



## A strategic response to urban sanitation in a war-torn city

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AFGHANISTAN HAS BEEN in a conflict situation since 1979. Between 1992 and 1995 Kabul, the capital, was the theatre of intense fighting and ended up with more than 40% housing destruction. Consequently, important population movement took place among its estimated 1,300,000 inhabitants. Those who lived in the most affected areas (districts 3, 5 and 8, see map) moved to those which were preserved (in particular to districts 10, 11 and 15, see map), thereby increasing their population density (see graph here after). The sanitary infrastructure and in particular its water and sewerage networks were heavily damaged. Since then the authorities have been more and more reluctant to attribute resources to sanitation services. As a result the provision of such services, especially for those highly populated districts, has been a key challenge both for the Taliban authorities and for the aid organisations concerned.

In recognition of the problems faced in the highly populated districts in central and northern Kabul the ICRC undertook an assessment in collaboration with the Ministry of Public Health (MOPH) and the Municipality of Kabul. Its aim was to find out the options available to overcome the lack of access to adequate sanitation. From mid 1996 ICRC field engineers provided technical support in looking mostly at urban sanitation although other environmental health problems such as water supply and waste disposal were also considered.

The access of the population of Kabul to adequate sanitation is poor. Increased population density observed in certain

districts (see above) contributed to a high morbidity due to preventable water and excreta related diseases. The survey focused mostly on these areas and on the most common sanitation system present : the individual dry latrine.

### PROBLEM ANALYSIS:

#### Factors affecting sanitation in Kabul:

##### *On-site sanitation:*

- serious health hazards exists, due to outflow of night soil in the streets with a risk of groundwater contamination (most of the wells are sunk in the superficial aquifer)
- traditional night soil collection are disorganised and sometimes non existent.

##### *Off-site sanitation:*

- sewerage networks are working much below their nominal capacity or not at all, due to the general backlog of maintenance and lack of fuel
- treatment plants are not operational
- many septic tanks are not maintained.

##### *Public services:*

- the public services are severely disrupted due to war and displaced population
- there is a lack of skills and means.

##### *Health education:*

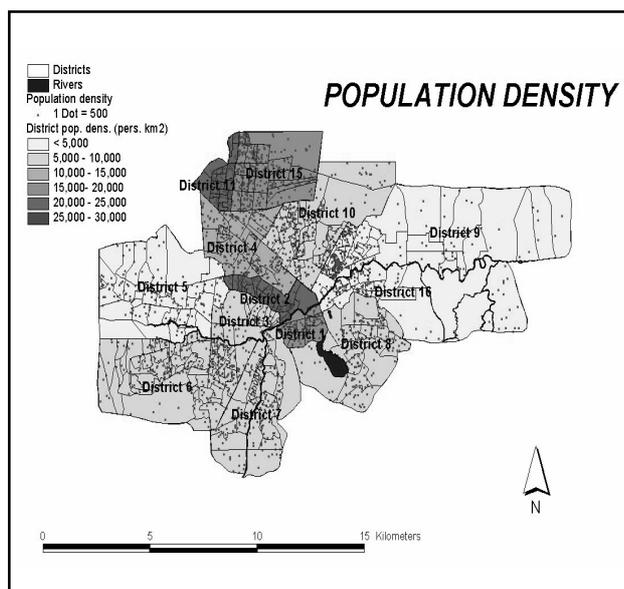
- urban sanitation issues are not a high priority
- traditional health education is difficult to implement due to the current religious and political constraints prevailing under the Taliban regime.

##### *Monitoring:*

- no proper inventories of existing wastewater and un-sewered systems exist
- no information management systems are in place

##### *Institutional framework:*

- little or no capacity from the Central Authority for Water Supply and Sewerage (CAWSS) for operation and maintenance of sewerage networks
- policy and investment priorities are not defined by the regime.
- budget and resources requirement are not defined (for sewerred and un-sewerred systems)



**SURVEY RESULTS :**

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The survey identified a number of sanitation methods in the respective districts, ranging from simple traditional latrines to individual or collective septic tanks and sewerage networks.

**Traditional and improved latrines:**

Almost every home surveyed and generally most of the 179,300 houses registered in the 16 districts of Kabul have traditional latrines. Kabul latrines are elevated and constructed in such a way that the chamber receiving the night soil has a hole opening onto the street. The night soil is either be emptied through this door or simply flows outside and dries, or is washed away by the rain. (see photo).

**Composting & night soil collection:**

Before the war, night soil collection was performed by the Municipality. During the war period, especially since the



early nineties, it was simply not collected and the night soil was left to flow in the channels or down the slopes of the hilly areas. From 1995, when cultivation restarted after the fighting, there was a need for fertilisers, the night soil collection therefore resumed. The main problems observed were that these private operators can work without hygienic considerations often leaving the doors of the chambers wide open (creating odours and health hazards).

**Collective and individual septic tanks**

The survey indicated that about 35,000 people living in 9 separate blocks (total of 3,200 apartments) do benefit from collective septic tanks. About 15,500 individual septic tanks were counted in the 16 districts, accounting for about 9% of the households. The emptying of these private tanks has become a serious problem as vacuum tankers are rare and expensive, therefore type of system has become an expensive means of household sanitation leading many owners to build dry latrines in their home compounds and abandon the flush toilet.

**Sewerage networks:**

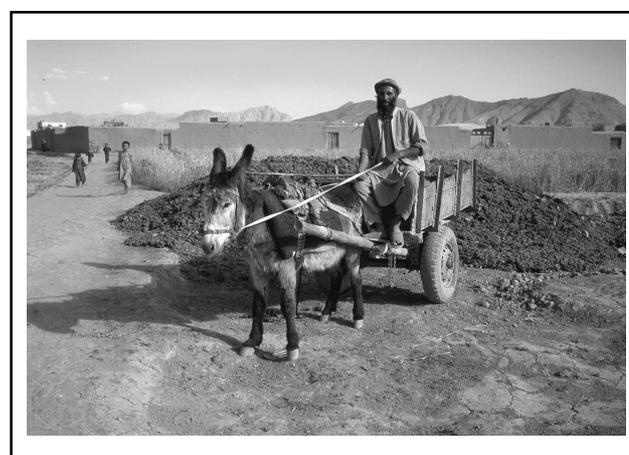
The main existing network serves “Microrayon” apartment blocks (built from the sixties by Eastern Germany) and its extension is very limited. It is connected to a treatment plant located in Qalaih Wazir. Most of the pumps suffered from a general lack of maintenance although the system was supported for an extended period by the NGO “Solidarités”.

**Capacity of the public services:**

Two local administrations are involved in service provision, including urban sanitation:

- the CAWSS is dealing in the operation and maintenance of the water and sewerage networks,
- the Municipality of Kabul is responsible for septic tanks, rain water and solid waste management

Both administrations used to be efficient and well organised but are now rather lacking funds. Many of their key personnel (engineers, managers) have left the country, a few



others are employed by international NGOs involved in the water and sanitation sectors.

## STRATEGY DEVELOPMENT:

### Key principles:

A workable strategy for urban sanitation was defined in collaboration with the MOPH and the Municipality who reviewed the findings of the ICRC survey, and helped to identify the key principles that could pave the way for a strategic development of the sector.

### Possible areas for investment:

- Reconstruction or construction of improved latrines; support the traditional night soil collection for farming and economical purposes,
- Rehabilitation of sewers and pumping stations; technical and financial support to the CAWSS for operation and maintenance of the sewerage systems,
- Maintenance and emptying of individual and collective latrines; support the private sector for maintenance of septic tanks.

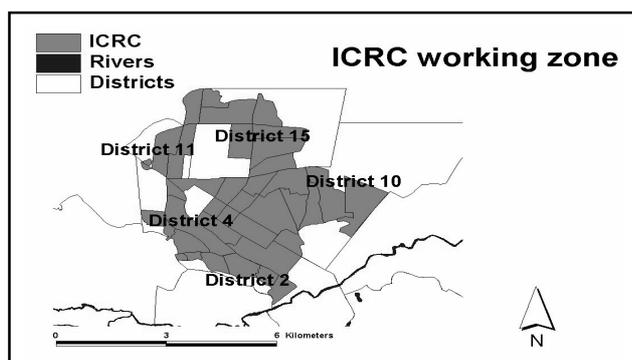
The ICRC decided to focus on option 1. Other organisations such as CARE, International Assistance Mission and German Agro Action worked in the same area. Other organisations such as “Solidarité” and UNCHS Habitat tackled option 2 and 3.

### Working area:

It was felt important, in addition to identifying the key areas which should be addressed, to prioritise particular settlements or districts i.e. zones with very low coverage in terms of access to adequate sanitation, high population density areas, presence of a high number of displaced people, etc. ICRC environmental programme was settle according to these considerations. Its working zone include the districts 2, 4, 10, 11 and 15.

### Programme planning:

The ICRC decided in conjunction with its partners to fund and implement an on-site sanitation improvement



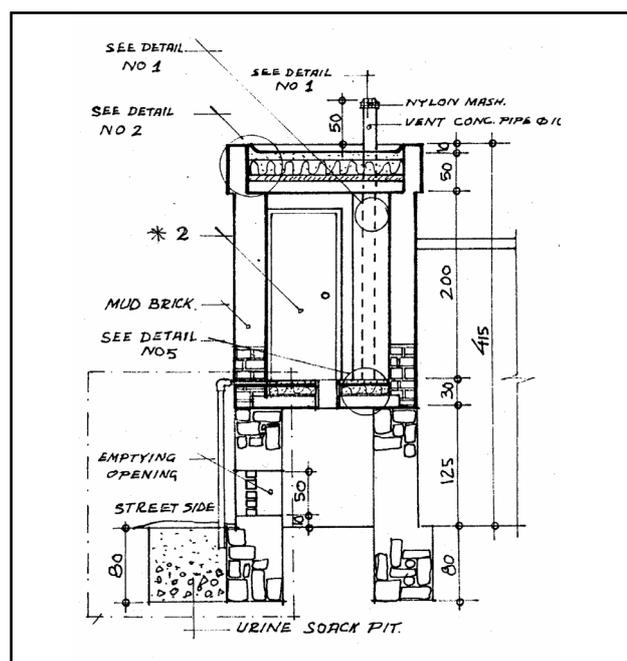
programme including a large latrine reconstruction component. It consists of the following activities:

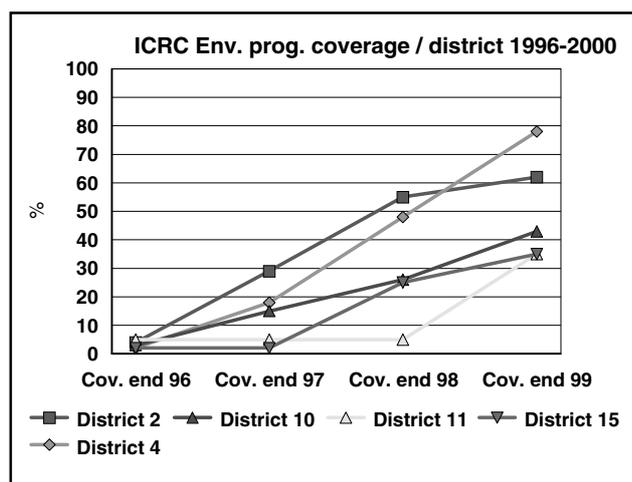
- construction of 10,000 improved latrines per year in the selected working area during a 5 years period (1997 to 2001), on the basis of the design of a unit
- support and training of night soil collectors in the respective districts
- assistance to the Municipality in sanitation related issues
- develop hygiene related educational material and organise regular visits to schools and public places

## PROGRAMME OUTPUTS & FUTURE DEVELOPMENT:

### Improved latrine design :

ICRC latrines are an improvement on the existing Kabul latrines. Their design is a variation on the traditional style, therefore assuring the participation of a larger proportion of the population since it disturbs fewer of their habits. The capacity of the chamber is increased to reach 1 m<sup>3</sup> with a minimum floor elevation of 1.2 m ; urine is separated and directed to a soak pit in order to achieve a consistency of the night soil, which eases the evacuation; ventilation is assured through a pipe topped with a screen for fly reduction ; the chamber is covered with a concrete slab and the night soil is therefore confined. These improvements can sometimes be achieved for less than 25 US dollars without destroying the existing latrine (rehabilitation) but in about 80 % of the cases, reconstruction has to be done, and then the cost is 80 US dollars. It is very important to get the participation of the beneficiaries in terms of materials and manpower. Every household contributes about one third of the price of the improved latrine





### Outputs from 1996 to date:

Based on the above strategy, the various proposals and activities were implemented starting in August 1996. Globally, a total of about 48,300 improved latrines have been constructed in the 16 districts of Kabul. This means that about 27% of the households (private homes) benefit from an improved latrine.

ICRC sanitation programme had achieved today about 36,000 out of which 73% were new latrines and 27% rehabilitated latrines. As showed here above, the highest coverage at the end of 1999 was in district 4 with close to 70% of household equipped with an improved latrine. The lowest coverage is 37% in the districts 11 and 15.

### Future development:

A number of issues still have to be addressed in the coming years in order to maximise health and economic benefits of the programme:

### Health Education and messages:

Health Education in Afghanistan has always been a challenge because of cultural barriers such as the difficulty to communicate with the women ("gender issue"). This situation has worsened since the Taliban took power, making increasingly difficult the communication with women and illegal the representation of "living creatures". ICRC Environmental programme has nevertheless tried to implement this type of activity in particular by doing door to door visits. It appeared essential to assure the collaboration of traditional leaders respected by the population as intermediaries to try to modify certain behaviours. The involvement of the Municipality has not always been able to co-ordinate the action of these leaders. They were however useful in getting authorisation to perform health education in schools, to distribute leaflets and posters and to disseminate health messages through the radio.

The effect of such activities is difficult to evaluate, but it is likely that the proper use of the latrines must be as important as the coverage for the prevention of diarrhoeal diseases and efforts will continue in this matter.

### Night soil collection and use of compost:

Another important aspect of the project was to involve the Municipality in the night soil collection. As mentioned above, night soil collection is performed by private collectors in a very disorganised way, leaving a large number of emptying doors open. Involving the traditional leaders in coordinating the night-soil collection imposing schedules, working areas and hygiene patterns to the collectors has contributed the past months to reduce the number of emptying doors left open.

Human night soil is traditionally collected for composting and sold to farmers around Kabul as fertiliser. This activity is an essential part of a sanitation system based on individual latrines. The problem is that afghan farmers have a tendency to prefer use "semi fresh" compost which is poisonous for the crops and potentially dangerous for the health. A training to teach the farmers how to produce of safe compost both from an agricultural and sanitary point of view has proved to be ineffective at this stage. Changing behaviour and traditional practice of those farmers will certainly require a longer term approach in terms of education.

### Monitoring and data base:

A geographical information system has been set up in conjunction with the Municipality for resources inventories in the water and sanitation sector. Efforts were initiated mid of 1999 to include data of all the improved latrines into this system for further planning purposes and monitoring of the level of sanitation coverage in each district

### EFFECTIVENESS : EFFECTS ON HEALTH :

The originality of the programme lays on its magnitude : 36,000 latrines reconstructed or rehabilitated, 80% coverage in many areas. Kabul Improved Latrines are directly inspired on the traditional design and it is the key of their success. Furthermore, the preventive effect of the programme on diarrhoea has been proved. Any other sanitation method (septic tank, sewerage network...) wouldn't be appropriate at that scale because too expensive to run and therefore impossible to sustain. This shows the necessity for such programme to consider the traditional ways to assure success.

The main purpose of ICRC sanitation programme is to prevent diarrhoeal diseases. In order to assess its effectiveness in terms of reducing diarrhoeal disease in children, a case-control study was carried out.

Data was gathered from 4,054 children aged 0 to 11 years old presenting to dispensaries in Kabul over 6 weeks. Of these, 1,238 were presenting for diarrhoeal disease, and had 3 or more stools per day. These subjects were classified as cases. An additional 625 children who presented for respiratory illnesses were classified as controls. Data gathered at the time of dispensary visit established whether the child lived in a house where the latrine had been revised or

not, along with demographic data and the project area of residence.

Linkage was made to the GIS database for water and sanitation activities through the project area information for each child, enabling the analysis to incorporate a number of ecological variables at the project level, such as population density, degree of maintenance of revised latrines, etc. Multivariate modelling using conditional logistic regression revealed a significant reduction in the likelihood of living in a home where the latrine had been revised amongst cases, with an odds ratio of 0.53 (95% CI 0.41, 0.67).

Because of the finding of significant protective effect, a stratified cluster sample was carried out to estimate the rate of diarrhoeal deaths amongst children in the project areas. This sample consisted of 8,017 individuals in 790 households. Data was gathered on deaths occurring in 437 deaths in children, and the circumstances around these deaths

were probed using a modified verbal autopsy method. Data from this sample enabled an estimate of 608 deaths due to diarrhoeal disease in children aged 0-11 (95% CI 264, 952) during a one year period centred around the date of case control data collection. Using an attributable risk calculation derived from the multivariate model, we estimate that 234 deaths in children were averted over the same period (95% CI 102, 367). These results provide support for the latrine revision programme being an effective intervention with a substantial impact on the primary cause of child mortality in Kabul.

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