SFD Promotion Initiative

Kabul
Afghanistan

Final Report

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SFD Report Kabul, Afghanistan, 2016

Produced by:

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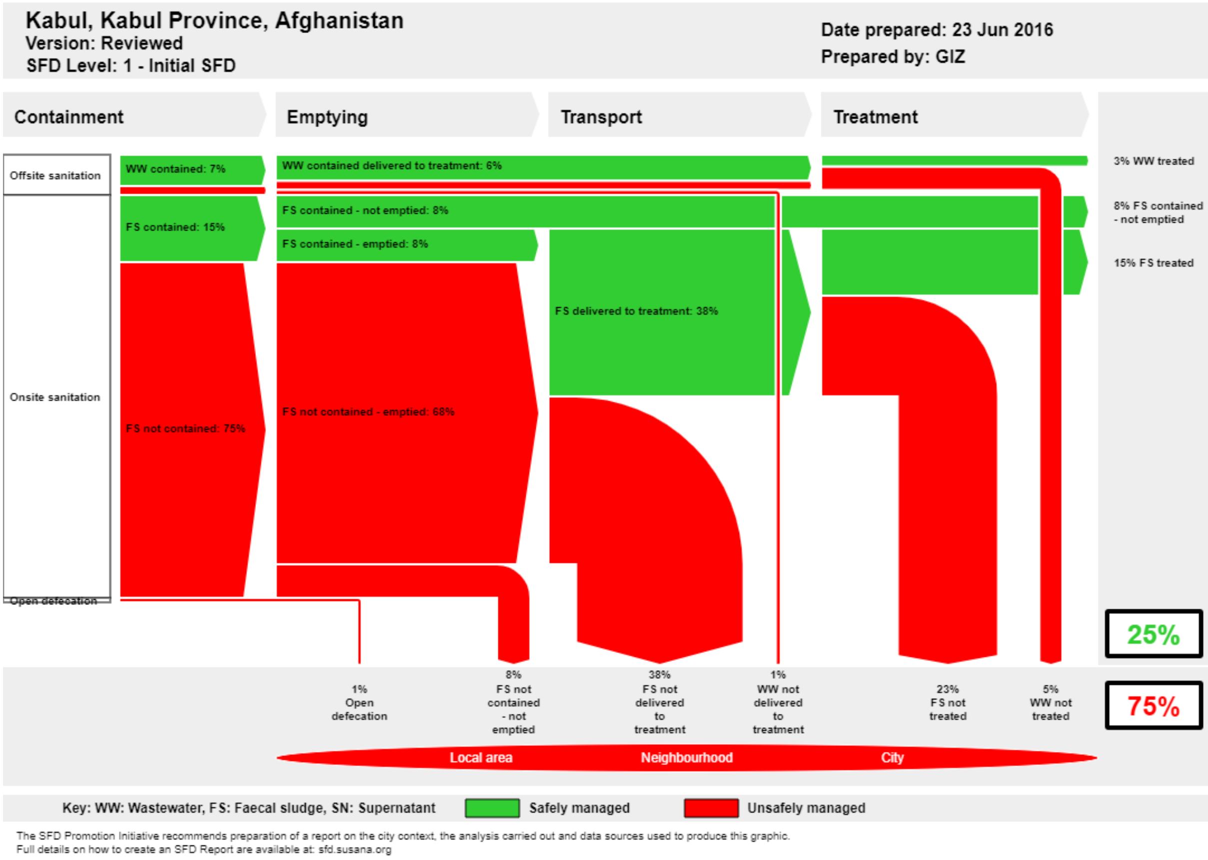
1. The Diagram



2. Diagram information

SFD Level:

This is a level 1- Initial SFD report.

Produced by:

This SFD is prepared by Younes Hassib (GIZ) with support from Hussain Etemadi (HCU & EAWAG) and Mohammad Noor (BORDA) in collaboration with the Ministry of Urban Development and Housing (MUDH).

Status:

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16/05/2016

3. General city information

Kabul, the capital city of Afghanistan, is locate at an altitude of about 1,800 m above sea level. Low annual precipitation of 330 mm with a decreasing tendency and low humidity especially during the summer months dominate the climatic conditions.

The residents of Kabul have experienced civil war and devastation in recent decades. Since the fall of the Taliban regime in 2001 large efforts were undertaken to rebuild the city.

The population of the urban agglomeration of Kabul is estimated by official sources at 3.7 million inhabitants (CSO 2015, Afghanistan).

Rapid urbanization of the city is fuelled by returning refugees and migration on economic grounds.

4. Service outcomes

A number of different waste water management practices and infrastructure are commonly found in Kabul urban area:

- *Dry toilet sanitation systems* (accounting for about 30% of the population) with either the reuse of the excreta as soil conditioner or the disposal on public ground.
- *Water-based on-site sanitation* systems (accounting for about 60% of the population) typically attached to holding tanks and soak pits. Groundwater contamination is prevalent due to a high permeability of the overlying soil layers.
- *Centralized sewage collection and treatment systems* (accounting for about 5% of the population) in two parts of the city with an existing but unreliable treatment facilities.
- Toilet discharges directly to a decentralised foul/separate sewer (2%)
- Toilet discharges directly to open drain or storm sewer (2%).
- Open defecation (1%).

The service outcomes for Kabul along the sanitation chain are:

- *Containment*: The predominant types of containment are various on-site sanitation facilities with the water-based soak pit accounting for 50% of the served households. This is followed with 30% by the traditional dry toilet, which has been the “fore runner” and which is replaced by water-borne facilities. The water-based septic tank accounts for 10%. The other sanitation facilities are in the “single- digit range”: Macrorayan (5%) and the decentralised systems such as DEWATS (2%). Direct discharge into open drains (2%) and open defecation (1%) are insignificant.
- *Emptying*: Private operators provide desludging services for septic tanks. During the Key Informant Interviews it was assumed that 100% of the septage is being collected from water- based septic tanks, whereas this ratio is 50% only for the water-based soak pits. Due to the lack of vacuum truck capacity and reliable records and log books these percentages which were concluded form the various interviews could not be verified. Earlier mentioned FGDs revealed that informal settlements are hardly serviced.
- *Transport*: The centralized and decentralized systems are assumed to deliver 85% and 80% of the wastewater, respectively to the treatment site. It is also assumed that treatment efficiency of centralized and decentralized systems is 40% and 60%, respectively. Wastewater from toilets discharging to open drains is not treated at all. Private operators provide desludging services for septic tanks. For onsite sanitation systems, 50% of the collected sludge is not reaching the treatment site but is rather dumped illegally into nearby ditches, etc. This assumes that the remaining 50% is reaching the treatment facility.
- *Treatment*: The total treatment capacity of the decentralized treatment plant facilities is 15.000 m³ per day. The facilities are not operating well, an efficiency of 40% was assumed. The efficiency of the DEWATS plants was estimated at 60%
- *End-use/ disposal*: There is a long standing tradition of reuse of treated faecal matter in Afghanistan. The increasing urbanisation of Kabul and the diminishing agricultural land have led to ever fewer quantities of FS being reused. No data are available to support any reasonable assumption. The interviews with key informants indicate that around 50% of the faecal matter from septic tanks is being disposed of safely.

About 85% of the population relies on uncontrolled groundwater sources for fresh water. Groundwater contaminations due to improper sanitary facilities cause a high health risk to a big part of the population.

5. Service delivery context

No single institution is responsible for sanitation in Kabul (SACOSAN 2013). The Sanitation Sector is not addressed as a distinct sector in strategic and regulatory frameworks, but rather the various aspects of sanitation are included in other overarching sectors. Additionally, the institutional set-up is divided along urban and rural domains.

The Ministry of Urban Development and Housing (MUDH) is currently in the process of reviewing the wastewater aspects of the 2005 Urban Water Supply and Sewerage Sector

Policy with the aim of making it realistic, catering to the decentralized needs of wastewater management, and promoting sustainability. The policy updating is at the final stage: It will be presenting soon (as of July 2016) to the Supreme Council of Land and Water (SCoLaW) for approval.

For rural areas, a revised policy by the Rural Water Supply, Sanitation and Irrigation Program (RuWatSIP) named Water Supply, Sanitation and Hygiene Promotion (WASH) was launched in October 2010. In this policy the role of designing, planning, coordination and monitoring of the Rural Water Supply and Sanitation functions was delegated to the Ministry of Rural Rehabilitation and Development (MRRD) together with the line ministries, Ministry of Public Health (MoPH) and Ministry of Education (MoE), with a five years strategic plan for implementation.

6. Overview of stakeholders

Afghanistan has a centralized system of political and administrative governance. Establishing institutional responsibilities has been and continues to be a critical process in sector development. A wide range of public institutions is linked to Integrated Waste Water Management (Table 1).

Table 1: Key Stakeholders.

Key Stakeholders	Institutions / Organizations /
Public Institutions	Ministry of Urban Development and Housing (MUDH), Ministry of Rural Rehabilitation and Development (MRRD), Ministry of Education (MoE), Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC), National Environmental Protection Agency (NEPA), Municipality
Private Sector	private emptiers
Development Partners, Donors	BORDA, GIZ, EAWAG

Table 2 shows the institutions and organizational bodies responsible in Kabul for the sanitation and water sector, divided in four service stages.

Table 2: Institutional framework and responsibilities for the sanitation sector.

Service	Responsible agencies
Planning	Ministry of Urban Development and Housing (MUDH), Ministry of Rural Rehabilitation and Development (MRRD), Ministry of Education (MoE), Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC), National Environmental Protection Agency (NEPA), Municipality
Implementation	Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC), Municipality
O&M	Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC), Municipality
Tariff fixation	Ministry of Urban Development and Housing (MUDH), Regulator (not established yet)

7. Credibility of data

Data sources:

This SFD report is produced as a desk-based assessment. Reports which describe the sanitary situation in Kabul are either outdated or touching upon the subject matter only superficially. Additionally to literature review, 15 Key Informant Interviews (KIIs) and 1 Focus Group Discussion (FGD) were conducted.

Assumptions:

- 50% of the collected sludge is not reaching the treatment site but is rather dumped illegally into nearby ditches etc.
- 50% of the containment facilities with open bottom contribute to groundwater contamination.
- 100% of the septage is being collected from water-based septic tanks.
- The centralized systems deliver 85% of the FS to the treatment site.
- Treatment efficiency for centralized system is 40% and for decentralized system is 60%.

Annotations:

Because most reports describing the sanitary situation in Kabul are outdated, a sanitation survey or a survey that addresses sanitation issues is recommended to be conducted to overcome the lack of data and to base future decisions in the field of sanitation on a more solid foundation.

8. Process of SFD development

Secondary data were reviewed and verified by

KIIs and FGDs that were conducted as part of a household survey.

Based on the service levels of the population to specific sanitary facilities the SFD Graphic Generator was used to subsequently calculate the excreta flow.

According to the SFD graphic, current practices of excreta disposal in Kabul result in 25% safe disposal.

Limitations of SFD:

In circumstances where groundwater is a relevant environmental media that is prone to contamination detailed groundwater maps need to be used to precisely determine affected parts of town.

9. List of data sources

Below is the list of data sources used for the production of this SFD.

Published reports and books:

- BGR 2008, Decentralised sanitation and wastewater treatment, Revised 2nd Edition, Report within the project "Improving groundwater protection for the preventative avoidance of drought problems in the Kabul Basin" funded by the Foreign Office of the Federal Republic of Germany, January 2008.
- DACAAR 2011, Groundwater natural resources and quality concern in Kabul Basin, Afghanistan, Scientific Investigation Report in Afghanistan, M. Hassan Saffi, Hydrogeologist, edited by M. Naim Eqrar, Kabul University, November 2011.
- EIRP 2006, Emergency Infrastructure Reconstruction Project - Sanitation Improvements in Kabul City", Gauff-JBG Ingenieure on behalf of the World Bank, January 2006.
- SACOSAN 2013, Afghanistan - Country Paper on Sanitation, SACOSAN-V 2013.
- USGS 2005, Inventory of Ground-Water Resources in the Kabul Basin, Afghanistan. Scientific Investigations Report, U.S. Geological Survey 2005.
- WHO-UNICEF 2013, Joint Monitoring Program (JMP) on Afghanistan 2013.

Unpublished reports:

- EAWAG 2015. Household Survey conducted by H.Etemadi, PhD Candidate at HCU and EAWAG, December 2015.
- MUDH 2014, Urban Water Supply and Waste Water Sector Policy, Final Draft for Circulation, June 2014.

KIIs with representatives from

- Ministry of Urban Development Affairs (MUDA).
- Afghanistan Urban Water supply and Sewerage Corporation (AUWSSC)
- Kabul Municipality.
- National Environmental Protection Agency (NEPA)
- Service Providers
- NGOs (BORDA)

Focus Group Discussion with community representatives from the informal settlements of Masjed Itefaq and - Dehghouchak.

Websites/web links:

- Central Statistic Organization, Afghanistan: http://cso.gov.af/en

SFD Kabul, Afghanistan, 2016

Produced by:

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Abbreviations

AFN	Afghani (Exchange rate March 2016: 1 USD ≙ 58 AFN)
ANDS	Afghanistan National Development Strategy
AUWSSC	Afghanistan Urban Water Supply and Sewerage Corporation
AUWSSC (BoD)	Aghanistan Urban Water Supply and Sewerage Corporation – Board of Directors
BGR	German Federal Institute for Geosciences and Natural Resources
BMGF	Bill and Melinda Gates Foundation
BOD	Biochemical Oxygen Demand
CHWs	Community Health Worker
DAIL	Agriculture, Irrigation and Livestock
DDA	District Development Assembly
DoPH	Department of Public Health
DoE	Department of Education
DRRD	Department of Rural Rehabilitation and Development
DUDA	Department of Urban Development Affairs
FGD	Focus Group Discussion
FS	Faecal sludge
HCU	Hafen City Universität, Hamburg
IDLG	Independent Directorate for Local Governance
KII	Key Informant Interview
KPIs	Key Performance Indicators
IDLG	Independent Directorate for Local Governance
lpcd	Litres per capita per day
masl	Meters above mean sea level
MAIL	Ministry of Agriculture, Irrigation and Livestock
mbgl	Meters below ground level
MEW	Ministry of Energy and Water
MoE	Ministry of Education

MoPH	Ministry of Public Health
MRRD	Ministry of Rural Rehabilitation and Development
MUDH	Ministry of Urban Development and Housing (previously Ministry of Urban development Affairs)
NEPA	National Environmental Protection Agency
NRM	Non-revenue Water
RBA	River Basin Agency / River Basin Council (RBC)
RuWatSIP	Rural Water Supply, Sanitation and Irrigation Program
SBU	Strategic Business Unit
SCoLaW	Supreme Council of Land and Water
SLBs	Service Level Benchmarks
SS	Suspended Solids
SSS	State Sanitation Strategy
TCM	Thousand cubic meters
UWSWW	Urban Water Supply and Waste Water Sector Policy
WASH	Water supply, Sanitation and Hygiene
WW	Wastewater
WWTP	Wastewater Treatment Plant

1 City context

The capital city of Afghanistan, Kabul overlooks more than 3,500 years of history. It is located strategically on ancient trade routes linking Central Asia and South Asia (Figure 1). In recent decades, the residents of the city have experienced civil war and devastation. Since the fall of the Taliban regime in 2001, large efforts were undertaken to rebuild the city. Rapid urbanization of the city is fuelled by returning refugees and migration on economic grounds. Currently, Kabul has to be considered as one of the fastest growing cities in the world. The population of the urban agglomeration of Kabul is estimated by official sources at 3.7 million inhabitants (CSO 2015, Afghanistan).

The health situation of the population is according to international standards well behind the average. Infant mortality is, with 134 per 1,000 live births, very high (in Pakistan, this number is 83). The life expectancy at birth in 2011 was 49 years (in Pakistan: 65 years). In spite of the high infant mortality rate, the estimated growth of the present population of about 30 million is 2.6% per annum, which is partly due to the high birth rates. The proportion of inhabitants under 15 years is about 50% of the total population.

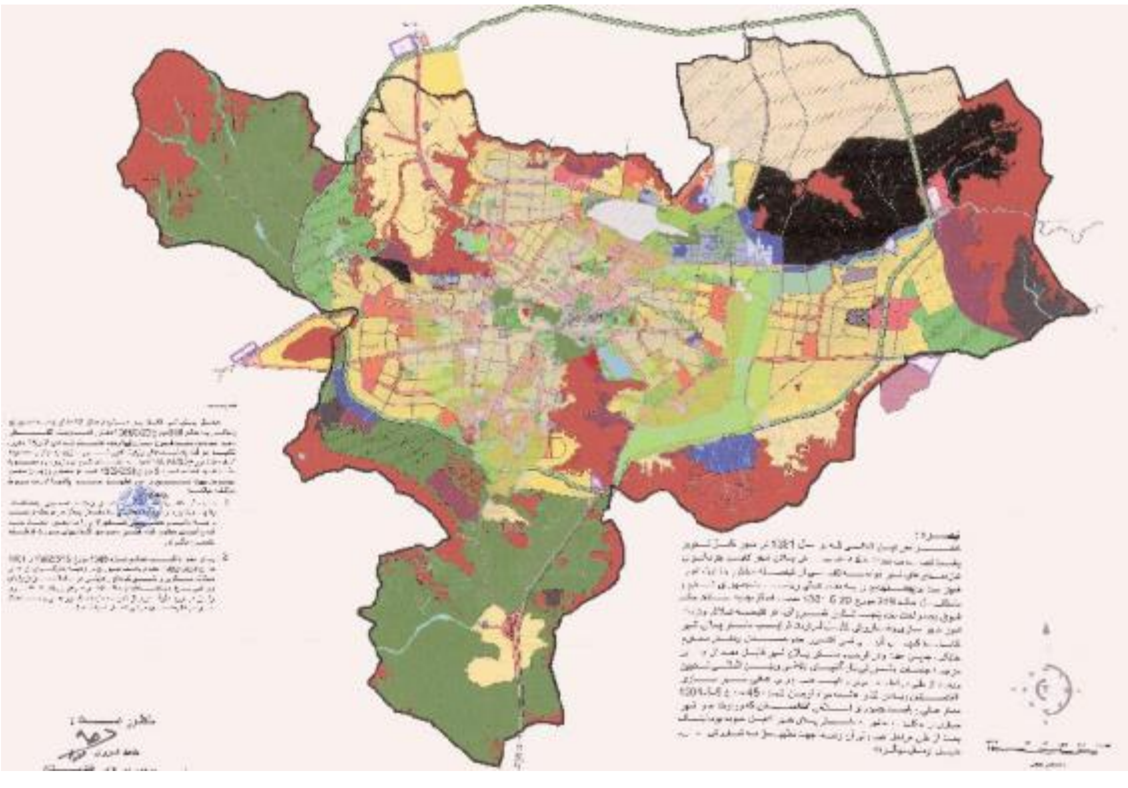

Figure 1: Map of the Kabul Urban Master Plan area (MUDH, 2014).

The city of Kabul is located at an altitude of about 1,800 m above sea level in a valley crossed by various ridges with irrigated agriculture. Kabul has an arid continental climate. It is categorized as steppe zone in dry weather. Usually, low humidity is the typical climatic condition throughout the year, especially from May to October, when relative humidity is less than 50 %. Records from 1959 – 2007 indicate that the average precipitation in Kabul is 330 mm per year with a decreasing tendency. Annual potential evaporation exceeds rainfall in all seasons, which is leading to a very low recharge of rainwater to the groundwater.

The main river system in the Kabul basin is the Kabul River. It is coming from the southwest and flows in an easterly direction through Kabul City, the Kabul River Gorge and finally joins the Indus River near Atak. Depending on seasonal rain, the Kabul River is almost dry from June to August. Sometimes, the river dries completely. The river bed is used as a solid waste dump site and as a receiving water body for illegally discharged septage that is being trucked by vacuum tankers.

2 Service Outcomes

2.1 Overview

The objective of the present SFD report is to strictly follow the methodology of the BMGF-financed SFD promotion initiative project. As such, this SFD report is based on a desk-based assessment of the sanitation situation in Kabul, Afghanistan. The data situation as concerns service coverage is generally poor. The lack of adequate service monitoring of both, on-site sanitation as well as decentralized facilities adds to the predicament.

The sanitation of Kabul was first subjected within a World Bank-funded study in 2004-2006. This study, which is generally referred to as the “Emergency Infrastructure Reconstruction Project - Sanitation Improvements in Kabul City”, short EIRP, has addressed wastewater and storm water drainage as well as solid waste. In EIRP 2005, it is stated that the old facilities, due to the encountered destructions, were in a bad condition (public toilets were largely out of service, maintenance was poor). The traditional dry toilets (vault toilets) and pit latrines were most common. Smaller centralised systems exist only to serve apartment complexes. The estimate that was presented more than 10 years ago assumed that 71.3% of the urban area in Kabul was equipped with traditional dry-toilets.

Returning refugees have settled in Kabul, which led to a tremendous growth of population and to a shift in sanitation. Water-based sanitation became increasingly important and has eventually led to the observed pollution of groundwater within the Kabul basin. The German Federal Institute for Geosciences and Natural Resources (BGR), which have been active in Afghanistan from 2003 onward, have mentioned that 70% of all wells in the Kabul basin are polluted by faecal bacteria. They further state that the observed groundwater pollution constitutes a major reason for the enormous child mortality in Kabul where one of four children dies before its fifth birthday (BGR 2008).

The Emergency Infrastructure Reconstruction Project states in (EIRP, 2005) that septic tanks and cesspits were emptied by the Municipality's Sanitation Department or private companies. The septage is either disposed to the main pumping station Qalae Wazir and then pumped to Macrorayan wastewater treatment plant or disposed to the Chamtala dumpsite or uncontrolled to nearby creeks or fallow lands. Most of the vault toilets are emptied randomly by the house owners. The night soil is frequently disposed on the street or the house owners dispose the night soil at solid waste collection points which leads to considerable environmental nuisances.

More recently, JICA funded the “Draft Kabul City Master Plan” (JICA, 2011) which has been looking also into urban planning. Sanitation development in Kabul during the next decades was one of many relevant aspects of that study.

A baseline assessment is planned to take place within the Sanitation Concept Study for the City of Kabul, which is jointly funded by AUWSSC and KfW and which will commence in the foreseeable future. Without the adequate data, the SFD graphic will be based only in part on recent studies, which occasionally did not keep pace with the rapid growth that has taken place in Kabul in the past decade. The SFD graphic will therefore primarily rely on Key Informant Interviews (KIIs) and on investigations which were conducted in the course of the PhD thesis of Hussain Etemadi that addresses two informal settlements of Kabul. KIIs are usually reserved for field-based SFDs but were employed here to help improve the quality of information provided through studies.

Table 1 summarizes the sanitary situation for Kabul based on the KIIs conducted in the autumn of 2015.

Table 1: Types of access to sanitation facilities (GIZ, 2015).

Type of access	% of people using it
Wastewater contained centralized (off-site) MACRORAYAN	5%
Wastewater contained de-centralized (off-site) DEWATS and similar	2%
Wastewater contained centralized (off-site) (direct discharge through open drains/channels)	2%
Faecal sludge contained onsite (traditional dry toilet)	30%
FS not contained (on-site) (different kinds of water- borne facilities)	60%
Open defecation	1%

The Macrorayan system may be considered as the only semi-public sewerage system existent in Kabul. Two sewage treatment plants have a combined treatment capacity of 15,000m^3 per day which corresponds approximately with 5% of the capital population hooked to one of these facilities. Operational standards are low due to frequent power outages and the lack of quality control measures (e.g. the lab is unqualified).

The Macrorayan facilities are operated by the estate. The national AUWSSC through Kabul SBU is not engaged in any formalised provision of sanitation services.

The sludge disposal is taking place through vacuum trucks with a suction capacity of generally 6m^3. These services are operated by private entrepreneurs who are not registered or regulated and which operate an unknown number of vacuum trucks (HCU & EAWAG, 2016). The emptying service costs around 2,000 AFN (US$ 25) per trip (HCU & EAWAG 2016).

The conveyed sludge is transported to the treatment facilities at Macrorayan. The overall capacity to properly handle the daily sludge quantities of Kabul is clearly insufficient and travel distances are too long. It is therefore assumed that 50% of the collected sludge is not reaching the treatment site but is rather dumped illegally into nearby ditches, etc.

The most common containment methods in Kabul are the septic tank, followed by pit latrines, and traditional dry toilets. Building permits are issued if an on-site facility is foreseen.

- **Emptying** services are provided by entrepreneurs, which are neither registered nor regulated by the authorities. Since desludging is comparatively expensive the residents tend to request these services only when their containment volume is overflowing. Due to high groundwater table levels, infiltration of onsite technologies has to be considered as unsafe disposal.

- **Transport**: Volumes were not balanced due to lack of data. Based on the conducted interviews with the informants it is assumed however that:
  - Wastewater from decentralized facilities is mainly transported to the treatment site.
  - Approximately 50% of the septage from the many on-site facilities is being evacuated.
- **Treatment**: approximately 5% of the population is connected to the Macrorayan treatment facilities. The KIIs suggest that the treatment efficiency is in the order of approximately 50%. The same was assumed for the DEWATS facilities. The actual treatment efficiency might be higher though. Since no systematic monitoring is available, the decision was made to use the conservative value.
- **End-use / Disposal**: As there is no designated disposal site in Kabul, the faecal sludge from onsite systems is assumed to be irregularly dumped on open ground, used in agriculture or discharged into water bodies.

2.2 SFD Matrix

2.2.1 Service levels in Kabul

There are no institutionalized services related to the management, operation and maintenance as well as monitoring of sanitation facilities in Kabul. All sanitation facilities are privately owned or, in the case of the Macrorayan, owned and operated by the estate. Service delivery related to erecting, emptying and maintaining these facilities is exclusively handled by the concerned owners of the facilities.

Knowing that only some 20% of the population is served through piped water delivered by AUWSSC it must be stated that current sanitation practices in Kabul put at risk the water supply of the majority of Kabul residents, namely the remaining 80% of the population.

There is strong evidence that discharged faecal sludge (contained and not emptied) communicates with the groundwater. Consequently, sludge disposal via pit latrines has to be rated as partially “unsafely managed”.

No census or survey has been conducted recently to support reliably the input figures of the SFD graphic. Since previous studies with regard to sanitation are either outdated (EIRP 2006) or they have touched upon the topic superficially (JICA 2011) the most trustworthy source of information remains the conducted KII’s.

Derived from Table 1, which represents the access rates to different sanitation facilities in Kabul, the actual input figures are calculated as shown in Table 2.

Table 2: Sanitation containment systems used in the SFD calculation tool.

Description of sanitation containment system	No.	SFD-PI terminology	% of people using it
User interface discharges directly to a centralised foul/separate sewer	175,000	T1A1C2 (Macroyan)	5%
User interface discharges directly to a decentralised foul/separate sewer	70,000	T1A1C4 (DEWATS)	2%
User interface discharges directly to open drain or storm sewer	70,000	T1A1C6 (direct discharge)	2%
Septic tank connected to soak pit, where there is a 'significant risk' of groundwater pollution	2,100,000	T2A2C5	60%
Lined pit with semi-permeable walls and open bottom, no outlet or overflow	1,050,000	T1A5C10 and T2A5C10 (traditional dry toilet)	30%
Open defecation	35,000	T1B11 C7 TO C9	1%

Figure 2 shows the sanitation selection grid.

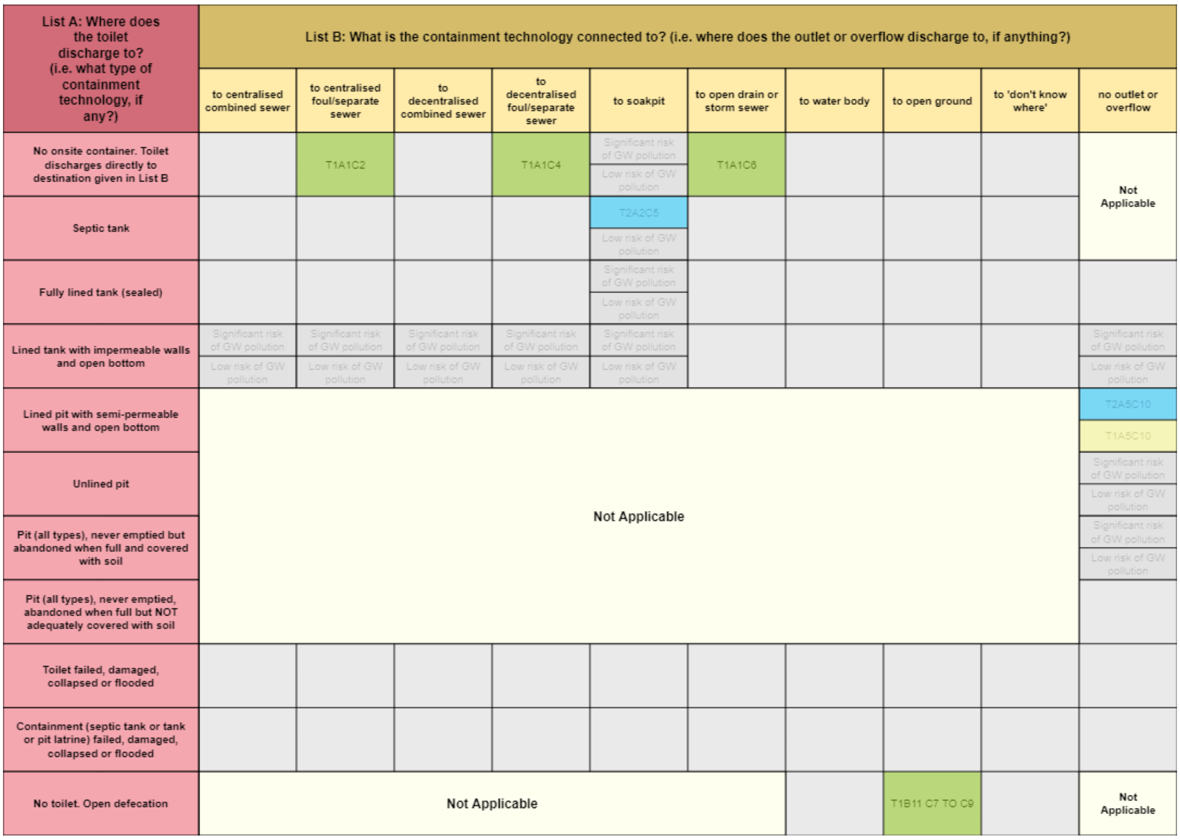

Figure 2: Selection grid.

2.2.2 Risk of groundwater contamination

There are strong indications that groundwater contamination is prevailing in large parts of Kabul. According to the Scientific Investigation Report on Kabul Hydrogeology (DACAAD 2011) it is the absence of a proper system to handle wastewater that is responsible for the presence of various aerobic bacteria. The main factors are:

- The high permeability of overlying layers of aquifer (loess-loam, sandy clay, silt and sand) which have a good water filtration capacity and retaining of the microbiological contamination from the countless drainage pits.
- Improper land use facilitating bacteria contamination of the groundwater.

For lack of more reliable data it has been assumed that 50% of the containment facilities with open bottom actually contribute to groundwater contamination in Kabul. Therefore, the percentage of pits with open bottom is split into 15% for system T1A5C10 (pits located in low-risk areas) and 15% for system T2A5C10 (pits located in high-risk areas).

2.2.3 The sanitation chain in Kabul

The term "sanitation chain" which refers to the sequence according to which FS is "handled" along the way from production at the level of the households until its disposal is shown in Figure 3.

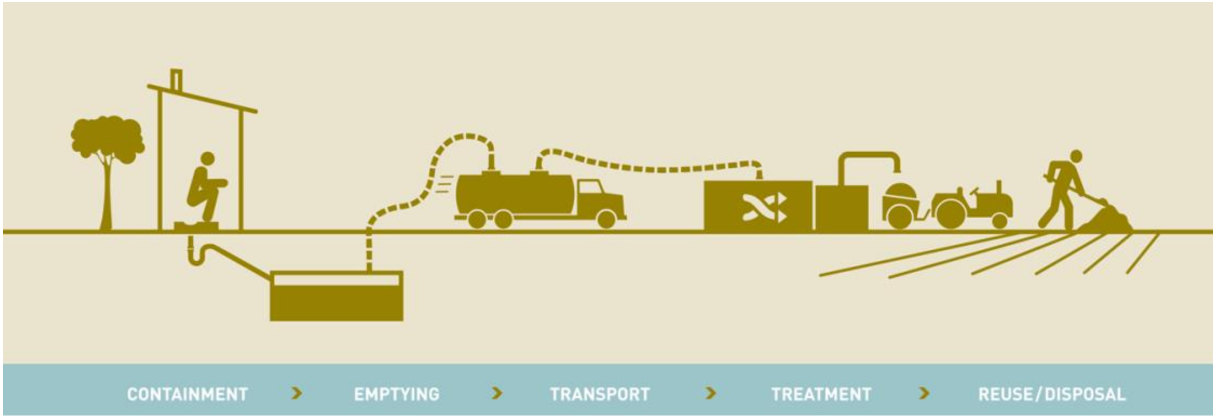

Figure 3: The Sanitation Chain (source: BMGF).

In many instances, the sanitation chain is incomplete as it does not reach any point of safe disposal. The process usually ends at the point of containment or with the unregulated discharge. Figure 4 shows the SFD matrix.

Kabul, Kabul Province, Afghanistan, 23 Jun 2016. SFD Level: 1 - Initial SFD
Population: 3500000
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 100%

System label	Pop	W4a	W5a	W4b	W5b	W4c	W5c	F3	F4	F5
System description	Proportion of population using this type of system	Proportion of wastewater in sewer system, which is delivered to centralised treatment plants	Proportion of wastewater delivered to centralised treatment plants, which is treated	Proportion of wastewater in sewer system, which is delivered to decentralised treatment plants	Proportion of wastewater delivered to decentralised treatment plants, which is treated	Proportion of wastewater in open sewer or storm drain system, which is delivered to treatment plants	Proportion of wastewater delivered to treatment plants, which is treated	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated
T1A1C2 Toilet discharges directly to a centralised foul/separate sewer	5.0	85.0	40.0							
T1A1C4 Toilet discharges directly to a decentralised foul/separate sewer	2.0			80.0	60.0					
T1A1C6 Toilet discharges directly to open drain or storm sewer	2.0					100.0	0.0			
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	15.0							50.0	50.0	0.0
T1B11 C7 TO C9 Open defecation	1.0									
T2A2C5 Septic tank connected to soak pit, where there is a 'significant risk' of groundwater pollution	60.0							100.0	50.0	50.0
T2A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	15.0							50.0	50.0	0.0

Figure 4: SFD matrix.

Containment

The predominant types of containment are various on-site sanitation facilities with the water-based soak pit accounting for 50% of the served households. This is followed with 30% by the traditional dry toilet, which has been the “fore runner” and which is replaced by water-borne facilities. The water-based septic tank accounts for 10%.

The other sanitation facilities are in the “single-digit range”: Macrorayan (5%) and the decentralised systems such as DEWATS (2%). Direct discharge into open drains (2%) and open defecation (1%) are insignificant.

In low income areas, toilets are frequently shared as shown during Focus Group Discussions (FGDs) conducted in two pilot areas within informal settlements.

Emptying

Private operators provide desludging services for septic tanks. During the KIIs, it was assumed that 100% of the septage is being collected from water-based septic tanks, whereas this ratio is 50% only for the water-based soak pits. Earlier mentioned FGDs revealed that informal settlements are hardly serviced. This corresponds to setting variable F3 for septic tanks (system T2A2C5) and pits (systems T1A5C10 and T2A5C10) to 100% and 50%, respectively. Due to the lack of vacuum truck capacity and reliable records and log books these percentages which were concluded form the various interviews cannot be verified.

Transport

The centralized and decentralized systems are assumed to deliver 85% and 80% of the wastewater, respectively to the treatment site. Thus, variable W4a for T1A1C2 (centralized sewer) is set to 85%, variable W4b for T1A1C4 (decentralized sewer) is set to 80% and variable W4a for T1A1C2 (toilet discharges directly to open drain or storm sewer) is set to 100%.

For onsite sanitation systems, 50% of the collected sludge is not reaching the treatment site but is rather dumped illegally into nearby ditches, etc. This assumes that the remaining 50% is reaching the treatment facility. Therefore, variable F4 for tanks and pits (systems T2A2C5, T1A5C10 and T2A5C10) is set to 50%.

Treatment

The total treatment capacity of the Macrorayan facilities is 15.000m³ per day. The facilities are not operating well, an efficiency of 40% was assumed and thus, variable W5a is set to 40%. The efficiency of the DEWATS plants was estimated at 60% and therefore, variable W5b is set to 60%. Wastewater from toilets discharging to open drains is not treated at all (variable W5c set to 0%).

Reuse / Disposal

There is a long standing tradition of reuse of treated faecal matter in Afghanistan. The increasing urbanisation of Kabul and the diminishing agricultural land have led to ever fewer quantities of FS being reused. No data are available to support any reasonable assumption. The interviews with key informants indicate that around 50% of the faecal matter from septic tanks is being disposed of safely. This corresponds to setting variable F3 for septic tanks (system T2A2C5) and pits (systems T1A5C10 and T2A5C10) to 50% and 0%, respectively.

2.2.4 Uncertainty of the data

This report is produced as a desk-based assessment. Reports which describe the sanitary situation in Kabul are either outdated or touching upon the subject matter only superficially.

Key Informant Interviews (KIIs) and Focal Group Discussions (FGDs) were therefore conducted to approximate the input numbers for the SFD graphic.

A sanitation survey or a survey that addresses sanitation issues is therefore recommended to be conducted to overcome the lack of data and to base future decisions in the field of sanitation on a more solid foundation.

2.3 SFD Graphic

Figure 5 shows the SFD graphic where it outlines that 25% of the excreta is safely managed while 75% of the excreta is unsafely managed.

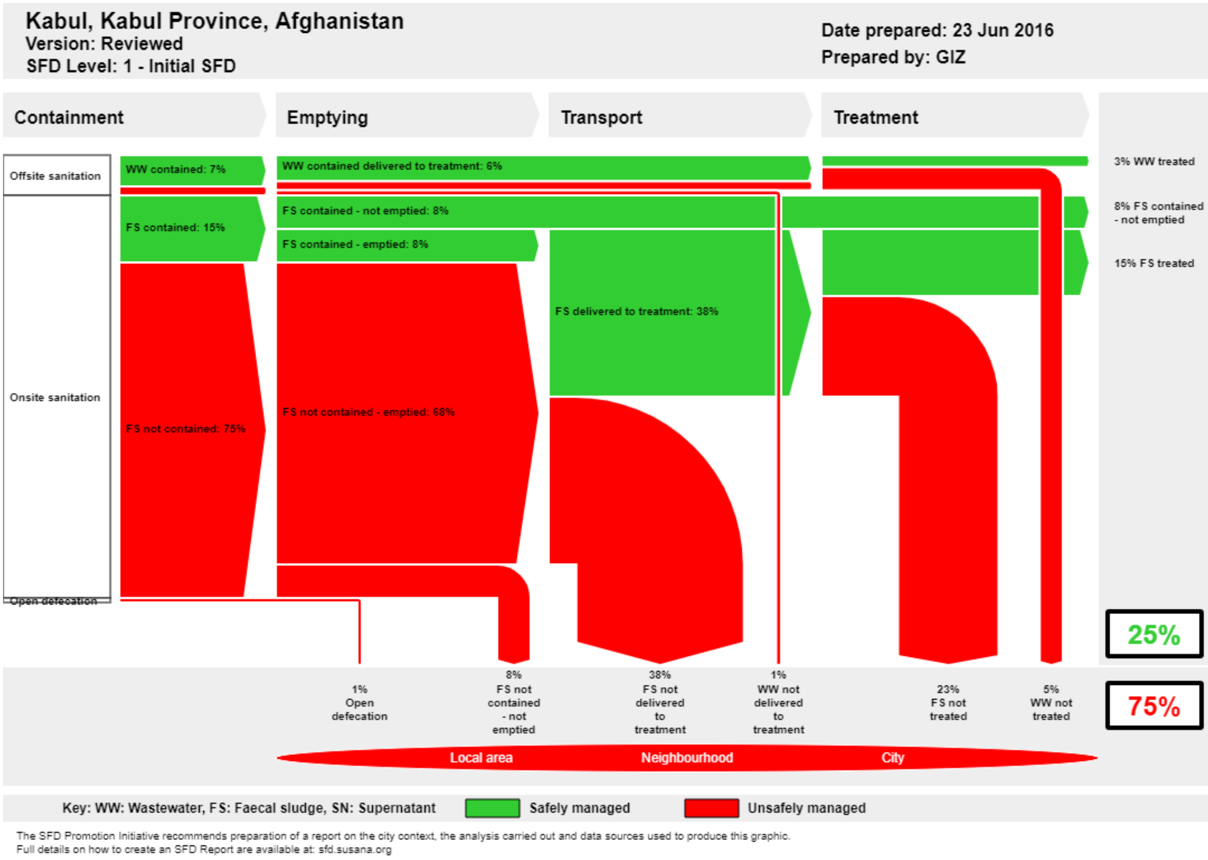

Figure 5: SFD Graphic.

The 25% of the excreta properly managed originates from: Wastewater (WW) contained delivered to treatment and treated (3%), FS contained - not emptied (8%) from onsite sanitation systems located in areas of low risk of groundwater contamination and FS treated from onsite sanitation systems (15%) as FS is also reused in agriculture. The 75% of the excreta unsafely managed is distributed as: WW not contained and not delivered to treatment (1%), WW delivered to treatment but not treated (5%), FS delivered to treatment but not treated (23%), FS not delivered to treatment (38%), FS not contained - not emptied (8%) from tanks and pits located in areas of high risk of groundwater pollution, and people practising open defecation (1%).

3 Service delivery context description

3.1 Policy, legislation and regulation

3.1.1 Policy

In Afghanistan, there is no single institution responsible for sanitation (SACOSAN, 2013). The sanitation sector is not addressed as a distinct sector in strategic and regulatory frameworks, but rather the various aspects of sanitation are included in other overarching sectors. Additionally, the institutional set-up is divided along urban and rural domains.

During the post-Taliban reconstruction era, a first policy entitled Urban Water Supply and Sewerage Sector Policy was formulated in 2005 (MUDH, 2005). However, the policy remained sparse and did not reflect the actual situation of wastewater management. MUDH is currently in the process of reviewing the wastewater aspects of the 2005 policy with the aim of making it realistic, catering to the decentralized needs of wastewater management, and promoting sustainability. In April 2012, a workshop was held with interlinking ministries and a preliminary agreement was reached by the stakeholders present on the broad scope of the wastewater aspects to be addressed in the revised urban policy. It was agreed that the policy shall address all forms of wastewater produced in urban areas (sewage, source separated wastewater including excreta from traditional dry latrines, surface drainage and industrial wastewater). Moreover, the focus would be on aspects of sustainability (health and hygiene, environment and natural resources, technology and operation, financial and economic aspects, and socio-cultural and institutional aspects). The policy updating is at the final stage: It will be presented soon (as of July 2016) to the Supreme Council of Land and Water (SCoLaW) for approval.

Some other framework documents related to the sanitation sector are as follows:

- National Waste Management Policy, National Environmental Protection Agency (NEPA) (Draft, Dec. 2008).
- National Pollution Control and Management Policy/ and Standards, NEPA (Draft, Oct. 2008).
- National Environmental Health Strategy 2011 - 2015, Ministry of Public Health (MoPH).
- National Communication Strategy for Hygiene Promotion, MoPH (currently being drafted).

Currently, the Urban Water Supply and Waste Water Sector Policy (UWSWW) is being developed by MUDH as an update to replace the existing Urban Water Supply and Sewerage Sector Policy (2005). The new UWSWW takes into account the developments which have been affecting the sector framework in the past ten years. Specifically, it derives its basis from the revised Water Law (2009) and anchors itself to the overarching principles of the Environment Law (2007). Moreover, it is directed by the Afghanistan National Development Strategy (ANDS), the overarching development strategy of Afghanistan and its respective priority planning processes. The UWSWW was submitted by MUDH to the Supreme Council of Land and Water (SCoLaW) where the document is discussed by its Technical Secretariat (TS) (see Table 3).

3.1.2 Institutional roles

Afghanistan has a centralized system of political and administrative governance. Establishing institutional responsibilities has been, and continues, to be a critical process in sector development. Figure 6 represents key institutions relating directly to wastewater as well as to interlinking aspects addressed in the approach of Integrated Waste Water Management, at the national, provincial/regional and town/district levels, respectively.

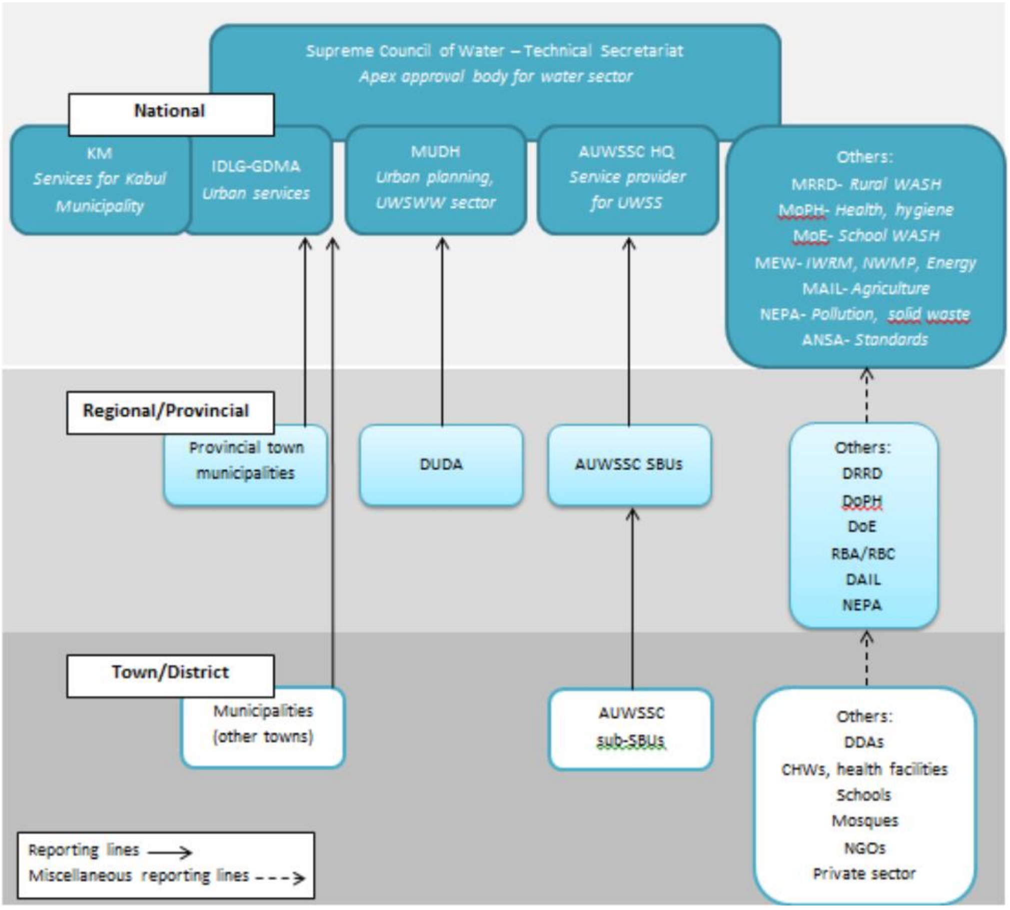

Figure 6: Schematic of key institutions linked to Integrated Waste Water Management at the national, regional/provincial and town/districts levels, respectively (GIZ, 2015).

Table 3 lists the principal responsibilities of the various institutions relating to sector governance.

Table 3: Institutional Responsibilities (GIZ, 2015).

Area	Responsibility	Institution
Sector Oversight	-Approval and acceptance of prepared policies, laws and regulations in water sector and its submission to the related offices; and coordinating development related to water and water resources management in all of the member ministries and governmental agencies. -Monitoring and control of implementation of policies and related laws.	SCoLaW and its TS

Policy-making	-Urban water supply and wastewater sector.	MUDH
	-Rural water supply and wastewater sector.	MRRD
	-Integrate environmental issues into legal and regulatory frameworks.	NEPA
	-Waste management.	NEPA
	-Hygiene and health.	MoPH
	-Agriculture.	MAIL
Planning	-National sector planning for urban water supply and wastewater sector.	MUDH
	-National sector planning for rural water supply and wastewater sector.	MRRD
	-Development of strategic plans (master plans) and detailed plans for municipalities.	Municipality/MUDH
	-Processing and approval of strategic and detailed plans for municipalities.	MUDH
	-Identifying need for infrastructure expansion and ensuring that planning takes place for improvement and expansion of water supply and sewerage.	AUWSSC HQ
	-Approval of short-term and long-term plans of AUWSSC and approval of annual programs.	AUWSSC HQ/ BOD
	-School WASH.	MoE
	-Determine procedure for and approval of Environmental Screening and Environmental Impact Assessment in planning of projects.	NEPA
Licensing and supervision	-Licensing for discharge of waste water or drainage water into water resources; control and supervision of quality of water; and penalty for polluters of water to the extent that exceeds the pollution tolerance limit	MEW/RBA/RBC
	-Pollution control licensing for discharging pollutants in the environment; inspection; and penalties for pollution	NEPA
	-Licensing for waste management facility in which waste is permanently disposed of or stored indefinitely; inspection; and penalties for violators inspection; and penalties for violators.	NEPA
	-Licensing for any occupier of premises where hazardous waste is kept, treated, or disposed;	NEPA
	-Licensing for private enterprises that intend to accomplish their activity in the municipality; inspection; and penalties for violators.	Municipality

As for urban areas, the Ministry of Urban Development and Housing (MUDH, recently re-named from Ministry for Urban Development Affairs) has the responsibility for policy-making and planning as shown in Table 3. In the absence of an independent regulator, MUDH also has by default an interim regulatory role until a separate regulatory body is established. The service provision function is implemented by the water utility. In January 2006, as per the directive of a Presidential Decree, the water utility went through an institutional reform process from the government enterprise, the former Central Authority of Water Supply and Sewerage (CAWSS), to the government-owned corporation of the Afghanistan Urban Water Supply and Sewerage Corporation (AUWSSC). Additionally, the provincial municipalities under the

Independent Directorate for Local Governance (IDLG) and Kabul Municipality have to ensure that sanitation and hygiene services are provided.

Water supply and, at least theoretically, sanitation services are provided by the public water utilities, the Strategic Business Units: the Kabul SBU for the capital. Table 4 shows the legal and institutional framework of the sanitation sector.

Table 4: Legal and Institutional Framework of the sanitation sector (MUDH, 2014).

Laws and Regulations	Standards	Policies	Guidelines
Water Law (2009) Environment Law (2007)	Water Resources Quality Standards	Urban Water Supply and Sewerage Sector Policy (2005, MUDH)	Integrated solid waste management program manual (IDLG) Latrine designs and WASH package for schools (MoE)
Law of Municipalities (existing)/ Municipal Law (draft, 2012) AUWSSC Statutes		Urban Water Supply and Waste Water Sector Policy (draft, 2014, MUDH)	Rural Water, Sanitation and Hygiene implementation manual (MRRD) Implementation manual for low- cost household latrines (MRRD)
		National Rural WASH Policy (2010, MRRD)	AUWSSC's SBU and other utilities management system guidelines
		Policies of NEPA (solid waste), MoPH (hygiene)	Procurement (policy) (AUWSSC)
			Public private partnership guidelines (IDLG)

For rural areas, the *Rural Water Supply, Sanitation and Irrigation Program* (RuWatSIP) which is part of the Ministry of Rural Rehabilitation and Development (MRRD), is mandated to plan, coordinate, facilitate the implementation and monitor the rural water supply, sanitation and hygiene promotion (WASH) activities from national down to community level. Taking into consideration the MDG goals and field evidence, the first policy had been revised by RuWatSIP/MRRD with the support of other key stake holders. The revised document was renamed *Water Supply, Sanitation and Hygiene Promotion* (WASH) policy launched in October 2010. In this policy, the role of designing, planning, coordination and monitoring of the Rural Water Supply and Sanitation functions was delegated to the MRRD together with the line ministries, MoPH and *Ministry of Education* (MoE), with a five years strategic plan for implementation.

3.1.3 Service provision

The municipalities are currently in charge of basic services such as hygiene, sewerage management and drainage, collection and disposal of garbage, managing litter, securing and preservation of hygiene and public local sanitation. A more detailed overview is provided in Table 5.

Table 5: Service provision (GIZ, 2015).

Type of service	Institution in charge
- Basic services like hygiene, sewerage management and drainage, collection and disposal of garbage, managing litter, securing and preservation of hygiene and public local sanitation, prevention of citizen from diseases, build and maintenance of ditches.	Municipality
- Production and supply of hygienic drinking water and sewerage services in urban areas.	AUWSSC SBUs
- Maintenance, operation and expansion of the water supply and sewerage services in the urban areas.	AUWSSC SBUs
- Building, expansion, maintenance and rehabilitation of water supply and sewerage related infrastructure along with their supplements in accordance with the environmental laws.	AUWSSC HQ
- Developing public, private sectors partnership (PPP) models and approval of private sector concession/lease/management contracts.	Regulator (not established yet)
Standard-setting	
- Facilitation of standard development process and its approval and publication.	ANSA
- Developing qualitative standard for drinking and domestic water, in line with international standards.	MoPH
- Developing the qualitative standards for industrial waste water discharge in MUDH line with international standard.	MUDH
- Developing qualitative standard for agriculture water, in line with international standards.	MAIL
- Set the pollution tolerance limit.	NEPA
Tariff-setting	
- Setting tariff policy that treats water as a scarce economic good and approving regulatory recommendations on tariffs and charges.	MUDH
- Reviewing and making recommendations to constitutional level on tariff applications.	Regulator (not established yet)

3.1.4 Service standards

Infrastructure was largely destroyed during the Afghan civil war between 1979 and 2001. Water supply and sanitation was widely organized informally. Reconstruction started only after the Taliban regime was toppled in 2001 with major engagement of international donors.

Piped water is supplied in Kabul to around 50,000 households or 15% of the capitals' population. The average supply hours are 4 hours per day. The remainder of the demand is satisfied by the many uncontrolled groundwater sources which have been the major source of water for decades and which are, due to increasing urban density, increasingly exposed to contamination.

In view of the occasional incidents of cholera, it became a major concern of those involved in service delivery to overcome the obvious deficiencies in sanitation.

In the post-Taliban reconstruction period, some efforts have been made to introduce improvements in sanitation services and waste water management in Kabul. These improvements are however at pilot scales as yet:

- Sulabh public toilet complexes with biogas sanitation system.
- Localized sewerage system with treatment plant for 'Omid-e-Sabz' Township (Shah- rak Omid-e-Sabz).
- Decentralized Waste water Treatment Solutions (DEWATS, BORDA).
- Kabul Urban Reconstruction Project (KURP)/ Kabul Municipality Development Program (KMDP).

In Afghanistan as a whole, no urban area has a centralized sewage collection and treatment system. In fact, sewage, as a mixed stream of domestic waste water, is only produced in a small number of localities and is often limited to blocks with high rise buildings or newer constructions. Almost all of the households in urban areas have access to a sanitation facility in their housing compound[1].

According to the Afghanistan living conditions survey (ALCS, 2013-14) and the National Risk and Vulnerability Assessment (NRVA, 2013-14), some 8.3% of the population used improved sanitation facilities, which is an improvement compared with NRVA 2007-08. Accordingly, the share of the population with improved sanitation is very low.

According to the national survey, the most commonly-used sanitation facilities are a covered latrine and open pit (respectively, 57 percent and 19 percent; both considered unimproved). Open defecation is practised by 15 percent of the population. The situation for the urban population is considerably better, as here, up to 29 percent of the population has access to improved sanitation. WHO and UNICEF however apply a more refined definition of the quality of sanitation (Joint Monitoring Programme, JMP), by distinguishing private and shared facilities within the category of improved sanitation (WHO-UNICEF, 2013). Using this additional

[1] The latest published report of the National Risk and Vulnerability Assessment (2007/2008) states:

'For sanitation purposes some 25 percent of the population use open field or 'darean', a place inside or outside the compound used for waste products. For the other types of sanitation combined, 89 percent of the population has access to sanitation within the compound (99 for urban, 87 for rural and 67 for the Kuchi population) and 22 percent shares the sanitation facility with other households'.

criterion, only 6 percent of the population – 19 percent in urban areas, 2 percent in rural areas and none of the Kuchi – rely on adequate method for sanitation.

Household sanitation systems comprise dry toilets; water-based flushing systems attached to an on-site collection or disposal unit, and localized sewage management systems. The type of sanitation system adopted depends on user habits and preferences, soil type and substrata, financial capacity of the household, type of residential area, and water availability. Dry toilets have been the age-old practice in the country and still dominate in the rural areas. In Kabul, the excreta from dry toilets are collected and used on surrounding farm land for agriculture. Such practices have become increasingly difficult due to loss of agricultural land to rapid urbanization. Additionally, in the cities there is a general trend of shifting away from dry sanitation to water-based systems as the economic status of a household improves.

The following waste water management practices and infrastructure are commonly found in Kabul urban area:

- *Dry toilet sanitation systems*

  These include different types of latrines, ranging from deep pits to above-ground chamber structures. The most common type is the traditional above-ground vault which is built attached to an exterior boundary wall and is emptied out from the street-side. These toilets collect and store excreta (faeces and urine) and are emptied out when full. "Washers" tend to use body-wash water in the latrine and channel this out separately. In other cases, urine may also be separated to reduce odour. Houses may add a ventilation pipe to minimize odour. The dry excreta is removed and transported for a charge by excreta collectors. Typically, the collectors bring soil or ash from bakery ovens and use it to cover the excreta in the toilet chamber before emptying it out. On the farm, the material is mixed, sieved and dried in the sun and used as a soil conditioner. With the expansion of the larger urban areas and the changing trends in the use of dry toilets, this is no longer a common practice in Kabul. Rather, households needing the service contact known farmers or wage labourers and pay for the task. Moreover, the people living on the hillsides of Kabul have become notorious for pushing out the excreta from the toilets into the streets or ditches before the rainy period so that it is washed downhill with the storm water.

- *Water-based on-site sanitation systems*

  In the absence of a centralized sewage system, houses and buildings with flush toilets usually make some on-site arrangement for the black water. Typically, this is found in the form of a soakage well[2] as it takes several years to fill up. Lately, newer houses and apartment blocks are equipped with holding tanks (commonly referred to as septic tanks). Households not having space for a holding tank within their own perimeter, construct them illegally under the roadside pavements. Some houses discharge black water directly into surface drainage channels.

  Water-based sanitation systems are found mostly in newer constructions where households can afford to install them. The black sewage is discharged into holdings tanks with an overflow into soak pits. A separation of black and grey water is

[2] A soak pit has an open bottom and walls erected from concrete rings.

applied in many cases to avoid rapid filling of the holding tank. In that case, grey water is evacuated through surface channels. The holding tanks have to be emptied out periodically. As concerns the soak pits, it takes several years for sludge to build up in them. The emptying out interval of holding tanks depends on the capacity, as few as once per year in a house to multiple times a day in a multi-story block. Sludge and septage removal services with vacuum trucks are provided by the private sector and the municipality. In some cases dried sludge has to be shoveled out manually.

The National Environmental Protection Agency (NEPA) has designated land outside Kabul for the disposal of sludge. Many service providers, however, simply dump the material illegally within the city limits and usually into the water body. Currently, trucks (private and municipal) deliver the contents of septic tanks, soak wells and holding tanks to treatment plants. Some households leave the products of dry latrines in designated sites for solid waste, which are subsequently collected by Kabul Municipality and taken to *Chamtala* dumping site.

- *Grey water management*

Grey water constitutes the larger volume of waste water as compared to black water. Some households which discharge their black water into a soak pit also infiltrate their grey water into the ground. Other households typically direct their grey water outside their property where it flows into storm water collection ditches of constructed channels and subsequently into a nearby water body. In apartment blocks and new private houses, the combined (grey and black water) sewage is occasionally gathered in holding tanks, from where it needs to be evacuated on a regular basis. In order to avoid related high expenditures, the grey water is evacuated in surface channels.

- *Decentralized sewage collection and treatment system*

Two notable decentralized systems with sewerage and treatment plants were implemented in Kabul city. One system is still functioning, though with poor treatment results, and belongs to the high-in-demand Macrorayan apartments built during the Soviet times. The daily capacity amounts to 6,000 plus 12,000 m^3/day. Unreliable power supply and worn material reduce the treatment efficiency significantly. A tariff is applied by the Maintenance Department that is charged according to the floor area. There are plans to increase the tariff from 1 AFN/m^2/month (US$ 0,012/m^2/month) to improve cost coverage. The second scheme, built for the Poly-technic Institute, has not been operational for many years.

According to the “Emergency Infrastructure Reconstruction Project - Sanitation Improvements in Kabul City” funded by the World Bank (EIRP 2006), there are three areas equipped with sewage treatment plants: Kabul University, the ISAF camp and a military school. More recently, townships within the Kabul urban area dispose of own decentralized treatment facilities without supervision or quality control.

- *Public toilets*

Public toilets in the urban areas are constructed and managed by the municipality. Typically pour-flush squatting toilets attached to sewage holding tanks or soakage wells are used in public toilets. When the holding tanks are full, they are emptied out by the municipality using a pump. The waste material is transported by truck and used on agricultural fields outside the city. Public toilets are generally operated by a user-pay system.

- *Commercial areas, small businesses, industrial sites, and institutions*

Commercial areas, small businesses, industrial sites and institutions (institutions include schools, colleges, clinics, hospitals, public buildings, mosques, etc.) use a combination of the waste water management systems described above. Notably, in new buildings, flush toilets are being installed, and the total combined waste water produced in the buildings is collected and stored in holding tanks. Some hospitals with better services are separating and pre-treating the effluent from laboratory or other sections producing hazardous effluents (eg. FMIC[3] Kabul). Unfortunately, many businesses and hospitals are also discharging all types of waste water, including hazardous wastewater, directly into the environment. Individual roadside shops and enterprises typically discharge their process-use and grey-water untreated into the storm water collection channels.

- *Industrial parks*

Industrial parks are the designated areas providing land and services for industrial development. The Industrial Parks Development Directorate of AISA is responsible for the development as well as management of new and modern industrial parks. Services for the parks include clean water supply and sewage system.

- *Storm water*

Storm water is managed through a system of piecemeal surface drainage channels. They may be simple shallow dug-out ditches or deeper concrete conduits, they may be open (majority of channels) or covered with concrete slabs or metal grills, and they may be interconnected and lead to a natural drain or disjointed, dead-end collectors. The primary purpose of the channels is to direct precipitation runoff to natural drains. However, owing to the lack of a public sewerage system and feasible alternatives, these channels are also used for disposal of grey water in many localities as well as for removal of process-water from market areas. In rare cases, black water outlets may be connected covertly to the channels and septage may be emptied into the channels illegally by night.

Although AUWSSC and its SBUs have the mandate to engage in the fields of wastewater and in sanitation management Kabul, they do not have the required institutional structure and have no practical experience in that domain as yet. Table 4 shows AUWSSC customers by category.

[3] French Medical Institute for Children.

Table 6: Water/Sanitation services (source: AUWSSC financial report 1388, 2009).

	Category	Number	Population served
Water supply	Domestic users	48,192 *	482,000
	Public taps	400	600,000
	Commercial	704	-
	Public	789	-
	Total	50,085	1,082,000

* domestic users as per March 2016

Assuming that Kabul has a population of 3.5 million inhabitants and according to the figures presented in Table 6, the coverage with water supply reaches some 30% of the population. The remainder of Kabul residents depends on ground water mostly abstracted from one of the many wells which are operated privately. Ground water quality however is increasingly exposed to anthropogenic pollution.

In 1996, the "*Action Contre La Faim*" program analysed 1,400 drinking water points in the Kabul Basin to determine the level of faecal bacteria contamination. The results of the analysis indicated that 45% of all wells fitted with hand pump, 76% of open wells and 49% of the distribution network were contaminated with bacteria. In 2004, BGR found that 55% of the analysed water samples from drinking water points of Kabul Basin indicated significant bacterial contamination. One year later, USGS reported that 73% of the analysed water samples from the drinking water points of Kabul Basin indicated significant coliform bacteria and 23% of the analysed water samples indicated *E-coli* bacteria (DACAAD 2011).

In its report on the groundwater situation in the Kabul basin, the Federal Institute for Geosciences and Natural Resources (BGR, 2007) states "*The shallow groundwater in the city has received tremendous amounts of pollutants due to a lack of proper waster and wastewater disposal. More than 86% of all households have a simple cesspit without any further wastewater treatment. Hence, elevated concentrations of nutrients such as nitrate, sulphate and faecal bacteria can be found in the shallow groundwater. The high infant mortality can be, at least partially, attributed to the insufficient water hygiene. Acid generated during the mineralization of the waste water is hidden due the strong pH buffering capacity. Luckily, the prevalent redox and pH conditions preclude significant mobilization of trace metals and metalloids, such as arsenic.*"

Onsite sanitation systems, the prevailing type of sanitation in Kabul, are not regulated. Services, such as emptying services are provided mainly by private entrepreneurs. According to oral information from the head of Macroyan O&M including Kabul WWTP, the volume of water that is handled on the facility is in the order of 580,000 m^3 per month, of which some 40,000 m^3 are delivered by trucks. The amount of wastewater clearly exceeds the current treatment capacity.

4 Stakeholder Engagement

4.1 Key Informant Interviews

KIIs were conducted with a number of stakeholders as shown in Annex 1. All stakeholders are engaged in the sector and are professionally related to the subject matter. The KIIs constitute the prime source for the input figures for the SFD graphic. The KIIs were conducted in accordance with the methodology to verify the information retrieved from various sources.

4.2 Focus Group Discussions

The objective of Focus Group Discussions (FGDs) with community representatives is to gather qualitative data that complements, validates, or perhaps challenges data collected during the literature review and KIIs. FGDs were conducted with men and women from the study areas in the informal settlements of:

- Masjed Itefaq area located in district 13 in western Kabul. This flat area prone to flooding has expanded rapidly during the last decade.
- Dehghouchak area is a hilly area in the centre of Kabul.

5 Acknowledgements

This SFD report is dedicated to all the citizens of Kabul. Most appreciated was the support of His Excellency Salik, MUDH Deputy Minister and Eng. Qasim Salehi, Director of Water and Sanitation in MUDH.

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7 Appendix

7.1 Appendix 1: Stakeholder identification

Stake-holder	Name of organization	Name of contact person	Position
1	MUDA	Mr. Akbar Mohammadi	Urban Affairs Deputy Minister
2	MUDA	Mr. Qasim Salehi	Director, Water Supply & Sanitation
3	MUDA	Ms. Fatema Jafari	Technical Advisor
4	AUWSSC	Mr. Baheer,	Head of AUWSSC
5	AUWSSC	Mr. Masoomyar,	Operational Manager
6	Kabul Municipality	Mr. Habibi	Sanitation Director at Kabul Municipality
7	Kabul Municipality	Eng. Qaisari	Head of Makroyan O & M
8	Kabul Municipality	Mr. Vali	Head of Kabul Waste Water Treatment Plant
9	Kabul Municipality	Mr. Nawabi	Head of Kabul Development Program (KMDP) under Kabul Municipality
10	NEPA	Mr. Malikyar	Technical Deputy Director General
11	NGOs (BORDA)	Ms. Mirzaei	Monitoring & Evaluation Officer

12	Service Providers	Not satisfied to be registered.	FGD: private service providers for emptying and transport of FS
13	MUDA - WSIP (GIZ)	Mr. Noor	Sanitation Advisor at MUDA & WSIP (GIZ)
14	Service Providers	Construction material provider	
15	Service Providers	Traditional collection and transportation	

7.2 Appendix 2: Tracking of Engagement

Stake-holder	Date of Engagement	Summary of outcomes
1	18/05/2015	Groundwater is the only source of drinking water in Kabul which is polluting by soak pits. Water scarcity especially at unplanned areas, even for drinking purposes, is becoming a big challenge.
2	18/05/2015	MUDA is developing an updated policy considering actual situation on ground.
3	10/08/2015	There is a wastewater committee according to an official order by economic council of ministers. The committee has responsibility to develop a sanitation plan for Kabul City.
4	08/03/2015	The main priority is water supply provision, but still we are in negotiation with our donors & partners to provide sanitation as a package covering all formal and informal areas.
5	08/03/2015	Kabul City is relied on groundwater which has been dropping down. This is a major concern for Kabul City while there is no any other alternative resource for it.
6	14/09/2015	We are collecting 200 ton fecal sludge per day while is not our responsibility. Kabul Municipality collects 5000 ton solid waste on daily basis.
7	08/11/2015	580,000 cubic meter wastewater is monthly inlet of Kabul WWTP, and currently without chlorination disposed into Kabul River.
8	08/11/2015	There is only physical process (sedimentation) in the treatment plant and the effluent discharges directly to Kabul River.
9	13/09/2015	KMDP is focused on road pavement and drainage in unplanned area while in the last phase they had sanitation improvement component and water supply as well.
10	07/11/2015	NEPA as a policy maker has responsibility to develop environmental standards, policy and regulation while monitors and control environmental pollutions.
11	10/08/2015	BORDA-Afghanistan currently has assigned some staffs to work on faecal sludge management.
12	09/07/2015	Soak pits, due to its convenience and also access to water, are expanding at different parts of Kabul City. This sanitation technology is deteriorating the quality of ground water.

13	10/08/2015	Household sanitation systems comprise dry toilets or water-based flushing systems that are either connected to on-site collection/soakage units, localized sewage management system, or simply discharge directly into the environment.
14	09/07/2015	During last 15 years people are using more and more soak pits due to its convenience and affordability.
15	09/03/2015	We are using animal cart to collect faecal sludge and use it for agricultural purposes. Many vacuum trucks come to our agricultural land paying money and discharge their waste which fertilizes our land.

SFD Promotion Initiative

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