Status of Urban Sanitation in the Capital of Ethiopia & the Urgency of Adopting an Integrated FSM System

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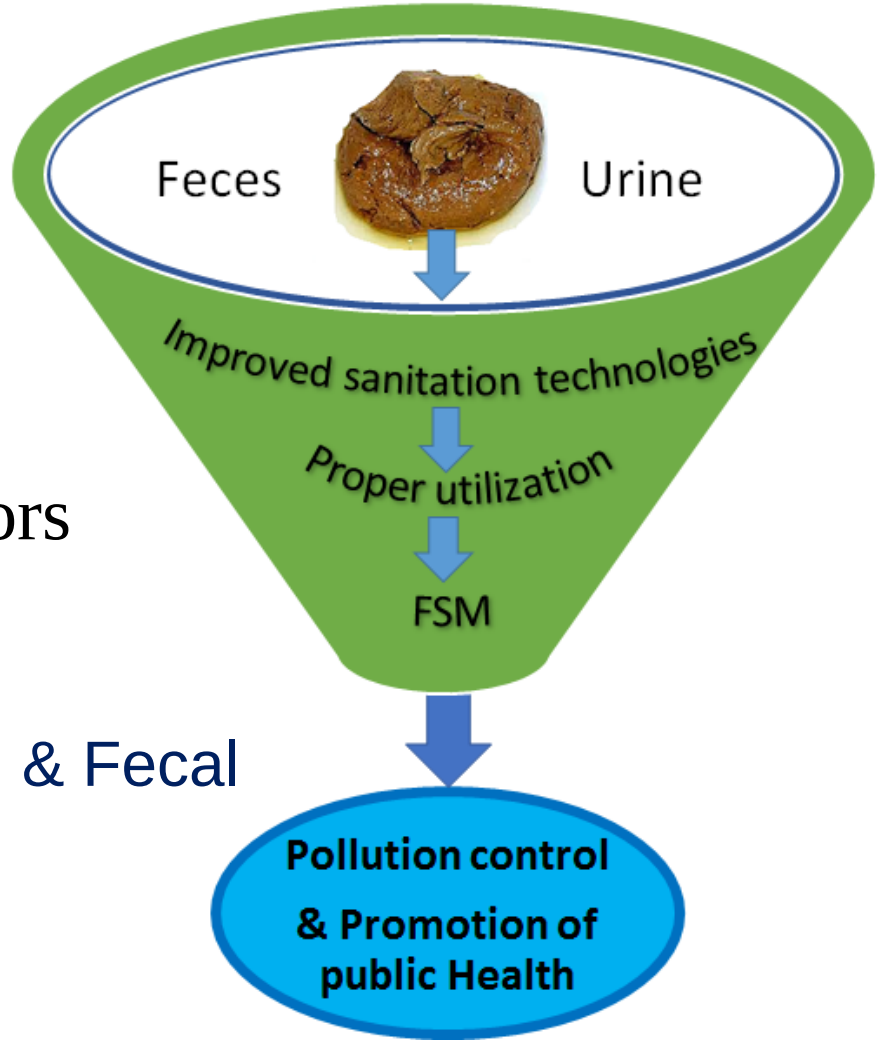
Introduction

- 60% of the disease burden is related to poor sanitation in Ethiopia (Ethiopian-MoH, 2013)
- What is the current state of sanitation & indicators used to monitor?



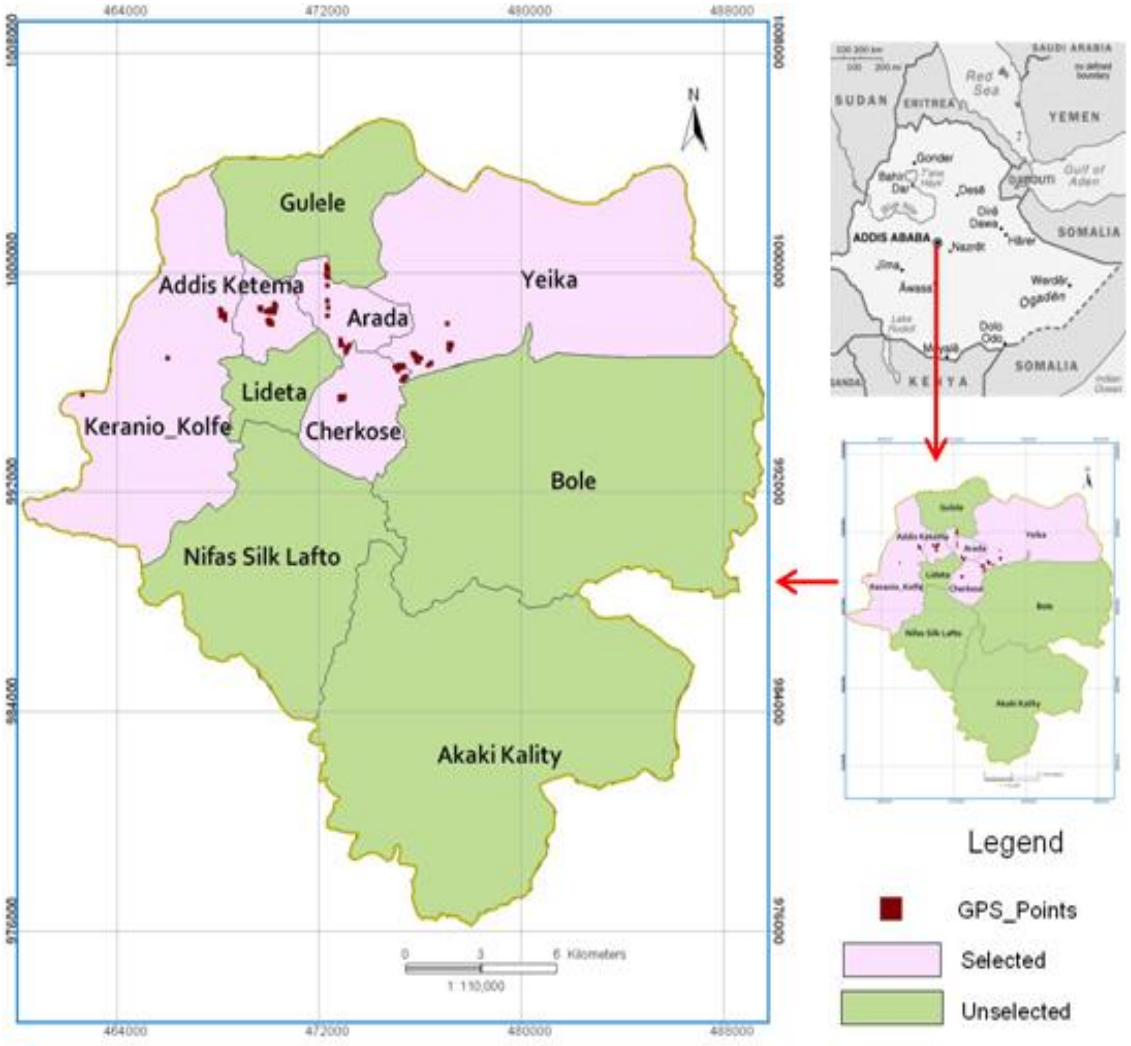
Access to improved sanitation with proper utilization & Fecal Sludge Management (FSM) system as defined by WHO/UNICEF.

An improved sanitation facility is defined as one that hygienically separates human excreta from human contact (WHO/UNICEF, 2008).

Objective

- To investigate current state of access to improved sanitation
- To map trends of sanitation in urban areas
- To determine the chain of FSM system with current practices

Method



Map showing the selected sub-cities & sampled households (HHs)

- **Cross-sectional survey in the capital city (2013)**

Addis Ababa (Ethiopia)

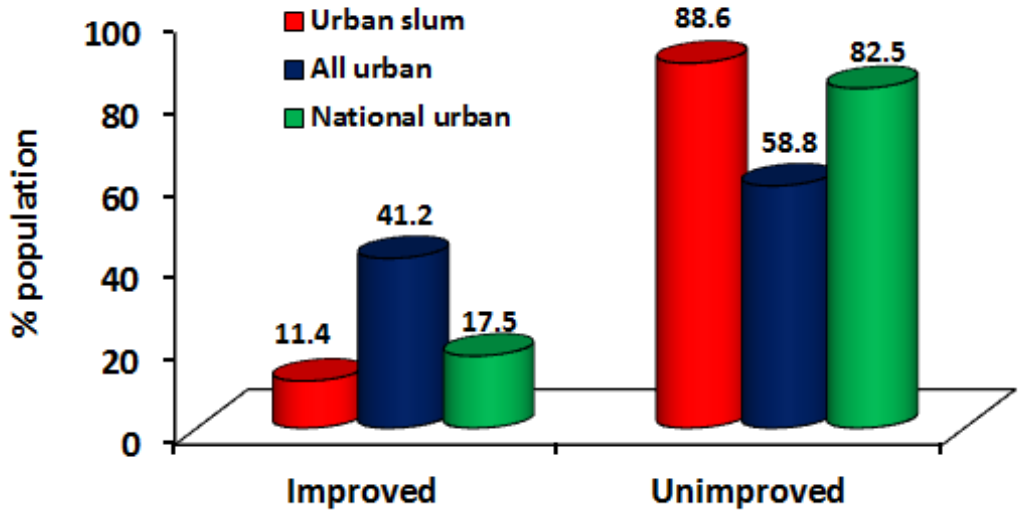
- Total area = **527 km^2**
- Population ρ = **5165 persons/km^2**
- It is considered as one of the largest cities in Africa with more than **3 million** residents.
- It has 10 sub-cites
- The study area is located in urban slums of Addis Ababa

- **National inventory results of 2014**
- **Sample survey of Ethiopian CSA of 2014**

Results

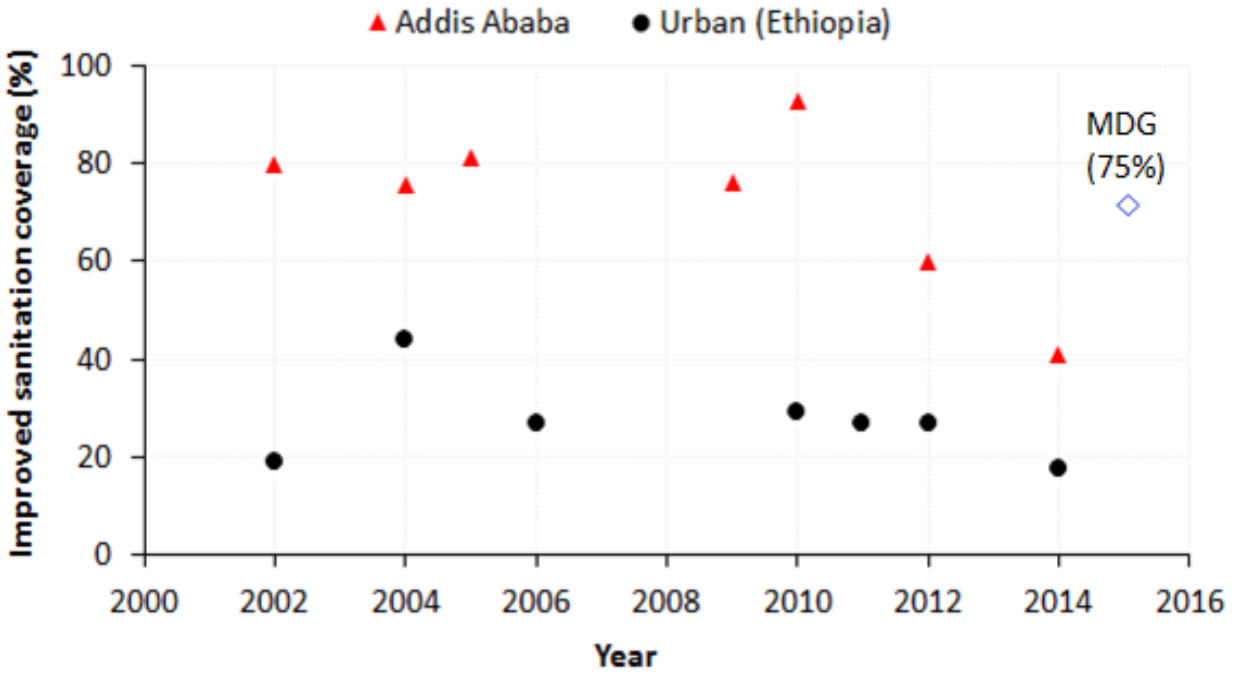
1. Current state of access to improved sanitation

- 88.6% urban slums used unimproved sanitation facilities
- National urban sanitation coverage = 17.5%
- 95.5% of national population have no access to improved sanitation



Access to improved sanitation in urban Ethiopia

Trends of access to improved sanitation in Addis Ababa & urban residents of Ethiopia in relation to MDG



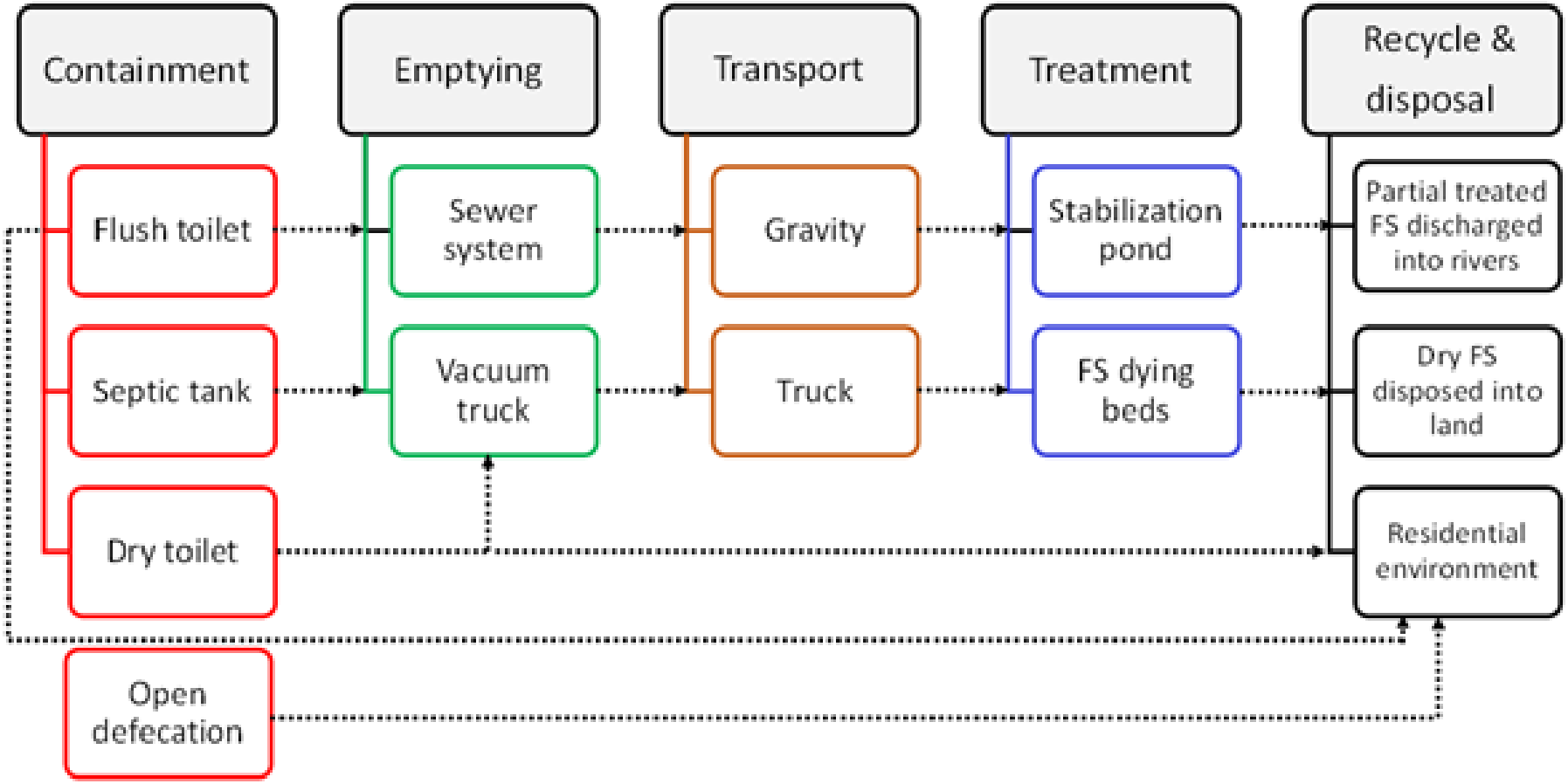
2. User behavior & pit emptying practice in urban slums

- ≈ 95% toilets were not clean
- 88% of HHs use municipal emptying services
- 7.8% HHs release the FS to the nearby rivers
- 4.2% use private pit emptying or sewer system.
- Expensive & limited access to pit emptying forced most of the residents to use full toilets (≈ 50% of the toilets were full) see the photos

3. Fecal sludge management (FSM) system

- In the chain of FSM system, the containment was mainly dry toilets (> 74% in Addis Ababa & 90.8 % urban slums of Addis Ababa)
- Direct disposal of partial treated & untreated FS to the environment (land & water)
- Resource recovery oriented FSM system almost nil

The chain of FSM system & current practices of FSM in Addis Ababa.



Conclusion:

- Current access to improved sanitation in is far from the MDG target
- Declining trend of access in sanitation
- Safe & resource recovery oriented FSM system is merely absent that even totally nullify the current access to IS

Why is Bill Gates drinking poop-water?

Source: http://www.treehugger.com

Sanitation solution should be all-in-one with a closed-loop !!!

Thank you!!!!

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Introduction

In the faces of high urbanization & demand for basic sanitation, there are debts that urban sanitation in Africa has been steadily improving in one hand & worsening on the other hand in the recent decades. Investigating the current level & trend of access, & identifying the underlining challenges to sanitation system development in urban slums will be useful for planning to promote sustainable development goals (post 2015 agenda).

An improved sanitation facility is defined as one that hygienically separates human excreta from human contact (WHO/UNICEF, 2008).

Monitoring of the progress of access to sanitation worldwide has been mainly focused on household-level inventory of type & number of toilet facilities ignoring proper utilization and user behavior (Kvarnstrom et al., 2011), and also the complete chain of FSM.

Are the recent reports of access to improved sanitation worldwide particularly in Sub-Saharan Africa in line to the WHO/UNICEF definition of access to improved sanitation?

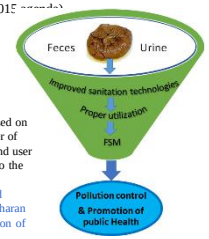
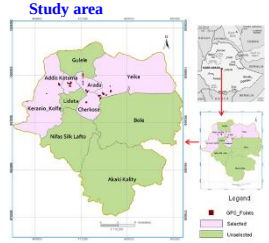


Fig. 1 Conceptual model showing access to improved sanitation with proper utilization and Fecal Sludge Management (FSM) system.

Objective

This study aimed to investigate the status of urban sanitation coverage in relation to MDG 2015 target and the major gaps of FSM.

Study area



Addis Ababa (Ethiopia)

- Total area = **527 km²**
- Population ρ = **5165 persons/km²**
- It is considered as one of the largest cities in Africa with more than **3 million** residents.
- It has 10 sub-cites
- The study area is located in urban slums of Addis Ababa

Fig. 2 Map showing the selected sub-cities & sampled households (HHs).

Materials and methods

Study design: A cross-sectional survey was conducted in Oct. 2013 using both observation and in-depth interview. We also included desk review of other surveys & administrative government reports.

Sampling: A multistage sampling technique (sub-cities → districts → households). A total of 403 HHs were randomly selected from 5 sub-cities & 10 districts.

Results

Current state of access to improved sanitation

- Majority of urban slums (88.6%) used unimproved sanitation facilities including open field defecation.
- National urban sanitation coverage is also very low = 17.5% (Ethiopian-MoWIE, 2014).
- 82.5% of national urban & 95.5% of national population hav no access to improved sanitation (Ethiopian-CSA, 2014).

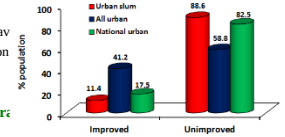


Fig. 3 Access to improved sanitation for urban slums & all urban population of Addis Ababa compared to the national coverage

Trends of Sanitation Coverage

- Relatively higher access to IS was reported in Addis Ababa than urban-national
- The trend showed a sharp decrease from 2010 to 2014
- The trend also revealed urban ISC was above the MDG target from 2002 to 2010 while the recent sanitation reports (2012 & 2014) indicated far lower from the MDG target

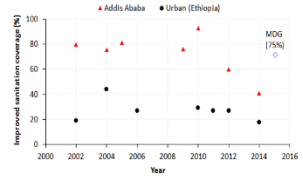


Fig. 4 Trends of access to improved sanitation in Addis Ababa & urban residents of Ethiopia in relation to MDG.

User behavior & pit emptying practice in urban slums

- Most toilet facilities (about 95%) were not clean & prone to environmental contamination
- 88.38% of HHs in urban slums of Addis Ababa used municipal emptying services
- 7.84% HHs connected their toilet facilities to the nearby rivers
- The rest use private pit emptying or sewer system.
- Expensive & limited access to pit emptying forced most of the residents to use full toilets (> 50% of the toilets were full).

Fig. 5 Photo showing full pit latrines & the residents were forced even to use the slab for defecation.

Fecal sludge management (FSM) system

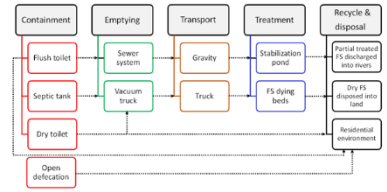


Fig. 6 The chain of fecal sludge management (FSM) system & current practices of FSM in Addis Ababa.

- In the chain of FSM system, the containment was mainly dry toilets (> 74% in Addis Ababa & 90.8 % urban slums of Addis Ababa)
- Direct disposal of partial treated & untreated FS to the environment (land & water)
- Resource recovery oriented FSM system was completely absent

Conclusion

- Current access to improved sanitation in urban residents of Ethiopia including the capital city is far from the MDG target
- Declining trend of access in sanitation because of uncontrolled population growth & high urbanization
- Safe & resource recovery oriented FSM system is totally absent in Addis Ababa that even totally nullify the current low access to improved sanitation coverage.

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