



**WHAT DOES IT TAKE
TO PUT TOGETHER A LATRINE PROJECT?
A Practical Guide for the NGO**

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Pictures on cover page are from Ghana. The first three photos show construction of a rectangular slab from Sikaman in the Ashanti Region, taken by the author of this report in 1997. The last photo is a communal KVIP from Dawlo in the Volta Region, taken by Augustus Vogel in 1999.

INTRODUCTION

Development and complex emergency-focused organizations face the challenge of not knowing how much to budget for a given overseas response initiative. Latrines are one such project that is important for NGOs to calculate costs, But, do NGOs in the United States know how much to appropriate? The purpose of this report is to serve as a useful guide that provides relevant information, advice and the process involved in ascertaining such costs to NGO staff that is looking to budget a latrine project, whether the latrine project is separate or larger program on water, sanitation program refugee camps, at schools, or in stable communities.

Ascertaining costs for latrines is somewhat more complicated than obtaining prices and options for a single item for a specific target audience like blankets for emergency displaced persons (EDPs). For an NGO to make an educated model selection, it will need to have some technical understanding of the various latrine types, why one model is selected over another in a particular situation. Therefore, this paper will provide a comparison on latrine types most suitable in either stable or emergency situations.

The paper is divided into the following sections: **All About Latrines** is background information on the importance of latrines and the varying types of latrines choices available to NGOs. The **Cost** section explains actual costs involved in building a latrine and how an NGO would go about budgeting a latrine project. Purchasing power parity (PPP) will also be introduced as a tool to ascertaining country-specific latrine cost estimates based on benchmark costs. **Research** explains the methodology used to synthesize information for this report, review of internet and organization literature, and data;

ALL ABOUT LATRINES

Importance of Sanitation

According to Sphere 2004, water and sanitation are critical determinants to survival in the early stages of a disaster. The affected population is more prone to death and disease due to poor sanitation, lack of water supply and poor hygiene.¹ Therefore, water supply, sanitation and hygiene education comprise a holistic approach to prevention of communicable and water-borne diseases. All three components go hand-in-hand in improving the health condition of a given population. An isolated response will not be as effective, however among the three, a sanitation response has the greatest impact, as it will reduce diarrhea by thirty-three percent.²

The objective of sanitation is to “keep human excreta separate from people, from food, living areas and from water supplies”³ to reduce the transmission of diseases due to environmental contamination by fecal matter or through disease-bearing vectors. Therefore, as indicated in Sphere, safe excreta disposal through the provision of latrines is a major priority as it creates the first barrier to direct and indirect excreta-related diseases.⁴ In the field, water supply and hygiene education, which would include sufficient water supply and soap; latrine maintenance; and the actual training and education, are important complements to latrine construction. A latrine program is usually folded into a larger health and/or water sanitation, or school construction program either in a refugee/disaster situation or a rural community development scheme in stable situations, but this report will tease out as much as possible the specific details and costs for a latrine program.

Step 1 of the Latrine Response

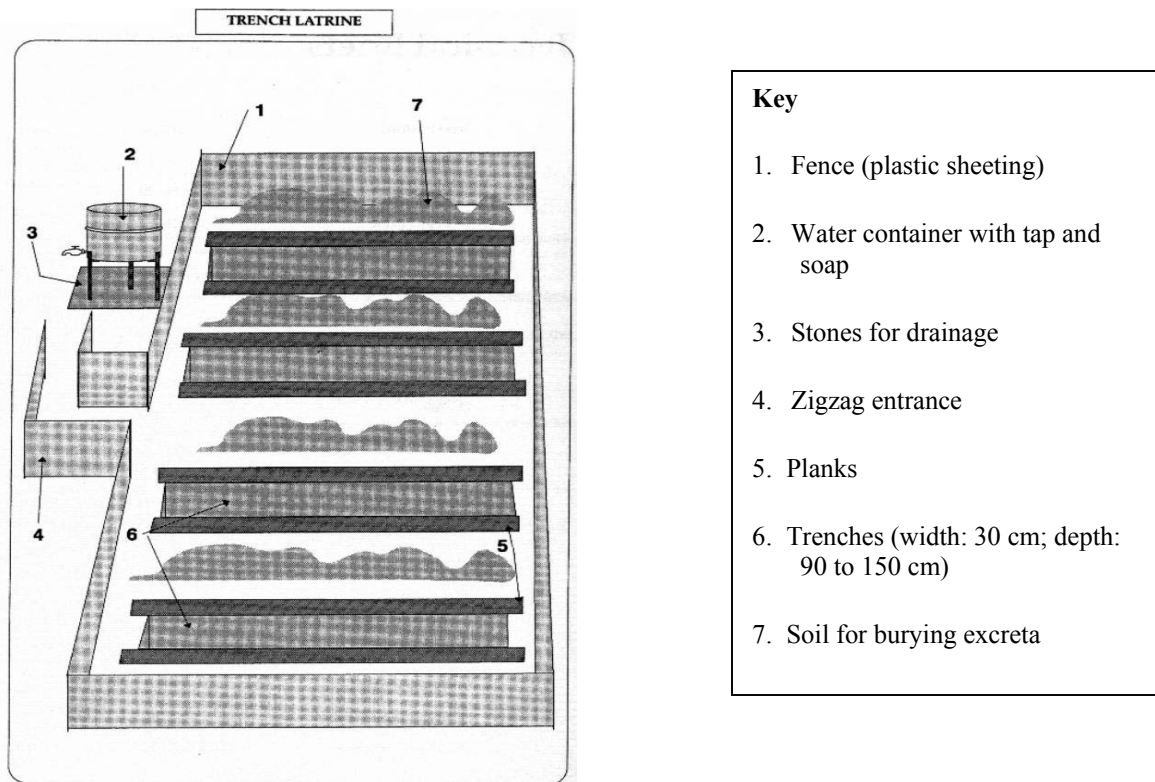
NGOs involved in a latrine program will first need to gather information about the in-country situation. The NGO will need to know the population that the latrines will service, whether latrines are for a refugee or EDP camp or for stable communities. Based on the health data, including the number of diarrhea cases, the NGO will be able to determine what the general response will be. Next, the quantity of latrines that will be needed is calculated by analyzing the current latrine coverage and target latrine coverage. Once this gap is determined, the NGO will decide on the design and quantity best suited for the target population.⁵

Numerous latrine designs exist; the selected option will be decided by a number of factors such as socio-cultural considerations, population, allowable time for latrine construction, whether usage or longevity is the main concern, cost, replication and/or manpower.

Basic Latrine Types⁶

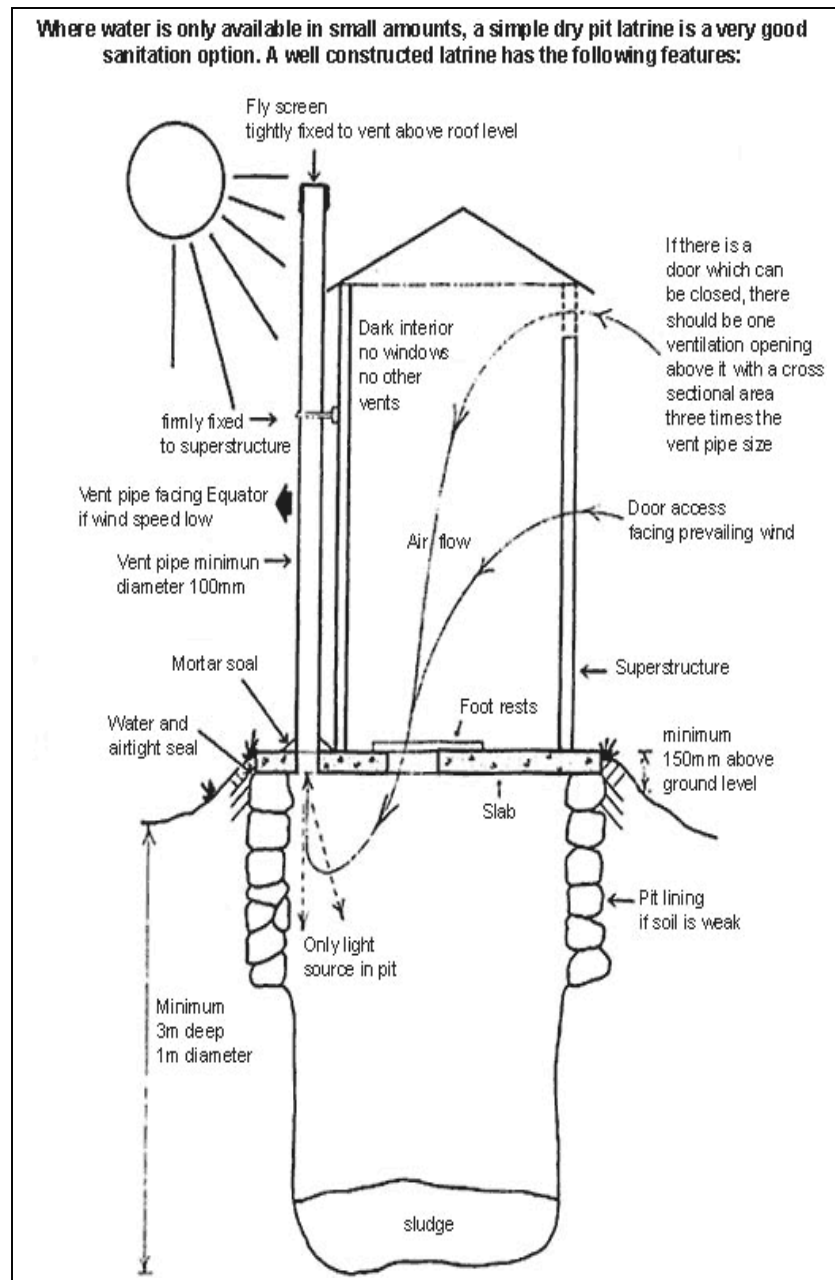
It is easiest to understand the various latrine designs and which of the basic models are best for which situation if they are thought of in a continuum. In a disaster, an immediate response is needed to get people to use facilities as quickly as possible, so demarcating fields or digging trench latrines are a temporary solution before more sanitary structures are put in place (see Figure 1). For demarcated fields and trench latrines to be effective in achieving the sanitation objective, they must be properly managed and maintained.⁷

Figure 1



The most basic latrine is a **simple pit latrine**. Various additions or slight changes to the simple pit latrine yield a number of different designs. The most basic of the simple pit latrine will have steel or iron-reinforced concrete slab, an unlined pit, and superstructure of local materials without a vent pipe.⁸ This design is constructed in situations such as refugee camps; whether they are ventilated or not, simple pit latrines are the most frequently used worldwide. Other modifications can be made to this basic design that affects the cost, such as the superstructure. A well-constructed simple pit latrine includes the features as illustrated in Figure 2. Local natural materials such as thatch do not require much money, but a cement superstructure will drive the cost of the simple pit latrine up.

Figure 2: Well-constructed Simple Pit Latrine



Direct supervision and education to beneficiaries on latrine construction and maintenance are also required.¹ The **ventilated improved pit (VIP)** and the **Kumasi Ventilated Improved Pit (KVIP)** are the most costly options presented here, but are the best for longevity (see Figure 4 for VIP and cover page for KVIP diagram and photo) if properly constructed. These should be built in more stable communities. VIPs and KVIPs are not the first choice of latrine in disaster situations.⁹ The need for a quick response, the time required to build a VIP due to its more complicated technical aspects, and increase in costs compared to the simple pit latrine make it impractical.

Figure 3: Pour Flush Single Pit and Twin Pit Latrine

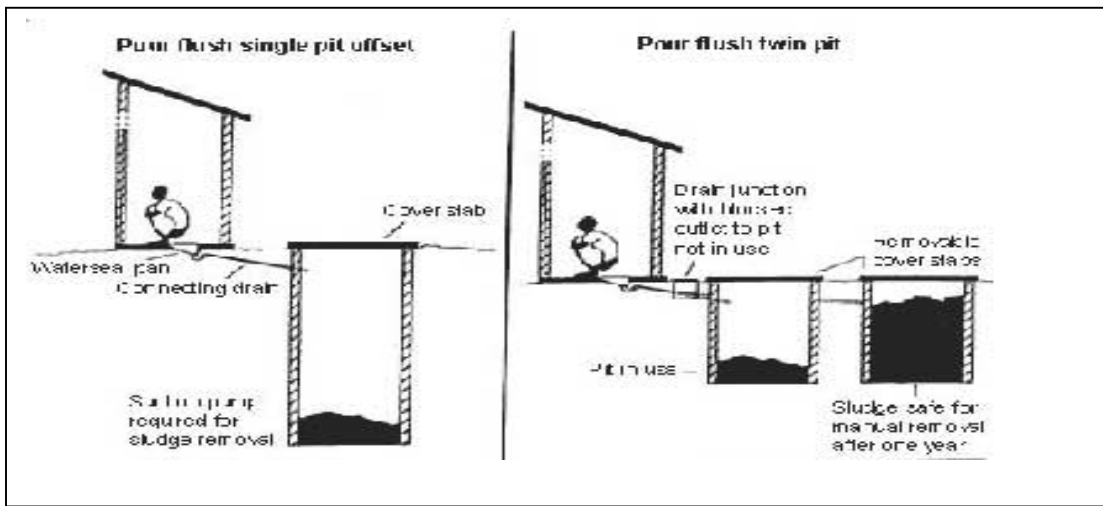
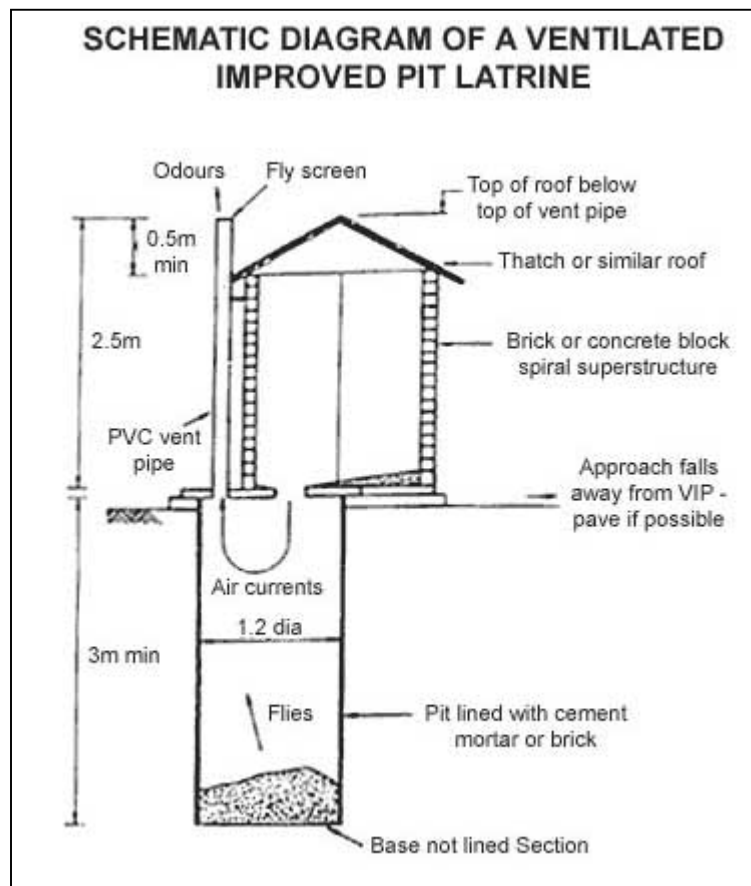


Figure 4: Ventilated Improved Pit Latrine



Note: For Figure references, see Endnote 6

Per Person Usage & Communal Latrines

According to Sphere guidelines, 20 persons can use a single latrine, but this may not always be the case where it may then be necessary to permit 50 persons to use a single toilet, decreasing down to 20 as quickly as possible.¹⁰ The more people per latrine will decrease the life cycle of the latrine as the pit will fill more quickly. Well-constructed and well-maintained latrines can last up to 20 years. For latrines that need to be constructed quickly, sanitation is the primary factor. Household latrines for more stable communities, sanitation and longevity are considered. The standard pit should be dug 3 meters deep by 1.5 meters wide. However, the pit size will depend on the number of people using the latrine, the height of the water table, and if water, used for cleansing, fills the pit. A pit is considered full when the sludge has risen to within .5 meters of the slab. The sludge decomposes naturally over time, and the rate of filling declines over time. If the right number of persons, a single household, uses a latrine, then there should be enough time for the sludge to decompose before the pit fills.¹¹

Although multiple people can use a single latrine, rendering it a **communal latrine**, in this report, a communal latrine will mean a public latrine in a single location with multiple latrines located side-by-side, sharing the same pit (see cover page, last photo for example). Communal latrines are typically located in markets, bus stations, or similar places where people are far away from their homes. Or, they can be built in communities used by residents for those that may not have a household latrine. Communal/public latrines are usually the same type of latrine as homes nearby; they tend to be VIP, a pour-flush latrine or alternating twin-pit latrine.¹² Communal latrines are usually constructed in more stable areas.

The latrine construction process, what's involved, what materials are needed and how they are used, is important to understanding the budget process. Therefore, **Table 1** presents in a comparative format, latrine types and technical notes.

In general terms, no matter which latrine type is selected, an excreta disposal technique may be considered acceptable when¹³:

- it contains the excreta in one place;
- it does not create an attraction for insects;
- it is not a source of pollution of water points;
- it is accessible to users;
- it gives a minimum of privacy;
- it is adapted to local habits.

Table 1: Survey of Latrine Types

Latrine Type	Description		Technical Notes	Materials Needed
Demarcate Fields	In situations where large populations are displaced, and immediate sequestered areas need to be identified, demarcating fields for controlled defecation is easy to do. Little equipment or legal authority is required. Minimal areas need to be identified and assigned as <u>defecation areas, separate from living quarters.</u>	Communal/Public		
Trench Latrine	Suitable for emergency situations. The objective should be to replace the trench latrines as quickly as possible with a more hygienic system	Communal/Public	<p>Sanitation engineers assist in examining the most suitable latrine location away from water sources and dwelling places, depth of the pit based on soil condition.</p> <ol style="list-style-type: none"> Choose a site away from water points (≥ 30 m), and downhill from them. Dig trenches about 30cm wide and 90 to 150cm deep. Allow about 3.5 m per 100 users. Place the excavated soil near the side of each trench so that the users can cover their excreta with soil after each use, to reduce the attraction of flies. Lay planks down the two sides in order to ensure a good foothold and to limit erosion of the trench edges. (When the excreta reach about 30 cm from the surface, fill in the trench with compacted earth. Mark the spot and dig another trench.) Fence the area (for example with plastic sheeting), and put up a zigzag entrance in order to limit the risk of straying of animals and to keep as much privacy as possible for users. Put a water container with a tap and soap in an obvious place (near the exit) to allow the washing of hands after defecation. <p><u>Important</u></p> <p>Wooden poles can replace the planks (which should be buried several centimeters). Ensure that living areas are not downwind of the trench latrines.</p> <p>It is usually necessary to build separate trench latrine areas for men and women. Simply separating the male and female sections with plastic sheeting and providing two separate entrances may not be enough from the point of view of acceptability to the population.</p>	<ul style="list-style-type: none"> Shovels, picks Planks (or wooden poles) Stakes (for the fence) Plastic sheeting (or local material) Empty cans (to handle soil for burying excreta) Water container (e.g. 200 L drum) with tap Soap
Simple Single Pit latrine ¹⁴ (see pictures below for visual)	<ul style="list-style-type: none"> Requires little technical help with provision of good guidelines. One family can use a well-constructed pit for 20 years. Mainly dry and wet (pour flush/water seal – <i>see below</i>) latrine types. Can be smelly and fly-ridden, especially if too 	Household or Communal/Public	<p>Following technical notes apply to single pit and variations of the pit latrine, pour flush latrine and ventilated pit latrine:</p> <p>Pit Location - Pit and should be 50 m away from nearest well or borehole to not contaminate drinking water. The pit should be dug during the dry season.</p>	<p><u>Latrine Slabs:</u></p> <p>Reinforced concrete single slab:</p> <ul style="list-style-type: none"> Cement – 24 liters (2/3 of 50 kg bag) Sand – 48 liters Gravel – 96 liters (6-20 mm size) Water – 20 liters 14 mm of 6 mm Rebar

	shallow.		<p>Pit Size - 1.2 m in diameter, or square (smallest dimension that can be dug conveniently), with the pit above the water table. Pit should be at least 3 m deep, and dug during the dry season. It may not be possible to dig 3 m because of hard rock near the ground surface or if the water table is too close to the ground surface. In these cases, the latrine will last for 8 years. Pit size also depends on how many persons are using the pit.</p> <p>Pit Shapes – Round pits have stronger walls. Rectangular pits are easier to dig but there is more danger of collapse.</p> <p>Pit Lining – If the soil is loose, the entire pit walls should be lined. Different materials can be used depending upon the ground conditions and local availability - timber, bricks or blocks, oil drum, bamboo basketwork, brick. If the soil is firm, except for the top 15 inches, it doesn't need to be lined.</p> <p>It is considered full when the sludge inside has risen to within .5 m of the slab. Because the sludge in the pit digests naturally over time, the rate of filling declines the longer the pit is used.</p> <p>Slab - Concrete slab cast over the pit. Can be cast in 2 pieces. Slab should be slightly curve outward with feet imprints on either side of the squat hole. Technical advice on concrete mix proportions and casting of slabs needs to be provided to communities. Slabs should be kept clean. Can be scrubbed with brush and disinfectant or soap.</p> <p>Superstructure – needed to give privacy and can be built of any local material. Some superstructure is made of concrete.</p>	<p>This slab weighs about 275 kg and can be rolled into position</p> <p>Rectangular slab can be pre-cast in two pieces to reduce the weight. Appx. 180 kg. each.</p> <p>Unreinforced concrete A simple concrete domed slab without reinforcement is another alternative. No vent is needed but a close-fitting plug must be provided to control flies and odor. Requires 2/3 of a 50 kg. bag of cement. Weighs 275 kg.</p> <p>Local Materials: Wood or bamboo lashed together and covered with a layer of mud makes a strong slab where other materials are difficult to acquire.</p> <p>Superstructure Can be built from locally available material:</p> <ul style="list-style-type: none"> • Mud & thatch • Ferro-cement • Galvanized corrugated iron • Tiles & brick
Pour flush Latrine/ Water Seal Latrine	<ul style="list-style-type: none"> • A variation of the single pit latrine suitable for communities where sufficient water is used for cleansing. • Advantage of water seal is that the user is not in direct contact with the latrine pit's contents. • But construction is more costly & complex than a simple latrine, and a reliable source of water is needed to flush it. • Water seal/squatting slab can be built directly over pit (direct) or sited 1-2 meters from pit (offset), where water drains through a communication pipe. 	Household or Communal/Public	<p>Construction of water seal pans need strict supervision during construction.</p> <p>Footpad should be cast into slab on each side of the squat hole and the surface of the slab should slope towards it.</p> <p>Pit - To prevent smells rising from the pit, a U-bend water seal can be incorporated, but proper flushing must be utilized, otherwise the U-bend is useless.</p> <p>Clean water does not need to be used to flush latrine. To flush bowl successfully, hurl water down.</p>	

<ul style="list-style-type: none"> Direct – The pan is directly above pit. 	<p>Advantage: It is less costly than the offset type and requires the least amount of water for flushing.</p> <p>Disadvantage -When the pit is full, the user has to build a new latrine or dig out the pit while the excreta at the top is still fresh. But, digging out the latrine is not too difficult if the aboveground structure is lightweight. People fear falling into the pit if the latrine is directly above it.</p>		<p>After the pit is dug, for the direct pit latrine, the slab and water seal pan should be securely fixed to the lining of the pit with cement mortar. Cover the pit with reinforced concrete slab. If the pit is large, 2 slabs may be needed.</p> <p>For the offset latrines, lay the pipe connecting the water seal pan to the pit. Each 2 ft. length of pipe should fall by at least 1 inch in height. Cement pipe through pit walls. The pit lining should be 6 inches above ground level.</p>	
<ul style="list-style-type: none"> Offset – The pan is not directly above pit. 	<p>Advantage: when the pit is full, a new one can be dug next to it. The pan does not have to be removed, and can be pumped into the new pit.</p> <p>Disadvantage – more costly than direct pit and requires more water to flush solids down the sewer pipe.</p>			
<p>Ventilated Improved Pit (VIP)</p>	<ul style="list-style-type: none"> Overcomes odor and fly problems. Flies drawn to pit will be attracted up the vent pipe by the brightness of the daylight at the top, but can't escape because of the screen covering the pipe and die. Wind passing over the vent pipe will cause an updraft removing smell. First developed in rural African communities. 	<p>Household or Communal/Public</p>	<p>Superstructure - Interior of superstructure should be darker than the daylight outside. Superstructure should be well ventilated to allow for flow of air into pit. Pit should have a vent pipe, which should be at least 100 mm diameter and extend from pit to about 1 m above roof. Top of pipe should be covered with fine-mesh stainless steel, GRP or aluminum fly screen.</p>	<ul style="list-style-type: none"> Same as for Simple pit latrine Shovel, pick, miner's bar Special VIP slab Mosquito netting (preferably nylon) Pipe of PVC or building material Material for superstructure and door
<p>Kumasi Ventilated Improved Pit (KVIP)/Twin pit ventilated</p>	<ul style="list-style-type: none"> Improved form of VIP, but costly. Excrement falls into one of two pits. When one pit is full, it is blocked for two years for the excreta to decompose, after which the excreta can be safely removed for fertilizer. In the meantime, the other pit is opened for use. Can be built in different sizes - a single family pit latrine or built as a communal latrine with more seats – depending how many people the KVIP is supposed to serve. 	<p>Household or Communal/Public</p>		<p>If for a single family, then same as VIP.</p> <p>If building a communal KVIP with more than 1 slab, then will require more materials.</p>

Source: WaterAid Technology notes website, 2003.
Worth of Water, John Pickford, 1991
 “Refugee Camp in the Heart of the City” Curriculum, Médecins Sans Frontières, 2003.
 WaterAid Technology notes at www.wateraid.org.uk/site/in_depth/technology_notes/303.asp.
 Steve Hansch, Complex Emergencies Reader, 2003

How Much Does a Latrine Cost?

The cost will vary pending what is calculated in direct and indirect costs. **Direct costs** will include tangible materials for the construction of the latrine (cement, sand, stone, gravel, and superstructure materials); costs will vary extremely by the latrine type (simple pit latrine, VIP, KVIP, etc.). Local labor, both skilled and unskilled, is also part of direct costs, but local labor oftentimes is included as in-kind costs. However, a USD value will be assigned to the labor cost, whether the a daily rate is paid for labor or it is in-kind. **Indirect costs** will include long-term costs such as the organizational costs implementing the latrine program including expatriate labor costs, private vehicles, and office space.¹⁵

The average cost of latrines is difficult to ascertain because of the numerous variables involved, principally the type of latrine selected for the population in need, type of superstructure, local cost-share, and local materials cost. Table 2 summarizes *direct* latrine costs from four actual budgets and five websites (see Appendix 1 for full budgets) of which the Give World website provided a cost breakdown. The UNEP and Whittington et al's reports included figures.

Single Pit Latrines. Table 2 reflects the spectrum of costs between \$40 to \$227. Complete information is not available; therefore, it is difficult to assess the cost discrepancy. UNEP also validates the varying latrine costs indicated by the \$30-\$100 range noted in its report. For the known models, we can conclude that the **simple pit latrine** is the least expensive with a range of \$20-\$113. CRS Ethiopia estimates its cost at \$18; factoring in the community/family cost-share of \$22 yields a \$40 aggregate cost. The main costs are for the purchase of cement for the slab and roofing sheet as part of the superstructure. CRS Ethiopia latrine construction is part of its health program (read *Survey of Latrine Projects in the Field*). IRC's figures also reflect the varying costs once cost-share is factored in. IRC estimates the direct cost of a single simple pit latrine in Ethiopia at a range of \$80-\$113. But, once cost-share is factored in (IRC Burundi and Ethiopia program), the cost decreases dramatically to \$20-\$28.

KVIP is the not surprisingly the most expensive at \$227 (1999 figures); \$150 in funds needed for purchases and the rest of it cost-shared by the community. Table 2 only includes the unit price for construction of a KVIP since the proposal was for construction of 26 latrines. If the aggregate materials for 26 latrines were broken down, then 21 bags of cement at \$98 at 1999 figures would be needed for a single KVIP. Cement accounts for roughly 2/3 of the \$150 needed. KVIP is the most expensive, but will last the longest.

Communal Latrines. Communal latrine costs are no different than family latrines in the varying costs. Table 2 has the least expensive latrines at \$250 (1994) and the most expensive at \$4,500 (2003). It is difficult to compare prices because the specific latrine model was not specified in many of the communal latrines. However, the CRS Burkina Faso and Dawlo, Ghana budgets are the most accurate since I know the two individuals that provided the costs. The Burkina Faso latrine type was not specified; the Dawlo latrine cost more because it was a KVIP model.

After determining the latrine coverage and then selecting the corresponding design, materials and inputs for a single latrine are calculated. What will be cost-shared by the community and the local labor costs will all be factored in. In refugee/EDP camps, oftentimes, refugees are not used for local labor. Response will have to be immediate, so work for latrine construction will be contracted out. After all the direct costs are calculated for a single latrine, then that amount is multiplied by the total number of latrines needed for the total direct costs. Indirect costs such as transportation and NGO staff labor are then

Table 2: Latrine Cost Survey¹⁶

Latrine Description	UNIT	Single Pit Latrine (unless otherwise specified)								Communal Latrine (costs est. per structure)			
		CRS, Ethiopia (FI)	Oxfam, Ethiopia* (Web)	IRC, Ethiopia (PI, E-mail)	IRC, Burundi, Ethiopia w/cost-share from beneficiaries	Give World* (Web)	Pour Flush UNEP, Addis Ababa, Ethiopia* (web)	VIP UNEP, Addis Ababa, Ethiopia*(web)	KVIP (23 6-seater) Ghana, Aviate (F, I) UNIT COST	Oxfam* Ethiopia (web)	KVIP Dawlo, Ghana 6-seater KVIP (web)	KVIP Ghana (R)	For schools CRS, Burkina Faso* (FI)
Cement	1 bag	\$5.30		\$11 (slab)		\$69			\$4.50				\$214 (\$6.95 X 30 bags)
Steel bar, HA 6		N/a							N/a				\$7 (\$1.64 X 4)
Steel bar, HA 8													\$10 (\$2.45 X 4)
Iron bar	unit	\$3.90							\$1.90				\$12 (\$6.36X1.8)
PVC		n/a							\$5.9 (PVC 4", 100 mm diameter)				
Roofing nails	1 lb	n/a							\$0.50				
Assorted nails	1 lb	n/a							\$1.40				\$0.42
Binding Wire	bundle	n/a							\$0.50				
Sand	1 trip	\$2.90							\$31.00				
Gravel	1 trip	\$3.00							\$26.00				
Labor	Per person/day	\$3.00				\$8			1.40				\$2.50
Digging		\$12.00											
Walls		\$7.00											
Roofing		\$3.00				\$10			\$3.33				
Timber	1 plank								\$2.57				\$4 (\$2.18 X 1.8 boards)
Board													\$10 (\$1.82 X 5.5)
Transportation		\$1.90				\$8			\$7.88				\$6
Artisan's Fee									\$66				
Other						\$4							
Direct		\$18				\$100			\$150				
Cost-share		\$22							\$77				
TOTAL		\$40	\$52 ¹⁷	\$80-\$113	\$20-28	\$100	\$ 30-100 (1999)	\$40-60 (1999)	\$227 ¹⁸ (1999)	\$4,300 ¹⁹	\$500 (1998)	\$250 (1994)	\$432 ²⁰ (2003)

KEY

	Cost-Share
FI	source from field interview
PI	Phone interview
*	Latrine type not specified, but will assume it is a simple pit.

l and managerial staff needed is decided. The number of days staff time is required for the latrine project is estimated and then added to the direct costs.²¹ Organizations such as IRC ascertain costs per beneficiary per year and then the ratio of the total indirect and direct costs in their analysis of the entire cost of the latrine project. Sometimes, indirect costs can account for half of the total project amount.

Cost Trends

Outside of relief situations, donors are now requiring significant cost-share from local communities, primarily to ensure there is community buy-in into the projects versus the projects being forced onto the communities by outsiders. The percentage cost-share required varies by donor agency. When there is community buy-in, this reflects that the beneficiary will more than likely maintain the latrine because he/she contributed time, labor an, sometimes, actual cash to the project.

Cost trends for direct inputs depend on a number of factors. Inflation dramatically increases costs in the local currency. For example, Billy Hwang, a Peace Corps Volunteer in Ghana submitted his latrine proposal in March 2000, and had added a contingency amount of 10% to the request total. By the time the proposal was approved and the funds were in the bank in July, material prices had already increased more than 10%. Even in Ghana, a stable country with a growing economy, inflation can drive costs up where by the time a proposal is approved, prices could have risen dramatically. If the funding is priced in the local currency, then NGOs should be aware of the inflation rate in the country of operation and factor a conservative figure into the budget. Also, as soon as the money is in the bank, materials should be purchased immediately. However, if the proposal is in a hard currency like the US dollar, then inflation will not affect prices in the local currency as greatly, nonetheless, inflation should still be factored in.

Cement is the single most important material input for a well-constructed latrine and accounts for a large share of the budget. In CRS Ethiopia's case, \$12 out of the total \$18 in direct costs is allotted for cement.²² In addition to inflation, supply and demand, and price fluctuations of cement production inputs affect the price of cement. In rapidly growing economies, high demand for cement for construction can drive prices up. Raw materials to make cement, especially limestone, are geologically widespread and abundant. Overall shortages are not likely in the future and local shortages can be easily imported.²³ are fairly abundant. Cement is locally sourced in every continent and available. Because cement is a bulk commodity, transportation costs, therefore fuel/oil prices can cause cement prices to increase. Fuel for cement production, coal or oil, is also where input costs can drive up cement production costs.²⁴ Cement trends are that cement will always be readily available. As demand increases, so will supply, therefore a cement shortage is not a major concern in the long run. Prices have tended to fluctuate across the world, but not across the board simultaneously. In some countries, for example, in the Philippines, cement prices have declined.²⁵

7 STEPS FOR BUDGETING LATRINE PROJECTS*:

Direct Cost

1. Determine latrine coverage – what's the population, determine gap between total latrine coverage and target latrine coverage.
2. Determine design.
3. Determine quantities and materials for the cost of a single latrine.
4. Add safety margin (inflation, sudden increase in prices, etc.) at 10-15%.
5. Determine construction costs – use local labor or contract the work.

Indirect Costs

6. Factor in transportation
7. Determine positions and staff needed, then based on the total latrine project and calculate how much staff is needed. Add this cost to latrine project cost.

*from interview with Frank Broadhurst, IRC,
Nov 16 2003.

PPP

For the NGO that would have to approximate latrine costs in another country where it may not have on –the-ground presence to obtain cost data, one method of ascertaining an approximate budget for a latrine program is to apply the purchasing power parity (PPP).

PPP is an economic term that says “in the long-run, exchange rates should move toward rates that would equalize the prices of an identical basket of goods and service in any two countries. Simply put, a dollar should buy the same everywhere”.²⁶ *The Economist* has used as its basket, the Big Mac. Produced locally with about the same ingredients, the Big Mac PPP serves as an equilibrium exchange rate; Big Macs should cost the same everywhere. Therefore, comparing the actual exchange rate against the hamburger standard would yield local prices.

Hypothetically, if the cost of constructing a single simple pit latrine in Peru is \$100, and I want to know what the cost of building a latrine in the Philippines, the following steps would yield the answer:

1. If Peru is the benchmark, then divide the Philippines Big Mac price (\$1.24) in dollars with the Peruvian Big Mac price (\$2.29). This would equal -.54. the ratio of the price differential between the two countries. In other words, a Big Mac in the Philippines cost 54% less than in Peru.

> $\frac{\text{Philippines Big Mac } (\$1.24)}{\text{Peru Big Mac } (\$2.29)} = -.54 \text{ ratio}$

2. Multiply \$100 by -.54. This equals \$54. This is the cost of constructing a latrine project in the Philippines.

PPP is not a perfect measure of comparing prices, but the calculation I propose does yield a quick look at costs of a given project in an unfamiliar country.

The hamburger standard					
	Big Mac prices		Implied PPP* of the dollar	Actual dollar exchange rate April 22nd	Under (-)/over (+) valuation against the dollar, %
	in local currency	in dollars			
United States†	\$2.71	2.71			
Argentina	Peso 4.10	1.43	1.51	2.88	-47
Australia	A\$3.00	1.86	1.11	1.61	-31
Brazil	Real 4.55	1.48	1.68	3.07	-45
Britain	£1.99	3.14	1.36†	1.58†	+16
Canada	C\$3.20	2.21	1.18	1.45	-18
Chile	Peso 1,400	1.95	517	716	-28
China	Yuan 9.90	1.20	3.65	8.28	-56
Czech Rep	Koruna 56.57	1.96	20.9	28.9	-28
Denmark	DKr27.75	4.10	10.2	6.78	+51
Egypt	Pound 8.00	1.35	2.95	5.92	-50
Euro area	€2.71	2.97	1.00§	1.10§	+10
Hong Kong	HK\$11.50	1.47	4.24	7.80	-46
Hungary	Forint 490	2.18	181	224	-19
Indonesia	Rupiah 16,100	1.84	5,941	8,740	-32
Japan	¥262	2.19	96.7	120	-19
Malaysia	M\$5.04	1.33	1.86	3.80	-51
Mexico	Peso 23.00	2.18	8.49	10.53	-19
New Zealand	NZ\$3.95	2.21	1.46	1.78	-18
Peru	New Sol 7.90	2.29	2.92	3.46	-16
Philippines	Peso 65.00	1.24	24.0	52.5	-54
Poland	Zloty 6.30	1.62	2.32	3.89	-40
Russia	Rouble 41.00	1.32	15.1	31.1	-51
Singapore	S\$3.30	1.86	1.22	1.78	-31
South Africa	Rand 13.95	1.84	5.15	7.56	-32
South Korea	Won 3,300	2.71	1,218	1,220	nil
Sweden	SKr30.00	3.60	11.1	8.34	+33
Switzerland	SFr6.30	4.59	2.32	1.37	+69
Taiwan	NT\$70.00	2.01	25.8	34.8	-26
Thailand	Baht 59.00	1.38	21.8	42.7	-49
Turkey	Lira 3,750,000	2.34	1,383,764	1,600,500	-14
Venezuela	Bolivar 3,700	2.32	1,365	1,598	-15
The additional hamburger standard					
Aruba	Florin 4.10	2.29	1.51	1.79	-15
Bahrain	Dinar 0.85	2.25	0.31	0.38	-17
Belarus	Ruble 2,450	1.21	904	2,018	-55
Bulgaria	Lev 2.98	1.68	1.10	1.78	-38
Colombia	Peso 6,200	2.13	2,288	2,914	+1
Costa Rica	Colon 1,130	2.89	417	390	+7
Croatia	Kuna 14.9	2.17	5.50	6.87	-20
Dominican Rep.	Peso 60.0	2.61	22.1	23.0	-4
Estonia	Krooni 29.5	2.07	10.9	14.3	-24
Georgia	Lari 3.65	1.65	1.35	2.21	-39
Guatemala	Quetzal 16.0	2.03	5.90	7.87	-25
Honduras	Lempira 25.95	1.51	9.58	17.2	-44
Iceland	Kronur 439	5.79	162	75.8	+114
Jamaica	Jam. \$113.04	1.99	41.7	56.7	-26
Kuwait	Dinar 0.65	2.17	0.24	0.30	-20
Lebanon	Pound 4,301	2.85	1,587	1,512	+5
Lithuania	Lita 6.50	2.06	2.40	3.15	-24
Macau	Pataca 11.2	1.39	4.13	8.03	-49
Macedonia	Denar 95.0	1.70	35.1	55.8	-37
Morocco	Dirhams 23.0	2.34	8.49	9.82	-14
Norway	Kroner 39.5	5.51	14.6	7.16	+64
Oman	Rial 0.90	2.34	0.33	0.39	-14
Pakistan	Rupee 99.0	1.71	36.5	57.8	-37
Qatar	Riyal 9.00	2.47	3.32	3.64	-9
Saudi Arabia	Riyal 9.00	2.40	3.32	3.75	-4
Slovakia	Koruna 66.0	1.76	24.4	37.4	-35
Slovenia	Tolar 480	2.26	177	212	-17
Sri Lanka	Rupee 130	1.34	48.0	97.0	-51
Suriname	S. guilder 8,000	3.18	2,952	2,515	+17
Ukraine	Hryvnia 7.00	1.31	2.58	5.34	-52
UAE	Dirham 9.00	2.45	3.32	3.67	-10
Uruguay	Peso 29.8	1.05	11.0	28.5	-61
Yugoslavia	Dinar 105	1.77	38.7	59.2	-35

*Purchasing-power parity: local price divided by price in United States
†Average of New York, Chicago, San Francisco and Atlanta
‡Dollars per pound §Dollars per euro
Sources: McDonald's; *The Economist*

RESEARCH METHODOLOGY & REVIEW

Ascertaining specific project costs is difficult if an individual or NGO does not have prior expertise. The normal route is to ask like organizations in the field to share budgets if that NGO is not competing with the asking NGO on a program for donor funds. This section is to provide an overview of what it takes to obtain costs if an organization wanted to tread into the latrine project territory. I reviewed and perused 40 different websites, interviewed eight individuals, and used reports to serve the basis for this paper.

Interviews

Research for this report consisted of interviews with field experts, development professionals in Washington DC and internet research of specific inputs costs and field organizations. A total of seven interviews via e-mail and in-person were conducted with complex emergency and development professionals state-side and in the field.²⁷ Of this composition, two major relief organizations, Catholic Relief Services (CRS) and International Rescue Committee (IRC) from various locations (Ethiopia, Burkina Faso, New York City), two for-profit entities in Washington DC, and Peace Corps Volunteers and other individuals that had previously worked in the field (Ghana and Kazakhstan) are represented in the data. Personal contact was the most useful so that both quantitative and qualitative data could be obtained, however, of the six cold e-mails sent, only IRC and WaterAid responded²⁸. The rest of the interviews were from personal contacts and references.

While I was targeting cost information on the spectrum of latrine types, I could not predict upon making contact with an NGO which latrine types they were building if at all, if they were working in refugee camps or in communities, therefore, cost information in this report is limited the projects organizations and individuals I spoke with were engaged in. Furthermore, latrine costs will also hinge on a number of variables such as what the superstructure is made of, how much the community can cost-share in the latrine construction (refer to Table 1, “materials” column on the numerous input variables).

Websites Review

While websites offered a range of information on which organizations were active in latrine construction, scope of projects, and even technical details, specific costs on latrine construction were non-existent. **WaterAid**, a UK-based organizations that with a water and sanitation focus, had the most comprehensive technical resources on latrines, explaining the importance of the sanitation, details on specific types of latrines complete with drawings and factors for consideration on the type of latrine to construct. WaterAid also has useful fact files on the countries where it has operates, including population, infant mortality, life expectancy, water supply cover, sanitation coverage. Useful to the latrine research was costs of cement for latrines (in Ethiopia, £5 pays for 2 bags of cement for 2 latrine cover slabs)²⁹.

The IRC and CRS websites provided information on the number of people they assist, each organization’s history in the country of operation and current role, but the former included the number of latrines they built. However, costs still were not included. CRS’ website did not provide as much program descriptions on its website, and did not mention its involvement in latrine construction in some of the countries it operates in when, in fact, discussions with an in-country CRS staff person in Ethiopia revealed CRS is building latrines.

LAST WORDS

No situation should prevent construction of latrines. Separating fecal matter from living quarters through the construction of latrines has immense health benefits either in refugee/EDP camps or for rural communities. Ascertaining a global average on latrine costs is no simple task, but this report is a good place to start for those unacquainted with latrines.



Sikaman, Ghana (1997)
by KC Choe

ENDNOTES

- ¹ The Sphere Project, The Humanitarian Charter and Minimum Standards in Disaster Response, p. 56, Available from <http://www.sphereproject.org/handbook/index.htm>.
- ² Broadhurst, Franklin, International Rescue Committee/NY, phone interview, Dec 16, 2003.
- ³ Hansch, Steve, American University Complex Emergencies Reader, Fall 2003, p. 608.
- ⁴ Sphere 2004, p. 71.
- ⁵ Step 1, Broadhurst, phone interview.
- ⁶ Simple Pit, Pour Flush, VIP latrines from WaterAid Technology website; Round slab and making slab photos from Ghana, taken by KC Choe, 1997; Trench latrine from “Refugee Camp in the Heart of the City” MSF website.
- ⁷ Sphere 2004, p. 72.
- ⁸ Broadhurst, e-mail exchange, Nov 19, 2003.
- ⁹ Broadhurst, phone interview, Dec. 16, 2003.
- ¹⁰ Sphere 2004, p. 72.
- ¹¹ Pickard, John, “The Worth of Water,” 1991, p. 37, 113-115.
- ¹² Pickard, p. 113-115.
- ¹³ Ibid.
- ¹⁴ WaterAid Technology notes at www.wateraid.org.uk/site/in_depth/technology_notes/303.asp. WaterAid’s website was very useful. Links to specific sections are below:
Considerations before a Design: http://www.WaterAid.org.uk/site/in_depth/technology_notes/295.asp
Hygiene Education: http://www.WaterAid.org.uk/site/in_depth/technology_notes/807.asp
Water Resource: http://www.wateraid.org.uk/site/in_depth/technology_notes/808.asp
Hand-Dug Wells: http://www.wateraid.org.uk/site/in_depth/technology_notes/297.asp
Tubes & Boreholes: http://www.wateraid.org.uk/site/in_depth/technology_notes/298.asp
Hand pumps: http://www.wateraid.org.uk/site/in_depth/technology_notes/299.asp
- ¹⁵ Latimer, Dennis from Catholic Relief Services in Ethiopia wrote that long-term costs, usually of 2-3 years, including staff salaries, office expenses, vehicle and travel expenses are not calculated (see Appendix A for full e-mail).
- ¹⁶ **CRS, Ethiopia** data from Latimer, Dennis, Nov. 11, 2003;
- **Oxfam, Ethiopia** from ReliefWeb, source from Oxfam from website <http://www.reliefweb.int/w/rwb.nsf/0/a8948ce17c61ad0ac1256d6dd003429>; accessed 9 Nov 2003;
 - UNEP, Division of Technology, Industry, and Economics, “**International Source Book On Environmentally Sound Technologies for Wastewater and Stormwater Management, Appendix 2: Costs of Wastewater Management**”, Available from <http://www.unep.or.jp/ietc/Publications/TechPublications/TechPub-15/Appendices/app2.asp>, accessed 26 Nov 2003;
 - **Taviefe, Ghana** from Hwang, Billy, Returned Peace Corps Volunteer from Ghana, budget from Proposal for Taviefe Household Latrine Programme, Ghana, submitted by Billy Hwang on 10 March 2000, conversed on 6 Dec 2003;
 - **IRC**, Ethiopia figures from Broadhurst, Franklin, Sr. Technical Advisor for Environmental Health, International Rescue Committee, e-mail exchange, Nov. 17, 2003;
 - **Give World**, Available from http://www.giveworld.org/erds/erds_donation_detail_don_id_456.htm, accessed 26 Nov 2003;
 - **Dawlo** figure from Atidekate website, www.atidekate.com, Returned Peace Corps Volunteer Ghana Augustus Vogel, accessed 6 Dec 2003;
 - Whittington, Dale, Lauria, Donald, Wright, Albert et al, “Household Demand for Improved Sanitation Services: A Case of Kumasi, Ghana”. The World Bank, Washington DC, May 1992, Available from http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1992/05/01/000009265_3961003064137/Rendered/PDF/multi_page.pdf, accessed 1 December 2003;
 - CRS Burkina Faso from Dills, Laura, e-mail exchange, 27 Nov 2003.
- ¹⁷ (£30, 12/14/03 conversion, £1 = \$1.72) - single pit latrine
- ¹⁸ Calculations est. from a larger 26 latrine project where direct costs was \$4,313 & community contribution was \$2,015; cedi converted at \$1=3,900 cedi exchange rate
- ¹⁹ (£2500, 12/4/03 conversion, £1 = \$1.72)
- ²⁰ Refer to budget. Cost of 6 communal latrines is \$2,593; 2003 budget, \$1=550 CFA
- ²¹ Broadhurst, Franklin, International Rescue Committee/NY, phone interview, Dec 16, 2003

²² Latimer, e-mail exchange, Nov 11, 2003.

²³ Van Oss, Hendrik, "Cement". U.S. Geological Survey, Mineral Commodity Summaries, January 2001, Available from <http://minerals.usgs.gov/minerals/pubs/commodity/cement/170301.pdf>, accessed Dec 10, 2003.

²⁴ Soule, Mason, Logan, Jeffrey, and Steward, Todd, "Towards a Sustainable Cement Industry: Trends, Challenges, and Opportunities in China's Cement Industry, World Business Council for Sustainable Development, Available from http://www.wbcscement.org/pdf/sub_china.pdf, accessed on Dec 10, 2003.

²⁵ Nine articles were reviewed on cement prices in Asia Pacific, Africa, China, and in the United States. No single trend on cement that tied all the countries together or a global trend was found except that cement production will become more environmentally friendly and that consumption levels for cement remains high. Philippine cement price data from http://www.cementtrade.com/articles/art_detail.asp?art_id={1521CABC-EA7D-49E0-A17D-E30FF4A05797}, accessed Dec 10, 2003.

²⁶ The Economist, "Hamburgers should be an essential part of every economist's diet." April 24, 2003. Available from www.economist.com/markets/bigmac/, accessed on Dec 2, 2003.

²⁷ See Appendix C, Interviews

²⁸ Organizations to which e-mails were sent: IRC Headquarters, ActionAid/Ethiopia, National Council of Churches in Australia, Canada Christian Children's Fund, WaterAid, Oxfam.

²⁹ WaterAid website: www.wateraid.org.uk/site/what_we_do/where_we_work/52.asp, accessed 11/9/03.