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Dry Toilets in urban crises: the case of Kabul

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Groupe URD, www.urd.org, (Emergency Rehabilitation Development) was founded in 1993 with the aim of improving the understanding of the complexity of emergency contexts emerging in the post Cold war era and developing new operational procedures. Groupe URD functions as a non-profit research, evaluation and training institute which provides support to humanitarian actors.*

Traditionally, the majority of private households in Kabul would use a dry vault toilet system and farmers would organise the collection of excreta directly from the vault toilet for use as humanure. However, decades of conflict meant that toilets were not maintained and have fallen into a state of disrepair. At the same time, the collection of excreta decreased, resulting in deteriorating sanitary conditions in the city, especially given that the population in Kabul and surrounding areas has risen so dramatically due to internal displacements from rural areas and return of former refugees.

This article presents an assessment of traditional human excreta reuse practices that are still functioning in various parts of the city today, and shows that this former ecological sanitation management system should not be abandoned, but supported where feasible. It proposes recommendations for aid actors, depending on whether they are working in unplanned areas (mainly poor urban communities) or in informal settlements (mainly IDPs and returnees).

Keywords: *Dry Vault Toilets, Humanitarian Aid, Kabul, IDPs, urban area*

Introduction

It is well known that ecological sanitation is part of a long-standing traditional practice in Kabul and this city is often put forward as an example of urban Ecological Sanitation solutions.

The aim of this paper is to give an overview of the reality of EcoSan in Kabul today, given that Kabul has been trapped in a series of recurring crises for many years now. This work could contribute to a comprehensive assessment of the potential of EcoSan in emergency and reconstruction situations in urban contexts.

Groupe URD has been working in Afghanistan since 1998. From January 2005 until mid-2008 our regional office in Kabul conducted a number of research projects, evaluations and training courses, as well as running an Observatory of Humanitarian Practice. Our work in Afghanistan now focuses on strengthening local capacity in managing humanitarian projects.

For over a decade now, Groupe URD has been analysing post-crisis humanitarian and reconstruction responses in urban and urban fringe areas, and in refugee camps. Managing and coordinating a response in an urban context is particularly complex, partly due to the fact that cities are the product of historical, technological, social, cultural, political, societal and economic systems.

In recent decades, many cities and towns have undergone dramatic population growth, with significant inflows from rural areas. A prominent feature of this global trend of urbanisation is forced displacement triggered by armed conflict, violence and political instability and slow and sudden-onset disasters – or a combination of these factors. Many of those forcibly displaced have moved to urban areas in search of greater security, including a degree of anonymity, better access to basic services and greater economic opportunities. (Haysom S. and Pavanello S., 2011)

Crises often put existing urban sanitation systems under serious stress, due to damaged facilities and/or the influx of IDPs¹ or refugees² in the city. This was the case and is still the case in Kabul. Kabul is a city which has alternatively been a refuge and a target in relation to armed opposition. It is a context where different forms of urbanisation co-exist (formal and informal³), where the urban administration is largely absent and where life is often very difficult due to the harshness of the climate.

Based on the hypotheses that i) ecological sanitation is still valid in Kabul and is an opportunity worth exploring, and ii) upgrading and developing the traditional method of managing excreta is worthwhile because it is the most sustainable sanitation system in Kabul, this paper try to answer the following questions:

- How has the traditional ecological system of managing excreta in Kabul (productive sanitation) evolved over the past two decades?
- What are the advantages of this traditional system today and what difficulties must be overcome?
- What are the main strategies and practices used by aid actors in the field of sanitation in Kabul?
- What motivates or prevents the promotion and use of dry toilets in the city?

Methods

A literature review was conducted with focus on i) urban crisis (especially war and conflict), ii) the city of Kabul and the changes it has undergone, and iii) humanitarian and development EcoSan programmes in Kabul.

During an evaluation of DG ECHO's activities in urban contexts⁴, we conducted a ten-day field assessment in Kabul in January 2012 carrying out direct observations (dry vault emptying in unplanned areas, urban development, life and sanitation conditions in Kabul

¹ The definition of '**internally displaced persons (IDP²s)**' used here comes from the UN Guiding Principles on Internal Displacement (1998), namely: persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.

² A **refugee** is a person who is outside their country of origin for the same reasons as the IDP²s.

³ According to (UN HABITAT, 2006) **informal settlements refers to** '(i) residential areas where a group of housing units has been constructed on land to which the occupants have no legal claim, or which they occupy illegally; (ii) unplanned settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing)'. In this review the terms 'illegal settlements' and 'informal settlements' are used interchangeably.

⁴ <http://www.urd.org/Evaluation-of-DG-ECHO-s-activities>

informal settlements, etc.) and interviews with Afghan urban planning authorities, WaSH⁵ NGOs, users of dry vault toilet systems, and Afghan people in the different locations visited.

Results and Discussion

1. Features of the traditional Dry Toilet

In urban and rural areas, Afghan households traditionally use specially shaped dry vault toilets which collect solid and liquid waste separately. This single vault latrine is made of local material. Although Afghan dry vault toilets have a drop hole, a ventilation pipe is often absent. (Communication with Azeem Barat, DACAAR and observation in Kabul in January 2012).

The reason for constructing raised latrines in preference to pit latrines is twofold. Firstly, the high water table in flatter areas may be at risk from contamination with pit latrines, and secondly, in hilly areas, excavation into bedrock is not viable. Sunni people use soil for anal cleansing, maintaining a largely dry latrine. Shiite communities wash after defecation and this water carries some of the excrement into the street to form pools which then gradually soak into the ground. On hillsides with low infiltration capacity this practice is problematic (Afzal Safi M., 1998).

The traditional Afghan design has only one vault/chamber for the excreta collection, which has to be emptied every one or two months, otherwise there is the risk that vault overfills and excreta flows into the street.

Before the war, traditional single vault/compost toilets in Kabul were emptied for free by the semi urban farmers who then used the excreta as fertilizer.

Traditionally, farmers from surrounding rural areas used to employ people to empty latrines and transport the excreta to their farms for compost production. The traditional excreta-collection system relied on a mutually-beneficial free service: farmers received excreta at a low cost, and re-used it as fertilizer, while households had their latrines emptied for free. Furthermore, this activity provided some income to those collecting and transporting the faecal matter.

When Kabul was a smaller town, it was feasible and safe for donkey carts to carry excrement out of town for use as fertilizer. However, with its rapid expansion, this traditional practice raises a number of problems. In 1998, Mohammed Afzal Safi had already assessed some of the difficulties.

The number of farmers or night-soil collectors who used to regularly empty private latrines in Kabul was insufficient to keep up with the expanding population. Just as chemical fertilizers became more accessible, the droughts of 1998-2003 and 2006 and pressure on available arable land have meant a further decrease in overall demand for organic fertilizer.

Recently, the system collapsed in many neighbourhoods in Kabul, because of i) the tremendous increase in urban population over the past decades that in turn has seen a reduction in agricultural land around the city and an increase in the number of latrines to be emptied, and ii) the drought affecting the Kabul area since 1999, compelling many

⁵ WaSH: Water Sanitation and Hygiene

farmers to leave their land, and subsequently reducing the demand for fertilizer (Action Contre la Faim, 2005).

As the system gradually collapsed, toilets in Kabul were no longer regularly emptied. The collection and transport of excreta represent a prohibitive cost for many households who instead often chose to empty fresh faecal matter in the streets besides the vault resulting in serious public health hazards.

Double vault (compost) latrines are more suitable and safe but they are not common in Afghanistan and, in urban areas, there is often not enough space for double vaults (which require roughly 9m² according to MRRD standards). If they are well managed, single vault toilets would be appropriate as they direct the fresh excreta towards the emptying trap, implying that the first heap could be emptied once the composting process has taken place within the vault.

Use of dry toilets has declined as people's habits have changed. Former refugees returning to Afghanistan from Iran became accustomed to using flush toilets in Iranian cities or in camps and do not want to use dry toilets any more.

Furthermore, both insufficient coordination between actors and the lack of clear official policy for sanitation (urban authorities were very weak) have had a negative impact on a situation that is already difficult.

Another problem today concerns the pollution of the groundwater table. The US Geological Survey found out that 70% of all wells in the Kabul basin are polluted by faecal bacteria, and this is one of main causes of high child mortality in Kabul where one in four children dies before his/her fifth birthday (Tilley E. et al., 2008).

2. Impact of conflict and population displacement on the traditional Kabul sanitation system

Kabul and other Afghan cities have seen their populations rise dramatically with the influx of former refugees and the arrival of IDPs. Also the expansion of informal settlements is another persistent problem in Kabul.

More than 25 years of conflict and political instability have resulted in large-scale forced migration movements both from and within Afghanistan.

Armed conflict and the Soviet invasion in 1979 led to the largest coerced movement of people in recent times. In the early 1990s, at the peak of the conflict, an estimated 7.5 million people were displaced: 3.2 million registered as refugees in Pakistan; 2.35 reported by the Iranian government; and an estimated 2 million displaced within Afghanistan's borders. The Soviet withdrawal in 1989 and government focus in Iran and Pakistan on repatriation of Afghan refugees led to a first return of about 1.5 million refugees to Afghanistan. However, civil war among Mujahideen factions (1992-1994), the subsequent emergence of the Taliban as a national force, and three successive years of drought prompted a second phase of internal displacement and forced migration movements to neighbouring countries. The collapse of the Taliban in December 2001 and appointment of a new Government triggered massive repatriation movements from neighbouring countries. At the same time, conflict between pro-government forces and insurgents resumed and has led to renewed internal displacement in several parts of the country.

According to UNHCR, over 5 million refugees have returned since 2002 increasing Afghanistan's overall population by approximately 20%.

(UNHCR; World Bank, 2011)

Kabul's population swelled from 1,5 million in 2001 to an estimated 5 million today.

As mentioned above, many farmers in the fringe areas of Kabul left their land, as a result the war, drought and urbanisation process, and the former nightsoil collection collapsed.

Three main types of urban situation can be identified in Kabul (Groupe URD, 2012) & (Boyer, 2010) :

The 'legal' city centre spreads over the plateau (flat area) and lies within the boundaries of the administrative sector under the old city's **Master Plan**. Sewerage and wastewater facilities are practically non-existent. Flush toilets and septic tanks have replaced the former dry vault system in most houses. The authorities responsible for sanitation facilities have been overwhelmed both financially and technically by the rise in population and municipal sewage and wastewater treatment on the whole is unsatisfactory (i.e. no proper sludge treatment facilities), which has resulted in the accumulation of high levels of nitrogen compounds in the groundwater table, combined with the risk of pathogen contamination.

Some parts of the informal city (**unplanned**), which lies outside of the administrative perimeter, are in the process of becoming regularised (under the new Master plan which will be published soon). Some 80% of the total population resides in officially unauthorised and unrecognised areas that lack adequate drainage, refuse disposal, gravel roads, water and sanitation facilities, and safe drinking water sources, even this situation is improving gradually. These informal neighbourhoods, some of which have been inhabited for more than 30 years, are located in hilly areas which is where the city is gradually expanding. Most houses here possess a dry vault. However, disposing of faecal matter is problematic as waste disposal facilities are situated some distance away in the plain and transportation would be prohibitive. Thus, inhabitants dispose of fresh faecal matter only once a year by burying waste in the streets, in immediate proximity to other houses raising obvious concerns with regards to health and hygiene.

The third category concerns inhabitants living in illegal settlements (often living in hopelessly alarming conditions), either in squats, illegally occupied plots of land or abandoned buildings. When referring to these dwellings, international organisations use the term **Kabul Informal Settlements (KIS)**, given that this type of precarious existence is often overlooked by local authorities and omitted from urban planning regulation. However, KIS can be found anywhere in Kabul, both in the centre and in the outskirts of the city, in the plain or on the hillsides. This phenomenon has arisen mainly as a result of rural depopulation and the combined effect of years of drought, conflict and deteriorating economic situation, and the waves of IDPs fleeing conflict or general insecurity and returnees from Iran and Pakistan. The KIS phenomenon was first detected in 2002 and figures imply a rapid increase. In October 2011, UNHCR identified 40 KIS throughout the city representing a total of 18,000 inhabitants. Poor hygiene conditions, including few toilets, insufficient waste disposal, use of cow dung and plastic as fuel during winter, raise concerns over a time bomb effect, especially in terms of epidemics.

3. Traditional dry vault toilets and humanitarian aid in Kabul city

Before 2001, a number of agencies have been working towards the rehabilitation of traditional latrines, and providing support and improving the traditional night-soil collection, ICRC and ACF being the most active in this field.

a. Humanitarian response aimed at encouraging traditional practices

From 1996 to 2003, ICRC ran a broad sanitation programme aiming to achieve sufficient coverage and thus reduce the impact of waterborne diseases. The ICRC programme included household latrine rehabilitation/construction and improvements to night-soil collection.

ICRC sanitation programme

Total of around 48,000 toilets in eight Districts of the city. The traditional design was improved by increasing the size of the tank under the toilet so that it could hold more waste, diverting the urine to a soak pit so that the contents of the tank remain relatively dry, installing a ventilation pipe to remove odours and reduce the number of flies and sealing the emptying door so that the contents do not run into the street.

One of the first programme activities was to encourage farmers to collect sludge again by providing subsidies. Once peace had been established, farmers returned to their farms and normal unsubsidized night-soil collection resumed. In hilly areas, the ICRC programme tried to assist by building large containment tanks where local people could throw their excreta and from where farmers could collect it using animal-drawn carts. At the time of the evaluation in 2003, the project was in the process of developing a model of linking specific collectors to a particular area. It is hoped that by guaranteeing farmers a regular supply of organic fertilizer and fixed income, it will be easier to ensure latrines are emptied properly. Finally the programme has made several attempts to introduce a treatment system for fresh excreta to try and minimize the problem of disease transmitting organisms.

(Reed R. and Khan N., 2003)

ACF adapted the traditional toilet model and ran a comprehensive sanitation-composting project.

ACF Compost Project-2001-2003, District 7

The improved model, designed by ACF, included:

- a stone masonry vault with a concrete bottom, which protects the shallow water table, and a shallow soakage trench placed in the back that allows the percolation of liquids
- a metal trap-door that allows excreta collection from the street
- a reinforced-concrete slab whose design allows the separation of urine from the excreta, and the collection water from anal cleansing and slab washing
- a ventilation pipe equipped with mosquito netting
- a superstructure made of mud bricks
- a roof made of wooden logs, mud and straw

The latrine was placed in the street next to the wall of the household compound. The vault of the latrine had an opening facing the street so that it can be emptied from the outside of the compound. Emptying must be done every 45 days, on average, based on ACF experience.

With the assistance of the local population, ACF rehabilitated more than 2,350 latrines in Kabul by the end of 2003.

ACF also focused on excreta collection and the subsequent composting process. A partnership between an ACF-supported local neighbourhood committee and farmers from the area was established. The neighbourhood committee was responsible for the following:

- organisation of latrine-emptying and transport of excreta to farmers
- purchase and provision of raw materials for compost production (including straw, sawdust)
- composting of the excreta
- storing and packaging of the compost for sale
- sale of bags of compost to other farmers.

The farmers were responsible for the compost-production process, including the mixing of excreta with raw materials and regular turning of the mixture. ACF provided technical assistance, including training of farmers, choice of the composting recipes, and temperature monitoring of compost piles, and ensured the promotion of the compost for sale.

Action contre la Faim, 2005 & communication with Brequeville B., 2012

In both cases, night-soil collection and large-scale composting projects are no longer in operation, mainly because of rapid urban expansion over the past decades, i.e. much of the agricultural land that would have used the organic fertilizer in the past has been developed for housing. Another factor that probably limited long-term impact was poor coordination with local institutions. Indeed all the organisations that were involved in water and sanitation activities in Kabul were confronted by the limited capacity of local institutions responsible for water and sanitation facilities.

Those experiences show that **night-soil collection for use as organic fertilizer it is not feasible in the centre of such a large city.**

b. Humanitarian organisations' present-day response to 'chronic emergency' in informal settlements

IDPs live in much more hazardous housing conditions than the urban poor (tents, temporary shelters or shacks). Lack of tenure security is a distinguishing feature of informal settlements which have developed over time due to poorly functioning land and housing markets, and insufficient planning for urban development and growth. The lack of formal property papers puts IDPs at constant risk of eviction.

It is vital that sustainable solutions for IDPs in informal settlements are developed, not simply humanitarian interventions. Initiatives must acknowledge that irrespective of the continuation of conflict, almost all IDPs plan to settle permanently in the city, and therefore will require assistance in developing skill sets appropriate for urban areas.

UNHCR; World Bank, 2011

In the KIS, NGOs have mainly been involved in building pits latrines as an emergency response, based on a Ministry of Rural Rehabilitation and Development (MRRD) design, which is relatively new for people. Poor hygiene conditions combined with high levels of promiscuity, a limited amount of space and the lack of formal property papers (squat, risk

of eviction) mean that a short-term response is justified. It is extremely difficult to set up community projects in this type of fluctuating heterogeneous urban settlement.

In some KIS, inhabitants opted for urine diversion because this is the solution they are accustomed to, with the advantage that it takes longer to fill up, and flies and bad odours are less of a problem.

In other KIS, people prefer pit latrines without urine diversion because otherwise urine would have flow into the street or onto a neighbour's property. Pit latrines are also considered to be more appropriate than the dry vault toilet they had in their village because in the KIS there is no land on which the faecal matter could be reused organic fertiliser.

In other KIS, inhabitants have preferred to build dry vault toilets given the limited space when the latrine is full, but the conditions for emptying the vault are generally unsafe.

	Advantages in KIS	Disadvantages in KIS
Dry vault	<ul style="list-style-type: none"> - More sustainable system where it is possible to empty vault - Traditional system: this is what people are used to 	<ul style="list-style-type: none"> - Requires space or facilities to dispose of the faecal matter - Requires means of handling fresh faecal matter
Pit latrine	<ul style="list-style-type: none"> - No risk of pathogen contamination because of the clay soil in Kabul 	<ul style="list-style-type: none"> - A new pit must be dug when full and this requires space - Risk of groundwater contamination with phosphates and nitrates which are not trapped by the clay soil

Having looked at a variety of sanitation strategies run by different organisations, in the future, as in many developing countries, Community-led Total Sanitation (CLTS) is becoming a part of the sanitation strategy in Kabul, and CLTS projects are likely to be launched very soon. However, a number of Afghan correspondents seemed doubtful with regards to whether this approach is relevant.

Conclusions and recommendations

The future is uncertain and unfortunately Afghanistan cannot yet be qualified as a stable State. The handover of security matters from international forces to Afghan national institutions and the required reinforcement of national capacity make the coming years a critical period for the country. It is likely that the 'KIS' phenomenon will grow and some instability will remain.

The traditional dry vault and night-soil collection system should not be abandoned in all parts of the city. If a sewage treatment system with flush toilets may well be the best solution **in the centre of the city**⁶ (within the boundary of the old Master Plan), dry toilets

⁶ We should nuance this by saying that firstly it is necessary to construct places for safe disposal of the sewage (today fresh sludge is emptied in agricultural lands, threatening environmental health). Secondly some areas (within the flat part of the City) suffer from water shortage: flush toilet would be the less worst

are probably still the better option in the **far urban fringe areas** and in the hilly areas (**unplanned areas** soon to be included in the new Master Plan, thus becoming legal areas). The rocky ground means that it is impossible (far too expensive) to build a network in hilly areas, yet given that emptying a single vault is unsafe and too expensive, the better option would be to set up on-site composting facilities by means of the double vault compost toilet. In many hilly areas, there is still enough space to build this type of toilet (9m² is required) and the building material (stone) is readily available for free. (communication with Nasrullah S, ACF - WASH - PM . Kabul).

The current sanitation system in Kabul has been in a crisis situation for decades, and even though some improvements were carried out by aid organisations, this was insufficient given the magnitude of the urban crisis that Kabul is facing (population displacement, exponential urbanisation and informal settlements). Serious health and environmental problems will arise if the problem is not addressed soon.

Priority should be given to developing alternative approaches to night-soil collection where this option is no longer feasible. Alternatively, where possible, systematic night-soil collection should be supported or improved via traditional systems that are still in operation, and carrying out a large-scale study on alternative night-soil collection and composting for other areas. This recommendation was put forward by ACF in 2004 (Grinell E. and Troc H., 2004) and still appears valid.

Supporting a night-soil evacuation system would certainly ease the ‘night soil crisis’, at least in some areas on the outskirts of Kabul. In areas where evacuation is difficult (hilly areas for example), it is not possible to establish a sustainable evacuation system. Another factor to be taken into account is that not everyone is aware of the dangers of disposing night-soil in the street. In this case, identifying alternatives to vault latrines, such as pit latrines or compost toilets appears to be the only solution.

Furthermore, a thorough feasibility study for sanitation projects should be carried out in all of the different areas in Kabul. For this, it is important that all the relevant government departments are involved, as well as other organisations and community representatives, etc. Developing strong, close relations between the various stakeholders should be a priority whilst ensuring that projects can be adapted to the developing plan of the city and that past mistakes are not repeated. (Nasrullah S, ACF - WASH – PM, Kabul).

Advocacy and working together with Afghan authorities, especially the Ministry of Agriculture, is another priority in order to better link EcoSan with urban planning issues. Afghan public authorities should be responsible for providing sanitation services (and why not night-soil collection services where feasible?), as well as garbage collection services.

It will also be interesting to see how the CLTS approach could be connected to the Ecosan approach and the use of excreta as organic fertiliser in urban fringe areas.

option because there is no space available for double vault composting toilet, and land tenure issues are highly complex. Finally according to Nasrullah S. (ACF WaSH PM) dry vault compost are suitable everywhere in areas with agricultural land. However the exponential urbanisation process may threaten such ideas, which should be further debated.

The **case of the informal settlements (KIS) is far more complex** and clearly demonstrates the need for humanitarian and development actors to re-think urban interventions. A new strategy that addresses humanitarian needs caused by rapid urban growth and displacement in a manner that supports long-term development goals is required (Charles A. Setchell and C. N. Luther, USAID/OFDA, 2009).

Aid actors in coordination with urban planning authorities must find long-term sustainable solutions, in a case-by-case approach. Basically, sustainable solutions mean relocation. Emergency WaSH needs in the KIS mainly concern ‘software’ activities (hygiene promotion, education, capacity building) linked with appropriate access to water and sanitation. But access must be long term and self sufficient, because truly sustainable, long-term solutions will probably take a long time to be identified and developed.

Certain elements require further investigation, such as the donors’ point of view regarding EcoSan. For example, urban and development donor agencies appear to prioritise water projects and do not seem to be so convinced of the urgency of EcoSan systems.

It is important to follow up EcoSan initiatives in emergency and reconstruction situations. Some progress has been made in the sanitation sector in cities affected by war or natural disasters, and working groups (e.g. SuSanA WG8⁷) are currently dealing with this issue. But this sector still requires a great deal of research and development in order to innovate and develop options (knowledge, strategy and preparedness) for crisis-affected urban populations.

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