Urban low cost sanitation

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URBAN LOW COST SANITATION: SELF HELP, GOVERNMENT DIRECT LABOUR OR CONTRACTOR BUILT?

1. Summary
Contractor built latrines located in urban developments are more likely to lead to the success of a pit latrine project than either direct labour or self help construction. Contractors are not constrained by government regulations and can often, for example, use alternative methods to obtain materials in short supply, or pay incentive wages to the labour force for work not just attendance.

A self help construction project is likely to be successful in a rural environ where the community is united under a central figure - the village elder. But the right to survive in an urban habitat often results in materials being sold for more important things such as food and medicine, and not the construction of the latrine. Urban Government direct labour built latrines can suffer from the severe restrictions of government rules and regulations which dictate the purchasing procedures, but not how much is necessary to bribe store keepers to release materials to the project.

2. Introduction
You are the Town Engineer: The town's population has doubled in the last 8 years, but the supply of housing has failed to keep up with demand. The rural migration has moved into slum (squatter) quarters along the river banks where the town council has not financial interest because it is waste land. There has just been an outbreak of cholera. The daily papers are clamouring for somebodys blood and blaming the Government for failing to implement election promises of providing sanitation to all people. You are perilously close to being sacked in order to assuage a political blunder and allow the government to be seen to take action. In the meantime, by working through the nights with the Ministry of Health you manage to contain the cholera out break.

A court of enquiry, after the cholera out break, establishes poor sanitation and the public's poor personal hygiene to be the main contributory factors. The enquiry established cholera to have a minor contributor to the mortality rate far outstripped by gastroenteritis, measles and malaria as infantile killers. In addition the Ministry of Health point out that clinic and hospital records indicate only the "tip of the iceberg". An inspection of the squatter areas shows bare footed children walking through pools of sewage, sullage and surface water, only a token water supply and refuse in partly covered pits with flies buzzing around the decaying matter.

The politicians authorize finance for consultants to study the water and sanitation problems. Bilateral agencies support the project and eventually, years later, the detailed designs are underway. However, the lending agencies are short of money and have limited the Projects to a standpipe water supply, sewerage for the town centre, latrine project. It is agreed that the Health Education Unit of the Ministry of Health will join forces with the Sanitation Extension Unit under the Town Engineer, and under their combined umbrella oversee the construction of the pit latrines. But how? Self help, Government Direct Labour or Contractor built?

3. Self Help Latrine Construction?
Since independence, the country's philosophy and policies have been based on socialist ideology. Great emphasis has been placed on self help and this has worked well. Village water supply schemes have been constructed under the authority of the village elder, with technical assistance from central government. The personal relationship the villages hold with the construction works has resulted in continuing interest in maintaining the plant to a high level. From a financial view, the village self help projects are very effective. Not only are the labour costs practically nil, but the indirect foreign exchange element is low. Little imported machinery is needed to undertake the works; diesel fuel is only required to transport materials to site and for the technical design and supervision staffs' transport.

The reason that self help philosophy does not work for an urban project is not technical, but human. The village elder is a paternal figure. He knows by name and personality everyone in his village. In turn he is respected by the villagers; his advice
and arbitration is sought after. A miadem-
eanour by a villager is soon brought to the
attention of the village elders and dealt
with. In fact, it is a "close-knit" society
working for a common good - socialism at its
most successful.

In an urban environment these village attrib-
utes are quickly lost and scorned in the
daily battle to survive. The dream of st-
reets "paved with gold" is rapidly dispelled
by the lack of work, food and housing the
lot of too many rural migrants. The pro-
blems are compounded by disease, most of
which is water related - children that might
survive measles in their home village die in
an urban community, as they are, in addi-
tion, fighting diarrhoea, ascariasis (round
worm), fevers and malnutrition etc.

In the past, "Sites and Service" projects
have occasionally been implemented on a self
help basis. The problems encountered are
along the lines that "if it can happen it
will happen". For example, one individual
used his loan for a luxurious week in the
country's best hotel. Others sold part of th-
their cement allocation to buy food for the
children. It was not long before sites and
services projects we contractor built.

4. Government Direct Labour?
The direct participation of the town or
governments' public works department in a
latrine construction programme seems very
attractive. It should be possible to save,
least, the contractors' element of profit
in addition to savings on Costs incurred in
tendering and administering the works. But,
to operate the project by complying with all
government regulations can lead to an expen-
sive latrine.

The hiring of a direct labour force is often
at the mercy of the regulations: Governments
commonly pay labourers the minimum wage:
sufficient for the man to arrive each day,
but not to do a days work. Overtime rates
are pitifully small unless the supervisor
awards four to five hours as an inducement
for hard work.

Many financial regulations for example
restrict the employment of casual labour to
three months. After the three months period,
labourers become full time government employ-
ees and are entitled to redundancy payments.
Often after this three month period the
labourer or craftsman has become effectively
trained when the regulations require him to
be sacked. The supervisor then has the
dilemma of retaining a new labour force or "bending" the regulations to maintain the
present one.

The financial accounting procedures can
effect the output of the labour force. Wages
are paid weekly and once the total bill is
more than, say, US $ 100 some financial
regulations require a police escort! It can
be very difficult to arrange and may result
in the work force spending half a working
day in collecting their wages from the cen-
tral office.

Financial regulations on the purchase of
materials and equipment are often very
frustrating. Local purchasing orders must
be placed with government parastatal bodies.
If the parastatal is unable to provide the
requisite materials, than a proforma must
be obtained from three private establish-
ments and the purchase placed with the
lowest tender. Even after payment for the
goods failures can still occur, especially
with scarce and valuable commodities such
as cement. The delay between obtaining a
proforma and presenting the money for pay-
ment can take weeks because of all the
necessary authorization signatures, by which
time the materials may have been allocated
elsewhere. And for cement, which is often
in short supply, it is nearly always necessary
for the allocation officer in the cement
works to be bribed - very difficult word to
use on your government wage sheet!

In developing country, government transport
is a highly valued commodity as public
transport is often on point of collapse.
Cars and Landrovers are used to ferry work-
ers to and from work by which time the
weekly quota of petrol is half consumed or
has been syphoned off by the driver in order
to pay for his food. Thus, the use of a
government car to supervise a construction
project is often not available. To borrow
a lorry to transport cement materials is
arranged in advance of the day for cement
allocation, only to be foiled by the cement
works who default on supplying either because
of non payment of the bribe or a mechanical
breakdown of the plant. The author knows
of occasions where three attempts had to be
made to obtain 7 tons of cement from a
parastatal cement works, although all payments
had been made and the highest authorities
given had priority clearance.

Two other areas affecting government trans-
port are the purchase of fuel and repairs to
the vehicle. Additional petrol to the weekly
quota (often 70 litres), requires the auth-
orization of the department's director and
the most senior civil servant in that Minis-
try - no mean feat to obtain these approvals.
But then the ration must be drawn from the
Government fuel depot. Which can entail
queues of up to a mile long - more wasted time
and energy. Repairs and servicing of veh-
icles with a few exceptions have to be under-
taken by the government garage. Spare parts
require money which is the reason why a veh-
icle can be laid up for months to the detri-
ment of the project.

The cost of educating and training profes-
sional and technical staff in a developing
country is a great burden on the economy.
In some cases this has suffered from Brit-
ain's dramatically increasing overseas
students fees. The limited number of qual-
ified professional staff are rapidly promoted to high positions where they are enmeshed in administration and have little chance in controlling the engineering projects. This is left to inexperienced staff who can often be daunted by the administrative procedures, let alone the technical requirements.

But a latrines project constructed by direct labour will require full time engineers to supervise the works. However a degree of the routine work can readily be undertaken by IVth and Vth form leavers, if given the appropriate induction course.

5. Contractor Built?

Contractors have the reputation of making large profits, which is considered consistent with a capitalist and not socialist ideology. But, by open tendering procedures it is possible, in many cases, to keep the profit percentage low.

The advantage of a contractor over a Ministry direct labour force is that he is not confined by the government financial arrangements that are long overdue for revision. The purchase of materials can be completed in a pragmatic manner, where necessary by paying the appropriate bribes - in other words the free market price. Petrol and vehicles are rarely a constraint to a contractor.

A great advantage of a contractor over a Ministry labour force is that he is not confined by the government financial arrangements that are long overdue for revision. The purchase of materials can be completed in a pragmatic manner, where necessary by paying the appropriate bribes - in other words the free market price. Petrol and vehicles are rarely a constraint to a contractor.

A great advantage for a latrine construction project is the hiring of local labour to undertake the works. Labourers and craftsmen are employed for the duration of the works. They will learn new skills, such as precasting latrine floor slabs on leveled ground rather than in situ floor slabs that require detailed shuttering. At the completion of the labour force will be disbanded but the acquired skills will remain within the district. A few craftsmen and labourers are likely to establish a latrine construction service to satisfy the demands of the area. Once this process has been successfully operated throughout the district the private "entrepreneur" craftsmen are in a position to undercut a contractor's price for any future works. It may not be by direct tendering, as that requires the formal establishment of a company, but by the refusal of the people to pay the higher price.

Supervision of the latrine construction by government or town council employees will still be required. But, the frustrations should be greatly reduced and confined to paying the contractor for satisfactorily performed work. But a word of warning, contractors are better equipped than private citizens to use inferior quality materials than those specified. Unless there is satisfactory supervision of the works the contractor will profit to the detriment of the works.

6. Cost Comparison

It is extremely difficult to compare the costs of building a pit latrine by self help, direct labour or a contractor. There has never been a project where all three approaches have been fully tried under identical conditions. Often, the government supervision and administrative costs are excluded in the analysis.

The average cost of a direct labour built pit latrine was obtained from a recent construction project in Africa and calculated to cost US $ 610 including government supervision and transport costs. The break down of costs is given in Table 1.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>The cost of a Single VIP Latrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>(January 1981 prices)</td>
<td></td>
</tr>
<tr>
<td>a) Materials:</td>
<td>US $</td>
</tr>
<tr>
<td>Cement</td>
<td>126</td>
</tr>
<tr>
<td>Steel</td>
<td>12</td>
</tr>
<tr>
<td>u PVC pipe</td>
<td>16</td>
</tr>
<tr>
<td>Timber</td>
<td>34</td>
</tr>
<tr>
<td>G.I. roof</td>
<td>22</td>
</tr>
<tr>
<td>Miscellaneous*</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>238 : 39%</td>
</tr>
<tr>
<td>b) Labour</td>
<td>372 : 61%</td>
</tr>
<tr>
<td></td>
<td>US $ 610</td>
</tr>
</tbody>
</table>

Or, if the black market (ie free market) exchange rate is used: US $ 226. The above costs take account of labour, standing time when materials were not available and cover the half a day's working time a week to collect wages.

A contractor built latrine should be financially more expensive than the US $ 226 and a self help built latrine cheaper. If there is no wastage of materials. But as with cost comparison between all systems the results will depend upon circumstances within each country.

* covers a proportion of tools and equipment such as steel squat plate moulds.