

4.6 Water supply

This **MUST** be investigated and flow and re-charge levels established before any other site work is started; if there is not enough water, you will have to find another site, or risk uncontrollable epidemics.

4.6.1 Local knowledge

Consult the regional Water Resources office (EWWCA) as soon as possible about the potential for adequate water near or on your site:

EWWCA is responsible for developing all rural water works, as well as major work that needs doing in the towns. They have maps, knowledge and expertise which will save you a lot of time with your investigations, as well as your implementation of any water scheme. They may even drill an exploratory borehole if there is a need.

Consult the farmers and the administration in the area of your proposed site, who will tell you what they know or can remember what others have said about:

- streams
- springs (all weather & seasonal)
- how water flows down the hillsides near your site
- water-logging on or near your site

4.6.2 Oxfam

OXFAM's water engineers and emergency water supply equipment have been used by many drought relief agencies. They work with EWWCA, and can be contacted through OXFAM's office in Addis Ababa.

4.6.3 Water sources

1. Remember that you are more likely to find water:
 - at the bottom of hills
 - where there are trees
 - where there are good crops
2. Ideally, feeding sites should be close to other services, ie in

towns. In the highlands, towns and villages tend to be at the top of hills and consequently do not have good water supplies, so you may have to choose a site at some distance from such centres. SCF's Bulbulo feeding centre in Ambassel (Wollo) was fully 5 km from the local RRC distribution centre at Bistima and took 2 months to site for this very reason.

3. Shallow masonry or concrete ring wells are the most common type of well in Wollo. A large number of these wells scattered over a wide area around the shelter area is the best solution for very large numbers of people (eg. Korem, Bati etc).

4. Discuss with EWWCA what possibilities there are in your area for deep wells with submersible pumps (eg. Korem), sub-surface dams (eg. Korem) and other major water enterprises.

Greater development of deep wells is needed throughout Ethiopia, but this needs to be coordinated at central and regional level. Find out who in your area has relevant information on geological conditions and previous such projects, so that you can refer organisations with spare development funds to them for advice on investment.

4.6.2 Bulbulo 1985
48,000 litre water
tank imported as an
OXFAM kit.
(Photo: Mike Wells)



4.6.4 Water requirements for feeding

Recommended for a full feeding programme:

30 litres per person per day

This ensures that there is sufficient water for everybody to wash all over regularly, for floors and latrines etc. to be washed down, and for sudden influxes of people needing feeding and washing.

An ABSOLUTE MINIMUM for a feeding centre is:

10 litres per person per 8 hour day

NB This means you must have the capacity to produce total amount of water in 8 hours.

NB This does NOT ensure enough water for washing, so don't have any live-in feeders.

4.6.5 Re-charge rates

1. The re-charge rate must be high enough to supply what you need, when you need it. Remember that most water used in a live-in feeding programme is used DURING THE DAYTIME, and there is an enormous demand in the MORNING, during daily start-up, morning washing etc.

2. If you are relying solely on a spring or a slow-filling well, you may need to make use of night-time flow by filling a storage tank to service the daily start-up needs.

3. Re-charge rates and requirements are normally expressed in litres per second.

4. Calculations:

$$\begin{aligned} & \text{no. of people} \times \text{per capita daily requirement} \\ & / \text{no. of pumping hours} \\ & = \text{litres per hour re-charge rate required} \\ & / 60 = \text{litres per minute requirement} \\ & / 60 = \text{litres per second requirement} \end{aligned}$$

EG for 1000 people, your requirement is $1000 \times 30 = 30,000$ litres. If you are lucky, your pump will work 12 hours a day. But it will have to pump 42 litres per minute, or 0.7 litres per second in order to fulfil your requirements.

5. Testing your re-charge rate:

Springs: Ask to measure the volume of one of the women's water pots, with a bucket of known volume. Watch the local women filling their pots, time how long it takes to fill 10, then calculate how many litres per second the flow is.

Wells: Dig a pit below the water-table. Mark the level of the water on the side of the pit. Pump out a measured quantity of water. Then time how long it takes to refill to the marked level. Calculate the flow by dividing the volume by the time.

If you cannot ensure your requirements with daytime pumping, but can by 24-hour pumping, find out about the availability of storage (metal tanks, plastic tanks, or fuel barrels). These can be filled overnight, providing your pump can work that long and you have enough fuel for it. Keep them covered.

If you cannot ensure an adequate water supply, CONSIDER ANOTHER SITE.

4.6.6 Pumps

Depth

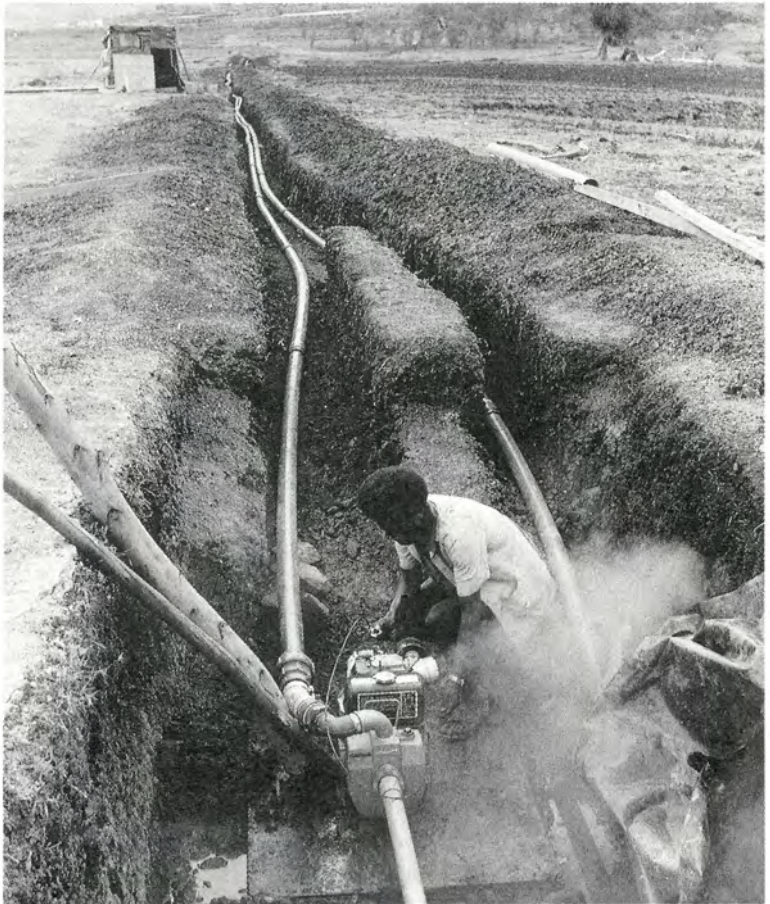
SUBMERSIBLE pumps can usually pump more than 2 litres per second, whatever the well-depth.

CONVENTIONAL, ground-level pumps can pump up to 2 litres per second from depths of 6-7 metres or less.

If the cylinder is down a well, a hand-pump can lift up to 50 m.

Pumping distance

3-inch pipes are more efficient than smaller pipes, but even in these, pumping water more than 200 m is not advisable.



4.6.6 Bulbulo 1985

The site water supply was a spring 360 metres away. Water was pumped from there to the bottom of the site, in the distance, and another pump delivered it to the live-in feeding programme for 1000 under-70% WFL children and their mothers. (Photo: Mike Wells)

Altitude

The pumping efficiency of internal combustion pumps decreases by 3.4% for every 1000m above sea-level, eg. a "20-metre" pump can only pump from 18.5 metres at 2000m.

The efficiency of lift-pumps decreases linearly with altitude.

Remember to adjust the fuel-air ratio in pumps at high altitudes, for more air.

4.6.7 Wells

Ask EWWCA if they will arrange digging.

Remember that shallow wells should have a thick gravel filter on the bottom.

4.6.8 Town water supplies

Some towns (eg. Kobo) have been supplied with water through special development schemes, and the town water office is directly responsible to the central Water Sewerage and Sanitation office in Addis Ababa.

Town water offices and the regional EWWCA are both responsible to NWRC - National Water Resources Commission. Relations between the two water offices, town and rural, are usually at least cordial, so combine their expertise to solve problems in using town water supplies. SCF Kobo relied on cooperation and expertise from both, as well as on OXFAM, to create its feeding programme water supply on the edge of the town.

All water installations which are required for relief feeding programmes and set up in agreement with the RRC are covered by RRC's or the government's drought relief budget. Let the local drought relief committee or the RRC deal with any paperwork for your water supply contracts, and the bills.

4.6.9 Emergency supplies

Always keep a storage tank or barrels full of water (and covered) for an emergency supply, even though you have a good town or other main supply. Their pumps can fail, and so can yours, especially with erratic fuel supply.



4.6.9

Drinking water is the priority use for any water brought by tanker. Pot-queueing is a regular phenomenon throughout the drought areas. Any cooked feeding must rely on better water supplies than this. (Photo: Mike Wells)

4.6.10 Who pays the bills?

The RRC normally undertakes to provide site and water for any feeding that it has requested. Check with the local DRC that this is the case.

You should not receive bills for such water. If you do, refer them straight to the RRC, and tell the water office who sent them that you have done so.

Town supply authorities may need a letter from the RRC in order for them to make application to their budget authorities for your exemption from local bills.

4.6.11 Safe drinking water

PROTECT water sources from defaecation:

- within 500 m of a surface-water source
- around a well

REDUCE micro-organisms by:

- letting the water stand at least 48 hours
- filtering the water

KILL all infecting organisms by:

Chlorination

Calcium Hypochlorite - $\text{Ca}(\text{OCl})_2$ dissolves in water with very little residue and can be obtained, with instructions, from Central Medical Stores, Addis Ababa.

Add sufficient $\text{Ca}(\text{OCl})_2$ to maintain the residual chlorine level at 0.1-0.5 ppm (mg per litre).

Test kits are available from H. Hahn, Electrical Engineering, Box 13, Addis Ababa (near St. George's Cathedral).

Boiling & sterilising

Boiling for 10 minutes kills everything harmful, but requires organisation and fuel and is only practicable for emergency provision of drinking water.

Sterilising tablets take time to have an effect. Keep them on hand for emergencies; otherwise use them only for small quantities of water, or while you are organising large-scale chlorination.

4.7 Transport and logistics

Transport is very limited & oversubscribed.

Contact NATRACOR, RRC & other NGOs to find what is available. Discuss with them your estimated transport needs, and keep in constant touch with them to ensure best coordination of what are very limited resources.

4.7.1 General

Use long-haul 10-ton trucks, with 12-ton trailers, for carrying a lot of food a long way on the scant network of good roads. 1 truck-plus-trailer unit carries up to 30 MT (6 days' food for 10 000 people).

Off the main roads, where most of the people live, use 4-wheel drive 7-ton trucks. LOAD no more than 5 tons (1 day's food for 10,000 people) on them on the very bad, ie. most roads.

Where 4-wheel drive 7-ton trucks cannot travel consider making or remaking FEEDER ROADS for them (see 4.14), or operating with a fleet of landrovers. Each might carry 0.5 MT (1 day's food for 1000 people).

Use air transport for logistical emergencies only. Don't count on planes - yours or other people's, for your regular supplies; but do keep the air agents supplied with a current list of what your priority

supplies are, so their costly space is used efficiently. A Hercules carries up to 20 MT (4 days' supply for 10 000 people)

Mules and camels, carrying 100 & 200 kg respectively, 15 km a day, are probably best managed by local merchants and farmers; your efforts are better spent dealing with larger-scale transport problems. But do have cash available to pay for pack-animals to fill in small supply gaps.

Roads are of very variable quality; you will not be able to put maximum loads on trucks, landrovers, etc. if you want the vehicles to last. See 4.14 on roads.

4.7.2 Calculating trucking requirements

Elements in the calculation are:

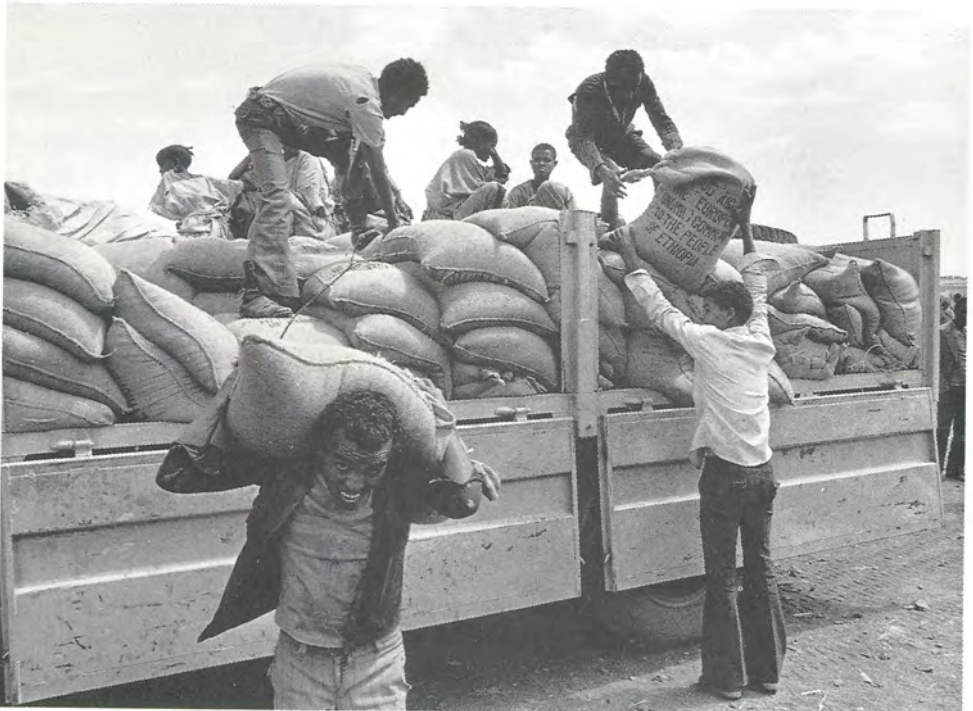
- quantity of food to be moved
- journey time (outward AND return)
- turnaround time
- breakdown and servicing time

4.7.2

Unloading a 20-ton truck and trailer. Time and organisation required for this has to be calculated into transport planning.

(Photo: Mike Wells)

EG A camp of 15 000 people receiving an average daily ration of 500 g of various foods will need about 58 tonnes of food per week. The roads to the camp are poor, so the trucks must carry reduced loads.



This is equivalent to 3 deliveries by a long-haul truck with trailer (20-22 tonnes). The return journey to the regional store takes 3 days (2 up and 1 back); turnaround and loading & unloading time is 1/2 day at each end. If you also allow time for breakdowns and any holidays not worked, you should assign 2 long-haul trucks permanently to supplying this camp.

4.7.3 Own transport

Remember that the larger your fleet, the more management of drivers and checking of routes, loads, log-sheets, etc you must do. You may prefer to contribute trucks to the NGO pool and reserve use when you need them; they will then be managed by CRDA.

You must provide all your personnel transport. Have a mix of petrol and diesel cars in order to cope with varying fuel supplies.

4.7.4 Maintenance & spares

Engage your own mechanic when your personnel fleet reaches 10 vehicles.

Equipping a workshop may be a viable proposition when you have 10 vehicles and expect your fleet to grow.

Order spares in large quantities in good time. Be prepared to fly in vital spare parts.

Tyres go quickly, eg. a 7-ton 4x4 Mercedes needs a complete set every month in Wollo.

Be prepared to pay high wages to good drivers and mechanics. Consider bringing in an expatriate mechanic for a workshop; but make sure s/he works with an Ethiopian counterpart.

4.7.5 Fuel

See 4.9

4.7.6 Importing

Employ a person at your Addis Ababa office whose job is to know which persons and offices to contact and which procedures to follow for all types of importing, customs clearance etc, for transport as well as for food and equipment.

DON'T import short-wheel-base vehicles; they are most uncomfortable to travel in over the long distances and the rural roads you will have to use.

Import long-wheel-base Land Rovers or Toyota's for personnel transport and small-scale transport of goods. The servicing and spare parts availability for these makes is not good, but is better than for other makes. Toyota servicing is better than Land Rover; and experience of car diesel engines is growing.

Import Fiat and Mercedes trucks, for the same reasons.

4.7.7 Government transport

The National Transport Corporation (known as NATRACOR, or Katena) is organised in 5 transport regions, according to the main road routes the trucks travel on. They have long-haul and 7-ton trucks which it is sometimes possible to hire at fixed rates. These are in great demand; so don't count on being able to use them when you want them, but do be ready to use them when they are available and offered to you.

4.7.8 Private commercial transport

There are very few trucks available for private hire; exceptions are very ancient vehicles, and the few small areas where NATRACOR have not yet absorbed local truckers.

4.8 Equipment supplies for feeding programmes

The shops and craftsmen of Addis Ababa and the towns of Ethiopia can provide many of the mundane items you need, like buckets, ladles, cups, bowls, oil drums for cooking barrels etc, as well as numerous services, but will need some time to gear up to large numbers and large operations. Make enquiries about what is available locally, and make as much use of them as possible.

4.8.1 Start-up supplies

1. OXFAM surveillance kits and feeding kits are excellent to have on hand in an emergency since the individual items are of good quality and last well. However, they are expensive and there can

be a lengthy delivery lag, so do not wait to act just because you don't have one. Use 4.8.3 or the OXFAM kit list as a shopping list and make up your own kits from local suppliers.

2. The rest: work out your shopping list with your own local administrator and fixers, and let them find out what is available locally. You will then know what you will have to find elsewhere, or even import (4.8.3 will help).

4.8.2 Regular supplies

Keep lists of what is available:

- locally
- from Addis
- only as imports: note the delivery time

Work out and place regular orders once you have started. Set re-order levels for each item of supplies, mark it on the relevant stock card and arrange with the storekeeper(s) to place their orders when those levels are reached.

4.8.3 Checklist

■ ITEM	REQUIREMENTS
■ Salter balance (25 kg by 100 g)	1/team + 1 spare
■ Salter balance (50 kg)	
■ weighing pants	
■ baby sling	
■ stand-on scales	for adults
■ rope	
■ length board, 120 cm long	1/team + 1 spare
■ tape measure, fibreglass	10/team
■ clipboards	
■ hardback register books	
■ stencilling paper	
■ card for records	1100 per 1000
■ squared paper for graphs	
■ lined paper	
■ plain paper	

■ ITEM	REQUIREMENTS
■ carbon paper	
■ ball-point pens	
■ pencils	
■ marker pens	
■ rulers	
■ notebooks	
■ paper clips	
■ anthropometric tables (WFL &c)	
■ calculator (electronic/solar)	1/team + 1 spare
■ spare batteries	
■ scissors	
■ staplers & staples	
■ holdalls	1/team + 1 spare
■ identity bracelets, strongest	1500 per 1000
■ coloured plastic sheeting (for ID & attendance)	
■ cooking pots, with lids (or half drums)	12 per 1000
■ empty fuel drums	20 per 1000
■ buckets, with lids	25 per 1000
■ scoops	
■ stirring paddles	5 per 1000
■ whisks	5 per 1000
■ ladles	25 per 1000
■ measuring jug, 500 ml	
■ measuring jug, 2 litre	
■ heavy-duty tin-opener	
■ stoves	
■ fire extinguishing equipment	
■ sterilising tablets	
■ jerry cans	

■ ITEM	REQUIREMENTS
■ hose	
■ scrubbing brushes	
■ wire wool	
■ detergent	
■ soap for hand-washing	
■ razors/blades	
■ cups	one per feeder
■ spoons, metal, small	for difficult feeders
■ bowls	one per feeder
■ torches	
■ candles	
■ hurricane lamps	
■ matches	
■ blankets	1500 per 1000
■ thick plastic —groundsheets, hygiene, etc.	
■ ORS sachets	
■ ORS bulk ingredients	
■ Vitamin A tablets	
■ Iron tablets	
■ De-worming tablets	
■ NG tubes, various sizes	
■ plastic syringes, 50 ml	
■ Drugs: to be ordered by medical staff	See 4.10.9

4.9 Fuel Supplies

4.9.1 Vehicle fuel

This is now only obtainable by chit or coupon from the transport department of the ministry to whom your organisation is contracted.

Make a rough estimate of your monthly requirements of *benzine* (= petrol) and *nafta* (= diesel) before going to negotiate with them, and take a full list of your vehicle plate numbers.

In an out-of-town emergency, you will usually find it easier to get hold of small quantities of diesel than petrol.

The local RRC, or DRC, will do their best to release a small quantity of fuel to you in a crisis, as long as it is not a crisis of your own making.

4.9.2 Cooking fuel

Wood is the most common domestic fuel, but in most of highland Ethiopia the hills are bare already or fast being denuded. The local stove consists of 3 stones around a fire, more suited to warming and keeping flies down inside a tukul than to cooking for large numbers on a windy hillside.

Try to base your cooking on:

- fuel-efficient stoves (enclosed, with flue)
- alternative fuels, eg. kerosene

SCF Wollo used local materials (eg. biscuit tins for flues) to build on-site fuel efficient stoves for wood and (imported) kerosene burners, as does the Ministry of Education's Basic Technology Unit.

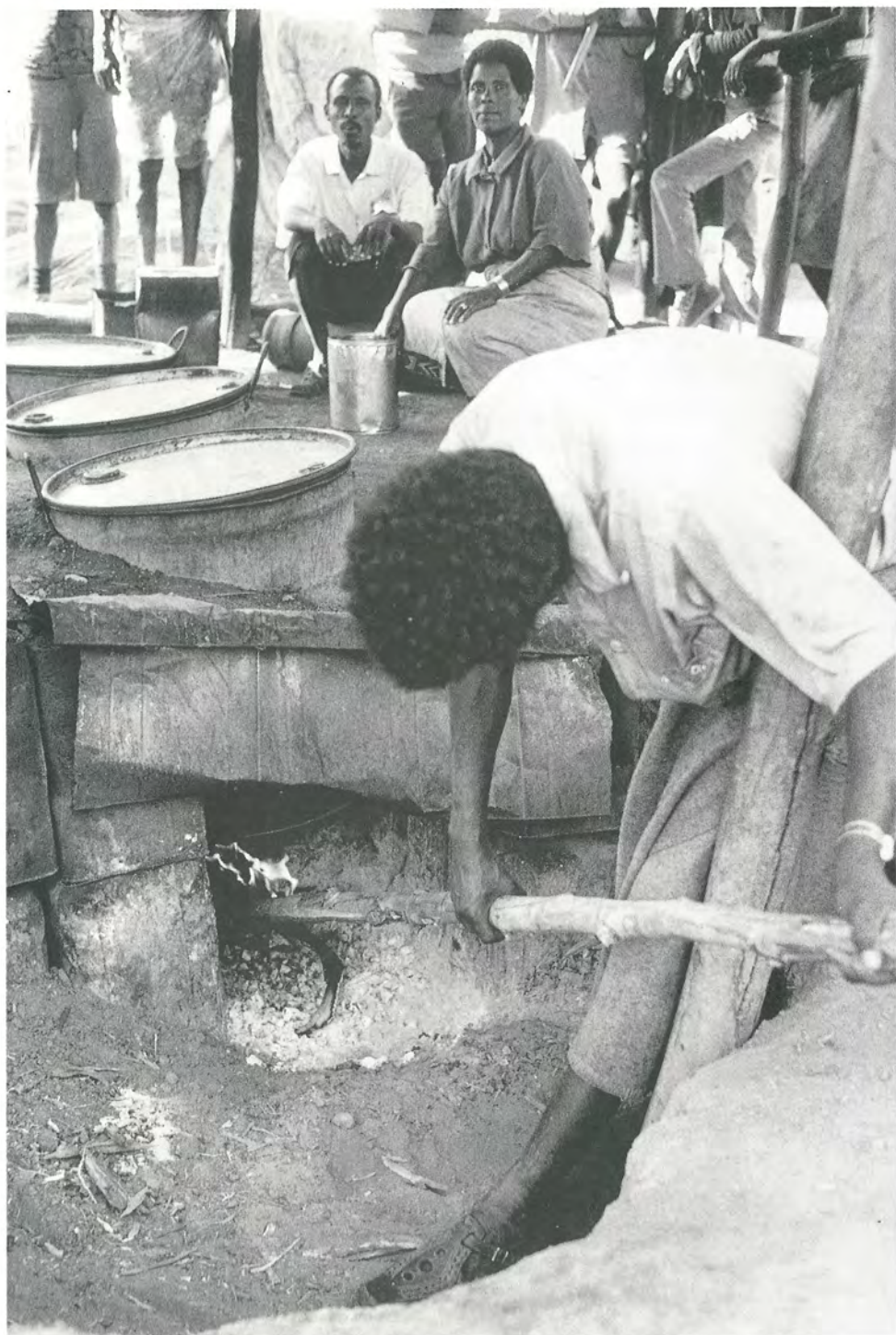
Trials of insulation boxes and solar and biogas energy would be useful.

Consumption

SCF Korem had to make up its wood supplies, for *kitta*-making and for back-up to irregular kerosene supplies, from eucalyptus stands 100 km away.

At best efficiency, and full feeding for 10 000 feeders @ 6 feeds a day, Korem used, per day

- 7 cu.m. wood, and
- 40 litres kerosene



4.9.2 Kobo 1985

Fuel-efficient stoves made from local materials, including World Food Programme biscuit tins. Here, three 200 litre drums of water are heated by one enclosed fire; the front drum takes 45 minutes to boil on a chilly day. (Photo: Mike Wells)

4.10 Assessing health & local health resources

4.10.1 General considerations

Carry out any health work MOH or RRC assigns you in consultation with MOH at all levels, and in a way which will bring lasting benefit for MOH as well as the local population.

Ethiopia's Ministry of Health (MOH) has a national network of health care stretching down to village level. Health centres frequently lack drugs and other resources to match this extensive coverage of the population even in normal times. During times of crisis like drought, they are grateful for

- additional expertise in organising feeding and health care for the worst-affected populations
- the nutritional, organisational and medical personnel necessary to do this
- training of Ethiopians in these specialities at the same time
- and funding for extra hired help

Consequently, the work of an NGO health team is much less likely to be in a hospital than in a food distribution centre, to which desperately hungry people have migrated, and where capacities and resources are severely stretched just providing public health prophylaxis and medical attention for the most common diseases.

Food first

Remember that people gathered in large numbers for food distributions need food first, and are unlikely to take medical treatment and advice seriously while they have nothing to eat. Meanwhile, the very fact that they assemble in larger groups than normal, in a weakened condition, means that they are frequently at high risk from the public health hazards directly related to:

- overcrowding, even on open spaces
- poor water supply, even for drinking
- poor sanitation, usually no latrines at all
- poor personal hygiene, due to poor water supply

Don't expect to have any impact on the general situation with drugs before food distributions, feeding and attention to water and environmental sanitation problems have been assured. Meanwhile

Don't even consider starting a feeding programme which involves people hanging around all day or living in, before basic public

health measures are carried out.

Without order, water, shelter and latrines, any feeding programme risks creating a centre for epidemic diseases. These are difficult to control in unsanitary conditions, and could result in the disadvantages of collecting people together for feeding (filth and increasing communicable diseases) outweighing the benefits.

4.10.2 Nutritional status

See 3.2

4.10.3 Food supply and numbers in need

See 3.2 & 4.3

4.10.4 Public health factors

Water supply

See 4.6, and ask MOH and EWWCA for an evaluation of quality.

Sanitation

You can usually smell the state of this. Consult the local MOH sanitarian about what can be done by MOH, and what help he needs to do it.

Shelter

How many people per sq m at night already? What protection does it give from sun, cold and rain? See 4.15 for advice on improving it.

Rain

Find out when rain is normally expected; and prepare for an increase in diarrhoeas and respiratory diseases when it does fall.

4.10.5 Disease prevalence

Discuss with local and regional MOH who is to be responsible for the health care a) in the feeding programme, and b) in the surrounding area; and over what period. For whatever work assigned to you,

Common diseases in people living in camps

DISEASE	CONTRIBUTORY FACTORS	PREVENTIVE MEASURES
DIARRHOEAL diseases	Overcrowding Contamination of food & water Change in diet	Adequate shelter & space. Personal & food hygiene. Vector control (flies) see 5.11
AMOEBIA CHOLERA TYPHOID	Overcrowding Poor personal hygiene, water & sanitation	Adequate shelter & space. Good personal hygiene, improved water & sanitation
WORMS	Overcrowding Poor sanitation	Adequate shelter & space. Personal hygiene. Routine de-worming. Nail cutting
ANAEMIA	Malaria Hookworm Diet inadequate	Treat Treat Enough food, with eg. beans or meat when available
MEASLES	Overcrowding	Adequate space in shelter. Immunisation
MALARIA	Change of environment Mosquitoes	Vector control (mosquitoes)
XEROPHTHALMIA	Diet Measles	Supplementation Immunisation (measles)
CONJUNCTIVITIS & TRACHOMA		Good personal hygiene. Vector control (flies)
RESPIRATORY DISEASES & TB	Overcrowding Exposure	Adequate shelter & space. Blankets & clothing
MENINGOCOCCAL MENINGITIS & PERTUSSIS	Overcrowding	Adequate shelter & space. Immunisation
TYPHUS (louse-borne) RELAPSING FEVER	Overcrowding Lice	Adequate shelter & space. Good personal hygiene. Vector control (lice)
SCABIES	Overcrowding Poor personal hygiene	Adequate space in shelter. Good personal hygiene

Investigate with MOH what preventive measures are being taken against any communicable diseases you find.

1. Ask MOH for their statistics, and an outline of local preventive health measures.
2. Carry out medical screening while the beneficiary population is receiving dry relief rations (it is usually orderly), or is being screened for nutritional status assessment.

Look for communicable and treatable disease. It is these you will be concentrating on in your public health and curative work.

This screening will give you some idea of how to judge the statistics supplied by the local health service from the clinic/health centre/hospital. Remember that the health service normally only sees those people who have managed to get to them - they don't normally go out looking for sick people. In addition, they are probably so overburdened with extra work, they may have little time to spend on their statistics anyway.

4.10.6 Local health service and supplies

Investigate:

- staffing level
- drugs supplies
- buildings and their proximity to your site
- preventive measures against communicable diseases
- what their experience of the worsening drought has been
- how they cope with extra patients
- what changes there have been in disease prevalence

4.10.7 What to do and how to do it

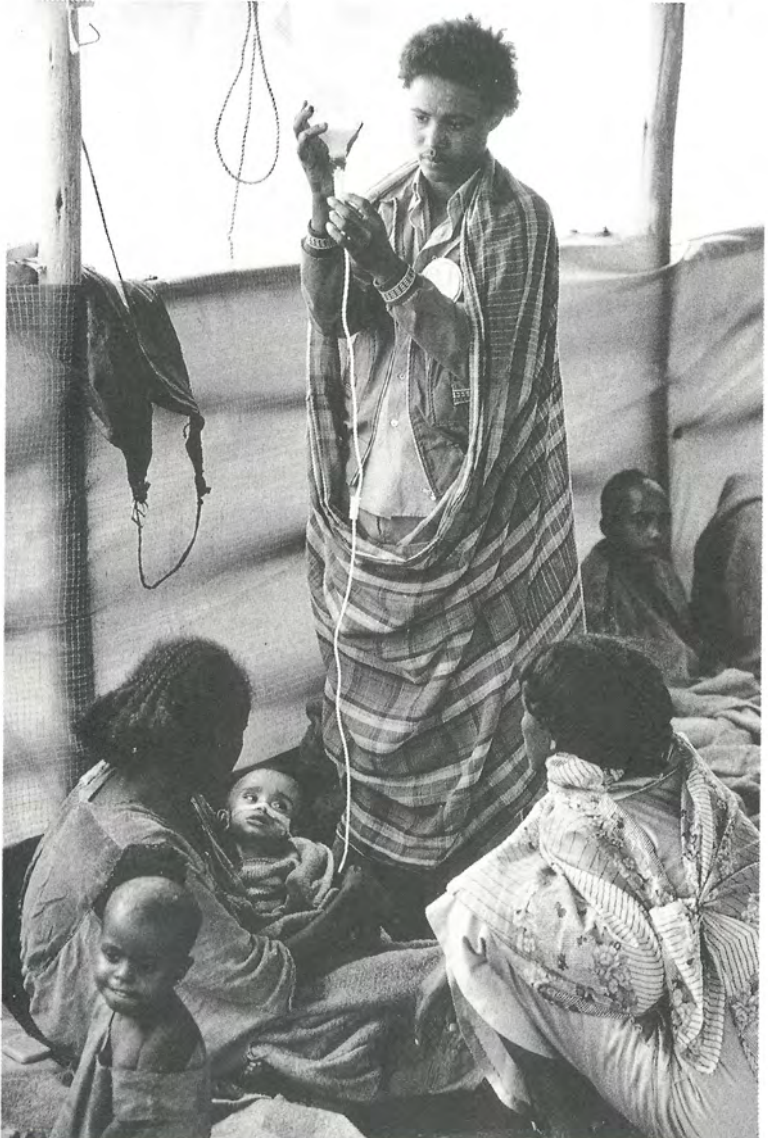
1. DON'T start a hospital; but do have a special area for special care and in-patients in a feeding centre if intensive care is called for.
2. On the basis of your screening and your consultations with MOH on the prevalence rates they have noted, set up a health service with local staff which:
 - deals with the most prevalent problems first
 - deals prophylactically with public health hazards
 - and trains LOCAL staff to do these jobs
3. Set up a health surveillance system, coordinated with the food distribution system, ie. RE-screen from time to time during general ration distributions.

4. Use your mass screening as a baseline against which to measure statistics from the surveillance system, and to monitor the development of the health status of the population in general.

4.10.8 Health staff

Ethiopia's Ministry of Health (MOH) has a national local health structure employing doctors, health officers, administrative nurses, sanitarians, health assistants and lab technicians, all of whom can be found in your region, and some of them may be seconded to work beside you with the famine populations.

4.10.8 Bulbulo 1985
Training is a valuable, developmental part of relief operations. Here two locally-employed health auxiliaries check the feeding of a seriously malnourished child.
(Photo: Mike Wells)



Don't hesitate to work with them. Not only are you required to do so according to the guidelines of the Drought Relief Committees, but you will find that locally-seconded staff are useful in advising on the details of your appropriate health care system, and are usually very eager to learn from you as they work alongside you.

Investigate what health personnel is available in the area, either as secondments or employees, and what their experience is, before you decide:

- the structure of your health care system
- the level of training you can build into your work.

DON'T assign your most experienced members of staff to the clinic. They will have far more medium- and long-term impact as supervisors of:

- public health
- general organisation
- overall clinical activities, and
- training and upgrading local staff

Gradually minimise the expatriate presence as the local health staff become more competent under your supervision. The advantages are

1. You build up a competent local staff who can deal with people in their own language and on their own terms (eg. it is much easier for a local person to harangue an irresponsible parent, or to give health education pep talks).
2. The whole system that you set up, or most of it, will carry on without expatriate staff if they should need to leave suddenly (due to illness, security etc.)
3. Local staff will in future be in a position to mount similar operations, as long as your operation is reproducible and not dependent on expensive, imported technology and drugs.

4.10.9 Notes on drug ordering

Local purchase

Many drugs are available locally, in state and private pharmacies, and in bulk through Central Medical Stores in Addis Ababa. During 1984 & 1985 we found it cheaper to order bulk drugs from Kenya or England (ECHO), but such orders may take 3 months to arrive.

UNICEF

UNICEF medical kits are very useful to have on hand for emergencies, since they contain most basic drugs. UNICEF has

supplied us with basic drugs as well as ORS.

For long-term and feeding programme use, do build up your own orders for the individual drugs, based on the estimated consumption of the population you are actually dealing with.

4.11 Essential public health measures

4.11.1 Water supply

See 4.6 for technical aspects of supply.

Check that the quantity is adequate:

30 litres/person/day is recommended for live-in
10 litres/person/day is the absolute minimum

Check the quality for palatability and contamination.

Remember that just as much disease is caused through LACK of water for washing as directly by drinking polluted water. So an adequate supply of clean water is the very first priority in considering the safety of establishing feeding or other services.

If the minimum supply cannot be guaranteed, consider restricting the feeding operations to dry take-home distribution, or if you must provide wet feeding, consider alternative locations that do have enough water.

4.11.2 Shelter

See 4.15 for tips on buildings.

Remember that:

- sleeping outside at temperatures as low as freezing point (eg. Korem in January), without blankets, increases a person's energy requirements by as much as 1000 kcal per day.
- exposure to hot sun greatly increases water and salt losses.
- overcrowded, badly ventilated buildings will contribute to an increase of ALL communicable diseases.

So check that shelters provide protection from rain, cold and sun, and have enough space (min. 1 sq.m. per person). See 4.15.3 for emergency shelter idea.

4.11.3 Sanitation

See 4.13

4.11.4 Vector control table

Vector and risk	Preventive measures
FLIES (Diarrhoeal disease) (Eye infections)	Improve general sanitation Provide latrines Provide garbage disposal Spray
MOSQUITOES (Malaria) (Yellow fever)	Drain stagnant pools Spray
LICE (Epidemic typhus) (Relapsing fever)	Good washing facilities Encourage good personal hygiene Steam all body clothes & blankets Spray
FLEAS (Plaque) (Endemic typhus)	Good personal hygiene Spray
& TICKS (Relapsing fever) (Spotted fever)	Good personal hygiene Spray

Coordinate all public health activities with MOH, RRC, ERCS and NGOs in the area.

Steaming—against lice and scabies. See 4.13.7.

Spraying See 4.13.8

One very successful spraying programme was carried out in Korem, where SCF & MSF shared public health responsibilities with MOH. The MOH malaria control team sprayed Actellic onto floors, clothing and blankets after typhus had been confirmed as accounting for 65% of all cases of an epidemic of PUO (pyrexia/fever of unknown origin). Typhus cases were reduced to zero after Actellic was sprayed for two consecutive months throughout the shelter.