

**Regional Network Centre  
for  
Water & Waste Management (EA)**

**Combined Report  
on two  
Regional Workshops  
To Review Learning Materials  
for  
Water and Health Institutions in East Africa**

**Environmental Health Unit  
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**August 1987**

204.1 - 87co-18890

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## INTRODUCTION

The idea to hold a regional workshop to review learning materials for training institutions in the water and sanitation sector was developed by the Regional Network Centre for Water and Waste Management (EA), (RNC), in 1986 after the initial consultative meetings held during that year between RNC, Training Institutions and the relevant Ministries within the East Africa Region. During the meetings, RNC and the Institutions identified that there was a dire need to improve the learning material situation in the institutions of the region and to identify ways in which RNC would offer assistance in the procurement of such material.

The level of learning material was found to be especially serious in Uganda and Tanzania because of the constraints imposed by a general lack of foreign currency. The situation in Kenya was slightly better because some of the learning materials could be found in the open market (though very expensive). However within the institutional libraries in Kenya the situation was no better than in other countries because of inadequate budgetary allocations to the institutions to purchase such learning materials from the open market.

The institutions expressed a strong wish that RNC should survey ways and means in which it could offer assistance to the institutions in the areas of learning materials.

The primary objectives of the regional workshops were therefore to :-

- (i) identify appropriate books, audio-visual aids and learning materials for different cadres in the water and sanitation sectors
- (ii) to provide a basis for the preparation of proposals for donors to offer assistance to the institutions in the provision of the learning materials;
- (iii) to identify learning materials which would be a high priority for stocking within the AMREF Book Distribution System in EA for sale in local currencies;

- (iv) to identify the gaps in the commercially available learning materials which the Regional Network Centre for Water and Waste Management should try to fill from its own resources.

The initial plan was to hold a joint meeting/workshop for the water and health institutions but this idea was later altered in favour of two separate workshops to run consecutively following further discussions with the institutions and ministries.

The first Workshop was held in Nyeri, Kenya from 5<sup>th</sup> to 13<sup>th</sup> May 1987. It was for the water sub-sector and was entitled "Regional Workshop to Review Learning Materials for Water Institutions in EA". Nine out of the thirteen invited participants attended the workshop. The Institutions which were represented at the sector workshop are briefly listed below. The names and addresses of the participants are shown in Appendix A1.

List of Invited Institutions; Water Workshop

Country	Ministry/Institution	Trainers of	Nominees
Kenya	University of Nairobi Dept. of Civil Engineering	Graduate Engineers	1
	Ministry of Water Development Hqs.	In-Service (Engs.) In-Service (Tech.)	2
	Kenya Water Institute	Diploma + Inspector + Training	1
		Water Operator/ Training Craft	1
Tanzania	University of Dar-es-Salaam Dept. of Civil Engineering	Graduate Engineers	1
	Ministry of Lands, Water, Housing and Urban Development, HQs.	In-service (Engrs) In-service (Tech.)	2
	Ardhi Institute Public Health Engineering Dept.	Diploma Public Health Engineers	1
	Rwegalulira Water Resources Institute	In-service Techn.) In-service (Craft)	1
Uganda	Makerere University		1
	Water Development Dept., HQs.	In-service (Engrs) In-service (Tech.)	2
TOTAL NO. OF PARTICIPANTS			13

The second Workshop was held in Eldoret, Kenya from 10-18 June 1987. It was for the health sub-sector and was entitled "Regional Workshop to Review Learning Materials for Health Institutions in EA"

Participants to the second Workshop came from the three Ministries of Health and Public Health Officers/Technicians Training institutions were invited as well as participants from University of Nairobi, Department of Community Health. Three institutions were represented from Kenya, three from Tanzania and three from Uganda. The names and addresses of the participants are shown in Appendix 2.

The following is a breakdown of Participants;

List of Invited Institutions; Health Workshop

Country	Ministry/Institution	Trainers of	Nominees
Kenya	University of Nairobi Dept. of Community Health	Graduate Doctors	1
	Ministry of Health HQs.	In-Service (PHOs. & Tech.) Represented by CHF below	-
	College of Health Professions, NBI	Pre-service (PHOs)	2
	Medical Training Center, Kisumu	Pre-service (Technicians)	1
Tanzania	Ministry of Health HQs.		
	- Continuing Education	In-service PHOs	1
	- Training		1
	School of Environmental Health, Tanga	Pre-service (PHOs & Technicians)	1
	Health Assistants School, Iringa	Pre-service (Technicians)	1
Uganda	Ministry of Health HQs.	In-service (PHOs & Technicians)	2
	School of Hygiene, Mbale	Pre-service (PHOs)	1
	Health Manpower Development Center	In-service (PHOs & Technicians)	1
TOTAL NO. OF PARTICIPANTS			12

An opportunity was also taken during the two Workshops to review specific country programmes for possible RNC Support through the various country institutions within the next two years.



## WORKSHOPS PREPARATIONS

The Workshops preparations commenced in mid December 1986 when RNC wrote letters to the various publishers in Europe and America to provide it with learning materials on appropriate technologies in water and sanitation. The responses from these institutions took a considerable longer time than expected mainly because most of the publishers required to be paid in advance for their books/learning materials before they could send copies for review to RNC. In retrospect it was clear that the length of time allowed for the purchase of books was inadequate. Six months after the initial orders many books had still not arrived including many important texts.

The despatch of letters to the publishers was followed by consultative meetings in January and February between RNC and the various Ministries and Institutions in the three countries. The decision to hold two separate workshops, one for the water sub-sector and one for the health sub-sector had already been made in late November 1987 after similar consultative meetings with the institutions.

### 2.1

#### Books for the Workshop

Books which RNC ordered from the various publishers started filtering in by mid March 1987. By late April 1987 a reasonable number of books had been assembled. These were supplemented by books which were borrowed from the AMREF Library and officers of the RNC. A number of books for review were also provided by the UNDP office in Nairobi. RNC managed to put forward for review over two hundred and twenty titles in the fields of :-

- |                                      |             |
|--------------------------------------|-------------|
| - Construction                       | (18 titles) |
| - General topics                     | (47 titles) |
| - Management/Community participation | (38 titles) |
| - Sanitation                         | (32 titles) |
| - Water Supply                       | (59 titles) |
| - Water & Sanitation                 | (17 titles) |

To supplement the above selection the participants brought for review their own books which they use for teaching in their institutions.

## 2.2

### Audio-Visual Aids

RNC provided the slides/cassettes and equipment to assist the review of the slide/sound Modules which have been published by the World Bank. The modules' subject area covers the field of low cost appropriate technologies in water and sanitation. ITN provided Film I - People and Problems for review. During the second Workshop, RNC borrowed two films from the IDRC Nairobi Office. These were: "Handle on Health" and "Prescription for Health".

## WORKSHOP ACTIVITIES

### 3.1 Country Presentations

During both Workshops the representatives from each country nominated a spokesman or spokesmen to present the following:-

- (i) Overall organisation in the water and sanitation sector
- (ii) Tasks of the various cadres
- (iii) Overview of curricula in the various institutions.

The objective of this exercise was to prepare the ground work for the selection of the relevant basic and reference books for the various cadres of staff for both pre-service and in-service training. The exercise was also intended to identify the similarities or differences in any of the various training programmes and tasks for similar cadres within the three East African countries.

The key ministries and training institutions of the sector in the three EA countries are shown in Appendix A2 .

### 3.2 Task Analysis

In order that the books selected should be directly relevant to the work of the cadres in the field and to the student curricula, a task analysis was carried out following the country presentations. The participants divided into groups, each group covering a specific cadre, e.g. Engineers, Health Officers, Water Technicians etc. The groups then scrutinized the actual tasks required of the respective cadres in their field situations. The tasks were then related to the curricula of the respective institutions.

The results of the task analyses were presented in a plenary session in order that each group would be aware of the tasks identified for the other cadres as well as its own and therefore be able to pass on

books it felt to be appropriate to the relevant cadre group. The process was seen also as a means to identifying any gaps in the literature, whereby essential tasks might be found to lack teaching materials.

### 3.3

#### Books Review

A unified system of book review was used during the two Workshops.

The books which had been labelled, grouped by subject and coded by RNC staff were displayed in one large conference hall. A book review form had been prepared by RNC to assist a uniform approach to the individual and group review of the books. A copy of the form used is shown in appendix A3 (c).

Each cadre group made an initial selection list from the titles available for review, in most cases each member of a group being allocated a certain list of titles to complete in order that as many titles as possible could be covered. Following time for the individual review of books, the cadre group met again to discuss it's members' findings and draw up it's recommendations. The listed books were then classified by the categories and priorities discussed below and presented to a plenary session of all groups for further comment and discussion.

The original RNC suggestion was that three categories would be used in the selections for each cadre.

- . Basic course text books
- . Essential reference books
- . Supplementary reading material.

Following discussion during the first workshop, the categories were changed to those given in the following table:-

PRIORITY	FREQUENCY OF CONSULTATION/USAGE	NO. OF TITLES
1	A	5
	B	10
2	A	5
	B	10
3	A	5
	B	10
TOTALS		45

The priority rating relates to the three years over which it was envisaged that the books would be supplied. A and B relate to the anticipated frequency of use and correspond approximately to the RNC idea of basic text books and reference books. The number of titles allocated to each of A and B set the maximum number of titles in each category to be supplied. The total number of books to be provided to each institution was proposed by the RNC to be based on the relevant student population. Category A books to be provided, if funds permit, at the rate of 30% of student numbers and category B at the rate of 5%. The relatively high numbers of books to be supplied through this formula allows for reasonable access to the proposed texts based on an acceptance that few students will be able to purchase their own copies.

It is yet to be seen whether sufficient funds will be forthcoming to meet the costs of supplying books at these rates.

Each representative of the various institution was requested to prepare a brief information sheet which would be used by RNC to determine the number of copies of books to be bought for the institutions and to provide background material for preparing proposals to prospective donors for supply of the books.

### 3.4 Discussion of Review Findings

#### 3.4.1 Water Workshop

Appendix 3 lists the books selected by the workshop participants, for each cadre, together with the classification into A or B and the priority rating for year of supply.

For the engineers two issues were raised by the workshop (Water Sector). Low cost technologies such as wells, spring protections and latrines are currently not included in the curricula. Although interest in them is high, changing curricula is a lengthy process and can only be instituted through the formal structures of the universities. This did not detract from the inclusion of teaching on these technologies at the present time, but reflected on the emphasis which it could be given and the need for its formal inclusion.

The second issue raised was that books on conventional technologies and basic engineering theory and practice were limited also. The book selections made for engineers therefore included some basic and conventional texts, but emphasis, especially in category B books, was given to appropriate technologies. Under the present circumstances this approach was considered to be the only acceptable one by the University representative. At the technician level the expressed need was for well illustrated texts covering basic theory and emphasizing practical aspects. Some books were selected, even though they were considered to be at a rather too high theory level, for lack of a more practical alternative.

This comment applied even more so to the craftsmen. The selection of books at the workshop was found not to cover the real needs of the craftsmen. Their need is for well illustrated practical guides covering the individual trades. Most of the books shown in the recommended lists above were considered more appropriate for the craftsmen's tutors, who would need to adapt the material for their students. The RNC agreed to search for appropriate practice manuals and to direct the production of it's own manuals towards meeting this essential need at the implementing field level.

#### 3.4.2 Health and Sanitation Workshop

The Health Officers selection was classified in the same way as for the water cadres. The selection made included some texts covering topics outside of water supply and sanitation perse but as these related mainly to Food Hygiene and other areas closely related to achieving health benefits from improved water supply and sanitation they were accepted. These texts originated from the institution tutors themselves and reflected the overall lack of text-books which they face.

The Health Technicians review group chose not to classify by priority the same way as the other cadres, but produced a listing by subject area for category A books and a general list for category B books.

The selection lists were agreed upon by each workshop in plenary session and represent a guide for the RNC in the provision of books. The actual titles to be provided will depend on costs and availability. Where an alternative, but comparable text is available at lower cost then this will be provided in place of the title selected in order to maintain number supplied. Similarly if more appropriate texts, not available for review at the workshop, are identified by RNC then again these may replace the comparable title selected by the workshop.

### 3.5 Audio-Visual Training Modules Review

#### 3.5.1 Review of Film I

The Audio-Visual Training Modules comprise of seventeen slide sound modules and three films and/or video cassettes. The films are :

- Film 1 - People and Problems
- Film 2 - Problems and Solutions
- Film 3 - Solutions and Problems

The participants were shown Film I - People and Problems.

This film generated a lot of interest among the participants and a very lively discussion session was held. The facilitator posed two questions to the participants. These were as follows:-

*Q1 What were the main messages from the film?  
Answer by writing two main messages each of 1 sentence long.*

*Q2 Who (among the participants), would use the film for retraining programmes?*

The answers to Questions 1 were assembled and written by the facilitator on the flip chart. Answers which were similar or the same were only written once. These answers provided a base for a very lively discussion.

The participants, who represented various institutions responded to Question 2 by identifying the target groups in institutions to which they would direct the film. Answers to this question indicated that the film was overwhelmingly acceptable as a teaching aid.

#### 3.5.2 Review of sample slide-sound modules

The methodology of reviewing the slide-sound modules was defined as follows:

- Two facilitators would lead the workshop in presenting to the workshop participants two



modules. The workshop participants would play the role of students at this stage.

- The workshop participants would then be split into two groups. Each group would nominate its own two facilitators for reviewing two selected modules.

This strategy was aimed at imparting to the participants the knowledge of how to use the modules in real teaching situations within the participants respective institutions.

A list of the module requirement by different institutions is shown in Appendix A4 .

### 3.6

#### Research Programmes

One of the objectives of the Regional Network Centre is to promote research in the field of appropriate and low cost water supply and sanitation technologies within the region. An exercise was therefore carried out to survey the various research activities being undertaken or proposed to be undertaken in the various EA institutions.

The participants were informed that RNC was willing to receive detailed proposals from the institutions for possible support and financing considerations.

A list of the various research programmes within the institutions is shown in Appendix A5 .

CONCLUSIONS AND RECOMMENDATIONS

## W: WATER SECTOR WORKSHOP OVERALL SUMMARY AND RECOMMENDATIONS

The following is a summary and recommendations of the water sector workshop;

W4.1 The participants considered that the workshop was a success because;

- i) it had given them an opportunity to share experiences with their contemporaries who work in the same field in the three countries;
- ii) discussions centering on country organisation of the sector, task analysis, new technologies and training material were very productive and educative to the participants.

The Workshop recommended that a follow up workshop be held in 1988.

W4.2 The Workshop identified that there is an acute shortage of text books, reference books, journals and other training material within the institutions.

The Workshop recommended that RNC should, to the extent possible, assist the institutions by the provision of such learning materials.

The Workshop identified 3 ways on how this assistance could be provided;

- i) RNC prepares a joint proposal to donors requesting for assistance in the purchase of books (which the workshop identified and prioritised) on behalf of the institutions. RNC would then distribute the material to various institutions in the Region.
- ii) RNC subscribes for the institutions to receive the essential journals in the field of water supply and sanitation.

iii) RNC, through AMREF Book Distribution Unit sets up a system through which the essential text books would be made available in selected bookshops within the countries of the region. These books would be available for sale in local currencies.

W4.3 The Workshop observed that the ITN training modules, (with a few modifications to take into consideration the local conditions), were excellent aids to teaching the students in the institutions.

The Workshop recommended that six sets of the slide-sound modules plus adequate numbers of participants' notes be provided as soon as possible to the institutions.

W4.4 The Workshop noted that the equipment which may be used with the slide-sound modules was not available within the institutions.

The Workshop therefore recommended that RNC provides assistance in the provision of reasonably priced slide projectors and cassette players to go with the slide-sound modules.

W4.5 The Workshop noted that various institutions are carrying out, or are proposing to carry out research in various subjects which are relevant to the development of low cost, appropriate technologies in water supply and sanitation. It was noted that many of these research projects have been hampered by lack of funding or adequate funding. Others have been constrained by lack of reference material which is generally not available in the region.

The Workshop therefore recommended that

- i) RNC provides direct financial assistance to such research programmes;
- ii) RNC assists in provision of reference materials by identifying who else may be carrying out similar research. The participants considered that the ITN system would be ideal to capture such information.

iii) RNC, because of its regional outlook plays the role of facilitating exchange of research information within the institutions in the region.

RNC agreed that it would look into these recommendations. As regards assistance to research projects RNC accepted to look into each case individually subject to the respective institutions preparing a detailed proposal for the research project. Where RNC agrees to provide assistance, a working and reporting programme would be worked out with the respective institutions. This was essential because RNC has to account for the financial assistance so provided.

W4.6

The Workshop noted that it would be useful to have a forum, such as a bulletin or newsletter, where progress or development in water supply and sanitation technologies and programmes within the region are reported for the benefit of the students and staff working in the three countries.

The Workshop consequently recommended that RNC should find ways of establishing such a bulletin.

## H: HEALTH SECTOR WORKSHOP OVERALL SUMMARY AND RECOMMENDATIONS

The following is a summary and recommendations of the Health Sector Workshop;

### H4.1 Task Analysis

H4.1.1 The need for Curricula development/review for the following cadres in the respective countries was identified;

Uganda	-	Health Inspectors & Health Assistants
Tanzania	-	Health Officers & Health Assistants
Kenya	-	Public Health Officers & Public Health Technicians

The Workshop noted that the current curricula for Environmental Health cadres are subject oriented rather than task oriented and so there is need to carry out task analysis in order to review and/or develop a new (objective based) curricula.

H4.1.2 The Workshop recommended that the Regional Network Centre provides assistance in the task analysis and curricula review.

H4.1.3 The Workshop strongly recommended that the task analysis and curricula review/development be put in hand as soon as possible in each country.

### H4.2 Book Review and Teaching Materials

H4.2.1 The Workshop observed that in every institution;

- i) There is serious shortage of books, teaching aids and equipment
- ii) The few available books are out dated and some are out of print
- iii) The Workshop further noted that some of the relevant books, teaching aids, equipments and materials are not available locally. The possibility to import is inhibited due to lack of foreign exchange.

H4.2.2 The Workshop recommended that:-

- i) RNC assists in identifying donors to provide funding for books, teaching aids and equipments for the institutions in accordance with the priorities drawn up by the Workshop.
- ii) RNC assists with stocking appropriate books (in each country) for purchase in local currency
- iii) The institutional staff be encouraged and supported to prepare appropriate teaching materials/aids.
- iv) The institutions in the Region cooperate in the exchange of teaching materials.
- v) RNC assists in coordinating (iii) and (iv) above. It was suggested that RNC should as soon as possible start the production of a Bulletin as a first step.
- vi) The RNC assists with the identification of appropriate Journals and their distribution.

H4.2.3 The budgetary allocation to the institutions for the purchase of learning materials need to be given a higher priority than is currently being done in order to reflect the fundamental importance of having adequate teaching materials for the achievement of learning objectives.

H4.3 Modules and Films

H4.3.1 The Workshop considered that the modules are useful teaching aids but that;

- i) The sequence in some modules is poor
- ii) Some slides are not suitable for the local conditions and needed to be changed
- iii) Some captions are not properly descriptive of the slides
- iv) Some modules omit important aspects on the subject (eg. Waste Stabilization Ponds : O & M, and Fencing omitted).

#### H4.3.2 The Workshop recommended:

- i) That the modules be distributed to the Ministries/ institutions as soon as possible.
- ii) That the officers/tutors using the modules should review them and/or make/recommend modifications to improve their technical, pedagogic and local content.
- iii) That the officers/tutors should inform RNC of modifications etc. for wider distribution to other users.
- iv) That Ministries and institutions be encouraged and supported to produce modules suitable for local conditions to increase the range, coverage and applicability.

That RNC should assist in coordinating the exchange of information on module development by use of bulletins.

- v) That officers/tutors workshops for the use of the modules are held in each country (one week duration).
- vi) That in addition to the modules the RNC should assist in identifying and distributing appropriate films.

#### H4.4 Bachelor of Science in Environmental Health Sciences

##### H4.4.1 The Workshop observed/noted

- i) that taking into account the increasing technical complexity and scope of the tasks of the Environmental Health Officers (EHO) both now and in future, there is an urgent need that these officers are equipped with a high level of academic and practical skills compatible with the environmental needs/demands.
- ii) that the appropriate level of academic and practical skills by the EHO be at degree level.

- iii) that the three countries have developed or are developing appropriate curricula for B.Sc in Environmental Health Sciences. Tanzania has developed a curriculum which has been provisionally approved by the University of Dar-es-Salaam and is likely to start soon.
- iv) That there is a serious shortage of qualified EHOs required to man the programme.

H4.4.2 The Workshop recommended;

- i) That the development and implementation of the degree programme be given high priority in all the three countries.
- ii) The commencement of the programme in Tanzania and encourages the admission of students from the other two sister countries.
- iii) That the relevant Ministries seek assistance from RNC and/or elsewhere for staff development in preparation for the implementation of the Degree programme.



## WORKSHOP EVALUATION

Two forms of evaluation were carried out. The first form was a standard form evaluation. Here each of the participants were requested to each fill an evaluation questionnaire.

The second form of evaluation was a participatory one. This was guided by one of the facilitators, during each Workshop. This second form of evaluation was especially lively because it involved an open discussion in a Plenary Session.

Below is a description of the two forms of the evaluation.

### 5.1 Standard Form Evaluation : Questionnaire

The questionnaire consisted of 3 sections. Part I requested the participants to carry out a guided evaluation on the Book and Publication Review sessions. The answers to the questions were in form of multiple choice which ensured that the responses were relatively uniform and suited to a standard evaluation procedure. In addition the participants were requested to make suggestions for the improvement of the future workshops.

Part II of the questionnaire dwelt on "Introduction to Audio-Visual Materials and the Network". This was similar to Part I.

Part III of the questionnaire related to overall workshop evaluation. The answers requested in this section were also primarily of multiple choice but the participants were allowed to make additional comments to clarify items or issues where they had strong feelings.

The questionnaire form for the health sector workshop contained questions related to the review of the proposals of B.Sc in Environmental Health Sciences.

A typical questionnaire form which was used is shown in Appendix A6.

The main outcome of the evaluations was that the workshops were quite successful. The participants felt that the review of learning materials should

be a continuous exercise and that a follow-up workshop should be organised in 1988.

## 5.2

### Participatory Evaluation : Facilitator Guided Evaluation

The participatory mode of evaluation comprised of holding a plenary session where 3 questions were posed to the participants in turn. The participants were given five minutes to write down answers to each question. Each participant then read out his/her answers to the plenary session in turn. The various answers were written by the facilitator on flip charts. If participants read an answer similar to one that had been recorded, then a mark was added to the previous answer.

In the next stage the participants were asked to look at the various answers and out of the list, to select the 3 answers which they felt expressed best their feelings. Each participant had therefore a choice of only three. This selection was done through voting by a show of hands. The points that each answer scored were shown against it. Each participant carried a score of three points, while the maximum score of points for each answer was equal to the number of participants and facilitators (facilitators also voted).

Listed below are the three questions which were posed to the participants.

1. *What were the two best aspects or most positive aspects of the workshop?*
2. *What were the two worst aspects of the workshop?*
3. *What were the two bad things related to the venue of the workshop or any other issues related to the workshop environment?*

Answers to Question 1 strongly indicated that the best aspects of the workshops were that they availed an opportunity for human interactions by peoples of different background who work in the same sector within the region. The participants felt that both venues and their facilities were quite good.

APPENDICES

## A1 LIST OF PARTICIPANTS

### (a) Water Sector Institutions

<u>Name</u>	<u>Title</u>	<u>Address</u>
1. Mr Paskol L Kusare	Senior Assist. Executive Eng. Head, In-Service Training Dept. .	The Rwegarulila Water Resources Institute
2. Mr J M S Shilungushela	Training Officer	Ministry of Lands, Natural Resources and Tourism, P O Box 9132, Dar-es-Salaam, Tanzania.
3. Mr Mohammed A Thabit	Training Officer	Ministry of Water, P O Box 9153, Dar-es-Salaam, Tanzania.
4. Mr Nerey C Mchaile	Lecturer Head, Dept of Public Health Engn. .	Ardhi Institute, P O Box 35176, Dar-es-Salaam, Tanzania.
5. Mr Leoni G Msimbe	Senior Lecturer	University of Dar-es-Salaam P O Box 35131, Dar-es-Salaam, Tanzania.
6. Dr Charles Wana-Etyem	Senior Lecturer	Dept of Civil Engineering, Makerere University, P O Box 7062, Kampala, Uganda.
7. Mr Moses Kagimu Gava	Acting Senior Executive Engineer	Water Development Departmer P O Box 19, Entebbe, Uganda.

- |     |                        |  |   |
|-----|------------------------|--|---|
| 8.  | Mr Ephraim Kiseembo    | Acting Senior Executive Engineer           | Water Development Department<br>P O Box 19,<br>Entebbe,<br>Uganda.                                    |
| 9.  | Dr P M A Odira         | Lecturer                                   | University of Nairobi,<br>P O Box 30197,<br>Nairobi,<br>Kenya.  |
| 10. | Dr Letitia A Obeng     | Project Officer                            | Network Co-ordination Unit,<br>WUD - NB34,<br>World Bank,<br>1818 H. St NW,<br>USA.                   |
| 11. | Prof Richard G Feacham | Professor of Tropical Environmental Health | London School of Hygiene and Tropical Medicine,<br>Keppel Street,<br>London WC1E 7HT,<br>UK.          |
| 12. | Mr Nicholas Greenacre  | Head, RNC                                  | Regional Network Centre for Water & Waste Management (EA) AMREF,<br>P O Box 30125,<br>Nairobi, Kenya. |
| 13. | Mr Matthew N Kariuki   | Deputy Head, RNC                           | Regional Network Centre for Water & Waste Management (EA) AMREF,<br>P O Box 30125,<br>Nairobi, Kenya. |
| 14. | Mr Daniel J Makerere   | Public Health Officer                      | Regional Network Centre for Waste Management (EA) AMREF, P.O.Box30125,<br>Nairobi, Kenya.             |
| 15. | Ali Saleh Abdalla      | Driver/Technician                          | Regional Network Centre for Water & Waste Management (EA) AMREF,<br>P O Box 30125,<br>Nairobi, Kenya. |
| 16. | Eunice Wairagu         | Secretary                                  | Regional Network Centre for Water & Waste Management (EA) AMREF,<br>P O Box 30125,<br>Nairobi, Kenya. |

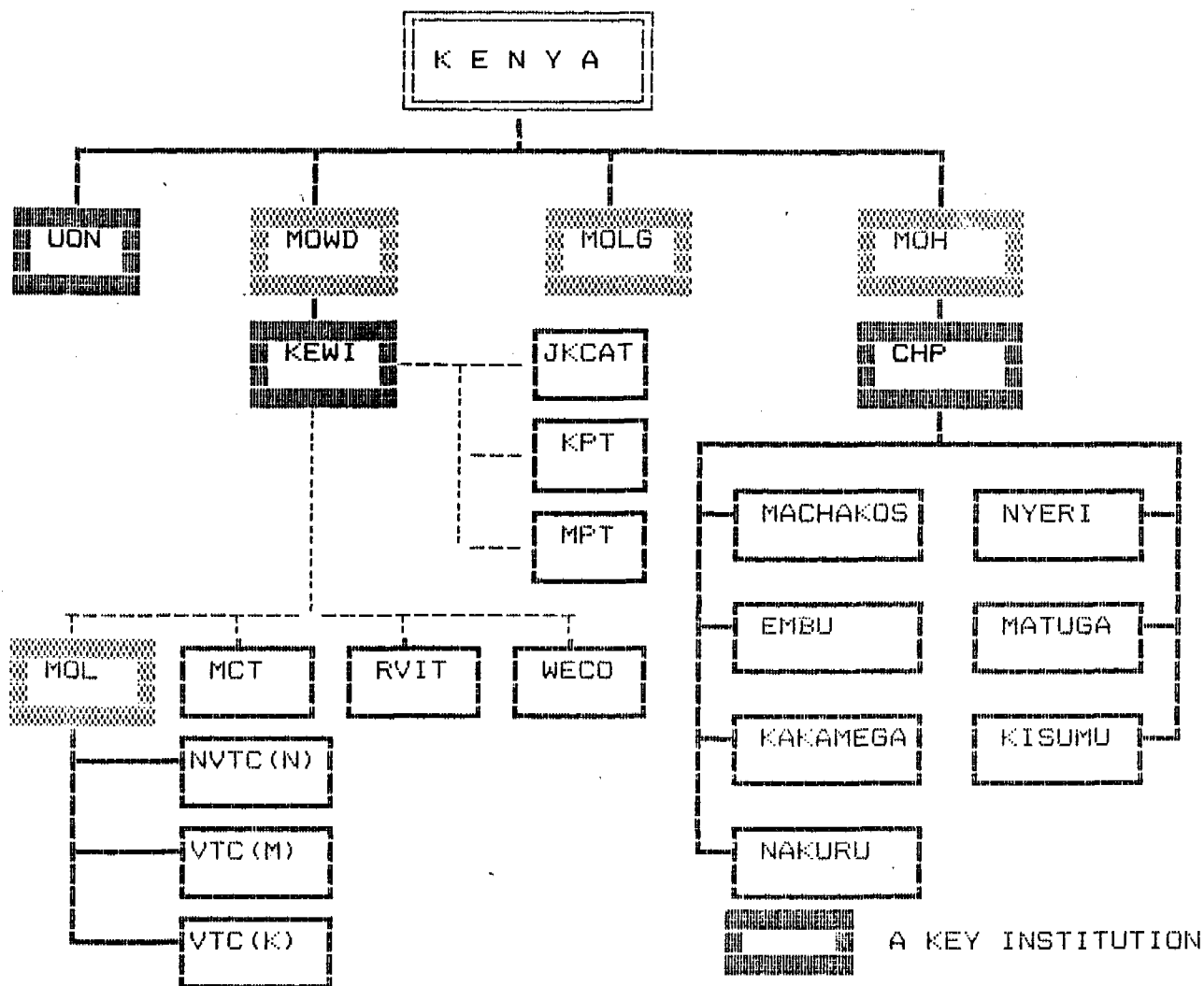
A1 LIST OF PARTICIPANTS (Cont'd)

(b) Health Sector Institutions

Name	Title	Address
1. Bigirima Zachary	Senior Health Inspector	Health Manpower Development Centre P O Box 2190, MBALE Uganda
2. Wangola V De B K K	Chief Health Inspector	Ministry of Health H/Quarters P O Box 8, ENTEBBE Uganda
3. Oluka Paulo	Tutor	School of Hygiene P O Box 221, MBALE Uganda
4. Myonga W J P	Principal	Health Assistants School P O Box 235, IRINGA Tanzania
5. Kawacha Cassian N	Senior Health Inspector	Ministry of Health Continuing Education Unit P O Box 9083, DAR-ES-SALAAM Tanzania
6. Nyang'echi G N	Public Health Officer (Tutor)	Medical Training Centre P O Box 1594, KISUMU Kenya
7. Chege Ephantus I	Public Health Officer (Tutor)	College of Health Professions P O Box 30195, NAIROBI Kenya
8. Otwell C J K	Deputy Chief Health Inspector	P O Box 8, ENTEBBE Uganda
9. Kaahwa S A B	Acting Principal	School of Hygiene P O Box 221, MBALE Uganda
10. Sheshe A K	Principal	School of Environmental Health P O Box 1475, TANGA Tanzania
11. Ngaviwa B M	Senior Health Officer (Training)	Ministry of Health & Social Welfare P O Box 9083, DAR-ES-SALAAM Tanzania
12. Mwanthi M A	Lecturer	University of Nairobi Dept. of Community Health P O Box 30588, NAIROBI Kenya
13. Muga P W	Public Health Officer (Tutor)	College of Health Professions P O Box 30195, NAIROBI Kenya
<u>Regional Network Centre Staff</u>		
14. Kariuki M N	Deputy Head	Regional Network Centre for Water & Waste Management (EA) AMREF P O Box 30125, NAIROBI Kenya
15. Denga I O	Public Health Engineer (Training)	
16. Eunice Wairagu	Secretary	
17. Makerere D J	Public Health Officer (Training)	
18. Ali Saleh Abdalla	Driver/Technician	

A2 KEY INSTITUTIONS

(a) Kenya



MOWD - Ministry of Water Development  
 MOL - Ministry of Labour

MOH - Ministry of Health  
 MOLG - Ministry of Local Government

WATER SECTOR INSTITUTIONS

Degree Training

UON - University of Nairobi

Water Technicians Training

KEWI - Kenya Water Institute  
 JKCAT - Jommo Kenyatta College of Agri.  
 KPT - Kenya Polytechnic  
 MPT - Mombasa Polytechnic

Water Operators Training

MCT - Muranga College of Technology  
 RVIT - Rift Valley Institute of Tech.  
 WECC - Western College of Arts & Tech.

Crafts Training

NVTC(N) - National Vocational Training Centre (Nairobi)  
 VTC(M or K) - Vocational Training Centre (Mombasa or Kisumu)

HEALTH SECTOR INSTITUTIONS

Public Health Officers Training

CHP - College of Health Professionals

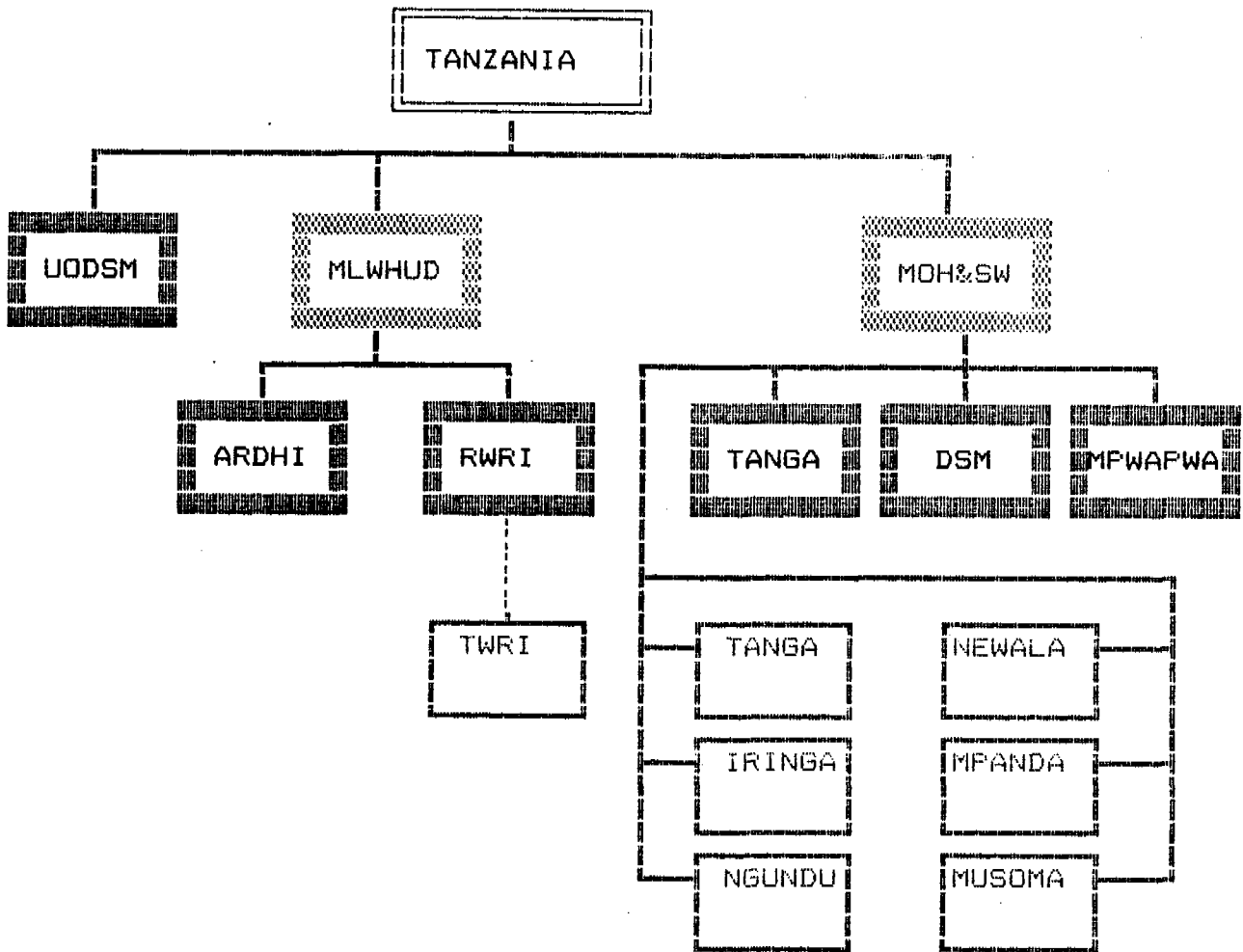
Public Health Technicians Training

MACHAKOS  
 EMBU  
 KAKAMEGA  
 NAKURU  
 NYERI

MATUGA  
 KISUMU

A2 KEY INSTITUTIONS (Contn'd)

(b) Tanzania



A KEY INSTITUTION

MLWHUD - Ministry of Lands,  
Water, Housing and  
Urban Development

MOH & SW - Ministry of Health  
& Social Welfare

WATER SECTOR INSTITUTIONS

HEALTH SECTOR INSTITUTIONS

Degree Training

UODSM - University of  
Dar-es-Salaam

Diploma training

ARDHI - Ardhi Institute

Public Health Officers Training

TANGA  
DSM - Dar-es-Salaam  
MPWAPWA

Technician Training

RWRI - Rwegalulira Water  
Resources Institute,  
Dar-es-Salaam

Health Assistants Training

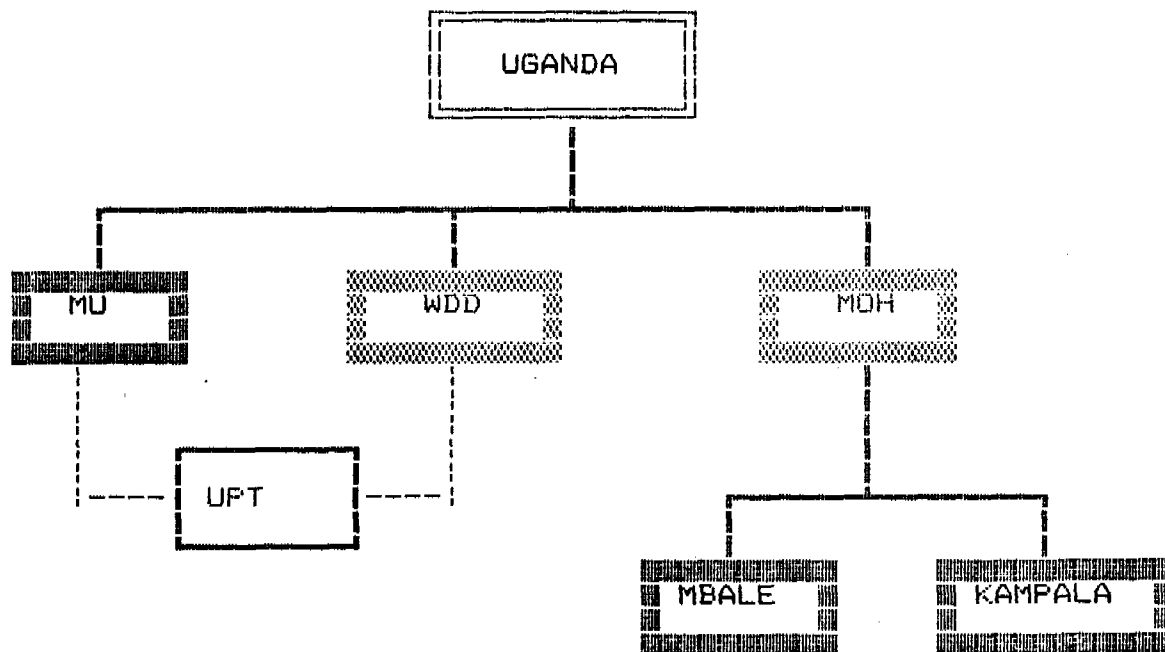
TANGA  
NEWALA  
IRINGA  
MPANDA  
MUSOMA  
NGUNDU

TWRI - Tanga Water Resources  
Institute



A2 KEY INSTITUTIONS (Contn'd)

(c) Uganda



A KEY INSTITUTION

WDD - Water Development Department

MOH - Ministry of Health

WATER SECTOR INSTITUTIONS

HEALTH SECTOR INSTITUTIONS

Degree Training

MU - University of Makerere

Diploma Training

UPT - Uganda Polytechnic  
(Currently no course  
on going)

Public Health Officer  
Training

MBALE - School of Hygiene

Public Health Technician  
Training

KAMPALA - School of Hygiene

### A3 SELECTION OF BOOKS

#### (a) Selection by Water Sector Institutions

#### Engineers Book Priority List

AUTHOR	TITLE	DATE	PUBLISHER	CODE No	P:ENGINEERS
Priority 1A					
Twort et al	Water Supply			W47.101	E-1A-01
Fair et al	Water and Wastewater Engineering			WS14.101	E-1A-02
Hwang	Fundamentals of Hydraulic Engineering Systems				E-1A-03
Sijbesma-Wijk	Particpn.& Educ.in Comm.W.Supp & San. Progm:Rep.13	1979	IRC	M14.101	E-1A-04
Blackwaardt B.	Hand Drilled Wells	1984	RWRI	W28.103	E-1A-05
Priority 1B					
Rich	Low Maintenance, Mechanically Simple Wastewater				E-1B-01
Benenson	Control of Communicable Diseases in Man				E-1B-02
Febbutt	Principles of Water Quality Control				E-1B-03
Chaulett	Environmental Protection				E-1B-04
	Community Wastewater Collection & Disposal				E-1B-05
IDRC	Women Issues in Water and Sanitation	1985	IDRC	M03.101	E-1B-06
Pacey A.	Rainwater Harvesting	1986	IT	W08.102	E-1B-07
Skat	Manual for Rural Water Supply	1980	Skat	W15.101	E-1B-08
DHV	Shallow Wells	1979	DHV	W29.101	E-1B-09
Sandy C-Cross et al	Environmental Health Engineering in the Tropics	1983	Wiley	WS01.101	E-1B-10
Priority 2A					
White	Wastewater Engineering			S31.101	E-2A-01
Todd	Ground Water Hydrology				E-2A-02
Steel EW and Mcghee	Water Supply and Sewerage				E-2A-03
Cairncross S. et al	Evaluation for Village Water Supply Planning	1980	IRC	M15.101	E-2A-04
Mara D.	Sewage Treatment in Hot Climate	1976	Wiley	S27.101	E-2A-05
Priority 2B					
Huisman L. et al	Particpn.& Educ.in Comm.W.Supp & San. Progm:Rep.12	1983	IRC	M01.101	E-2B-01
Zoot M.T.	Guidelines for Hygiene Ed.in Comm.Water Supp & San	1984	IRC	M07.101	E-2B-02
WHO	People First, Water and Sanitation Later	1987	WHO	M31.101	E-2B-03
Austin T. et al	Training of Trainers	1978	WHO	M32.101	E-2B-04
Watt S.B.	Septic Tanks and Aqua Privies	1984	IT	S01.102	E-2B-05
Gloyna	Waste Stabilization Ponds	1971	WHO	S25.101	E-2B-06
Jordan T.D.	A Handbook of Gravity-flow Water System	1984	IT	W02.102	E-2B-07
IRC	Slow Sand Filt. for Com. Water Supp.in Dev.Count.	1982	IRC	W09.101	E-2B-08
	Water Supply & Sanitation in Developing Countries		IWES	WS16.101	E-2B-09
Salvato J A	Environmental Engineering and Sanitation	1982	Wiley	WS04.101	E-2B-10
Priority 3A					
IRC	Small Community Water Supplies	1981	IRC	W01.303	E-3A-01
Schulz et al	Surface Water Treatment			W45.101	E-3A-02
Barnes	Water and Wastewater Engineering Systems				E-3A-03

Bourne PG	Water and Sanitation	1984	A. Press	WS07.101	E-3A-04
Teka	Water Supply - Ethiopia	1982	Addis Ababa	W17.101	E-3A-05
IRC	Participation of Women in Water Supp. & Sanitation	1985	IRC	M13.101	E-3B-01
Priority 3B					
Feachem et al	Water, Health and Development	1978	Trihed	M26.101	E-3B-02
Sainna AAJ	Traditional Water Purif.in Tropical Dev.Countries	1981	GTZ	W18.104	E-3B-03
Fraetkel P.	Water Pumping Devices	1986	IT	W25.102	E-3B-04
Watt S.B.	Hand dug Wells	1979	IT	W26.102	E-3B-05
WHO	Guidelines for Drinking Water Quality Vol.2	1984	WHO	W37.101	E-3B-06b
WHO	Guidelines for Drinking Water Quality Vol.3	1985	WHO	W38.101	E-3B-06c
COX CR	Operation & Control of Water Treatment Process	1969	WHO	W39.101	E-3B-07
Hutton L.	Field Testing of Water in Developing Countries	1983	WRC	W44.101	E-3B-08
Feachem R.	Water, Wastes and Health in Hot climates	1980	Wiley	WS06.101	E-3B-09
ASCE	Pipeline Design for Water and Wastewater		ASCE		E-3B-10

### Technicians Book Priority List

AUTHOR	TITLE	DATE	PUBLISHER	CODE No	P:TECHNICIANS
Priority 1A					
Longland F.	Field Engineering	1983	ITDG	C06.102	T-1A-01
IRC	Small Community Water Supplies	1981	IRC	W01.303	T-1A-02
Skat	Manual for Rural Water Supply	1980	Skat	W15.101	T-1A-03
Sandy C-Cross et al	Environmental Health Engineering in the Tropics	1983	Wiley	WS01.101	T-1A-04
Schulz et al	Surface Water Treatment			W45.101	T-1A-05
Priority 1B					
White Anne	Guidelines for Plan. Community Particpn. W&S	1986	WHO	M27.101	T-2A-01
	Latrine Construction		WASH	S32.101	T-2A-02
Watt S.B.	Hand dug Wells	1979	IT	W26.102	T-2A-03
Blackwaardt B.	Hand Drilled Wells	1984	RWRI	W28.103	T-2A-04
WHO	Guidelines for Drinking Water Quality Vol.3	1985	WHO	W38.101	T-2A-05
	Rainwater Roof Catchment		WASH	W52.101	T-2A-06
	Spring Capping		WASH	W53.101	T-2A-07
	Handpump Installation and Maintenance		WASH	W55.101	T-2A-08
Salvato J A	Environmental Engineering and Sanitation	1982	Wiley	WS04.101	T-2A-09
Bourne PG	Water and Sanitation	1984	A. Press	WS07.101	T-2A-10
Priority 2A					
Watt S.B.	Septic Tanks and Aqua Privies	1984	IT	S01.102	T-1B-01
Cointreau, S.J.	Env.Mnqt.of Urban Solid Wastes in Dev.Countries	1982	WB	S17.101	T-1B-02
Basaako K. et al	Handbook for District Sanitation Coordinators	1983	WB	S22.101	T-1B-03
Mara D.	Sewage Treatment in Hot Climate	1976	Wiley	S27.101	T-1B-04
Jordan T.D.	A Handbook of Gravity-flow Water System	1984	IT	W02.102	T-1B-05

Priority 2B

Nostrand J. et al	The Vent. Impv. D/Pit Lat. A Const. Man. for Botswana	1983	WB	C01.106	T-2B-01
	Rural Vent. Imp. Pit Lat. A Field Man. for Botswana			C13.202	T-2B-02
White Dr. A.	Community Participn. in Water & Sanitation TP 17	1981	IRC	M02.101	T-2B-03
Cairncross S. et al	Evaluation for Village Water Supply Planning	1980	IRC	M15.101	T-2B-04
WHO	Minimum Evaluation Procedure	1983	WHO	M29.101	T-2B-05
Kalbermatten J.M.	A Planners Guide	1980	WB	S10.102	T-2B-06
IRC	Slow Sand Filt. for Com. Water Supp. in Dev. Count.	1982	IRC	W09.101	T-2B-07
Herber G.	Simple Methods for the Treat. of Drinking Water	1985	Vieweg & Sohn	W19.104	T-2B-08
IRC	Hand Pumps	1982	UN, WHO	W21.101	T-2B-09
DHV	Low Cost Water Supply	1983	DHV	W22.101	T-2B-10

Priority 3A

Watt S.B.	Ferrocement Water Tanks	1978	IT	C04.101	T-1B-06
Glyona	Waste Stabilization Ponds	1971	WHO	S25.101	T-1B-07
Mara	Design of VIP Latrines			S29.101	T-1B-08
Facey A.	Rainwater Harvesting	1986	IT	W08.102	T-1B-09
Hutton L.	Field Testing of Water in Developing Countries	1983	WRC	W44.101	T-1B-10

Priority 3B

McGuigan D.	Small Scale Wind Power	1979	A Wheaton & Co.	609.101	T-2C-01
Tebbutt	Principles of Water Quality Control				T-2C-02
IRC	Participation of Women in Water Supp. & Sanitation	1985	IRC	M13.101	T-2C-03
Meynell P.J.	Methane: Planning a Digester	1982	Prism Press	S05.101	T-2C-04
WHO No. 14	Management of Hazardous Waste	1983	WHO	S23.101	T-2C-05
Gotaas H.B.	Composting	1956	WHO	S24.101	T-2C-06
Cairncross S.	Small Water Supplies	1986	Ross I	W07.101	T-2C-07
DHV	Shallow Wells	1979	DHV	W29.101	T-2C-08
Peterson	Rain Water Catchment			W46.101	T-2C-09
Zoeteman B.C.J.	The potential poll. Ind. as a Tool for Riv Qul. Mgt	1973	WHO and IRC	WS03.101	T-2C-10

Craftsman Book Priority List

AUTHOR	TITLE	DATE	PUBLISHER	CODE No	P:CRAFTSMEN
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Priority 1A

Winblad & Kilama	Sanitation Without Water	1985	McMillan	S02.101	C-1A-01
Feacham et al	Small Excreta Disposal Systems	1978	ROSS	S28.102	C-1A-02
Cairncross S.	Small Water Supplies	1986	Ross I	W07.101	C-1A-03
Longland F.	Field Engineering	1983	ITOG	C06.102	C-1A-04
Dancy H K	A Manual of Building Construction	1973	ITP		C-1A-05

Priority 1B

	Blair Latrines Instruction Manual		MOH Zimbabwe	C15.101	C-1B-01
Jordan T.D.	A Handbook of Gravity-flow Water System	1984	IT	W02.102	C-1B-02
Weygers A.G.	The Making of Tools	1973	Van N.R. Co.	613.101	C-1B-03
Weygers A.G.	The Recycling, Use and Repair of Tools	1978	Van N.R. Co.	616.101	C-1B-04
	Raising Water With Pumps (Bucket)		MOH Zimbabwe	W57.101	C-1B-05
	Water for All		MOH Zimbabwe	C17.101	C-1B-06
DHV	Low Cost Water Supply	1983	DHV	W22.101	C-1B-07
Lochery P.W.S. et al	Building & Operating Multi-Compartment VIP Latrine		UN	C11.101	C-1B-08
Conf. Report	Community Ed. & Partic. in the Slow Sand Filt. Projs.	1978	IRC	M12.101	C-1B-09
IRC	Participation of Women in Water Supp. & Sanitation	1985	IRC	M13.101	C-1B-10

Priority 2A

Hutton L.	Field Testing of Water in Developing Countries	1983	WRC	W44.101	C-2A-01
Marfleet H F	Pictorial Guide to Woodworking Tools & Joints	1981	R K P London		C-2A-02
Mara	Design of VIP Latrines			S29.101	C-2A-03
Blackwaardt B.	Hand Drilled Wells	1984	RWRI	W28.103	C-2A-04
Dolan J A	Motor Vehicle Technology and Practical Work Parts 1	1983	ELBS London		C-2A-05

Priority 2B

Feachem et al	Water, Health and Development	1978	Trihed	M28.101	C-2B-01
Roy A.K. et al	Manual on Des. Con. & Mtc. of Lowcost PFWSL in India	1980	WB	S20.102	C-2B-02
Ryan B.A. et al	Ventilated Imp. Pit Latrines: Vent Pipe Desgn. Guid.	1983	WB	S21.101	C-2B-03
Pacey A.	Rainwater Harvesting	1986	IT	W08.102	C-2B-04
Watt S.B.	Hand dug Wells	1979	IT	W26.102	C-2B-05
Pacey A.	Hand Pump Maintenance	1983	IT	W32.102	C-2B-06
Peterson	Rain Water Catchment			W46.101	C-2B-07
	Preventive Maintenance of Rural Water Supply		WHO	W51.101	C-2B-08
	Raising Water With Different Pumps (Blair)		MOH Zimbabwe	W56.101	C-2B-09
	Water for All		MOH Zimbabwe	W59.101	C-2B-10

Priority 3 +

Sandy C-Cross et al	Environmental Health Engineering in the Tropics	1983	Wiley	WS01.101	C-3B-01
U.S. DHH Services	Environmental Health Technician Handbook	1984	US DHHS	WS05.101	C-3B-02
Mann H T	Water Treatment and Sanitation	1979	ITP	WS10.101	C-3B-03
Feachem et al	Water Wastes and Health in Hot Climates	1977	Wiley	WS13.102	C-3B-04
WHO	International Standards for Drinking Water	1971	WHO	**	C-3B-05
Tebbutt	Principles of Water Quality Control				C-3B-06
	Elements of Water Supply & Wastewater Disposal		Wiley		C-3B-07
Todd	Ground Water Hydrology				C-3B-08
	Text Books for Individual Trades: Blacksmith				C
	Text Books for Individual Trades: Electrician				C
	Text Books for Individual Trades: Pump Mechanics				C
	Text Books for Individual Trades: Plumber				C
	Text Books for Individual Trades: Welder				C
	Text Books for Individual Trades: Painter				C
	Text Books for Individual Trades: Plant Operators				C

Text Books for Individual Trades: Surveyors  
Text Books for Individual Trades: Fitting and Turning

C  
C

\* Note: The selection of books at the workshop was found not to cover the real needs of the craftsmen. Their need is for well illustrated practical guides covering the individual trades. Most of the books shown in the recommended lists above were considered more appropriate for the craftsmen's tutors, who would need to adapt the material for their students. The RNC agreed to search for appropriate practice manuals and to direct the production of it's own manuals towards meeting this essential need at the implementing field level.

## (b) Selection by Health Sector Institutions

## SELECTED BOOKS FOR PUBLIC HEALTH OFFICERS

## PRIORITY I

Core Text Books 1A					
	Author	Title	Date	Publisher	Code No
1	A C Twort	Water Supply	1985	E Arnold	W47.101
2	McKay	Building Construction Vol. I-III	1975	Longman	
3	Feacham	Environmental Health Engineering	1983	J Wiley	WS1.101
4	APHA	Control of Communicable Diseases			
5	Martin	Practical Food Inspection			
Reference Text Books 1B					
1	Salvato	Environmental Engr. & Sanitatn.	1982	J Wiley	WS04.101
2	Davey & Lightbody	Control of Communicable Diseases in the Tropics			
3	Clay	Environmental Health Officers Handbook			
4	Ronald Millard	Public Cleansing			
5	HMSO	The Bacteriological Examination of Water Supplies	1977	HMSO	W60.101
6	Barker	Practical Epidemiology	1982	Churchill Livingstone	
7	Koziorowsky	Industrial Waste Disposal			
8	Barry	The Construction of Buildings Vol. I-IV	1969	Crosby L S	C20.101
9	Peter & Bourne	Water & Sanitation	1984	A Press	WS07.101
10	A Pacey	Sanitation in Developing Countries	1978	J Wiley	S26.101

PRIORITY II

Core Text Books 2A					
1	Tebbut	Principles of Water Quality Control		Pergamon	
2	Wagner & Lenoix	Excreta Disposai in Rural Areas &		WHO	
3	Mackmanon	On Being Incharge		WHO	
4		Vector Control in International Health		WHO	
5	D Mara	Chemistry for Sanitary Engineers			
Reference Text Books 2B					
1	Vita	Village Technology Handbook	1981	Vita	C07.101
2	Srivasin	Health Management			
3	Linsley & Franzin	Water Resources Engineering			
4	Combs & Macv	Milk and Milk Products			
5	Hill & Dodsworth	Food Inspection Notes		H K Lewis	
6	D Mara	Sewage Treatment in Hot Climates	1976	J Wiley	S27.101
7	Kilama	Sanitation Without Water	1985	MacMillan	
8	M King	Human Anatomy			
9	J Norton	Building With Earth	1986	I T Pub.	C21.101
10	Feacham	Water Supplies for Rural Areas & Developing Countries			



PRIORITY III

Core Text Books 3A					
1	Sandra	Environmental Management of Urban Solid Wastes in Dev. Countries	1982	Urban Developmt.	
2	C Wood	Occupational Health	1979	AMREF	
3	C Wood	Community Health	1984	AMREF	
4	Tindel & Cox	Inspection of Fish, Poultry, Fruit, Nuts and Vegetables			
5	Eshuis & Marshot	Communicable Diseases	1984	AMREF	
Reference Text Books 3B					
1	C R Cox	Operation & Control of Water Treatment Process	1989	WHO	W39.102
2	B Grover	Water Supply & Sanitation Project Preparation Handbook			
3	Clark	Water Supply & Pollution Control			
4		Water Supply for Rural Areas and Small Communities		WHO	
5	WHO	Ecology and Control of Rodents of Public Health Importance	1974	WHO	
6	WHO	Health Hazard of Human Environmt.		WHO	
7	WHO	The Control of Schistosomiasis	1985	WHO	
8	WHO	International Standards for Drinking Water		WHO	
9	WHO	International Health Regulations		WHO	
10	WHO	Guidelines for Drinking Water Quality	1984	WHO	W37.101

## PRIORITY LIST FOR HEALTH TECHNICIANS

Course Text Books A  
ACCourse

### WATER

- 1 Environmental Health Engineering in the Tropics by Sandy Cairn-Cross & R Feacham. Publisher John Wiley & Sons 1983.
- 2 Water Treatment & Sanitation Simple Methods for Rural Areas by H T Mann & D Williamson. Publisher I T Publican 1983.
- 3 Rain Catchment Water Supply in Rural Africa by E Nissen-Petersen Publisher Hodder & Stoughton 1982.
- 4 Guidelines for Drinking Water Quality Vol. 1-3 by WHO & Published by WHO 1985.
- 5 Hand dug Wells by S B Watt & W E Wood. Publisher Intermediate Technology Publications London 1981.
- 6 Sanitation Without Water by Kilama McMillan 1985.
- 7 Jordan's Tropical Hygiene by W Wilkie Publisher Bailliere Tindall & Cox 1975.
- 8 Excreta Disposal for Rural Areas in Small Communities by Wagner & Lanoix Published by WHO 1958.
- 9 Health Hazards of the Human Environment by WHO 1972
- 10 Microbiology, Health and Hygiene by Akinsanya Publisher MacMillan Press 1980.
- 11 Control of Diseases in the Tropics by Davey & Wilson Publisher Levis Co. London 1980.
- 12 New Tropical Hygiene & Biology by Goodwin & Duggan Publisher Allen/Inwin 1978.

## MANAGEMENT

- 13 Rural Sanitation Planning & Approach by Oxfam  
Published by I I P Ltd. 1980.
- 14 Environmental Management of Urban Solid in Developing  
Countries by Sandra J Cointreau. Published by Urban  
Development Department 1982.
- 15 Methods for Gathering Socio-Cultural Data for Water  
Supply and Sanitation Projects by World Bank 1983.

## BUILDING TECHNOLOGY

- 16 Building Construction by McKay Published by Longman  
1970.
- 17 Equipment for Rural Workshops by J Royd Published by  
International Technical Publications 1978.
- 18 A Manual for Building Construction by Rev. Harold Dancy  
Published by International Technical Development Group  
Ltd. London 1973.
- 19 Appropriate Building Materials by Ronald Stulz  
Published by Skat 1981.

## REFERENCE BOOKS FOR HEALTH TECHNICIANS B

- 1 Simple Methods for the Treatment of Drinking Water by  
Gabriele Heber Publisher Vieweg & John 1985.
- 2 Rainwater Harvest by Arnold Pacey Publisher  
Intermediate Technology 1986.
- 3 Environmentally sound Small Scale Water Projects by Gus  
Tillman Publisher Codel Vita Publication 1981.
- 4 Sanitary Science Notes by H Hill Publisher H K Lewis  
Co. Ltd. 1957.
- 5 Drainage & Sanitary by E H Blakes Publisher Batsford Ltd  
London 1962.
- 6 Guideline for Planning Community Participation  
Activities in Water Supply by Anne Whyte. Published by  
WHO in 1986.
- 7 Community Education & Participation in the Slow Sand  
Filtration Bulletin 4 Published by WHO 1979.

- 8 Safe Water and Waste Disposal for Rural Health by Judy Bair Published by The National Demonstration Water Project 1982.
- 9 Bacteriology by Humphries Published by John Murray London 1974.
- 10 A Handbook for Village Health Educators by D Nyamwaya Published by Republic of Botswana 1985.
- 11 Construction of Buildings Vol. 1-2 by Barry Published by Crosby Lockwood Staples
- 12 Manual on Building Maintenance Vol.1 by Derek Miles Published by International
- 13 Environmental Pollution Control in Relation to Development Published by WHO 1985.
- 14 International Health Regulations by Delon.
- 15 Water, Health & Development by R Feacham Published by Trhmed Book Ltd.
- 16 Evaluation for Village Water Supply Planning by Sandy Cain-Cross Published by J Wiley & sons 1980.
- 17 Village Technology Handbook Published by Vita 1981.
- 18 Participation in Community Water Supply and Sanitation Progress by Technical Paper Series 12. Published by IRC 1984.
- 19 Evaluation for Village Water Supply Planning by Baldwin Published by John Wiley & Sons 1980.
- 20 Guidelines for Drinking Water Quality Vol.2 by WHO Published by WHO 1984.
- 21 Small Community Water Supply by WHO Published by WHO 1986.
- 22 Low Cost Water Supply by DHV & Published by DHV Consulting Engineers 1984.
- 23 Septic Tanks and Aqua Privies by Watt S B Published by International Technical Publications 1984.
- 24 Sanitation in Developing Countries by Arnold Facey Published by John Wiley & Sons 1978.

- 25 Water Treatment & Examination by W S Holden Published by Churchill 1970.
- 26 Rural Water Supply and Health by Malin Falken Mark Published by Scandinavian Institute of African Studies 1982.
- 27 Insects & Disease by Keith R Snow Published by Routhed G E & Kegan Paul 1974.
- 28 Helping Health Workers Learn by David Werner Published by Hesperian Foundation 1983.
- 29 Management of Hazardous Waste by WHO Published by WHO 1983.

Title: \_\_\_\_\_  
 \_\_\_\_\_

Author: \_\_\_\_\_

Publisher: \_\_\_\_\_ Date of Pub. \_\_\_\_\_

1. Main Subject Areas :- (Please circle as appropriate)

- |                     |   |   |
|---------------------|---|---|
| a) Water            | : | Urban Rural Irrigation Treatment Construction     |
| b) Sanitation       | : | Urban Rural Treatment Construction Solid Wastes   |
| c) Management       | : | Proj. Prep. & Impl. Financial Comm. participation |
| d) Health & Hygiene | : | Diseases & Control. Hyg. Prog. H. Education       |

2. Cadre (for which reviewed \_\_\_\_\_ level A, B, C, D.

3. Relevance (Circle as appropriate)

- |                           |         |          |      |
|---------------------------|---------|----------|------|
| a) To students curriculum | Poor    | Fair     | Good |
| b) To serving officers    | Poor    | Fair     | Good |
| c) Practical orientation  | Poor    | Fair     | Good |
| d) Is the level right?    | Too low | Too high | Good |

4. Subject Coverage (Circle as appropriate)

Are the subjects covered well?

- |                        |      |      |      |
|------------------------|------|------|------|
| Subj. 1 _____          | Poor | Fair | Good |
| Subj. 2 _____          | Poor | Fair | Good |
| Subj. 3 _____          | Poor | Fair | Good |
| Subj. 4 _____          | Poor | Fair | Good |
| Overall coverage _____ | Poor | Fair | Good |

5. Presentation (Circle as appropriate)

- |                                       |      |      |      |
|---------------------------------------|------|------|------|
| a) Text (writing style)               | Poor | Fair | Good |
| b) Illustrations (sufficient & clear) | Poor | Fair | Good |
| c) Overall presentation               | Poor | Fair | Good |

6. Final Classification

Suitable as: Not suitable Supplementary Reference Course Text Book

7. Rating: Rate book 0-3 at top of page; (circle No.; 3 = highest rating)

8. Put any other comments on reverse

## MODULE REQUIREMENTS

## (a) Modules for Water Sector Institutions

The Workshop agreed that 6 sets of Modules were needed of the institutions which were represented in the Workshop. These were to be combined with additional sets of participants notes to cater for the varying numbers of students in the various institutions. The requirements were as follows :-

Table 5

Institution	Module	Additional Participants Notes
<u>Kenya</u>		
1 University of Nbi	One complete set	2 sets of 30 x 17 Participants notes
<u>Tanzania</u>		
1 University of DSM	One complete set	1 set of 30 x 17 Participants notes
2 Ardhi Institute	One complete set	1 set of 30 x 17 Participants notes
3 RWRI + Ministry of Water	One complete set	2 sets of 30 x 17 Participants notes
<u>Uganda</u>		
1 Makerere University	One complete set	1 set of 30 x 17 Participants notes
2 WDD	One complete set	-

## MODULE REQUIREMENTS (Contn'd)

## (b) Modules for Health Sector Institutions

The following recommendation was adopted.

That each institution be given 1 No. complete set of modules and the Ministry of Health Headquarters in each be given a set too.

Country	Ministry H/Q	Institutions	Total
Kenya	1 No.	8 No.	9 No.
Tanzania	1 No.	9 No.	10 No.
Uganda	1 No.	2 No.	3 No.

Table 6

Institution	Module	Total for Country
<u>Kenya</u>		
1. Ministry of Health	One complete set	9 sets
2. College of Health Professions	"	
3.		
4.		
5.		
<u>Tanzania</u>		
1 University of DSM	One complete set	10 sets
2 Ardhi Institute	One complete set	
3 RWRI + Ministry of Water	One complete set	



<u>Uganda</u>		
1	Makerere University	One complete set: 3 sets
2	WDD	One complete set:

## RESEARCH PROGRAMMES

- Ardhi - Tanzania
- (1) Composting & Biogas. Since 1983. Min/Ardhi/Danida - Low fund
  - (2) Groundwater Pollution IDRC funded - 1987-1990
  - (3) Rainwater Catchment IDRC/Maji In pipeline.
- UDSM - Tanzania
- (1) Low Cost Urban Housing - low cost sanitation comp. No funds for San Structures & Foltus funded
  - (2) Solid Waste Management - no fundis ?GTZ
  - (3) Biogas - Evaluation of Performance; starting 1987 yrs IDRC funded.
  - (4) Pollution of Surface Water in DSM starting 87 - mid 89 IDRC
  - (5) Some others
- RWRI - Tanzania
- (1) Fluorosis: commenced 86 - GoT funded
  - (2) G-W-Recharge - Proposed
  - (3) Hvdro-Ram - "
  - (4) Windpumps - "
  - (5) Water Meters - "
- Makerere University - Uganda
- (1) Yield distribution in Pre-Cambrian formations 1986-88. No external funding Univ. of Makerere only
  - (2) Aquifer formation, lining & costs. 1987 - University of Makerere.
  - (3) Longterm effects of the drilling programme in Uganda. (Under consideration. Unicef/WDD 1987 )
- Uganda WDD
- (1) Hydro-rams. Govt/IDRC 85-88
  - (2) Hydro-geology 87-89 IDRC/Govt. Transmissivity/etc.

University of Nbi

- (1) PhD Fluorides in Kenya. Commenced 1979 - Kenya Govt./w funded; intermittent funding.
- (2) PhD Stab. Ponds. 'suspended'
- (3) New - Gravel bed flocculators & upflow filters. - Nat. Res. Council; commenced Aug. 1987 -
- (4) Indigenous Makrials for Water Treatment - Nat. Res. Council. Aug. 1987.

AMREF - Nairobi

- (1) Latrines - vents, slabs, commenced 86-87;
  - (2) Hygiene Ed. Materials 86-88
- SDC/GTZ funding.

A6 STANDARD FORM QUESTIONNAIRE EVALUATION SUMMARY

Name -----

(PLEASE TICK OR CIRCLE APPROPRIATE RESPONSE)

PART I

BOOK AND PUBLICATION REVIEW (6-9 May)

COMPONENT	USEFULNESS TO YOU				TIME ALLOCATED		
	Very useful	Useful	Useful in parts	Useless	Too long	About right	Too short
1 Country presentations	5	4				8	1
2 Identification of cadre tasks	5	3	1			8	1
3 Reviewing books and publications	7	2				1	8
4 Preparation of priority lists	5	2	2			6	2

5 Did you find the process of country presentation, task analysis review and priority listing appropriate?

Yes 6

No

Partly 3

Any suggestions for improvement or changes?

- Information on country presentation and other activity should have been sent to participants in advance to allow better preparation. 3
- Inadequate time for book review 1
- Send book list to participants in advance. 1
- Inadequate time for country presentations. 1

PART II

INTRODUCTION TO AUDIO-VISUAL MATERIALS AND THE NETWORK (10-12 May)

	USEFULNESS TO YOU				TIME ALLOCATED		
	Very useful	Useful	Useful in parts	Useless	Too long	About right	Too short
1 Background to Network	7	2				9	
2 Presentations with you as a "student"	4	4	1		1	7	1
3 Practice presentations	3	5	1			4	5
4 Review and preparation of lists	6	3				5	3
5 How useful was the film as a training tool	7		2			7	2

FART III

OVERALL EVALUATION

1.	How useful will your experience in Nyeri	Very useful	6
		Useful	1
		Useful in parts	2
		Useless	
2.	Was the overall programme in Nyeri	Too long?	3
		About right?	5
		Too short?	1
3.	How similar was the programme to what you expected before you came?	Identical	
		Similar	4
		Somewhat different	5
4.	Was the number of and variety of books/publications provided adequate?	Too many	
		Just right	4
		Inadequate	5
5.	Previously, how much use did you make of audio-visual materials in your teaching/training?	A lot	
		A little	5
		None	4
6.	Will you increase your use of audio-visual materials in the future?	Yes	8
		No	1

7.	Will some or all of the Network's materials be useful in your teaching/training?	All	5
		Some	4
		None	
8.	Did you learn anything new about teaching or training methods in Nyeri?	A lot	6
		A little	2
		Nothing	1
9.	Did you learn anything new about water supplies and sanitation in Nyeri?	A lot	2
		A little	6
		Nothing	1
10.	What subjects or activities would you have liked to include in this Workshop that were missing?		
		- Site visits	4
		- Recreational activities	3
		- Project Management	1
		- Data collection and analysis	1
		- Use of Unit Hydrograph	1
		- Water Modelling	1
		- Use of hydraulic rams	1
11.	Would it be useful to you to attend a follow-up Workshop next year?	Yes	9
		No	
12.	Did you find the accommodation and other facilities adequate?	Yes	4
		No	5
	If "No" please explain		
	- Full board should be replaced by bed and breakfast and per diem increased to allow more flexible eating arrangements.	4	
- Inadequate per diem	2		
- Inadequate arrangements and money for laundry	2		

- Inadequate recreational activity 1
- Inadequate time and information to prepare  
for the workshop 1
- Nyeri is too isolated 1



6 April 1986

REF: MNK/AW/EHU 127

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Dear Sir,

RE: Regional Workshop to Review Learning Materials for  
Water Institutions in E.A

In response to the concern expressed by the Principals and tutors of the Institutions in the Region over the inadequacy of the learning materials available to them at present, the Centre proposes to hold a Learning Materials Workshop from the 6th - 13th May. You are invited to nominate two participants to the Workshop who are directly involved in the in-service and pre-service training of technicians.

The aim of the workshop is to identify appropriate learning materials for use by the Institutions for their students and for serving officers. Following the workshop the Centre will offer assistance in finding donors for funding library sets for the institutions where necessary and will arrange for the stocking of copies in the AMREF Book Distribution Unit for sale at cost price in local currencies.

In pursuance of the above aim the workshop will review the books, journals and bulletins in current use by the Institutions, together with additional materials obtained by the Centre from publishers and information centres. The strategy proposed is that books are classified into the following categories:

1. Core textbooks: A limited range of basic textbooks which will need to be obtained in enough numbers to enable students to have ready access to a copy
2. Essential reference books: To cover the main topics of additional knowledge required by the students and supplied in reasonable numbers

3. Supplementary books: Books which provide a broader understanding of the topics covered but which are not considered essential reading

In order to reinforce that the books selected will meet the practical needs of the students and serving engineers and technicians it is proposed that the workshop will commence with brief presentations by the participants on the tasks of each cadre and their current training programmes.

Institution participants are requested to bring copies of the textbooks in current use together with curricula/syllabi for the cadres under their Instructions. Ministry participants are requested to bring job descriptions of the engineers and technicians to facilitate the task analysis discussions

Nominations for participants should reach the Regional Network Centre by the 25th April to enable arrangements for the Workshop to be finalized

We look forward to a continued co-operation.

Yours faithfully

---

NICHOLAS GREENACRE  
Head: Regional Network Centre for Water &  
Waste Management (E.A)

## Objectives and Strategy

### Objectives

To identify appropriate books in the following categories:

- i) Basic course text books
- ii) Essential reference books
- iii) Supplementary reading material  
for each cadre

### Strategy

1. Introductory presentations on the structure of the sector in each country, the tasks for each cadre and the training programmes for each cadre and current in-service training needs
2. Group discussions in two groups or more: to define common tasks, job descriptions and essential learning objectives for each cadre - undergraduate and in-service - identify short falls in literature.
3. Groups then review books completing a questionnaire for each book - individually done and then discussed. Groups draw up priority lists of books for the cadres concerned in each category i.e. Basic text, ref, supplementary.

No. of books viz a viz No. of students for each institution and No. required for in-service courses

Plenary session

Presentation by each group of its findings and recommendations

Preparation of final priority lists in each category

## Workshop Information

### 1. Date and Venue of the Workshop

The Workshop shall be held in Kenya between 6th to 13th May 1987. The specific venue shall be communicated to the Institutions/Ministries as soon as the arrangements for accommodation of the participants are finalized.

The workshop shall be divided in two parts. The first part shall cover the general book review and prioritizing of the same. This exercise shall be done between Wednesday 6th and Saturday 9th May 1987. The second part shall cover the review of audio visual training modules to evaluate their applicability to training institutions. This session shall be held between Monday 11th to Wednesday 13th May 1987. The second session is considered especially relevant to participants from the Universities who, after being shown how to use the modules, could be left by the Centre to organize the use of the modules themselves within their institutions. The Centre's responsibility may only be necessary in so far as the University may require assistance to acquire the relevant modules.

Consequently it is proposed that some of the participants may depart on 10th May 1987 while those who will wait for the module session shall depart on 14 May 1987

### 2. Nominations

Participants in the Workshop shall be drawn from the Key Water institutions in East Africa which are actively involved in the training of water engineers and technicians. Additional participation shall be invited from the relevant Ministries of water because they are the primary recipients of graduate water engineers and technicians. The expected participating institutions and Ministries from all the three countries are shown in the attached list. Each Institution/Ministry is requested to nominate the number(s) of candidate shown against their name

### 3. Cost of the Workshop

The cost of the Workshop shall be met by the Regional Network Centre. The cost of full board for the participants during the Workshop shall be covered by RNC. RNC shall also provide return air tickets for those participants travelling from Tanzania and Uganda. For participants coming from Kenya, reasonable travelling reimbursement shall be made to those participants who may come from outside Nairobi.

Any additional costs, pocket money etc. will be the responsibility of the participant or his Ministry/Institution and would not be covered by the Centre due to the limitations of the Workshop funding

Workshop Revised Programme(a) Regional Workshop to Review Learning Materials for  
Water Institutions in E.A

## Provisional Programme

Day	Date	Times	Activity
0	Tuesday		
1	Wednesday 6.5.86	08:30 - 10:00	Welcome and Introduction. Opening Registration
		10:00 - 10:30	Tea/Coffee Break
		10:30 - 11:00	- Election of Workshop Steering Committee and Chairman
			- Discussion of Provisional Programme & amendment if necessary. Division into groups
		11:00 - 12:30	Presentation by Kenya Institutes
		12:00 - 1:45	Lunch
		1:45 - 3:15	Presentation by Tanzanian Institutes
		3:15 - 3:45	Tea
		3:45 - 5:15	Presentation by Ugandan Institutes
		Evening	Free
2	Thursday 7.5.86	08:30 - 10:00	Group work. Definition of Cadre tasks, essential learning objectives, pre-service and in-service. Shortfalls in literature; type of books; subject areas inadequately covered.
		10:00 - 10:30	Tea
		10:30 - 12:00	" "
		12:30 - 12:30	Introduction of Review Questionnaires and Procedure
		12:30 - 1:45	Lunch

Day	Date	Times	
		1:45 - 4:45	Individual reviewing of books
		4:45 - 5:15	Plenary session - to discuss any problem or questions on the reviewing
		Evening	Individual reviewing of books
3	Friday 8.5.87	08:30 - 12:30	Individual reviewing of books
		12:30 - 1:45	Lunch
		1:45 - 5:15	Individual reviewing
4	Saturday 9.5.87	08:30 - 12:30	Group discussion of books reviewed individually: Group review and selection into categories. Identification of gaps that the books available do not cover. Separate country lists if necessary
		1:45 - 3:30	Plenary session: Presentation by groups of findings. Identification if possible of core books applicable to all cadres/countries. Discussion of follow-up. Who can buy. Who needs support.
5	Sunday 10.5.87	-	Free/Departure
6	Monday 11.5.87		Modules
7	Tuesday 12.5.86		Modules
8	Wednesday 13.5.86		Modules
9			Departure