

DEPS . DEPARTAMENTO DE ESTUDOS E PLANEAMENTO DA SAÚDE
(DEPARTMENT OF HEALTH STUDIES AND PLANNING - MINISTRY OF HEALTH - PORTUGAL)
WSSCC . WATER SUPPLY AND SANITATION COLLABORATIVE COUNCIL - WHO/UNDP

2nd INTERNATIONAL MEETING OF ENVIRONMENTAL
HEALTH ON WATER AND SANITATION FOR THE
AFRICAN LUSOPHONE COUNTRIES

CALOUSTE GULBENKIAN FOUNDATION, LISBON - 26 TO 28 MAY 1993

INFORMATION AND TRAINING OF ENVIRONMENTAL
HEALTH ON WATER AND SANITATION - SITUATION
ANALYSIS AND CAPACITY BUILDING

ASSESSMENT OF WATER AND SANITATION SECTOR

EDUCATION AND TRAINING FACILITIES AND NEEDS

ASSESSMENT OF THE SITUATION

CAPE VERDE

LISBON
MAY - 1993

824-CV93 - 19332

DEPS . DEPARTAMENTO DE ESTUDOS E PLANEAMENTO DA SAÚDE
(DEPARTMENT OF HEALTH STUDIES AND PLANNING - MINISTRY OF HEALTH - PORTUGAL)
WSSCC . WATER SUPPLY AND SANITATION COLLABORATIVE COUNCIL - WHO/UNDP

2nd INTERNATIONAL MEETING OF ENVIRONMENTAL
HEALTH ON WATER AND SANITATION FOR THE
AFRICAN LUSOPHONE COUNTRIES

CALOUSTE GULBENKIAN FOUNDATION, LISBON - 26 TO 28 MAY 1993

INFORMATION AND TRAINING OF ENVIRONMENTAL
HEALTH ON WATER AND SANITATION - SITUATION
ANALYSIS AND CAPACITY BUILDING

ASSESSMENT OF WATER AND SANITATION SECTOR
EDUCATION AND TRAINING FACILITIES AND NEEDS

ASSESSMENT OF THE SITUATION
CAPE VERDE

Prof. Ivanildo Hespanhol, WHO
Geneva

LISBON
MAY - 1993

CONTENTS

Background Page 1

The need for training in the WSS Sector..... Page 2

Recommendations for human resources
development in the WSS Sector of Cape Verde Page 3

The Lusophone Initiative Committee
from Cape Verde Page 7

Officials contacted Page 8

REPORT ON DUTY TRAVEL TO CAPE VERDE, 20 TO 27 MARCH 1993
IVANILDO HESPANHOL

THE LUSOPHONE INITIATIVE
ASSESSMENT OF THE EDUCATION AND TRAINING/CAPACITY
BUILDING SITUATION IN THE WATER SUPPLY & SANITATION SECTOR
REPUBLIC OF CAPE VERDE

BACKGROUND

The international meeting on Water Supply and Sanitation Decade Development was held in Lisbon from 19 to 22 April 1988 following a proposal made by the Water Supply and Sanitation Collaboration Council. The meeting was co-sponsored by the Government of Portugal; the Ministry of Economic Cooperation, Federal Republic of Germany; the United Nations Development Programme and the World Health Organization, and was aimed at the development of the water supply and sanitation sector of the Portuguese-speaking countries of Africa. The meeting was attended by representatives from Angola, Cape Verde, Guinea Bissau, Mozambique and Sao Tomé & Príncipe. Brazil also participated in the meeting to provide information on appropriate technology for the water and sanitation sector.

As a follow up to this meeting, the Collaborative council has launched the "Lusophone Initiative" aimed specifically at the development of capacity building in information and training for Portuguese-speaking African countries in the water supply and sanitation sector. This is a collaborative effort under execution by WHO, the Government of Portugal and the International Reference Centre for Water Supply and Sanitation, IRC. A Round Table has been planned to take place in Lisbon from 26 to 28 May 1993 to discuss the strategies for the implementation of a process leading to the achievement of the above objectives. Participants from all Portuguese-speaking countries of Africa, Portugal and Brazil, and of the concerned support and financing agencies will consider the propositions for the implementation of a programme for capacity building in training and information in the Portuguese-speaking countries of Africa. The assessment of the information management situation in these countries had been carried out by the IRC, based on a visit of consultants to two of the countries (Guinea-Bissau and Angola) as well as on available desk studies.

The objective of the mission to Cape Verde was to assess the education and training/capacity building situation, and to collaborate with national authorities in the preparation of a national plan of action for staff development in the water supply and sanitation sector.

THE NEED FOR TRAINING IN THE WATER SUPPLY AND SANITATION SECTOR

There is no formal training being provided at any level in Cape Verde as far as the water supply and sanitation sector is concerned. A few governmental institutions and UNICEF have been organizing informal training courses to cover several technical areas in the sector, as well as on activities related to promotion, motivation and increase of awareness in health-related matters. The Ministry of Health has no training programme in the water supply and sanitation sector, but works closely on training activities with UNICEF, providing support on sanitation courses and on health education and awareness.

The Ministry of Infrastructure and Transport, the National Institute of Water Resources and the City Councils (Camaras Municipais) of Cape Verde have been engaged in training activities in the past and have plans for providing special courses for their staff in charge of water supply and sanitation programmes. Attached as Annexes are four questionnaires filled out by the Ministry of Health, Ministry of Infrastructure and Transport, Institute of Water Resources and the Praia City Council reporting their past and planned activities on human resources development for the sector as well as the installations and facilities which can be made available for carrying out training courses in Cape Verde. Due to the short time available, information from the questionnaires is rather poor. However, during the discussions held with the representatives from these institutions, it has been made very clear that the sector will not be able to provide sustainable services to the community if human resources development in all levels is not fully implemented in Cape Verde. The attached Table summarizes the identified needs in training for the sector in Cape Verde. The suggested titles for training in association with educational levels and professional categories are merely indicative. The programmes for each one of the training courses suggested should be completed by experts in each particular field after discussion with local authorities.

CAPE VERDE - TRAINING NEEDS IN THE WATER SUPPLY AND SANITATION SECTOR

Institution/ Educational level	Ministry of Health	Ministry of Infrastructure and Transport	National Institute for Water Resources	City Councils
Graduate	<p>Medical Doctors and Microbiologists</p> <ul style="list-style-type: none"> - Water quality/Guidelines and standards - Water disinfection - Sanitation - Solid wastes - Vector control 	<p>Engineers</p> <ul style="list-style-type: none"> - Water supply - Supervision of waterworks - Operation - wastewater treatment plants and desalination plants - Pollution control - Environmental impact - Wastewater reuse - Tender documents 	<p>Engineers/Hydrologists</p> <ul style="list-style-type: none"> - Administration and planning of water resources - Water legislation - Wastewater reuse 	<p>Engineers/Economists</p> <ul style="list-style-type: none"> - Operation, water treatment plants - Operation & maintenance, water supply and wastewater collection networks, pumping stations - Cost recovery - Legislation, water and sanitation
Intermediate	<p>Laboratory Technicians (Water)</p> <ul style="list-style-type: none"> - Bacteriological examination - Physico-chemical analysis 	<p>Laboratory Technicians (Water + Wastewater)</p> <ul style="list-style-type: none"> - Bacteriological examination - Physico-chemical analysis <p>Water Technicians</p> <ul style="list-style-type: none"> - Operation and maintenance of water and wastewater treatment plants <p>Supervisors for Waterworks</p> <ul style="list-style-type: none"> - Hydraulic & electric installations - Water supply and wastewater networks - Materials & equipment 	<p>Laboratory Technicians (Water + Wastewater)</p> <ul style="list-style-type: none"> - Bacteriological examination - Physico-chemical analysis <p>Operators of Water Treatment Plants</p> <ul style="list-style-type: none"> - Water disinfection <p>Computer Technicians</p> <ul style="list-style-type: none"> - Data storage and processing - System analysis - Mathematical models for water resources planning 	<p>Operators of Water Distribution Systems</p> <ul style="list-style-type: none"> - Macrometering - Micrometering - Reparation and maintenance of water meters - Network/reservoir operation - Emergency situations

		<p>Supervisors for Waterworks</p> <ul style="list-style-type: none"> - Hydraulic & electric installations - Water supply and wastewater networks - Materials & equipment <p>Accountants</p> <ul style="list-style-type: none"> - Cost estimates - Economical appraisal <p>Computer Technicians</p> <ul style="list-style-type: none"> - Data storage and processing - System analysis for water distribution, wastewater and solid wastes systems - Mathematical models for design and operation of water supply and treatment systems 	<p>Computer Technicians</p> <ul style="list-style-type: none"> - Data storage and processing - System analysis - Mathematical models for water resources planning 	
Auxiliary	<p>Sanitary Inspectors</p> <ul style="list-style-type: none"> - Water quality and disease - Water disinfection - Latrine construction - Solid wastes - Food safety - Inspection of industrial and commercial installations - Sanitary inspection <p>Laboratory Technicians (Water)</p> <ul style="list-style-type: none"> - Glassware handling - Sample collection and transportation - Data reporting - Repair and maintenance of equipment - Laboratory maintenance 	<p>Laboratory Technicians (Water + Wastewater)</p> <ul style="list-style-type: none"> - Glassware handling - Sample collection and transportation - Data reporting - Repair and maintenance of equipment - Laboratory maintenance 	<p>Laboratory Technicians (Water + Wastewater)</p> <ul style="list-style-type: none"> - Glassware handling - Sample collection and transportation - Data recording - Repair and maintenance of equipment - Laboratory maintenance 	<p>Laboratory Technicians (Water + Wastewater)</p> <ul style="list-style-type: none"> - Glassware handling - Sample collection and transportation - Data recording - Repair and maintenance of equipment - Laboratory maintenance <p>Sanitary Inspectors</p> <ul style="list-style-type: none"> - Water quality and disease - Water disinfection - Basic sanitation: latrines, solid wastes, food safety, vector control

RECOMMENDATIONS FOR HUMAN RESOURCES DEVELOPMENT IN THE WATER SUPPLY AND SANITATION SECTOR OF CAPE VERDE

Cape Verde is located in a zone of long drought periods which dramatically shortens the available water resources. This picture is worsened by an accelerating urban development and expansion of agricultural activities which is leading to a substantial increase on water demand.

In addition to the great scarcity of water resources, there are many other constraints hampering the development of the water supply and sanitation sector. One of the most significant of these restrictive factors is the lack of qualified personnel at all levels. Aiming at the development of technical and administrative capacity of the water supply and sanitation sector in Cape Verde, it is strongly recommended that a programme on education and training is fully implemented according to the following:

I. FIRST PHASE - 1993/1994

This phase should concentrate on courses of short duration (one to two weeks), and should deal with specific subjects. It should be directed to trainees in order that the courses can be replicated afterwards by nationals with the support of external consultants. Subject items for this programme which will cover most of the training needs in the country are the following:

A. GRADUATION LEVEL

- Basic Water Supply and Sanitation for Medical Doctors and Microbiologists:

- o Guidelines and standards for water quality
- o Surveillance of drinking water quality
- o Water treatment - disinfection
- o Wastewater and excreta treatment disposal
- o Solid wastes
- o Food safety
- o Vector control
- o Pollution control

- **Water Resources Management**
 - o Water uses
 - o Water resources management systems
 - o Water resources augmentation and preservation
 - o Use of low quality waters (drainage waters, brackish waters and wastewater)
 - o Legislation
 - o Concessions/charges/cost recovery

- **Institutional, Economical, Legal and Administrative Aspects of Water Resources**
 - o Administration of water authorities
 - o Tender documents
 - o Supervision of public works
 - o Cost recovery

- **Operation and Maintenance of Water Treatment Plants**

- **Operation and Maintenance of Wastewater Treatment Plants**

- **Operation and Maintenance of Water Supply Systems**

- **Operation and Maintenance of Wastewater Collection Systems**

- **Health, Environmental, Technical, Institutional and Socio-Economic Aspects of the Use of Treated Wastewater for Irrigation**

- B. **INTERMEDIATE AND AUXILIARY LEVELS**
 - **Water and Wastewater Analysis**
 - o Bacteriological examination
 - o Physico-chemical analysis
 - o Analytical quality control
 - o Sample collection and transportation
 - o Laboratory maintenance

- o Data reporting

Basic Water Supply and Sanitation

- o Water quality
- o Characteristics of domestic and industrial wastewaters
- o Water and disease
- o Water uses
- o Low-cost water supply and sanitation systems
- o Water and wastewater treatment
- o Urban drainage
- o Solid wastes
- o Food safety
- o Vector control

Waterworks and Water Systems

- o Materials and equipment
- o Hydraulic and electric installations
- o Macrometering and micrometering
- o Repair and maintenance of water meters
- o Technical inventory
- o Mapping of piping systems
- o Operation and maintenance

Computer Techniques Applied to Sanitary Engineering

- o Data storage and recovery
- o Presentation of statistically treated data
- o Financial analysis
- o System optimization (water supply, wastewater and solid wastes collection)
- o Mathematical models
- o Metering, billing and collecting
- o Technical inventory
- o Mapping of piping systems

2. SECOND PHASE 1994/1996

There are several schools and institutes in Cape Verde providing intermediate training in several sectors. Some of them are:

- **Escola Industrial e Comercial do Mindelo**, which provides training in accounting, computer science, construction of buildings, electricity, mechanics, etc.
- **Escola de Belas Artes e Oficinas** on carpentry, plumbing, topography, etc. This school, located in Santiago is administered by the Ministry of Education. It is equipped with several classrooms and dormitories to lodge students.
- **Escola de Formação de Professores**, dedicated to the training of teachers for college. It includes the disciplines of mathematics, history, geography, phisico-chemistry, etc.
- **INIT - Instituto Nacional de Investigação Tecnológica**. This institute is presently operating an experimental plant on wastewater treatment and reuse for irrigation. Resources available include an almost complete laboratory for water and wastewater analysis.
- **INIDA - Instituto Nacional de Investigação e Desenvolvimento Agrario**, in Sao Jorge, is a training centre in agronomy, topography, forestry protection, etc. This institute can also accommodate several students during short-term training courses.
- **Centro Agrícola de Afonso Martinho** in Santo Antao, is under the Ministry of Agriculture. Has a reasonably installed laboratory for water quality control and food safety control.
- **Escola Técnica da Praia** which is to begin operation in 1994.

To provide training on a continuous basis to the water supply and sanitation sector, intermediate courses on water supply and sanitation could be implemented in one of these schools or institutions. Another option is that courses in the water supply and sanitation sector

be offered in conjunction by two or three of the schools or institutes. For example, a course on analytical chemistry and water bacteriology could be established in conjunction by the Escola de Formação de Professores (through the extension of its courses in physico-chemistry), and the Instituto Nacional de Investigação Tecnológica which would facilitate its laboratory and pilot plant for practical and experimental activities, and its installations to lodge students from other islands of the country.

3. THIRD PHASE - 1995/1998

Supported by the experience gained from the short-term training courses and the implementation of training packages within existing schools and institutes, a national training centre for the water supply and sanitation is to be established in Cape Verde. This centre may have similar characteristics as the centre operating in Maputo, Mozambique (Centro de Formação Profissional da Direção de Aguas - Ministerio da Construção e Agua), and may provide training at the intermediate level to professionals from the African west coast Portuguese-speaking countries: Guinea Bissau, Sao Tomé and Príncipe and Angola.

THE LUSOPHONE INITIATIVE COMMITTEE FOR CAPE VERDE

During my mission, a committee was established to prepare a training programme to be presented and discussed during the Portugal meeting (Lisbon 26 to 28 May 1993). This committee is composed of the following representatives of the related institutions from Cape Verde.

- Dra. Maria de Lourdes Monteiro, Ministry of Health (Coordinator)
- Eng. Artur Brazao, Praia City Council
- Agromet. Maria Stella Fortes Benchimol, National Institute of Water Resources
- Arq. Albertino R. Rivera Jesus, Ministry of Infrastructure and Transport.

This committee will prepare, in consultation with their respective institutes, a proposal for training/capacity building in the water supply and sanitation sector, according to the three phases discussed above. The committee will also indicate the names of the representatives from Cape Verde who will present and discuss the proposals at the Lisbon meeting.

OFFICIALS CONTACTED

Dr Carlos Tiny
WHO Representative
P.O. Box 62, Praia, Cape Verde
Tel.: (00 238) 61 57 38
Fax.: 61 30 93

Dr Julio Barros Andrade
Director Geral de Saude
Ministerio da Saude
P.O. Box 47, Praia, Cape Verde
Tel.: (00 238) 61 57 23/4
Fax.: 61 39 91

Dr Pericles Africano Lima Barros
Presidente, Instituto Nacional de Gestao dos Recursos Hidricos
P.O. Box 50, Praia, Cape Verde
Tel.: (00 238) 61 39 79 (office); 61 11 57 (Home)
Fax.: 61 30 47

Eng. Gabriel E. Evora
Director Geral
Direcção Geral do Ordenamento do Territorio e Ambiente
Ministerio das Infraestruturas e Transporte
P.O. Box 114, Ponta Belem, Praia
Tel.: (00 238) 61 57 09
Fax.: 61 56 99
Telex: 61 60 78

Eng. Artur Brazao
Director do Serviço de Saneamento, Municipio de Praia
Praça Alexandre Albuquerque
P.O. Box 108, Praia, Cape Verde
Tel.: (00 238) 61 23 88 (direct) e 61 24 09 (pabx)
Fax.: 61 12 42

Dr Ildo A.S. Carvalho
Director, Gabinete de Estudos e Planeamento
Ministerio da Saude
P.O. Box 47, Praia
Tel.: (00 238) 61 15 09
Fax.: 61 39 91
Telex: 6059 MSAS

Dra Maria de Lourdes Monteiro
Responsavel pelo Programa de Controle de Doenças
Diarreicas, Ministerio da Saude
P.O. Box 47, Praia
Tel.: (00 238) 61 31 12

Arq. Albertino R. Rivera Jesus
Director do Departamento do Ordenamento do Territorio
Ministerio das Infraestruturas e Transportes
Direcção Geral do Ordenamento do Territorio e Ambiente
P.O. Box 114, Praia
Tel.: (00 238) 61 57 09/61 57 04
Fax.: 61 56 99
Telex: 61 60 78

Enga. Maria de Lourdes Monteiro Lima
Vereador, Camara Municipal da Praia
Praça Alexandre Albuquerque
P.O. Box 108, Praia
Tel.: (00 238) 61 30 47
Fax: 61 12 42

Agromete. D. Maria Stella Fortes Benchimol
Diretora do Serviço de Agua potavel e Tratamento de Agua
Instituto Nacional de Gestao de Recursos Hidricos
P.O. Box 50, Praia
Tel.: (00 238) 61 39 74
Fax: 61 30 47

Eng. Nuno Melo Egidio
Chargé de Programme Eau & Assainissement
UNICEF
P.O. Box 263, Praia
Tel.: (00 238) 61 15 35/61 15 38
Fax: 61 34 87
Telex: 6007 UNICEF CV

Eng. Hdr. Claudio Lopes Dos Santos
UNICEF
Vila da Ribeira Grande, Santo Antao
Tel: (00 238) 21 12 04/21 12 54

Mr Pierre Entienne Ly
UNDP Représentant Resident du PNUD et Coordinateur Resident
du Système des Nations Unies
Casa Moeda, P.O. Box 62
Praia
Tel: (00 238) 61 57 43