



An integrated approach to sanitation and health in Kabul



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KABUL IS A major population centre faced with serious sanitation problems. Poor quality housing, severely limited financial resources, the absence of sustainable management structures, the emigration of many educated people, and the influx of internally displaced people all contribute to the problem. The high water table in some of the flatter areas of the city, blocked and poorly constructed surface drainage systems and the absence of any co-ordinated waste collection and management system are other causes of the problem. Due to the recent civil war all economic and social sectors including health services have been heavily damaged and the economic status of many people has been dramatically affected.

Current situation

Latrines and nightsoil collection

The most common type of toilet system used both in planned and unplanned housing in Kabul is the raised drop latrine. It consists of a raised squatting slab, often of wood and mud built over a box structure with its base approximately at street level, usually built of stone or concrete. This box has a small outlet (0.5m x 0.5m) direct to the street. In the case of two or even three-storied buildings sewage from higher floors reaches the outlet box by a drop chute. The reason for constructing raised latrines in preference to pit latrines is twofold. Firstly, the high water table in the flatter areas may be at risk from contamination with pit latrines, and secondly, in the hilly areas excavation into bedrock is impracticable.

Some sections of the community separate the urine and the faeces, the faeces passing through to the receptacle, the urine down a tube to the outside of the house. The result is a pile of fresh faeces that builds up under the slab until somebody removes it. In many areas there is no possibility of mechanical emptying due to the steep terrain and narrow streets. Consequently if the latrine is not manually emptied the fresh faeces pass out into the street. Sunni people use soil for anal cleansing, maintaining a largely dry latrine. Shi-ite communities wash after defecation and the water used commonly carries some of the excrement into the street to form pools which gradually soak into the ground. On hillsides with low infiltration capacity this practice is a greater hazard. The major advantage of the system is that the excreta is kept above ground level and prevented from contaminating the ground water. A second advantage is that the excreta is readily available for use as fertiliser. However, the current practice of using fresh excreta for

fertiliser puts the collector, the farmer and the consumer of untreated vegetables at risk from the pathogens contained therein.

This collection system has successfully worked in the past with assistance from local farmers. When Kabul was smaller and surrounded by cultivated land the local farmers would come to the city and collect the nightsoil to use as fertiliser on their fields. This still occurs to some degree in the peri-urban areas of the city. Frequent and regular collection breaks the egg to egg cycle of the insect vectors, and the number of breeding sites is reduced in the areas of high population density. However, the benefits this brings are offset somewhat by the addition of fresh excreta to fields in rural areas. In recent years, as communities became separated by the war and traditional structures broke down, communities migrated to different areas of the city. The city also became more urbanised, and nearby areas of farmland were mined, severely restricting traditional agricultural practices. This combination of factors has led to a break down in the nightsoil collection system. Although there are still large areas of cultivated land to the north and south of Kabul (Shamoli, Logar and Maidan valleys) the transport costs for nightsoil cannot be afforded by the farmers. The result of the breakdown of the collection system is that many areas suffer from latrines being emptied directly into streets. The health risks associated with such practices are direct contact between people, particularly children, and the excreted pathogens, and vector transmitted diseases.

Kabul has an extensive network of surface drains for carrying rainwater to the Kabul river, the majority of which are open. Major drains are lined with cement, others are simply dug and left unlined, while others still are natural drainage channels formed during periods of heavy run-off. Due to its present shortage of financial resources, Kabul Municipality cannot afford to maintain the drains. Refuse and nightsoil are commonly disposed of into the drains to form blockages which restrict water flow. Since many of the drains are dug by hand and left unlined the water sometimes carries a high sediment load which then builds up behind the blockage. In addition to this on the steep hillsides there is little or no vegetation to bind soil together, so that during intense rainstorms significant soil erosion results with much of the material being deposited in the drains at restrictions or where the gradient of the drain is reduced. This has happened to such an extent that many drains now no longer function at all. The result of the poorly functioning drainage is the formation of hundreds of large pools of standing water that act as breeding sites for

disease vectors. Hundreds of kilometres of drain remain waterlogged providing similar breeding grounds. In the rainy season the inadequacy of the drainage leads to flooding causing damage to buildings especially in hilly areas, and the formation of large pools of sewage in flatter areas as the water collects and mixes with the excreta in, and from, the latrines. In addition to the health risk that this poses it makes the roads impassable and general living conditions very unpleasant.

Garbage collection and disposal

Garbage collection in Kabul is the responsibility of the Municipality, but budget restrictions, political instability and war have prevented services from functioning adequately since 1992. This has resulted in the accumulation of large piles of rubbish in the streets which serve as breeding grounds for rodent and insect vectors in many areas of the city. Some of the garbage is collected by Municipality trucks, although this is presently funded by an NGO, and coverage within the city is minimal. The garbage is then disposed of at a landfill site to the north of the city.

Personal hygiene

The emigration of a significant proportion of educated middle class since 1992 and the influx of very poor internally displaced people has had a negative impact on the

level of health related knowledge within the city regarding personal hygiene and cleansing. Internally displaced people from rural areas with a culture of open defecation in the fields and gardens with plenty of space, fresh air and no odour would not accept the practice of defecating in shelters with little space. Mothers generally take their children to defecate in the yard and adults carry on the same practice during the night. At present only a limited number of people receive environmental health education. Some is given to mothers when they bring their children to clinics, but little is given in the community. The Islamic faith does teach the need for hygiene and beauty of the environment. However, this is linked more to the need for washing in preparation for prayer time than an understanding of environmental health. It is not common to wash hands after going to the toilet or before preparing food.

Response

The response to the situation has been to establish sustainable and co-ordinated sanitation projects. Currently several NGOs are implementing different sanitation programmes notably latrine and surface drainage improvements in different parts of the city with each NGO focusing on a particular area after negotiation with the municipality and other NGOs. The International Assistance Mission's

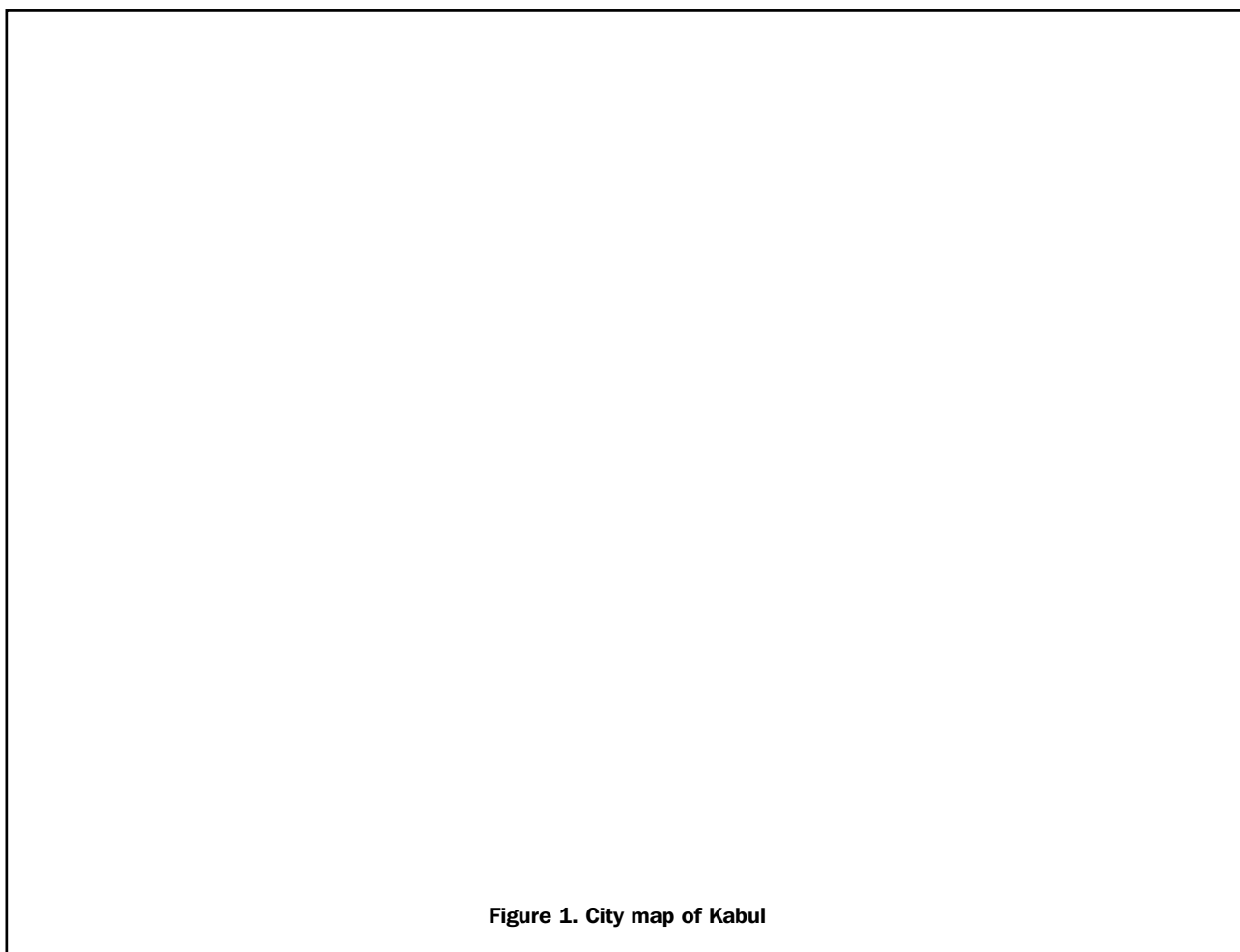


Figure 1. City map of Kabul



Figure 2. Latrine construction

(IAM) Relief Team is one of the NGOs working in the city to implement an integrated programme, with the primary objective of controlling the transmission of communicable diseases through a series of engineering and health education inputs. The primary diseases of concern are faecal-oral and insect vector diseases. The programme includes latrine construction, surface drainage improvement, garbage and nightsoil management and community health education. Other participating bodies in the programme are the municipality, the Ministry of Public Health (MoPH), the local Shura (council of community representatives) and the local community. The area in which IAM Relief is operating is in the west of Kabul in Districts 3, 5 and 6 (Figure 1). These districts are some of the most severely damaged by the war and the communities are among the poorest in Kabul. The target area is characterised by a highly fragile hydrogeological condition. The depth to groundwater in the project area varies from several metres in the west to less than one metre in the east. Some of the working area is flat with planned housing, however the lack of any surface drainage system and the high water table in the area has resulted in the formation of large areas of marshland and ponds. In contrast to this, other areas are hilly and have unplanned housing built on bed rock which has a very low infiltration capacity. Consequently during the heavy spring rains, runoff is significant, and without any surface drainage system soil erosion and subsequent deposition is a major problem, with roads becoming impassable.

Engineering measures

Latrines

Improvements to existing latrines includes installation of a vent pipe, in-situ casting of a concrete squatting slab to separate urine from faeces, construction of an emptying point (the "nose") a cover slab and steps (Figure 2). By providing the concrete squatting slab with proper footings, the faecal contamination to the slab is reduced. The addition of the slab to seal the nose of the latrine and a separate outlet for urine ensure that faeces no longer flow into the street. The ventilation pipe removes bad odours, with the masons using their experience with the traditional Afghan underground heater, the *taba khana*, to determine the appropriate length and diameter of the vent pipe, and the size of the receptacle. These improvements to the latrines should help to reduce pathogen migration and contamination of both surface and groundwater.

Drainage

Within the flat areas where the water table is very high, often less than 1m below ground level, both lined and unlined drains have been constructed, and many marshy and other low lying areas have been drained, and subsequently filled with material excavated for the drain construction. In conjunction with the drainage improvements, many surrounds to hand pumps have been improved in an attempt to restrict groundwater contamination - at present, most of the estimated 100,000 hand dug wells in Kabul are highly contaminated (Timmins, 1996).

Garbage collection

Kabul Municipality have not offered garbage collection services to the city for nearly ten years. IAM Relief and Habitat are currently working together to collect rubbish from the streets and in the 6 month period to March 1998 around 3800m³ of rubbish had been collected from District 3 and disposed of to a landfill site. The operation is staffed by personnel from the local Municipality's Cleaning Department and local workers who collect the rubbish, with Habitat providing the necessary trucks for transportation to the landfill site.

Nightsoil collection

A protocol has been signed between IAM Relief and the Ministry of the Interior for the construction of a composting centre in the former Dehmazang jail. Mixed with ash, broom dust and vegetable waste in the latrines the partially detoxified nightsoil will be transported to the centre for full composting. Separation of most of the urine from faeces and adding ash and vegetable waste to the nightsoil on site will increase the C/N ratio allowing full detoxification. The fully treated nightsoil will then be provided as a cheap alternative to costly chemical fertiliser to the local farmers, whose traditional practice is to use untreated nightsoil which puts both the farmer and the consumer at risk. It is intended that this procedure will lead to a sustainable industry to the local population.

Health education

A fundamental complement of the programme is community health education which is being carried out as a joint project between IAM Relief and MoPH. The main objective of this is to promote good hygiene and sanitation practice among the community. To this end 24 male and female staff from MoPH have been employed to convey the hygiene messages at different levels within the community, from the home to street level and beyond. The target audience is a wide range of city dwellers and many illiterate internally displaced people who receive education covering different environmental and personal interventions. The health education programme includes: regular health education within the community by male and female educators; the incorporation of children into the home-based health education programme; demonstration of the correct use of the latrines; personal hygiene and hand washing; and environmental health assessments of homes, wells, yards, latrines, schools and working sites. Health educators convey their messages through simple and easy to understand language; art therapy, particularly with children; street theatre, and through quotations from the Holy Quran.

Results and conclusions

By carrying out the integrated sanitation programme large areas of marshy land which previously acted as ideal insect breeding sites have been drained, and large areas within each of the working districts have been mostly cleared of fresh faeces and piles of garbage. The construction of around 130 km of unlined drains in District 3 and 5 has resulted in the removal many small pools in front of people's houses and has helped to keep roads relatively dry during the rains so that they remain passable. The latrine improvements have resulted in mostly odourless latrines - according to a survey carried out by health educators only 5 per cent of improved latrines still had a bad odour - and most latrines are at present kept in a reasonably clean state.

It is still too early to quantitatively ascertain the impact of the improvements made to sanitation and drainage in the working areas. This will only be possible with the follow-up surveys scheduled to take place during the summer of 1998. However, anecdotal evidence has indicated that each

of the engineering components has had a positive effect, with many comments received from the community that both insect numbers, and the frequency of diarrhoeal diseases have reduced.

Overall, the response from the community has been encouraging, although there have been some problems. Typical examples include: failing to close the nose of the latrine; putting ashes in drains instead of in the latrines; stealing and breaking of urine pipes; throwing vegetable waste into the street; and blocking drains to improve access to properties. Despite these problems, progress is being made, emphasising the key role that the health educators play in the whole process, particularly with regard to behavioural attitudes. In order to continue this change and promote a hygiene culture among the community it is recommended that the health education programme should run in conjunction with the engineering programmes being undertaken. For any integrated sanitation project a combination of many different professions are necessary, such as doctors, engineers, health educators, biologists, and economists. All of these are available within Afghanistan, but the use of all these skills in combination as part of the sanitation engineering culture in the country has not been fully cultivated yet.

References

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