Agencies are coordinated to the Ministry and the beneficiary community by the Department of Water Development and the National Water and Sewerage Corporation. The Health Education Division of the Ministry of Health is responsible for the Health Education component in the project.

3. SANITATION

3.1 The standard of Sanitation in Uganda before 1969 was quite good. The Sewage works in different towns of Uganda were working normally. The pit latrine provision in the rural areas was at 90% level. During the period of paramilitary and military rule (1969-1982) the standard declined to almost non-existent in urban areas and about 30% in rural areas. This accounted for the increased incidence of faecal oral routed diseases mostly in urban areas.

3.2 The Environmental Health Control Division of the Ministry of Health is responsible for the execution of the rural Sanitation programmes. The division is headed by the Chief Health Inspector (C.H.I.) at the Ministerial level who is directly responsible to the Director of Medical Services (DMS). The DMS is under the Permanent Secretary (PS). Under the Chief Health Inspector are the District Health Inspectors who supervise Health Inspectors at county level. Under County Health Inspectors are Health Assistants who execute environmental health control duties at subcounty level. In the Chief Health Inspector's office is the Field Coordinator - Sanitation who is responsible for coordination of rural sanitation field activities.

3.3 By the law of the land, the Ministry of Local Government through her District Administrations and Urban Authorities is responsible for promotion and maintenance of health. But since it has no trained manpower, it has to liaise with the Ministry of Health. The Ministry of Health thus seconds staff to the Ministry of Local Government which takes care of financing of the health services including sanitation.

3.4 While the Environmental Health Control Sections in urban areas take charge of checking on proper functioning of sanitary facilities in individual households and public places, the National Water and Sewerage Corporation is responsible for the operational services of the excreta disposal component of sanitation. The refuse disposal component is under the Environmental Health Control Section. However, all these sections and bodies closely liaise to achieve the expected.

3.5 In 1982 the Government having realised the problem of faecal oral routed and Water related diseases, requested Donor Agencies to assist to combat the problem. UNICEF consented to assist to improve water supplies in the rural and semi urban areas of the country. The UNICEF assisted Water Project involving drilling of boreholes Protection of Springs and wells and Quality Control of water was thus initiated. However good water without proper sanitation would not alleviate the situation. Therefore in 1985 the UNICEF assisted Rural Sanitation project was initiated to compliment the water project.

3.6 The project activities include:-

1. Organisation of seminars on sanitation at district, county and subcounty level. These seminars are attended by Health, Administration, Community Development Education, Agriculture and other departmental staff connected with rural development. They are also attended by members from Resistance Committees and non-Governmental organisations. In addition to lectures the seminar programme includes practical field work whereby participants participate in the actual construction of different designs of VIP latrines. At the end of the workshop the participants should be able to effectively advise the people on construction of VIP latrines.

2. Construction of demonstration VIP latrines at public places like schools, administrative unit headquarters, community centres, Health Centres, etc. The sites for these demonstration units are selected by the people through their Resistance Committees. Local masons from the communities are trained on the job during construction of these units so that they could be sources of knowledge in their respective communities. The public is also expected to learn from these units so that they could aspire to construct the same in their homes. Postive response has so far been observed.

3. Casting of concrete latrine slabs which are distributed to intending developers free of charge. However in the future it is planned that a minimo charge will be levied on each slab given out. This will help to make the people feel the value of the slab which would not have been so if the slab was free.

4. Encouraging the people to realise the need for better sanitation. The extension staff constantly visit members of the community interact with them and advise them on construction of pit latrines. Although the ventileted improved latrines have advantages over the traditional non-vented pit latrines,the project propagates for the two designs. The criterion is affordability of costs for both initial construction and maintenance and choice of the individual developer.

3.7 The Environmental Health Control Division of the Ministry of Health closely liaises with the Ministry of Water and Mineral Resources in the implimentation of the Water and Sanitation projects as the two projects are inter-related. Transport, tools and equipment are shared between the Springs and Wells Programme and Sanitation Project.

3.8 On the Urban areas front, European Economic Commission, World Bank, African Development Bank, the Islamic Development Bank consented to rehabilitate/construct water supplies and sanitation systems in some Uganda towns. Work is in progress in Kampala, Entebbe, Jinja, Mbale, etc.

4.0 DATA COLLECTION AND STORAGE

4.1 Borehole sites are selected by the people through their village, Parish and subcountry committees (RC, RC_2 and RC_3). Sites selected in villages are forwarded to the Parish Committee (RC_2) which compiles a list of all sites in its villages and forward it to the Subcountry Committees RC. The Subcountry Committee compiles a list of all sites in the Subcount and submits it to the Ministry of Water and Mineral Resources. Each of these three committees remains with a copy of its list for reference and counter checking. The Ministry arranges for Hydrogelogical surveys and drilling following this data.

4.2 After drilling each drilling team (manning one rig) submits to the Drilling Superintendent and the Director of Drilling detailed information on each borehole it has drilled e.g. location, depth, work time etc. The pump installation team that follows the drilling team also submits to the same offices detailed information as to the registration number of the borehole, pump installed, date completed etc. They also take a a sample of water for quality analysis. All this information and results of analysis are recorded. Compiled data on completed springs is forwarded to the Ministry and UNICEF. The Ministry forwards copy of the data to the Ministry of Planning and Economic Development which is responsible for planning evaluation and co-ordination of all External Aid Projects.

4.3 Water sources for protection are identified by the Community and forwarded to the subcounty committees (RC_3) through Village and Parish Committees (RC_1) and RC_2). The RC_3 submits a list of identified sources to the Area Health Assistant who inspects the sources to ascertain as to whether they can be protected. He compiles a list of those which can be protected and submits the same to his supervising County Health Inspector who compiles a list from different subcounties and forwards it to the District Health Inspector. The District Health Inspector acting on this information releases materials to the subcountry committees, who with the technical guidance from the Area Health Assistants, arrange for protection of the springs. On completion the Health Assistants, through their County Health Inspector, submit to the District Health Inspector detailed information on each spring e.g. quantity of materials used, flow rate, labour used and time spent. The D.H.I. compiles a report and submits it to the Ministry of Water and Mineral Mineral Resources with the copy to the Ministry of Health and UNICEF. The Ministry of Water Water and Mineral Resources sends a copy of this information to the Ministry of Planning and Economic Development.

4.4 The National Water and Sewerage Corporation likewise receives data from the Plant operation Managers (Water Works and Sewerage Works) regarding the daily operation of the Plant. The Corporation compiles this data and forwards it to its parent Ministry.

4.5 The Field Health staff carry our routine inspections of their areas of jurisdiction. they also receive complaints from the public regarding various aspects of environmental Health Control. They compile monthly progress reports which they submit to the Ministry of Health. The Ministry of Health submits the same to the Ministry of Planning and Economic Development.

4.6 The data so collected is stores at both the different levels of collection and Ministerial headquarters. The Ministry of Planning and Economic Development which is responsible for planning, evaluation and coordination of projects receives and stores data from all Ministries. There is also a National Inter-Ministerial Committee which plans for projects. Data collection is necessary for proper planning implimentation, monitoring and evaluation of water and sanitation projects.

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REPUBLIC OF ZAMBIA

MINISTRY OF HEALTH

AND

DEPARTMENT OF WATER

AFFAIRS OF THE

MINISTRY OF AGRICULTURE

AND

WATER DEVELOPMENT

WHO/DANIDA SEMINAR/WORKSHOP: WATER SUPPLY AND SANITATION - MANGOCHI, MALAWI 10th TO 14th NOVEMBER, 1986.

BY: P. C. MPHANDE

AND

M. MULIPUKWA

1. INTRODUCTION

1.1. Zambia is a land-locked country situated in Central Africa Southe of the equator between latitudes 8° and 18° southe and longitudes 22° and 34° east. The country covers an area of 752,614 square kilometres. The greater portion of the land lies between 900 metres and 1200 metres above sea level. The country lies in the savanna with woodland as being the predominant vegetation. The mean annual rainfall decreases from 1200 - 1600mm in the north and north-west to 600 - 800mm in the south and south-west. Temperatures are closely related to the altitude. The ranges are as follows:-

November to April	-	15°C to 24°C on the lowlands and from 16°C to 21°C on the highlands
May to July	-	16°C to 18°C on the lowlands and 13°C to 16°C on the highlands
August to October	-	21°C to 28°C on the lowlands and 17°C to 24°C on the highlands

persistent drought during the last few years have severely curtailed agricultural productivity and reduced the reliability of water supplies for both Municipal and industrial use.

The population of Zambia in 1984 was estimated at 6.44 million about 57% of the people live in rural areas and 43% live in urban areas. The national average annual growth rates of population are estimated at 3.3% and 3.2% for periods 1980-1990 and 1990 -2000 respectively, the growth rates for urban areas are estimated at 5.4% and 5.0% for the same periods. The population density varies from 2.4 to 40.4 persons per square kilometre, with an average of 7.5 persons per square kilometre. In the period 1979 - 1984 average life expectancy was 48.3 years. The infant mortality rate in 1980 was 141 per

1000 live births. Diarrhoea, Malaria and malnutrition rank as the top main health problems in Zambia.

The country is divided into six main catchment areas in terms of drainage. These are:- Zambezi, the Luangwa, the Kafue, the Luapula and the Lake Tanganyika basins. The Zambezi, Kafue and Luangwa rivers eventually end up into one water course and drain into the east through Mozambique. The Chambeshi and Luapula rivers are part of the Congo basin and drain into the Atlantic Ocean to the west through Zaire.

Administratively Zambia is divided into nine provinces with a total of 56 districts.

1.2. Water Supply and Sanitation Sector

The responsibilities for planning, design, implementation operation and maintenance of water supply and sanitation facilities in Zambia is shared between at least four Government Ministries. The Ministry of Agriculture and water development, the Ministry of Works and Supply, the Ministry of Health and the Ministry of Decentralisation which deals with local government administration.

Department of Water Affairs (DWA) of the Ministry of Agriculture and Water Development, is responsible for all aspects of water resources conservation, planning and utilisation, and advising government on all issues related to water resources development. DWA handles 66 township water supply and all rural water supplies, however sanitation matters are not the responsibility of DWA.

Buildings Department (BD) Ministry of Works and Supply - The water and drainage section of BD is responsible for planning, design and supervision of construction of waterborne sanitation in 43 townships and for water reticulation and waterborne sanitation to government institutions such as schools, police camps, hospitals, prisons etc.

Ministry of Health is responsible for health education and promotion of environmental health and sanitation in rural areas.

Ministry of Decentralisation is concerned with the direction and control of local authorities.

1.3. Summary of Service levels of Coverage

Water Supply Levels 1985.

Current levels of service in Zambia indicate that only 47% of the total population have access to safe water supply. The predominant source of supply is surface water, however ground water is used as well. The table below summarises the current levels of supply. Large urban areas refer to towns with populations of 50,000 or more. There are presently 10 large urban areas including the Capital City - Lusaka, with a population exceeding 700,000 (1985). Small urban townships have populations less than 50,000 and 50% of the population is engaged in non-agricultural activities. There are 87 small urban townships, these constitute the highest population growth centres.

WATER SUPPLY CURRENT LEVEL IN ZAMBIA 1985

ZONE	ACCEPTABLE WATER SUPPLY		UNACCEPTABLE WATER SUPPLY	
Large U	Population in Zone	% Total Pop. in Zone	Population in Zone	% Total Population in Zone
Large Urban Centres	1,330,000	70	570,000	30
Small Urban Centres	267,000	45	326,000	55
Rural areas	1,021,000	32	2,179,000	68
Total	2,618,000	-	3,075,000	-

Sanitation

The coverage of sanitation lags significantly behind water supply. Currently more than 3.5 million people in Zambia do not have proper sanitation facilities. In the peri-urban areas where population densities are very high, pit latrines are commonly used by communities without waterborne sanitation. The high usage rates and lack of adequate maintenance often lead to unacceptable standards of sanitation. The table below summarises the service levels of sanitation throughout the country

CURRENT LEVELS OF SANITATION IN ZAMBIA 1985

ZONE	ADEQUATE SANITATION		INSANITATION	
	Pop. in Zone	% Total Pop. in Zone	Pop. in Zone	% Total Pop. in Zone
Large Urban Centres	988,000	52	912,000	48
Small Urban Centres	166,000	31	373,000	69
Rural Areas	972,000	30	2,268,000	70
Total	2,126,000	-	3,553,000	-

2. WATER SUB-SECTOR INFORMATION

2.1. Hydrome . Data

The collection, analysis and storage of the Hydrometeorological data is the responsibility of two departments. The department of meteorology department of water affairs. The neteorological Department of the Ministry of Power, Transport and Communications is responsible for collection of all meteorological data on rain fall and temperatures which data after analysis is published in the Departmental seasonal reports. Data and planning division of the Department of Water Affairs collects data on both surface water, after analysing it is published in hydrological year book. The hydrogeological section too collects and stores information on ground water potential. However these publications are laggir behind due to some operational and manpower constraints. For example the lates publication on surface water is for 1976/77 season and that on rainfall is of 1979/80 season.

Un published data is mea up to date.

3. SANITATION SUB-SECTOR DATA FOR RURAL AREAS

The Ministry of Health conducted a rapid assessment of Sanitation facilities available in the rural areas in 1981. It was then found that about 30% of the rural population were using adequate pit latrines. See table below:-

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SERVICE LEVELS OF PIT LATRINES IN THE RURAL AREAS 1981

PROVINCE	RURAL POPLUATION	% OF RURAL POPULATION USING ADEQUATE PIT LATRINE
Central	330,733	33
Copperbelt	100,034	21
Luapula	347,251	31
Northern	560,145	30
North Western	263,632	42
Southern	500,388	60
Western	425,410	38
TOTAL	3,239,389	30 average

4. Information collection - A lot of information has so far been collected on water and sanitation. This has been the result of Decade planning. However no system has yet been followed for regular collection of data on both water supply and sanitation.

Constraints to establishment of Information System

4.1. Manpower - There is generally a shortage of manpower because of this shortage the few technical people available are over-worked and so are unable to plan and execute regular information collection activities.

4.2. Funds - There is generally a shortage of funds for surveys and field activities and also the inadequacy of transport.

4.3. There are too many sector institutions dealing with the subject on water supply and sanitation so that there is lack of coordinated actions.

5. PROSPECTS FOR THE FUTURE

The problems as regards information collection, storage and retrieval systems have been recognised. The Department of Water Affairs plans in the Fourth National Development Plan, plans to set up a computer based data bank. The Ministry of Health is in a process of working out a system of keeping information on sanitation and it is hoped that with a little help from other agencies this could be ready in not too a distance future.

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WHO/DANIDA WORKSHOP

ON

WATER SUPPLY AND SANITATION:

INFORMATION FOR SECTORAL MANAGEMENT

Mangochi, Malawi, 10 - 14 November, 1986.

Zimbabwe Country Paper

Mr. N. Mtakwa,

National Drinking Water Supply and Sanitation Decade Officer,

Ministry of Health

Background

Zimbabwe is a land-locked, tropical, middle-income, newly industrializing country in Central Africa which gained political independence in 1980 after over eighty years of British colonial rule. Zimbabwe's colonial inheritance has been a markedly heterogeneous socio-economic structure, particularly reflected in a sharp imbalance between levels of development in rural and urban areas. The estimated 1985 population is 8,6 million of which roughly 72% live in rural areas. Approximately 60 % of the population live in the Communal Lands (formerly Tribal Trust Lands) which constitute 42% of the land area. These formerly neglected areas are the focus of much development activity.

Zimbabwe is a drought-prone region with a variable and uneven pattern of rainfall. In most areas surface water sources are unsatisfactory drinking water sources. By contrast the potential

for the development of hydrogeological sources for rural domestic water supplies is considerable. Existing levels of service are summarized in Appendix 1. They illustrate that while levels of service in urban areas remains high, approximately 66% of the Communal Land population, or 3,1 million people (1985), presently draw water from unimproved sources. Despite great advances in sanitation development, at present approximately only 15% of Communal Land residents have access to a safe and adequate latrine, leaving a 1985 shortfall of 0,77 million latrines in these areas.

Institutional responsibilities within the drinking water supply and sanitation sector in Zimbabwe are complex, as is illustrated in the Table in Appendix 1. Three Government Agencies are centrally involved:

* The Ministry of Health (MoH), through its Department of Environmental Health, encourages communities to dig and protect shallow wells, and is also involved in hand-augered wells, spring protection and rainwater collection. The same Department is responsible for all rural sanitation programmes.

* The District Development Fund (DDF), within the Ministry of Local Government Rural and Urban Development (MLGRUD), through its newly created Water Division is responsible for the maintenance of primary water supplies and is also equipped to provide new water supplies, mainly deep blasted wells and boreholes.

* The Ministry of Energy and Water Resources and Development (MEWRD) is primarily a technical and professional engineering ministry which acts on behalf of other ministries with regard to water resource planning. The Ministry operates water supplies on a commercial basis and is responsible for provision of water to Government institutions, but also manages a number of piped village water supplies which supply free water. The MEWRD operates a fleet of drilling machines in communal areas and resettlement areas, either on behalf of DDF or with donor funds.

* Municipalities are responsible for the operation of all urban water supplies, and sewered and non-sewered excreta disposal systems.

Since Independence the Government of Zimbabwe has been responsible for a range of water and sanitation programmes to redress previous imbalances. The focus has been on rural and peri-urban development. The strengths of the Zimbabwean programmes have been: the high priority accorded to water and sanitation development by Government and users; the extensive network of technical officers (Health Inspectors, Health Assistants, DDF Field Officers and borehole maintenance teams); and the development of indigenous Zimbabwean water and sanitation technologies which are affordable, appropriate and locally acceptable, and which have made Zimbabwe world-renowned in environmental health. Important development initiatives which have enhanced water and sanitation programmes include: the reorganization of rural administrative structures; the

establishment of a national development planning process stretching from Village Development Committees to the Cabinet Committee on Development; and the development of a National Master Plan for Rural Water Supply and Sanitation.

Ongoing sector problems include: a lack of comprehensive and logical programme planning; in some areas a lack of standardization of approach in terms of programme strategy, design criteria or technology choice; a lack of coordination and integration within the sector as a whole; and a lack of policy on some key issues, such as cost recovery, maintenance, information management etc.

Information Management

Existing information systems for water and sanitation reflect the historical divisions within the sector. Each key sector ministry has developed its own system for information collection, storage and retrieval:

* The MoH has since Independence focussed much attention on the creation of an health information system which utilizes primary health care workers. Prior to this, information (mainly in-patient data) was sent directly to the Central Statistic Office (CSO) and only a small proportion was fed back to the MoH. Post-Independence information systems have broadened data collection and established parallel systems of information flow, which include information from Village Health Workers, in- and out-patients, and Health Officers. Health Assistants and Health Inspectors regularly file

information on environmental improvements. To facilitate the collection and flow of information of water and sanitation each Province has recently appointed a Provincial (Drinking Water Supply and Sanitation) Decade Officer with specific duties in the reporting of information on water and sanitation.

* The MEWRD has similarily been concerned to improve its information gathering system. The national data bank with respect to hydrological records is remarkably extensive, which is not surprising given the Ministry's historical strength in large dam construction. Hydrogeological records are less well collated. To supplement existing records, which are kept at both provincial and head office, the Groundwater Branch of MEWRD gathered a considerable body of additional data during the development of the Master Plan. This has subsequently been further developed by follow-up activities to the Master Plan which make use of microcomputers. Several MEWRD implementation programmes are now also being predicated by the development of district-level inventories of existing water sources. This information is used both for immediate programme implementation and will ultimately be fed back into the central data bank.

* The MLGRUD maintains lists of water sources through the office of District Administrators. This information is passed both to the DDF borehole maintenance teams and to head office. Now that the DDF is itself actively

involved in primary water supply development a head office data bank has also been developed which exchanges information with the MEWRD.

* The CSO carries out national sample surveys and censuses which also contain information on levels of service of water supplies and sanitation.

The existing systems for information management are deficient in several respects:

* There is a lack of integration between different ministries' information systems.

* Emphasis is on implementation rather than information collection, and with the existing manpower constraints and transport restrictions this often means that information collection becomes neglected.

* The passage of information is subject to many delays which limits the usefulness of much of the data collected. Delays are experienced with information being passed both between ministries and from the field to head office.

* There is little consensus and no guidelines as to what information should be gathered. Different ministries have quite differing orientations as to what level and type of information is necessary.

* Little quality control and checks have been applied to existing data banks. The Inventory developed under the National Master Plan, for example, paid scant and uneven attention to wells and latrines and the data in this respect is unreliable.

* The information gathered neglects basic facilities: neither the MEWRD nor the DDF have consistently included information on wells; only the MoH gathers information on latrines; and no information on existing traditional water sources is gathered.

* The extensive activities of Non-Governmental organizations in the sector go largely unrecorded in national data banks.

* A range of storage systems exist, and few are sufficiently computerized.

* In the non-computerized systems retrieval is particularly slow. Not all the data storage systems are compatible, which further limits retrieval.

As a result of many of the foregoing constraints the potential use of existing data is greatly limited. Other aspects of sector planning, such as establishing a rational priority list of areas of need, facilitating a more precise understanding of regional water resource development potentials etc, cannot be attempted with existing levels of information.

Future Plans for Enhancing Information Management

Plans for improving national information management direct attention at several levels in the information gathering system.

Recent stress on the importance of district-level planning has encouraged the gathering of information on all sectors including water and sanitation. This process has been complemented by several regional projects, such as those in the MEWRD and MoH, which have set as their first priority the updating of district inventories of rural water supplies and sanitation facilities.

At national level efforts are being made to streamline and standardize the flow of information by greater sector coordination through the National Action Committee (for Water Supply and Sanitation) and its subcommittees. This process is helped by the recent trend towards more integrated development projects which entails easier sharing of information between executing agencies. Follow-up activities to the Master Plan include the creation of a permanent Master Plan Office responsible for the ongoing collection, storing and updating of sectoral information.

The storage and retrieval of information is being improved by plans for more extensive and considered computerization, and the use of micro-computers. It is anticipated that better coordination and greater standardization will result in a clearer definition of information to be gathered, a quicker throughput of collected data and, as a result, greater use of collected information and an enhanced potential for sharing of information.

APPENDIX 1:SERVICE LEVELS AND GENERAL INFORMATION

Zimbabwe, December 1985

General Information

Area:	390 759 Km²
Total Population:	8,6 million
Annual Rate of Population Growth:	3,7%
Ratio Urban to Total Population:	28%
Ratio Rural to Total Population:	72%
Estimated Urban Population:	2,3 million
Estimated Rural Population:	6,3 million

Levels of Service: Water

Proportion Urban Population with House Connections:	?85%
Proportion Urban Population with reasonable access to an improved water source:	?10%
Proportion Rural Population with reasonable access to an Improved water source:	34%

Estimated Per Capita Water Consumption

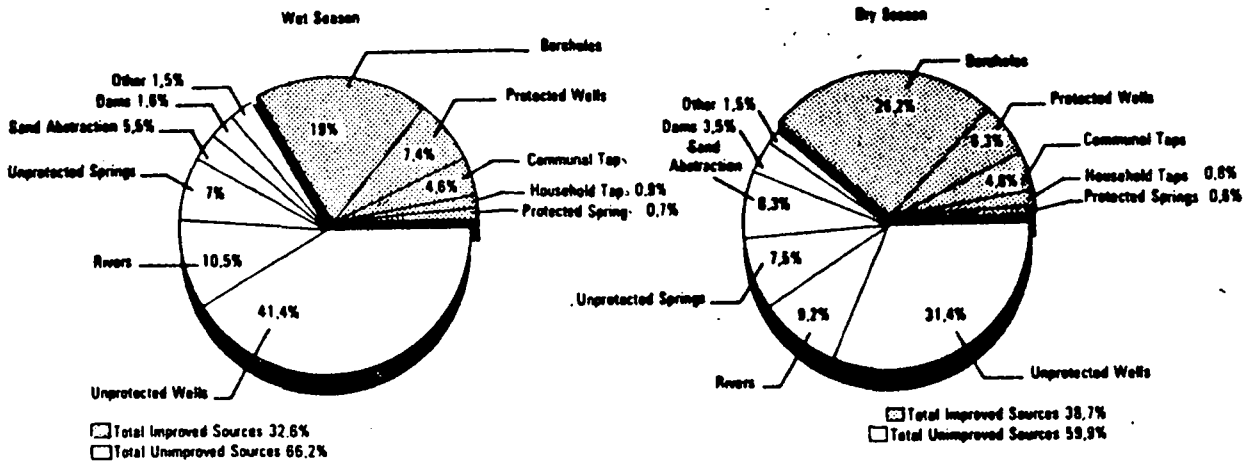
Urban Areas	25 lcd
Rural Areas	10 lcd

Levels of Service: Excreta Disposal

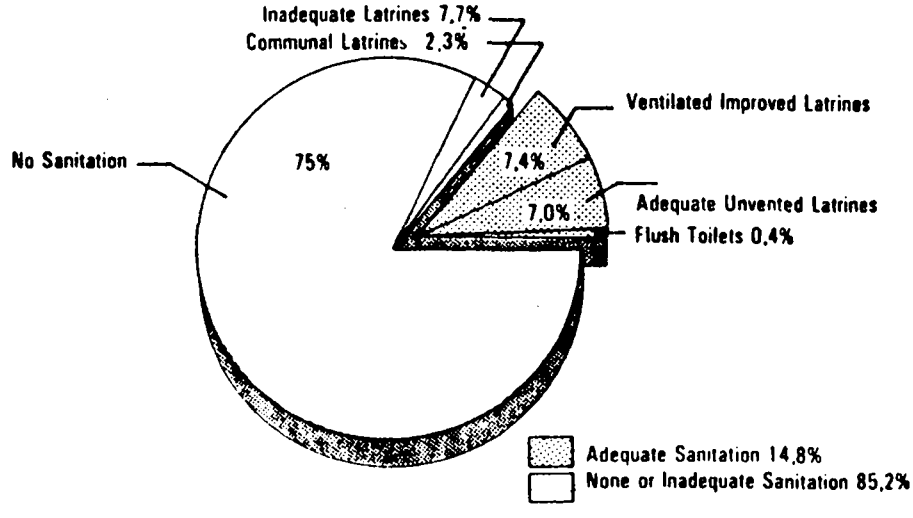
Proportion Urban Population served by public sewers	?60%
Proportion Urban Population served by non-sewered systems	?20%
Proportion Rural Population with safe, adequate excreta disposal systems	15%

Pie Charts of Existing Levels of Access in Communal Lands

Pie Charts of Existing Levels of Access to Domestic Water Sources in Communal Areas



Pie Chart of Levels of Access to Sanitation Facilities in Communal Areas



Division of Technical Responsibilities for Water Supply and Sanitation in Communal Lands

Division of Technical Responsibilities for Water Supply and Sanitation in Communal Areas

	Dams		Boreholes	Piped Schemes		Wells		Sanitation
Activities	Large and Medium Dams	Small Dams	Boreholes and Sand - Abstraction Schemes	Large	Small	Shallow Hand Dug or Hand Augered	Deep or Requiring Blasting	Pit Latrine And Roof Catchment
Technical Planning and Design	Ministry of Energy and Water Resources and Development	Ministry of Energy and Water Resources and Development	Ministry of Energy and Water Resources and Development /DDF	Ministry of Energy and Water Resources and Development	Ministry of Energy and Water Resources and Development	Ministry of Health/District Development Fund	District Development Fund	Ministry of Health
Construction Supervision	Ministry of Energy and Water Resources and Development	District Development Fund	Ministry of Energy and Water Resources and Development /DDF	Ministry of Energy and Water Resources and Development	District Development Fund	Ministry of Health/District Development Fund**	District Development Fund	Ministry of Health
Improvements or Maintenance	Ministry of Energy and Water Resources and Development	District Development Fund	Local Communities/ District Development Fund	DDF/ MEWRD *	MEWRD*	Local Communities/ District Development Fund		—

*Until local authorities/DDF are capable of taking over all supplies

**Responsible for support

MEWRD — Ministry of Energy and Water Resources and Development

DDF — District Development Fund

M/F

DANIDA/WHO WATER AND SANITATION INFORMATION WORKSHOP, MALAWI 10-14 NOVEMBER 1986.

TABLE 1.1 AFRICAN REGION (1985)

BASIC INDICATORS: DEMOGRAPHIC, ECONOMIC, HEALTH

COUNTRY/TERRIRORY	POPULATION 1 000	POPULATION GROWTH RATE %	GNP per capita US $	Life expectancy years	Infant mortality per 1 000 live births	Water disease per 100 000	Population without safe water %	Population without sanitation %
NIGERIA	97290.00	2.77	-	65 a	170 a	28.05	-	-
ZAIRE	30500.00	2.70	271.00	50.00	106.00	-	67.00	-
REPUBLIC OF TANZANIA	21940.00	3.20	197.00	51.00	103.00	-	50.52	36.40
KENYA	-	-	-	-	-	-	-	-
UGANDA	14680.00	2.80	220.00	53.00	-	-	79.22	69.78
GHANA	12387.00	2.60	420.00	53.00	120.00	-	43.55	69.67
MOZAMBIQUE	13810.00	2.59	-	-	-	-	86.00	80.23
REP OF CAMEROON	10000.00	2.60	-	-	-	-	70.30	69.00
MADAGASCAR	9986.00	2.78	232.00	49.00	69.00	6900.00	68.65	87.27
ZIMBABWE	8581.00	3.70	-	-	-	-	-	-
ANGOLA	8573.00	2.40	560.00	41.00	107.00	3607.00	68.60	81.02
BURKINA FASO	7014.00	2.68	185.00	38.00	167.00	5007.00	35.50	88.15
MALI	7907.00	2.60	142.00	40.00	150.00	80000.00	82.79	79.46
MALAWI	7059.00	3.30	140.00	44.60	151.00	-	44.51	-
SENEGAL	6500.00	-	-	-	-	-	45.38	65.23
ZAMBIA	6720.00	3.30	373.00	51.40	105.00	-	41.83	45.92
NIGER	6115.00	2.77	258.00	44.00	158.00	-	53.51	-
RWANDA	6331.00	3.70	280.00	49.00	115.00	2872.00	51.22	43.74
GUINEA	5780.00	2.30	310.00	49.00	160.00	-	80.00	-
BURUNDI	4782.00	2.64	230.00	46.50	127.00	20000.00	73.78	42.28
BENIN	3825.00	2.60	320.00	46.00	106.00	-	43.50	60.42
SIERRA LIONE	3700.00	2.32	200.00	47.00	225.00	-	74.49	74.97
CENTRAL AFRICAN REPUB.	2673.00	2.50	-	48.00	190.00	452.00	95.55	-
TOGO	3068.00	2.80	300.00	46.00	90.00	-	43.38	85.04
LIBERIA	2182.00	3.36	-	55.50	119.00	11800.00	44.18	96.61
CONGO	-	-	-	-	-	-	-	-
MAURITANIA	1888.00	2.93	363.00	44.00	137.00	17942.00	13.93	97.19
LESOTHO	1496.00	2.30	484.00	51.00	130.00	31.00	65.44	85.16
BOTSWANA	1088.00	3.70	749.00	56.30	68.40	-	46.42	58.09
SAO TOME & PRINCIPE	1083.00	2.30	362.00	64.00	62.00	6000.00	85.99	98.47
MAURITIUS	998.00	1.44	1020.00	68.00	23.80	-	0.00	0.00
GUINEA BISSAU	880.00	2.20	150.00	40.00	200.00	3500.00	79.20	79.32
THE GAMBIA	749.00	3.40	241.00	44.00	120.00	-	58.88	-
SWAZILAND	650.00	3.50	810.00	48.00	105.00	-	78.46	63.75
CAPE VERDE	337.00	2.10	317.00	62.00	65.80	5070.00	36.80	81.90
EQUATORIAL GUINEA	-	-	-	-	-	-	-	-
SEYCHELLES	65.24	0.80	2250.00	68.00	17.90	-	10.77	1.00

BENIN ADDED 11/6/86
BURUNDI ADDED 11/6/86
CENTRAL AFRICAN REPUBLIC ADDED 11/6/86
MALAWI ADDED 11/6/786
CAPE VERDE ADDED 18/7/86,modified after AFRO memo of 3/7/86
MOZAMBIQUE ADDED 18/6/86

DANIDA/WHO WATER SUPPLY AND SANITATION INFORMATION WORKSHOP, MALAWI, 10-14 NOVEMBER 1986.

TABLE 1.2;AFRICAN REGION 1985
COVERAGE TARGETS (% of population) (1990) AND DECADE PL

COUNTRY/TERRITORY	URBAN WATER SUPPLY		URBAN SANITATION		RURAL WATER SUPPLY	RURAL SANITATION	STATUS OF DECADE PLAN PREPARATION
	HOUSE CONNECTION	STANDPOST	SEWER CONNECTIONS	BY OTHER MEANS			
NIGERIA	89	-	-	-	37	-	-
ZAIRE	59	11	-	40	35	35	-
REPUBLIC of TANZANIA	-	-	-	-	-	-	-
KENYA	-	-	-	-	-	-	-
UGANDA		80		85	40	50	-
GHANA	42	58	3	67	77	30	-
MOZAMBIQUE	22	62	21	67	68	58	1983
REP OF CAMEROON	46	23	6	94	100	100	-
MADAGASCAR	15	60	-	-	23	-	-
ZIMBABWE	-	-	-	-	52	38	1986
ANGOLA	70	30	18	30	30	30	NO
BURKINA FASO	49	51	0	46	65	85	
MALI	30	18	1	93	36	30	YES 1984
MALAWI	62	18	11	59	67	-	UNDER PREPARATION
SENEGAL	43	50	27	67	67	-	-
ZAMBIA	14	71	11	89	65	60	1983 UPDATED 1985
NIGER	-	-	-	-	-	-	YES 1985
RWANDA	45	45	0	85	70	75	YES 1984
GUINEA *	7	4	3	-	9	0	-
BURUNDI	57	39	40	60	90	70	YES 1984
BENIN	60	40	0	80	80	50	YES 1986
SIERRA LEONE	-	-	-	-	-	-	YES 1981
CENTRAL AFRICAN REPUB.	100	0	100	0	50	50	YES 1982
TOGO	15	85	3	37	99	80	-
LIBERIA	35	18	49	51	100	17	-
CONGO	-	-	-	-	-	-	-
MAURITANIA	99	-	43	-	59	-	-
LESOTHO	59	41	16	70	60	45	YES 1983
SAO TOME & PRINCIPE	38	51	62	15	73	91	YES 1985
BOTSWANA	34	58	-	-	-	-	-
MAURITIUS		-	-	-	-	-	NO
GUINEA BISSAU	16	5	-	28	35	24	-
THE GAMBIA	-	-	-	-	-	-	-
SWAZILAND	100	0	40	60	50	35	1987 UNDER MODIFICATION
CAPE VERDE	47	53	22	40	76	73	PARTIAL
EQUATORIAL GUINEA	-	-	-	-	-	-	-
SEYCHELLES	95	5	90	10	90	1000	PARTIAL

TABLE 1.3 AFRICAN REGION
1985 LEVELS OF SERVICE

COUNTRY/TERRITORY	POPULATION			POPULATION WITH SERVICE							
				DRINKING WATER				SANITATION			
	TOTAL	URBAN	RURAL	TOTAL	URBAN by H.C.	URBAN by P.S.	RURAL	TOTAL	URBAN by S.C.	URBAN by others	RURAL
NIGERIA	97090	25675	71415	-	-	-	-	-	-	-	-
	-	(26)	(74)	-	-	-	-	-	-	-	-
ZAIRE	30500	11600	18900	5000	1000	4000	4000	-	-	-	1750
	-	(38)	(62)	(43)	(9)	(34)	(21)	-	-	-	(9)
REPUBLIC OF TANZANIA	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
KENYA	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
UGANDA	14680	1894	12786	700	-	-	2350	600	-	-	3836
	-	(13)	(87)	(37)	-	-	(18)	(32)	-	-	(30)
GHANA	12387	3956	8431	3679	1626	2053	3314	2394	160	2234	1363
	-	(32)	(68)	(93)	(41)	(52)	(39)	(61)	(4)	(57)	(16)
REP OF CAMEROON	10000	3000	7000	1290	300	990	1680	3000	100	2900	100
	-	(30)	(70)	(43)	(10)	(33)	(24)	(100)	(3)	(97)	(1)
MOZAMBIQUE	13810	2500	11310	950	400	550	1000	1330	280	1050	1400
		(18)	(82)	(38)	(16)	(22)	(9)	(53)	(11)	(42)	(12)
MADAGASCAR	9986	2197	7789	1789	379	1410	1342	-	1212	-	-
	-	(22)	(78)	(81)	(17)	(64)	(17)	-	(55)	-	-
Z[redacted]E	8581	2294	6287	-	-	-	2043	-	-	-	943
	-	(27)	(73)	-	-	-	(32)	-	-	-	(15)
ANGOLA	8573	1972	6601	1714	394	1320	978	571	256	315	1056
	-	(23)	(77)	(87)	(20)	(67)	(15)	(29)	(13)	(16)	(16)
BURKINA FASO	7014	1093	5921	465	230	235	4060	482	0	482	350
		(16)	(84)	(43)	(21)	(22)	(69)	(44)	(0)	(44)	(6)
MALI	7914	1589	6325	728	238	490	633	1434	10	1424	190
	-	(20)	(80)	(46)	(15)	(31)	(10)	(90)	(1)	(89)	(3)
MALAWI	7059	847	6212	818	620	198	3099	-	-	-	-
	-	(12)	(88)	(97)	(73)	(24)	(50)	-	-	-	-
SENEGAL	6500	2600	3900	2050	850	1200	1500	2260	360	1900	-
	-	(40)	(60)	(79)	(33)	(46)	(38)	(87)	(14)	(73)	-
ZAMBIA	6720	3243	3477	2468	1424	1044	1441	2468	814	1654	1166
	-	(48)	(52)	(76)	(44)	(32)	(41)	(76)	(25)	(51)	(34)
NIGER	6115	991	5124	349	247	102	2494	-		-	-
	-	(16)	(84)	(35)	(25)	(10)	(49)	-	(0)	-	-
RWANDA	6331	253	6078	200	120	80	2888	195	0	195	3367
	-	(4)	(96)	(79)	(47)	(32)	(48)	(77)	(0)	(77)	(55)
GUINEA	5780	1579	4201	642	410	232	514	-	145	-	-
	-	(27)	(73)	(41)	(26)	(15)	(12)	-	(9)	-	-
BURUNDI	4782	310	4472	304	204	100	950	260	20	240	2500
	-	(6)	(94)	(98)	(66)	(32)	(21)	(84)	(7)	(77)	(56)
BENIN	3825	1874	1951	1499	843	656	663	1124	0	1124	390
	-	(49)	(51)	(80)	(45)	(35)	(34)	(58)	(0)	(58)	(20)
SIERRA LEONE	3700	1110	2590	755	231	524	189	667	7	660	259
	-	(30)	(70)	(68)	(21)	(47)	(7)	(60)	(1)	(59)	(10)
CENTRAL AFRICAN REPUB.	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
CENTRAL AFRICAN REP.	2673	908	1765	119	61	58	-	-	-	-	-
		(34)	(66)	(13)	(7)	(6)	-	-	-	-	-
TOGO	3068	819	2249	819	154	665	918	250	0	250	209
	-	(27)	(73)	(100)	(19)	(81)	(41)	(31)	(0)	(31)	(9)
LIBERIA	2181	875	1306	875	397	478	303	-	50	-	24
	-	(40)	(60)	(100)	(45)	(55)	(23)	-	(6)	-	(2)
CONGO	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
MAURITANIA	1888	654	1234	475	100	375	-	53	18	35	-
	-	(35)	(65)	(73)	(15)	(58)	-	(8)	(3)	(5)	-
LESOTHO	1496	187	1309	121	65	56	396	41	22	19	181
	-	(13)	(87)	(65)	(35)	(30)	(30)	(22)	(12)	(10)	(14)
SAO TOME & PRINCIPE	1082	363	719	119	97	22	327	6	3	3	11
	-	(34)	(66)	(33)	(27)	(6)	(45)	(2)	(1)	(1)	(2)
BOTSWANA	1088	227	861	190	76	114	393	211	125	86	245
	-	(21)	(79)	(84)	(33)	(51)	(46)	(93)	(55)	(38)	(28)
MAURITIUS	998	429	569	429	429	0	569	429	250	179	490
		(43)	(57)	(100)	(100)	(0)	(100)	(100)	(58)	(42)	(86)
GUINEA BISSAU	880	190	690	33	24	9	150	55	2	53	127
	-	(22)	(78)	(17)	(13)	(4)	(22)	(29)	(1)	(28)	(18)
THE GAMBIA	749	139	610	135	-	-	306	-	-	-	-
	-	(19)	(81)	(97)	-	-	(50)	-	-	-	-
SWAZILAND	650	98	553	98	84	14	40	98	32	66	139
	-	(15)	(85)	(100)	(86)	(14)	(7)	(100)	(33)	(67)	(25)
CAPE VERDE	337	135	202	112	33	79	101	43	18	25	19
	-	(40)	(60)	(83)	(24)	(59)	(50)	(32)	(13)	(19)	(9)
EQUATORIAL GUINEA	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
SEYCHELLES	65	26	39	26	21	5	37	26	2	24	39
	-	(40)	(60)	(100)	(81)	(19)	(95)	(100)	(8)	(92)	(99)

TABLE 1.4.1.1.:AFRICAN REGION 1985
DECADE TARGETS FOR URBAN WATER SUPPLY

COUNTRY/TERRITORY	URBAN POPULATION (000)		WATER SUPPLY POPULATION COVERED			
	1985	1990	1985		1990	
			No.(000)	%	No.(000)	%
ZAIRE	11600	13500	6000	52	9500	70
KENYA	-	-	-	-	-	-
UGANDA	1894	1970	700	37	1576	80
GHANA	3956	4631	3679	93	4631	100
MOZAMBIQUE	2500	2891	950	38	2440	84
MADAGASCAR	2197	2502	1789	81	1895	76
REP OF CAMEROON	3000	3500	1290	43	2400	69
ANGOLA	1972	2993	1714	87	2993	100
BURKINA FASO	1093	1305	465	43	1305	100
MALI	1589	1882	728	46	904	48
MALAWI	847	1259	818	97	1008	80
SENEGAL	2600	3000	2050	79	2800	93
ZAMBIA	3243	4215	2468	76	3604	86
NIGER	-	-	-	-	-	-
RWANDA	253	411	200	79	370	90
BURUNDI	310	351	304	98	343	98
BENIN	1874	2118	1499	80	2118	100
CENTRAL AFRICAN REP.	908	962	119	13	962	100
TOGO	819	1046	819	100	1042	100
LIBERIA	875	1030	815	93	549	53
CONGO	-	-	-	-	-	-
MAURITANIA	-	-	-	-	-	-
SAO TOME & PRINCIPE	36	47	32	89	42	89
LESOTHO	187	244	121	65	244	100
BOTSWANA	227	293	190	84	276	94
GUINEA BISSAU	190	229	33	17	48	21
SWAZILAND	98	112	98	100	112	100
CAPE VERDE	100	130	93	93	130	100
SEYCHELLES	26	30	26	100	30	100

DANIDA/WHO WATER SUPPLY AND SANITATION INFORMATION WORKSHOP, MALAWI. 10-14 NOVEMBER 1986.

TABLE 1.4.1.2.;AFRICAN REGION 1985
DECADE TARGETS FOR URBAN SANITATION

COUNTRY/TERRITORY	URBAN POPULATION (000)		WATER SUPPLY POPULATION COVERED			
	1985	1990	1985		1990	
			No.(000)	%	No.(000)	%
KENYA	-	-	-	-	-	-
UGANDA	1894	1970	600	32	1675	85
GHANA	3956	4631	2394	61	3242	70
MOZAMBIQUE	2500	2891	1330	53	2460	85
REP OF CAMEROON	3000	3500	3000	100	3500	100
ANGOLA	1972	2993	571	29	1436	48
MALI	1589	1882	728	46	904	48
MALAWI	-	-	-	-	-	-
SENEGAL	2600	3000	2260	87	2800	93
ZAMBIA	3243	4215	2468	76	4214	100
NIGER	-	-	-	-	-	-
RWANDA	253	411	195	77	349	85
BURUNDI	310	351	260	84	351	100
BENIN	1874	2118	1124	60	1694	80
TOGO	819	1046	250	31	416	40
SAO TOME & PRINCIPE	36	47	6	17	36	77
LESOTHO	187	244	41	22	232	95
BURKINA FASO	1093	1305	482	44	595	46
GUINEA BISSAU	190	229	55	29	67	29
SWAZILAND	98	112	98	100	100	89
SEYCHELLES	26	30	26	100	30	100

DANIDA/WHO WATER SUPPLY AND SANITATION INFORMATION WORKSHOP, MALAWI, 10-14 NOVEMBER 1986.

TABLE 1.4.2.1.:AFRICAN REGION 1985
DECADE TARGETS FOR RURAL WATER SUPPLY

COUNTRY/TERRITORY	RURAL POPULATION (000)		WATER SUPPLY POPULATION COVERED			
	1985	1990	1985		1990	
			No.(000)	%	No.(000)	%
ZAIRE	18900	21400	4000	21	7500	35
KENYA	-	-	-	-	-	-
UGANDA	12786	15000	2350	18	6000	40
GHANA	8431	9606	3314	39	7413	77
ANGOLA	6601	6985	978	15	2095	30
MOZAMBIQUE	11310	12981	1000	9	8787	68
MADAGASCAR	7789	8911	1342	17	2005	23
REP OF CAMEROON	7000	8000	1680	24	8000	100
ZIMBABWE	6287	7290	2043	32	3792	52
BURKINA FASO	5921	6292	4060	69	4060	65
MALI	6325	7080	2549	40	3099	44
MALAWI	6212	7030	3099	50	4687	67
SENEGAL	3900	4500	1500	38	3000	67
ZAMBIA	3477	3317	1441	41	2171	65
RWANDA	6078	6852	2888	48	4797	70
BURUNDI	4472	4918	950	21	4425	90
BENIN	1951	2204	663	34	1763	80
TOGO	2249	2568	918	41	2552	99
CONGO	-	-	-	-	-	-
LESOTHO	1309	1432	396	30	864	60
SAO TOME & PRINCIPE	72	72	33	46	53	74
CAPE VERDE	237	254	95	40	150	59
GUINEA BISSAU	690	752	150	22	260	35
SWAZILAND	553	636	40	7	50	8
SEYCHELLES	39	45	37	95	41	91

TABLE 1.4.2.2.;AFRICAN REGION 1985
DECADE TARGETS FOR RURAL SANITATION

COUNTRY/TERRITORY	RURAL POPULATION (000)		WATER SUPPLY POPULATION COVERED			
	1985	1990	1985		1990	
			No.(000)	%	No.(000)	%
ZAIRE	18900	21400	1750	9	7500	35
KENYA	-	-	-	-	-	-
UGANDA	12786	15000	3836	30	7500	50
GHANA	8431	9606	1363	16	2882	30
MOZAMBIQUE	11310	12981	1400	12	7478	58
REP OF CAMEROON	7000	8000	100	1	8000	100
ZIMBABWE	6287	7290	943	15	2777	38
ANGOLA	6601	6985	1056	16	2095	30
BURKINA FASO	5921	6292	350	6	5360	85
MALI	6325	7080	190	3	2124	30
ZAMBIA	3477	3317	1166	34	2000	60
NIGER	-	-	-	-	-	-
RWANDA	6078	6852	3367	55	5139	75
BURUNDI	4472	4918	2500	56	3442	70
BENIN	1951	2204	390	20	1102	50
TOGO	2249	2568	209	9	2054	80
LESOTHO	1309	1432	181	14	644	45
SAO TOME & PRINCIPE	72	72	11	15	66	92
CAPE VERDE	237	254	18	8	152	60
GUINEA BISSAU	690	752	127	18	180	24
SWAZILAND	553	636	138	25	35	6*
SEYCHELLES	39	45	39	100	45	100

TABLE 1.5;AFRICAN REGION 1985
STAFF RESOURCES 1985 (top line)AND PROJECTED REQUIREMENTS FOR 1990 (bottom line)

COUNTRY/TERRITORY	PLANNING AND MANAGEMENT	TECHNICAL	CRAFTSMEN ARTISANAL	ADMINISTRATION CLERICAL	UNSKILLED WORKERS	TOTAL B-F	TOTAL PER MILLION POPULATION	COMMUNITY BASED YES/NO	TOTAL M PER MILLION RURAL POPULATION	ESTABLISHED TRAINING BUDGET AND IS IT SUFFICIENT
NIGERIA	-	-	-	-	-	-	-	YES	YES/NO	-
	-	-	-	-	-	-	-	-	-	-
ZAIRE	600	900	-	5500	-	7000	230	YES	-	YES/-
	708	950	-	6000	-	7658	219	-	-	-
REPUBLIC OF TANZANIA	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
KENYA	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
UGANDA	-	-	-	-	-	-	-	YES	NO	-
	-	-	-	-	-	-	-	-	-	-
GHANA	128	423	2261	1469	2866	7147	578	YES	-	YES/NO
	-	-	-	-	-	-	-	-	-	-
MOZAMBIQUE	12	58	30	336	-	436	32	741	66	YES/-
	-	-	-	-	-	-	-	-	-	-
MADAGASCAR	27	236	757	240	975	2235	224	YES	-	YES/-
	-	-	-	-	-	-	-	-	-	-
RE[redacted]MEROON	-	-	-	-	-	-	-	NO	-	NO
	-	-	-	-	-	-	-	-	-	-
MADAGASCAR	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
ZIMBABWE	25	665	102	5	-	797	93	6500	1034	YES/NO
	-	-	-	-	-	-	-	-	-	-
ANGOLA	-	209	722	245	-	176	137	2310	350	NO
	-	-	-	-	-	-	-	-	-	-
BURKINA FASO	58	56	32	43	70	259	37	YES	-	YES/-
	-	-	-	-	-	-	-	-	-	-
MALI	39	201	77	60	-	376	48	1500	237	NO
	-	-	-	-	-	-	-	-	-	-
MALAWI	63	380	2000	180	-	2623	372	-	-	YES/NO
	68	500	3800	195	-	3763	454	-	-	-
SENEGAL	-	-	-	-	-	-	-	YES	-	YES/-
	-	-	-	-	-	-	-	-	-	-
ZAMBIA a	14	560	1400	232	4037	6243	929	YES	144	YES/NO
	19	797	1631	232	4037	6716	999	-	-	-
NIGER	28	120	66	-	-	214	35	YES	-	NO/-
	-	-	-	-	-	-	-	-	-	-
RWANDA	40	132	70	30	-	232	37	YES	-	NO/-
	-	-	-	-	-	-	-	-	-	-
BURUNDI	26	70	55	30	-	181	38	YES	-	YES/-
	40	105	85	50	-	280	53	-	-	-
BENIN	30	42	248	72	-	392	102	392	201	NO/-
	55	80	500	150	-	785	182	785	356	-
CEN[redacted]FRICAN REP.	-	385	-	-	-	-	-	133	75	-
	-	-	-	-	-	-	-	177	95	-
SIERRA LEONE	5	350	750	170	-	-	-	NO	-	NO/-
	-	-	-	-	-	-	-	-	-	-
TOGO	-	-	-	-	-	-	-	YES	-	-
	-	-	-	-	-	-	-	-	-	-
LIBERIA	12	332	88	569	-	-	-	YES	-	YES/NO
	-	-	-	-	-	-	-	-	-	-
CONGO	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
MAURITANIA	8	43	409	28	-	488	395	YES	-	NO
	-	-	-	-	-	-	-	-	-	-
BOTSWANA a	2	20	140	60	230	452	1991	-	-	-
	-	-	-	-	-	-	-	-	-	-
MAURITIUS	7	227	617	217	786	1854	1858	NO		YES/NO
GUINEA BISSAU	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
SAO TOME & PRINCIPE	1	7	70	7	-	85	785	NO	-	NO
	1	9	60	20	-	90	754	YES	2072	NO
GUINEA BISSAU	4	240	30	277	-	551	626	50	72	NO
THE GAMBIA	-	-	-	-	-	-	-	YES/-	-	YES/NO
	-	-	-	-	-	-	-	-	-	-
CAPE VERDE	-	-	-	-	-	-	-	NO	-	NO
	-	-	-	-	-	-	-	-	-	-
LESOTHO	13	99	367	115	-	594	454	YES	4100 a	YES/NO
EQUATORIAL GUINEA	-	-	-	-	-	-	-	-	-	-
SWAZILAND	0	59	0	0	9	68	105	YES	-	YES/NO
SEYCHELLES	3	22	169	65	45	304	4659	-	-	YES/-
	-	-	-	-	-	-	-	-	-	-

TABLE 1.6;AFRICAN REGION 1985
UNIR COSTS OF CONSTRUCTION(US$ PER CAPITA) AND OF WATER PRODUCTION(US$/m3)

COUNTRY TERRITORY	CONSTRUCTION URBAN WATER SUPPLY		CONSTRUCTION URBAN SANITATION		RURAL WATER SUPPLY	RURAL SANITATION	AVERAGE COST OF WATER PRODUCTION	OPERATION AVERAGE WATER TARIFF	PROGRESSIVE WATER TARIFF
	HOUSE CONNECTIONS	STAND POSTS	SEWER CONNECTIONS	OTHER MEANS					
NIGERIA	85.00	28.00	-	-	18.00	-	-	-	-
ZAIRE	41.00	33.00	-	-	8.00	3.00	0.22	0.27	YES
REPUBLIC OF TANZANIA	85.00	60.00	-	-	60.00	35.00	-	0.17	NO
KENYA	-	-	-	-	-	-	-	-	-
UGANDA		210		300	40.00	25.00	-	0.17	NO
GHANA	100.00	80.00	200.00	60.00	30.00	100.00	0.35	0.35	YES
MOZAMBIQUE	-	-	-	-	-	-			
MADAGASCAR	121.00	15.00	-	37.00	42.00	-	0.17	0.21	YES
REP OF CAMEROON	150.00	150.00	-	-	80.00	-	2.00	0.60	YES
MADAGASCAR	-	-	-	-	-	-	-	-	-
ZIMBABWE	-	-	-	-	42.00	20.00	-	-	NO/RURAL FREE
ANGOLA	100.00	40.00	110.00	40.00	30.00	10.00	0.15	0.10	NO
BURKINA FASO	-	-	-	-	-	-	-	-	-
MALI	100.00	14.00	120.00	50.00	50.00	8.00	0.33	0.22	NO
MALAWI	-	-	-	-	-	-	0.60	0.20	YES
SENEGAL	-	-	-	-	-	-	-	-	-
ZAMBIA	204-565	90.00	314-403	163.00	90.00	45.00	1.05	0.30	IN SOME AREAS
NIGER	-	-	-	-	49.60	-	-	-	-
RWANDA	165.00	55.00	-	385.00	22.50	18-25	0.40	0.43	YES
BURUNDI	150.00	1000.00	150.00	200.00	20.00	100.00	0.35	0.28	NO
BENIN	88.00	-	-	-	-	-	-	-	-
SIERRA LEONE	112.00	78.00	-	150.00	35.00	30.00	0.90	0.30	YES
CENTRAL AFRICAN REP.	183.00	6.60	-	-	-	-	-	0.41	-
TOGO	-	-	-	142.00	23.00	-	0.66	0.33	YES
LIBERIA	113.00	-	125.00	40.00	15.00	10.00	-	-	YES
CONGO	-	-	-	-	-	-	-	-	-
MAURITANIA	-	-	-	-	50.00	-	-	-	NO
LESOTHO	275.00	140.00	300.00	40.00	25.00	25.00	0.76	0.30	NO
SAO TOME & PRINCIPE	63.00	31.00	150.00	120.00	40.00	20.00	-	0.05	NO
BOTSWANA	83.00	44.00	230.00	185.00	-	40.00	0.75	0.54	YES
MAURITIUS	50.00				50.00		0.29	0.23	YES
GUINEA BISSAU		160		300	110.00	60.00	0.06	0.04	NO
THE GAMBIA	-	-	-	-	-	-	-	-	-
CAPE VERDE	-	-	-	-	-	-	4.65	1.08	-
EQUATORIAL GUINEA	-	-	-	-	-	-	-	-	-
SWAZILAND	-	-	-	-	40.00	1.60	-	0.16	YES
SEYCHELLES	580.00	60.00	355.00	100.00	600.00	100.00	0.60	0.50	YES

TABLE 1.7;AFRICAN REGION 1985
COST PROJECTIONS COMPARED WITH 1981-5 SECTOR INVESTMENTS

COUNTRY/TERRITORY	ESTIMATED COST TO REACH COUNTRY DECADE TARGETS US$ millions	SECTOR INVNVESTMENTS (1981, 19 982, 1983) TOTAL US$ millions	PERCENTAGE OF TOTAL DEVELOPMENT INVESTMENT	EXTERNAL US$ millions I	ACCELERATION IN INVESTMENT NEEDED (FOLD)
NIGERIA	-	-	-	-	-
	-	-	-	-	-
ZAIRE	572.60	45.54	18.00	26.72	6.29
	-	-	-	(59)	-
REPUBLIC OF TANZANIA	-	-	-	-	-
	-	-	-	-	-
KENYA	-	-	-	-	-
	-	-	-	-	-
UGANDA	-	-	-	-	-
	-	-	-	-	-
GHANA	-	-	-	-	-
	-	-	-	-	-
MOZAMBIQUE	130.80	75.50	-	46.40	0.87
	-	-	-	(61)	-
MADAGASCAR	65.26	10.22	0.92	6.84	3.19
	-	-	-	(67)	-
ANGOLA	412.00	107.33	-	11.62	1.92
	-	-	-	(11)	-
MALI	272*	23.19	6.00	22.04	11.73
	-	-	-	(95)	-
MALAWI	-	18.73	3.10	-	-
	-	-	-	(77)	-
SENEGAL	1027.00	22.98	8.27	20.11	22.35
	-	-	-	(88)	-
ZAMBIA	840.00	78.00	6.00	62.00	5.38
	-	-	-	(79)	-
NIGER	-	-	7.30	-	-
	-	-	-	-	-
RWANDA	-	-	-	-	-
	-	-	-	(66)	-
BURUNDI	-	42.32	9.40	35.06	-
	-	-	-	(83)	-
BENIN	-	-	-	-	-
	-	-	-	-	-
SIERRA LEONE	-	26.76	-	23.35	-
	-	-	-	(81)	-
CENTRAL AFRICAN REP.	-	-	2.12	-	-
	-	-	-	-	-
TOGO	-	10.56	-	7.84	-
	-	-	-	(74)	-
LIBERIA	147.60	28.07	-	21.04	2.63
	-	-	-	(75)	-
CONGO	-	-	-	-	-
	-	-	-	-	-
MAURITANIA	-	-	-	-	-
	-	-	-	-	-
LESOTHO	114.00	41.06	10.50	34.25	1.39
	-	-	-	(83)	-
SAO TOME & PRINCIPE	11.40	-	-	-	-
	-	-	-	-	-
BOTSWANA	-	39.31	-	23.56	-
	-	-	-	59.94	-
GUINEA BISSAU	-	-	-	-	-
	-	-	-	-	-
THE GAMBIA	-	-	-	-	-
	-	-	-	-	-
CAPE VERDE	-	-	-	-	-
	-	-	-	-	-
EQUATORIAL GUINEA	-	-	-	-	-
	-	-	-	-	-

TABLE 1.8;AFRICAN REGION 1985
RANKING AND FREQUENCY OF CONSTRAINTS a

CONSTRAINTS	No. OF COUNTRIES INDICATING CONSTRAINT			RANKING
	VERY SEVERE	SEVERE	MODERATE	INDEX b
FUNDING LIMITATIONS	11	14	3	64
INADEQUATE COST-RECOVERY FRAMEWORK	12	8	5	57
OPERATION AND MAINTENANCE	13	6	5	56
INSUFFICIENCY OF TRAINED PERSONNEL (professional)	10	9	5	53
LOGISTICS	9	8	9	52
INSUFFICIENCY OF TRAINED PERSONNEL (sub-professional)	5	12	9	48
INADEQUATE OR OUTMODED LEGAL FRAMEWORK	3	13	8	43
INAPPROPRIATE INSTITUTIONAL FRAMEWORK	7	8	5	42
IMPORT RESTRICTIONS	8	4	7	39
INTERMITTENT WATER SERVICE	7	4	9	38
INSUFFICIENT KNOWLEDGE OF WATER RESOURCES	3	7	15	38
INSUFFICIENT HEALTH EDUCATION EFFORTS	5	7	8	37
LACK OF DEFINITE GOVERNMENT POLICY FOR SECTOR	3	8	11	36
INADEQUATE WATER RESOURCES	3	2	17	30
INAPPROPRIATE TECHNOLOGY	2	6	12	30
NON-INVOLVEMENT OF COMMUNITIES	1	6	14	29
LACK OF PLANNING AND DESIGN CRITERIA	2	5	11	27

DANIDA/WHO WATER SUPPLY AND SANITATION INFORMATION WORKSHOP, MALAWI, 10-14 NOVEMBER 1986

TABLE I.3 AFRICAN REGION
1985 LEVELS OF SERVICE; COVERAGE CALCULATION TABLE.

COUNTRY/TERRITORY	POPULATION					POPULATION WITH SERVICE															
						DRINKING WATER									SANITATION						
								URBAN				RURAL	RURAL			URBAN				RURAL	RURAL
	TOTAL	URBAN No.	URBAN %	RURAL No.	RURAL %	TOTAL No.	TOTAL %	by H.C. No.	by H.C. %	by P.S. No.	by P.S. %	No.	%	TOTAL No.	TOTAL %	by S.C. No.	by S.C. %	by others No.	by others %	No.	%
NIGERIA	97090	25675	26	71415	74	0	0		0		0		0	0	0		0		0		0
ZAIRE	30500	11600	38	18900	62	5000	43	1000	9	4000	34	4000	21	0	0		0		0	1750	9
REPUBLIC OF TANZANIA	21940	3510	16	18430	84	3155	90	1950	56	1205	34	7700	42	3264	93	421	12	2843	81	10689	58
KENYA	0		ERR		ERR	0	ERR		ERR		ERR		ERR	0	ERR		ERR		ERR		ERR
UGANDA	14680	1894	13	12786	87	700	37		0		0	2350	18	680	32		0		0	3836	30
GHANA	12387	3956	32	8431	68	3679	93	1626	41	2053	52	3314	39	2394	61	160	4	2234	56	1363	16
MOZAMBIQUE	13810	2500	18	11310	82	950	38	400	16	550	22	1000	9	1330	53	280	11	1050	42	1400	12
MADAGASCAR	9986	2197	22	7789	78	1789	81	379	17	1410	64	1342	17			1212	55				
REP OF CAMEROON	10000	3000	30	7000	70	1290	43	300	10	990	33	1680	24	3000	100	100	3	2900	97	100	1
ZIMBABWE	8581	2294	27	6287	73	0	0					2043	32							943	15
ANGOLA	8573	1972	23	6601	77	1714	87	394	20	1320	67	978	15	571	29	256	13	315	16	1056	16
BURKINA FASO	7014	1093	16	5921	84	465	43	230	21	235	22	4060	69	482	44	0	0	482	44	350	6
MALI	7914	1589	20	6325	80	728	46	238	15	490	31	633	10	1434	90	10	1	1424	90	190	3
MALAWI	7059	847	12	6212	88	818	97	620	73	198	23	3099	50	0	0		0		0		0
SENEGAL	6500	2600	40	3900	60	2050	79	850	33	1200	46	1500	38	2260	87	360	14	1900	73		0
ZAMBIA	6720	3243	48	3477	52	2468	76	1424	44	1044	32	1441	41	2468	76	814	25	1654	51	1166	34
NIGER	6115	991	16	5124	84	349	35	247	25	102	10	2494	49	316	32	0	0	316	32	167	3
RWANDA	6331	253	4	6078	96	200	79	120	47	80	32	2888	48	195	77	0	0	195	77	3367	55
GUINEA	5780	1579	27	4201	73	642	41	410	26	232	15	514	12			145	9				
BURUNDI	4782	310	6	4472	94	304	98	204	66	100	32	950	21	260	84	20	6	240	77	2500	56
BENIN	3825	1874	49	1951	51	1499	80	843	45	656	35	663	34	1124	60	0	0	1124	60	390	20
SIERRA LEONE	3700	1110	30	2590	70	755	68	231	21	524	47	189	7	667	60	7	1	660	59	259	10
CENTRAL AFRICAN REPUBLIC	2673	908	34	1765	66	119	13	61	7	58	6		0	0	0		0		0		0
TOGO	3068	819	27	2249	73	819	100	154	19	665	81	918	41	250	31	0	0	250	31	209	9
LIBERIA	2181	875	40	1306	60	875	100	397	45	478	55	303	23	50	6	50	6		0	24	2
CONGO	0		ERR		ERR	0	ERR		ERR		ERR		ERR	0	ERR		ERR		ERR		ERR
MAURITANIA	1888	654	35	1234	65	475	73	100	15	375	57		ERR	53	8	18	3	35	5		0
LESOTHO	1496	187	13	1309	88	121	65	65	35	56	30	396	30	41	22	22	12	19	10	181	14
SAO TOME & PRINCIPE	1082	363	34	719	66	119	33	97	27	22	6	327	45	6	2	3	1	3	1	11	2
BOTSWANA	1088	227	21	861	79	190	84	76	33	114	50	393	46	211	93	125	55	86	38	245	28
MAURITIUS	998	429	43	569	57	429	100	422	98	7	2	569	100	429	100	195	45	234	55	490	86
GUINEA BISSAU	880	190	22	690	78	33	17	24	13	9	5	150	22	55	29	2	1	53	28	127	18
GAMBIA	749	139	19	610	81	135	97					306	50								
SWAZILAND	651	98	15	553	85	98	100	84	86	14	14	40	7	98	100	32	33	66	67	138	25
CAPE VERDE	337	135	40	202	60	112	83	33	24	79	59	101	50	43	32	18	13	25	19	18	9
EQUATORIAL GUINEA	ERR		ERR		ERR	ERR	ERR		ERR		ERR		ERR	ERR	ERR		ERR		ERR		ERR
SEYCHELLES	65	26	40	39	60	26	100	21	81	5	19	37	95	26	100	2	8	24	92	39	100
TOTAL	310443	79137	25	231306	75	32106	63	13000	26	18271	37	47528	30	21627	56	4252	12	18132	60	31008	24

DANIDA/WHO WATER SUPPLY AND SANITATION INFORMATION WORKSHOP, MALAWI 10-14 NOVEMBER 1986.

TABLE 1.11 AFRICAN REGION (1985)

COUNTRY/TERRIRORY	WATER CONSUMPTION (l/c/d) WATER CONSUMPTION USED FOR DESIGN PURPOSES		ION (l/c/d) WATER CONSUMPTION ACTUAL	
	URBAN l/c/d	RURAL l/c/d	URBAN l/c/d	RURAL l/c/d
NIGERIA	120.00	60.00	63.00	25.00
ZAIRE	50.00	30.00	55.00	7.00
REPUBLIC OF TANZANIA	130.00	25.00	130.00	25.00
KENYA	-	-	-	-
UGANDA	150.00	40.00	80.00	15.00
GHANA	100.00	22.70	45.00	5.00
MOZAMBIQUE	150.00	40.00	120.00	30.00
REP OF CAMEROON	150.00	60.00	150.00	25.00
MADAGASCAR	65.00	30.00	45.00	20.00
ZIMBABWE	35-40	15.00	25.00	10.00
ANGOLA	150.00	30.00	100.00	20.00
BURKINA FASO	50-120	10-25	50-75	10-25
MALI	60.00	40.00	50.00	15.00
MALAWI	50-300	27.00	50-300	10-27
SENEGAL	80.00	20.00	42.00	15.00
ZAMBIA	250-300	30.00	310.00	30.00
NIGER	75.00	25.00	45.00	20.00
RWANDA	60.00	10.00	15.00	8.00
GUINEA	-	-	-	-
BURUNDI	200.00	60.00	150.00	40.00
BENIN	40.00	10.00	60.00	20.00
SIERRA LIONE	100.00	10-25	27-100	10.00
CENTRAL AFRICAN REPUB.	49.00	25.00	45.00	-
TOGO	30-80	20.00	39.00	7.00
LIBERIA	26-250	19.00	26-250	19.00
CONGO	-	-	-	-
MAURITANIA	50.00	20.00	25.00	15.00
LESOTHO	-	10-30	-	
BOTSWANA	-	30.00	-	30.00
SAO TOME & PRINCIPE	60.00	30.00	170.00	20.00
MAURITIUS	200-225	125-150	200.00	125.00
GUINEA BISSAU	120.00	40.00	120.00	40.00
THE GAMBIA	-	30.00	39.00	-
SWAZILAND	200.00	25.00	200.00	10.00
CAPE VERDE	50.00	25.00	30.00	-
EQUATORIAL GUINEA	-	-	-	-
SEYCHELLES	195.00	140.00	180.00	135.00