Appendix E
Use of Non-technical Solutions

BASIC DESIGN REQUIREMENTS FOR OPERATING THEATRES

In a field widely influenced by technical consultants, architects and engineers, there is an increasing tendency for technical solutions to be proposed for natural problems. Automatic door openers and closers, hand-drying machines, automatic bed-pan washers, temperature monitors, and air-conditioning systems are being introduced into health facilities at all levels. When functioning efficiently and effectively, these devices give satisfaction all round. However, problems usually occur when any form of maintenance is required.

In this exciting environment perhaps we may rely too much on technical solutions? For example, to claim that air-conditioning systems in operating theatres will simultaneously control the temperature of the room, remove toxic gases, guarantee the quality of the air and control the movement of bacteria around the different rooms of the operating theatre suite is certainly optimistic and may be credulous.

Here we hope to show how conditions in operating theatres can be improved and sustained by non-technical means.

When constructing new operating theatres the aim must be to provide good working conditions for the staff, good conditions of hygiene for the patients, and secure conditions of safety against explosions and fires for all.

Good Working Conditions
- Temperature 22-24^0 C
- Unpolluted air
- Good lighting

Good Hygienic Conditions
- Volume of air around operating area should be close to sterile
- Control of bacteria

Safety against Fire and Explosions
- Minimal amounts of explosive gases
- Minimal danger of electrical sparks

GOOD WORKING CONDITIONS

Temperature in the operating theatre can be controlled by a correctly-designed air-conditioning system. This should go some way to controlling pollution, assuming that the system is properly maintained. Electrical ventilation and ceiling fans can be less effective but more economical alternatives. Satisfactory lighting can be best provided by electricity.

However, no matter how many resources are available to design, provide and maintain the system, the passive means of providing good working conditions should be recognised. These include:

- Specifying the good insulation of buildings with ventilation of roof space.
- Ensuring the correct orientation of buildings with shading of vertical walls and windows.
- Insisting on the good natural ventilation of all rooms.
- Limiting the use of individual theatres (using over more weekdays, or building more theatres).
- Limiting the number of people in the theatre.
- Testing the anaesthetic equipment for leaks.
- Instructing staff in the correct use of facilities.
- Providing correct maintenance.

GOOD HYGIENIC CONDITIONS

Some important means are available for ensuring good conditions of hygiene by passive means. These are:

- Careful personal cleanliness.
- Correct procedures for staff with regard to cleaning.
- Strict observance of clean and dirty zones.
- Careful handling of sterile packs.
- Reasonable time between operations.
- Separation of septic cases.
- Floors and walls should be easily cleanable.
- Minimum of equipment standing on the floors.
- Surplus old equipment should be given away.
- Shelving should be durable, easily-cleaned and 5 cm away from walls.
- No ledges to collect dust.
- Space should be provided underneath internal doors.
- No sliding doors.
- Number of people in theatre kept to minimum.

SAFETY AGAINST FIRE AND EXPLOSIONS

Aside from the provision of fire detectors and sprinklers, only passive means are available for ensuring that conditions of safety in the operating theatre are acceptable. These are:

- Not using explosive gases.
- Using leak-proof connections and regularly checking for leaks.
- Using spark-proof electrical contacts, placing socket outlets at high level.
- Not using electrical extension cables.
- Not using unprotected electrical suction units and hand-tools.
- Anti-static flooring, shoes, anaesthetic masks and tubes.
- Good natural ventilation.
- Maintenance of electrical equipment.
- orrect treatment of floors to maintain anti-static properties.
- Appropriate instruction of all staff.

Appendix F
Calculating the Need for In-patient Beds

Many variables affect the calculation of the need for in-patient beds; for the overall requirement of beds in a defined district, the following formulas can be used. Normally one should aim for an average bed occupancy rate of 80 percent when planning for the number of beds in a health facility.

CALCULATION

(A) = Catchment population to be served.
In our example 120 000.

(B) = Annual admissions / 000 population.
This figure is based on present statistics from the area or from the province to which the area belongs.
In this example 42 / 000.

(C) = Existing total number of admissions per year = (A) x (B).
Example: 120 x 42 = 5 040.

(D) = Average length of stay in hospital per admission.
In our example: 8 days

(E) = Total number of bed-days at present a year = (C) x (D).
Example: 5 040 x 8 = 40 320.

(F) = Average number of bed occupied per day = (E) / 365.
Example: 40 320 / 365 = 110 beds.

Therefore:

(F) / 0.80 = Number of beds required to provide for an average occupancy rate of 80 percent.
Example: 110 / 0.80 = 138 beds.

In calculating the number of beds required in a new hospital, annual increase in population must be allowed for. It can be expected that with a new facility the number of admissions to hospital will increase. At the same time the better conditions provided will imply a reduction of the average length of stay. In considering these variables, any assumptions arrived at should be founded on professional experience.

Appendix G
Example of Facility Use and Capacity Figures

It is often difficult for the Client to calculate the extent and number of services which will be required at different facilities. Where powerful donors are involved with interests in specific areas, there is often the risk that particular services (for example mother and child care) will be over-provided to the detriment of other services.

The following figures were collected on many field visits in Mozambique during the civil war. The figures are shown as an example of the relationship between different types of data and are not presented as an example of the efficient use of health services.

FACILITY USE AND CAPACITY FIGURES

General

The following figures were assembled from a number of sources, partly from the statistics available in the Ministry of Health in Maputo, partly reflecting Ministry's policy for the development and utilisation of rural health services in Mozambique. The figures were also checked with observations made whilst carring out field work at a large number of facilities in all parts of the country.

The original intention in developing these figures was to provide an aid for dimensioning new rural health institutions and with this purpose in mind they were checked and where necessary adjusted, during a study tour of 18 health institutions in Mozambique, undertaken in 1983.

It must be pointed out that the figures themselves are for general use, and will always be the subject of variations due to seasonal, geographical and topological conditions. They must also in future use be the subject of constant reappraisal, to take account of the constant developments taking place in the morbidity patterns within the population, and the changing aims and policies being defined for the rural health network in Mozambique.

While emphasising that the figures in themselves are not, (and most probably never will be able to be) very precise, it is suggested that they can serve a useful purpose in a number of different ways.

A. First and foremost they can be used for the purpose for which they were originally intended, that is in the drawing up of room schedules for new health institutions in rural areas.

B. In the same way the figures can be used in evaluating the uses which can be made of existing rural health institutions and thereby as a means of giving an indication of the possibility of incorporating extra services in existing rural health institutions as requested.

C. Further the figures can also form a basis for comparing the level of health service provision in different rural areas and finally as a basis for rationalising and centralizing activities in the rural health service network taking into account the requirements of the population, and economical considerations.

A. USE OF HEALTH FACILITIES BY RURAL POPULATION

A1. Visits to health facilities per day	= 0,6% of population
A2. Mother and child visits per day	= 0,15% of population
A3. Dentists visits	= 0,12% of population
A4. Admissions to wards	= 0,016% of population
of which maternity	= 0,005% of population
surgical medical	= 0,013% of population
A5. Number of births per day	= 0,014% of population
A6. Number of deaths per day	= 0,005% of population

The above figures are based on the following:

A1. Visits to institutions	- Average 1,5 visits per person per year, 250 days per year.
A2. Mother and child visits	- 20% of population age 0-5 years, 4,8 visits per year, 40% attending, 250 days per year.
A3. Dentists visits	- 30% of population attend average 1 time per year, 250 days per year.
A4. Admissions	- 1 bed per 1000 population, average length of stay 5 days. 80% occupancy.
Maternity admissions	- 40 births per 1000 population, 40% of all births in hospital.
Surgical/medical	- Total admissions, less maternity
A5. Births	- 50 births per 1000 population
A6. Deaths	- 20 deaths per 1000 population

SEASONAL VARIATIONS.

	Maximum	Minimum
A1. Visits to institutions	+ 20%	- 20%
A2. Mother and child visits	+ 20%	- 20%
A3. Dentists visits	+ 10%	- 10%
A4. Admissions	+ 15%	- 15%
Maternity	+ 20%	- 20%
Surgical/medical	+ 10%	- 10%

VARIATIONS DUE TO DISTANCE OF POPULATION FROM FACILITIES

	10 km or less	30 km or less	over 20 km
A1. Visits to institutions	+ 10%	-	- 20%
A2. Mother and child visits	+ 10%	-	- 50%
A3. Dentists visits	+ 10%	-	- 50%
A4. Admissions to wards	+ 10%	-	- 20%

B. PATIENTS REQUIREMENTS FROM HEALTH FACILITIES

		% of total No. of visits
B1.	First consultations	100
B2.	Injections/treatments	40
B3.	Dressings	10
B4.	Consultations with doctor	20
B5.	Laboratory tests	15
B6.	Prescriptions	85
B7.	X-rays	10
B8.	Minor operations	2
B9.	Major operations	2
B10.	Emergencies	x)

This is difficult to calculate statistically as often emergency is systematically used for 1. consultations. Some administrative limitation of patient's access to emergency could be considered.

C: TYPICAL PRODUCTION/CAPACITY FIGURES FOR HEALTH PERSONNEL/FACILITIES PER DAY

		Min.	Max.
C1.	1st consultations per health technician/nurse	70	140
C2.	MCH consultations per health technician/nurse	40	70
C3.	Maternity consultations per midwife	40	70
C4.	Injections per nurse	40	105
C5.	Dressings per nurse/health technician		84
C6.	Consultations per doctor	40	70
C7.	Laboratory tests per laboratory technician	20	45
C8.	X-rays per X-ray machine	10	48
C9.	Operations per theatre (major + minor)	-	12
C10.	Prescriptions per pharmacist	-	210
C11.	Births per midwife	-	3
C12.	Consultations per dentist	-	30

The above figures are based on the following:

C1. Average 3 minutes per consultation per 7 hour day
C2. Average 6 minutes per consultation per 7 hour day
C3. Average 6 minutes per consultation per 7 hour day
C4. Average 4 minutes per consultation per 7 hour day
C5. Average 5 minutes per consultation per 7 hour day
C6. Average 6 minutes per consultation per 7 hour day
C7. Reference WHO offset publication number 72
C8. -
C9. 8-16 per day depending on complication
C10. Average 2 minutes per prescription per 7 hour day
C11. -
C12. 15-20 minutes per consultation per 7 hour day.

D. KEY PROVISION FIGURES FOR NUMBER OF INHABITANTS PER HEALTH WORKER/FUNCTION

D1. A health technician can see 120 patients a day
(120 is 100% of 120)
(120 is 0.6% of 20,000)

Therefore there should be 1 full time health technician per 20,000 inhabitants for consultations.

D2. A doctor can see 60 patients a day
(60 is 20% of 300)
(300 is 0.6% of 50.000)

Therefore there should be 1 doctor per 50,000 inhabitants for consultations.

D3. 1 laboratory technician can do 35 lab. tests per day.
(35 is 15% of 233)
(233 is 0.6% of 38,000).

Therefore there should be 1 lab. technician per 38,000 inhabitants.

D4. 1 x-ray can do 40 tests per day
(40 is 10% of 400)
(400 is 0.6% of 66,000)

Therefore there should be 1 x-ray machine per 60,000 inhabitants.

D5. 1 operating theatre can do 12 operations per day
(12 is 2% of 600)
(600 is 0.6% of 160,000)

Therefore there should be 1 operating theatre per 160,000 population.

If 80% of operations in theatre are on in-patients and average bed stay = 8 days then 1 operating theatre will serve 75 surgical beds.

(If 30% of all beds are surgical, and there are 1,2 beds per 100 population, then there should be 1 theatre per 100,000 population. Using alternative method of calculation).

D6. A health technician can see 70 MCH patients per day
(70 is 100% of 70)
(70 is 0,3% of 23,000)

Therefore there should be 1 full time health technician per 20,000 inhabitants. (The difference here is between actual use as shown in A2, and anticipated future use).

D7. Births in hospitals.
A midwife can assist at 2 births per day.
(2 births are 0,003% of 40,000)

Therefore there should be 1 midwife per 40,000 population. (i.e. in health institutions).

D8. Dentists can treat 30 patients per day.
(30 patients are 0,12% of 25,000).

Therefore there should be 1 dentist per 25,000 population.

D9. Admissions: There should be 1,2 general acute beds/100 population

Therefore there should be 120 beds for 10,000 population.
Of these: 20 beds should be maternity. (According to births)
Plus an extra 6 beds in emergency (5% of all beds).

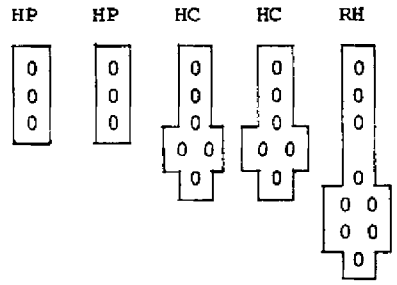
APPLICATION OF THE FACILITY USE AND CAPACITY FIGURES.

Using the figures given in section A-D, the theoretical provision of health facilities for a rural population of 100,000 inhabitants can be established as follows:

Technicians for general consultations	= 5
Nurses for injections and dressings	= 5
Pharmacists	= 5
Dentists	= 4
Laboratory technicians	= 3
X-ray machines	= 2
Doctors for consultations	= 2
Operating theatres	= 1

Midwives are not included here due to the reevaluation of previous policy.

The distribution of these medical staff and functions could be for example:



Key: HP = Health Post
HC = Health Centre
RH = Rural Hospital

Obviously where wards are provided, extra staff will be required.

The above model does not take into account problems such as communications and transport, which of course must also be considered when applying the systems in practice.

Appendix H
Setting Priorities

The different users involved in a health facility construction project may each have very different ideas of the priorities which should be given to different types of intervention. Some may be hoping for the latest types of diagnostic equipment, others for improved staff housing, others may be aware that the leaking roofs seriously reduce the efficiency of the services provided in the institution. The following notes are included to assist in formulating project priorities.

Issues to be considered when inspecting existing facilities

Two governing concerns are:

- The suitability of the buildings, installations and equipment for providing the health services required,
- The influence of the spatial and functional aspects of the buildings (and the condition in which these have been maintained), on the quality and quantity of the health services provided to the population.

The separate issues will concern primarily:

Space,
Function, and
Hygiene.

These will lead to considerations of:

Construction,
Building Finishes,
Technical Installations.

The next key issue is:

Availability and condition of medical and non-medical equipment.

A universal and essential field for monitoring will be:

Cleaning,
Maintenance, and the need for improvements.

Any interventions should use the following order:

Priority 1: Make urgent repairs where the buildings and contents are in danger of serious damage. For example, where there are holes in the roof, or where there are leaks in water pipes and plumbing. (Water is the most destructive element for buildings). The same urgency applies where there are serious cracks in walls and floors due to earth movement.

Priority 2: Make repairs where function conditions are unacceptable and the buildings are inefficient.

For example, where hygiene conditions are unacceptable. Where it is difficult to clean (as where floors are damaged), or where sterilising and sanitary equipment does not work.

Priority 3: Take action to improve efficiency and reduce running costs.
For example, to improve insulation or provide more efficient heating in order to reduce the use of energy.
To reduce the use of water.
To make laboratory tests more reliable
To reduce cross-infection.
Here, the provision of better housing as a means to improve staff morale can be considered

Priority 4: Provide needed facilities which will improve the quality of the services provided as well as efficiency.
For example, improving sanitary conditions, providing space where it is not possible to properly separate infectious patients (particularly where there are no functioning patient toilets) or where the staff are not able to correctly supervise activities.

Appendix J
The Re-use of Existing Buildings

Although countries differ and the hopes regarding health infrastructure vary significantly, similar conditions are often observed when visiting health facilities. There are important lessons to be learned from country-to-country especially on the implications of the re-use of existing buildings.

In many places, existing health buildings are of varying quality, particularly from a functional point of view, but their fabric is usually solid, even after many years of neglect or even disuse. Even in colonial times, buildings for health services in Mozambique were generally well-sited and solidly constructed.

Depending on the age of the building, in most cases conventional repair work will bring the buildings back to reasonable condition.

Functionally however, these buildings are often seriously deficient. Comparing their functional standards with those proposed for the standard-type plans described, we see the greatest differences in the following areas:

- Wards, which are usually the multi-bed type with little possibility of isolating patients, or achieving flexibility of allocation. Wards usually lack the essential facilities for achieving good hygienic conditions.
- Theatres, in which it is difficult to maintain correct hygienic conditions, and where the theatres are often closely connected to other traffic-ways and functions in the hospital.
- X-ray rooms, which are often unsatisfactory especially as to protection of radiologists and passers-by from radiation, and where the equipment and electrical installations are often dilapidated, and sometimes dangerous.
- Laboratories, which (when existing at all as defined locations) are often inadequate in space, location, equipment and necessary installations.

In existing buildings, many different functions are usually collected together in single blocks; as a result, separate extension of individual facilities is very difficult. Where there is more than one block, connections between buildings are usually inadequate, often being neither paved or covered. Over and above the problems and inconvenience for patients and staff there is often an increased danger of soil erosion.

In most existing rural health facilities in Mozambique, the buildings are :

- Adequate for use as offices, consulting rooms, class-rooms, stores, dispensaries and similar purposes.
- Inadequate for use as wards, operating theatres, medical services facilities, or to meet the usual requirements for in-patients.

Proposed procedure

The following sequence of activities will usually be relevant.

	Activity	Effect on recurrent costs
1	Establish circulation pattern of covered walkways between existing blocks (allowing for future connections to new buildings).	Negative, should improve quality and efficiency and prolong the life of trolleys and containers.
2	Provide acceptable accommodation for staff.	Neutral, should improve quality and efficiency.
3	Construct new wards.	Neutral if bed numbers stay the same, may well imply savings in staff with efficient design.
4	Construct new operating theatres, X-ray, laboratory, maternity, delivery and other facilities.	Neutral, may imply slight increases if equipment which did not work is now functioning.
5	Convert existing facilities to out- patients, administration, stores and related areas.	Neutral, but with proviso as no 4.

Appendix K
Checklist for Approving Design Proposals for Hospital Projects

After the formulation of the Design Brief, the most important task for the Client is to review and approve the proposals submitted by the Architect and Engineer. This is not always easy. Problems of time and manpower resources, and difficulty in understanding drawings or other information are common reasons for the serious mistakes which occur.

1. Prerequisites

Before beginning to review the drawings, it is important to be aware of the information on which the drawings are based.

- What was asked for in the Brief?
- Was an operational policy document forwarded?
- Are there any cost limits?
- Was a maximum area in square metres stated?
- How much will each square metre cost to build?
- How many staff will work in the departments in question?
- What comments were made to earlier submissions on this project?

2. Drawings

Drawings have to be understandable. As the Client, if you find drawings difficult to read, or cannot easily see where there are door and window openings, or cannot see the difference between internal and external areas, ask for explanations. If you do not understand the drawings (and there is no-one at hand to assist you) send the drawings back and ask for better drawings to be submitted.

All drawings should show:

- Scale,
- North-point,
- Total gross area in square metres,
- Clear images, renderings, plans, sections or views of existing and proposed buildings.

3 Location Plan / Site Plan

It is most important to exhibit the new departments or buildings on the site as a whole, and with the position of adjacent departments / buildings clearly delineated.
Check that:

- All habitable rooms face due north or due south;
- Existing site zoning—of out-patient areas, in-patient areas, medical services, kitchens-laundries-stores-workshops—is maintained;
- Visitors and out-patients have no access to internal hospital areas or areas with high security requirements;

- The new buildings are so placed on the site to provide for future extensions;
- Entrances to the new departments are easily located by visitors and can be correctly controlled by staff;
- Adequate waiting areas are provided close to entrances;
- Internal court-yards / light-wells have ample access for gardening, maintenance, fire-fighting.

4 Layout Plans 1:100

The layout plans at 1:100 should show all internal walls and partitions, and should indicate which walls go full height to the ceiling, and which are stub walls. All external and internal door and window openings should be clearly shown, as should door openings and the direction of the door swings.

Check further that:

- The area shown is the area which has been budgeted for;
- Corridors and circulation ways are economically planned, and will facilitate the correct movement of people —particularly if patients are involved— around the department;
- There are only necessary entrances to the department, and that these can be satisfactorily supervised by the staff;
- There is adequate room for waiting where required;
- Internal corridors have natural daylight and good natural ventilation;
- All rooms including toilets and internal lobbies have direct natural daylight and natural ventilation;
- Toilets in areas where water supply problems may arise are approached from the outside;
- The size of the department, the numbers of toilets, offices and work-spaces all reflect and relate to the number of people who will be employed;
- Clean functions are kept separate from dirty functions;
- The production (functional) process is logically expressed;
- The movement of staff when at work will be kept to a minimum;
- The department is correctly zoned, with, for example, patient/public areas, service areas, staff areas, restricted areas, and so on, all correctly separated;
- Rooms are big enough for the equipment which is to be provided;
- Similar functions are provided with the same size of room;
- The architects provide an environment which is pleasant yet efficient.

5 General Comments

Some general recommendations:

- As the Client, insist that you are given the time you need to review the drawings without haste or pressure.
- Drawings presented at meetings must be comprehensible and complete.
- Please do not give answers on behalf of the users before you have discussed the proposals with them.
- Resist any impulse to redesign half-finished proposals at a meeting where a large number of people are present. This never works.
- Always hold your internal discussions before you arrive for the meeting, or you will risk confusing the Architects (who may be inclined to listen to those arguments which best suit their own purposes).
- Refuse to be persuaded to give approvals hastily or without proper consultation between you and other stakeholders. If possible, agree a standard review/approval time with the Architect for this.

Appendix L
Contents of a Masterplan

Before proposals are made for any changes (no matter how small) to existing health institutions, Masterplans should have been drawn up for the long-term development of the site and buildings. This ensures that short-time activities do not limit future possibilities. Fortunately, a Masterplan can be surveyed and presented in a comparatively short time, using limited data and few specialised resources.

A Masterplan is a series of documents which describe the framework for the future development of a health institution. It is based on easily accessible data, and should contain the following information:

A. Basic Data
- Catchment population.
- Distance to other health institutions.
- Present utilisation.
- Present staffing.

B Existing Conditions
- The present layout of the complex.
- Existing zoning of activities.
- The date of construction of the different buildings.
- The distribution of departments in the buildings with gross areas.
- Layout of mains services and drainage reticulations.
- Departments which are badly located in relationship to other departments/ functions.
- Departments which function well.
- Departments which function badly.
- Condition of key building elements: roofs, external walls, doors and windows, internal partitions, floors, sanitary installations, water and drainage, and electrical installations.
- Buildings which should be renovated as a matter of urgency.
- Buildings which should be demolished.

C Issues
- What is the predicted future use and occupancy of the facilities?
- Which provision norms are applicable?
- Which priorities should be used for determining the sequence of future steps?

D Future Proposals
- Areas of the site for future construction.
- Future zoning of activities.
- Proposed traffic / circulation routes / ways.
- Future layout plan to provide for expected requirements in 15-years time.
- Proposed phasing of activities.

E Budget
- Estimates for realising the individual projects shown in the plan.
- Annual budgets for capital works to realise the Masterplan.
- Development plan budgets.

Appendix M
Other Sources of Information

Little material on health facility planning has been published in the Southern Africa Region in recent years. Publications from other parts of the world are unfortunately not always entirely appropriate to the region's needs.

For the chapter on Planning of Health Equipment, several publications have been consulted. These are:

Manpower Development for a Health Care Technical Service, WHO 1990, Report Nr. WHO/ SHS/NHP/90.4.

Bloom G. and others, The Right Equipment...In Working Order, World Health Forum, Vol. 10, 1, page 3-27.

WHO Global Action Plan on Management, Maintenance and Repair of Health Care Equipment.

Bloom G., and Temple-Bird C., Medical Equipment in Sub-Saharan Africa, IDS, Research Report, WHO(Rr19).

The South African CSIR has published various memoranda and reports dealing with technical issues related to building construction, building specifications, aspects of internal climate control in buildings (and some specific health-building issues). CSIR undertakes, fosters and manages broadly-based market -driven research and development and technology transfer in support of its clients in both the public and private sectors, and to meet the community needs and improve the quality of life of all South Africa in a cost-effective and ethical manner.

The CSIR can be contacted for more information on their publications at :

CSIR
Pretoria
Republic of South Africa.
tel: 27-21-887 5101
fax: 27-21-887 5142
World Wide Web: http://csir.co.za/
http://www.ctcc.gov.za/business/education.html
e-mail: info@csir.co.za

The World Health Organisation

The Organisation frequently publishes reports and discussion papers on many aspects of service provision and management. These are particularly relevant when dealing with investment projects in the health sector. In the 80s, WHO published a series of reports on building for primary health services. The World Health Organisation can be contacted for more information on its publications through its field offices, regional offices or head quarters.

Headquarters
World Health Organization
Office of Publications
20, Avenue Appia
CH-1211 Geneva,
Switzerland

Tel: 41-22-791 2111
Fax: 41-22-791 0746 / 791 4150
World Wide Web: http://www.who.ch/
e-mail: library@who.ch or:
publications@who.ch

Regional Office for Africa
WHO - AFRO
B.P. 6
Brazzaville
Congo

tel: 242-839111
fax: 242-242-839410

The World Bank

Important information on employing consultants and contractors and on aspects on the tendering process can be obtained from the World Bank's publications on Procurement.

This publication will be available on the World Wide Web: http://www.worldbank.org/htlm/afr/healthb

The World Bank can be contacted for more information on its publications at:

Resident Missions

or:

World Bank Bookstore
World Bank
1818 H Street, N.W.
Washington, D.C. 20433
U.S.A.

tel: 1-202-473 2941
World Wide Web: http://www.worldbank.org
E-mail: books@worldbank.org

The web site has information on local distributors, publications and prices. Customers outside the United States must place their orders through their local distributor. The World Bank has established this policy to provide efficient service at a fair local price. Customers benefit because their orders can be processed quickly and their purchases can be made in local currency. They also avoid the additional shipping and handling charges that can considerably increase the cost of direct orders from the United States. If no distributor is listed for your country, you may order directly from the World Bank in the United States. Payment may be made by credit card or by US dollar check drawn on a US bank payable to the World Bank. Please note the order number and price of the items you wish to purchase. The order number and price are listed in the bibliographic information of each abstract.