



# **Inefficient technology or misperceived demand: exploring failure of vacu-tug based pit emptying service in Bangladesh**

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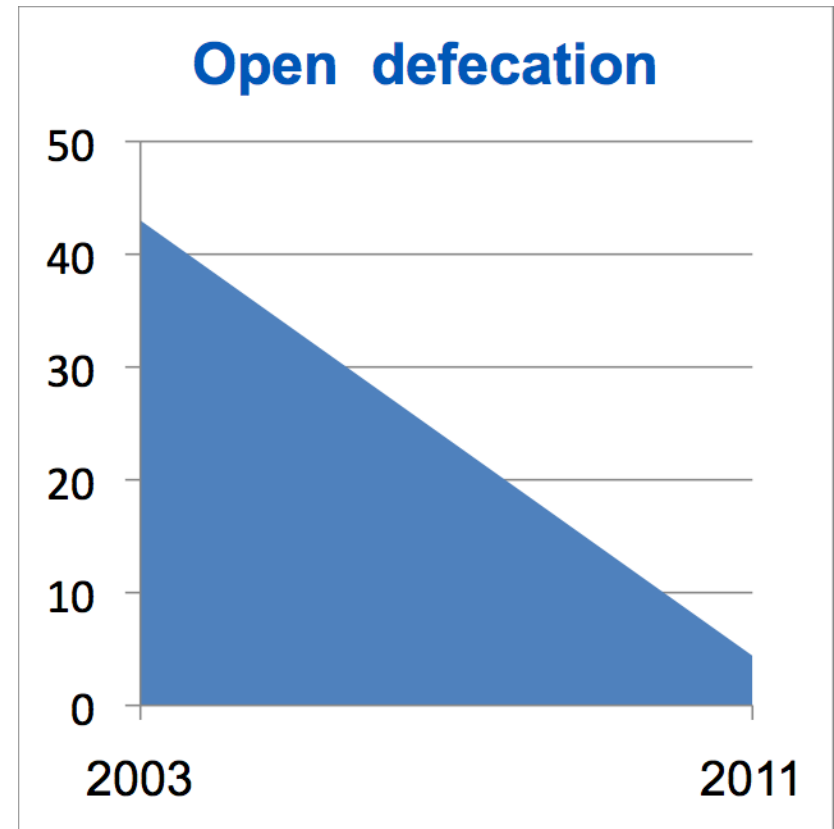
**Emergency Sanitation Workshop**

**13-15 June, 2012**  
**Delft, Netherlands**



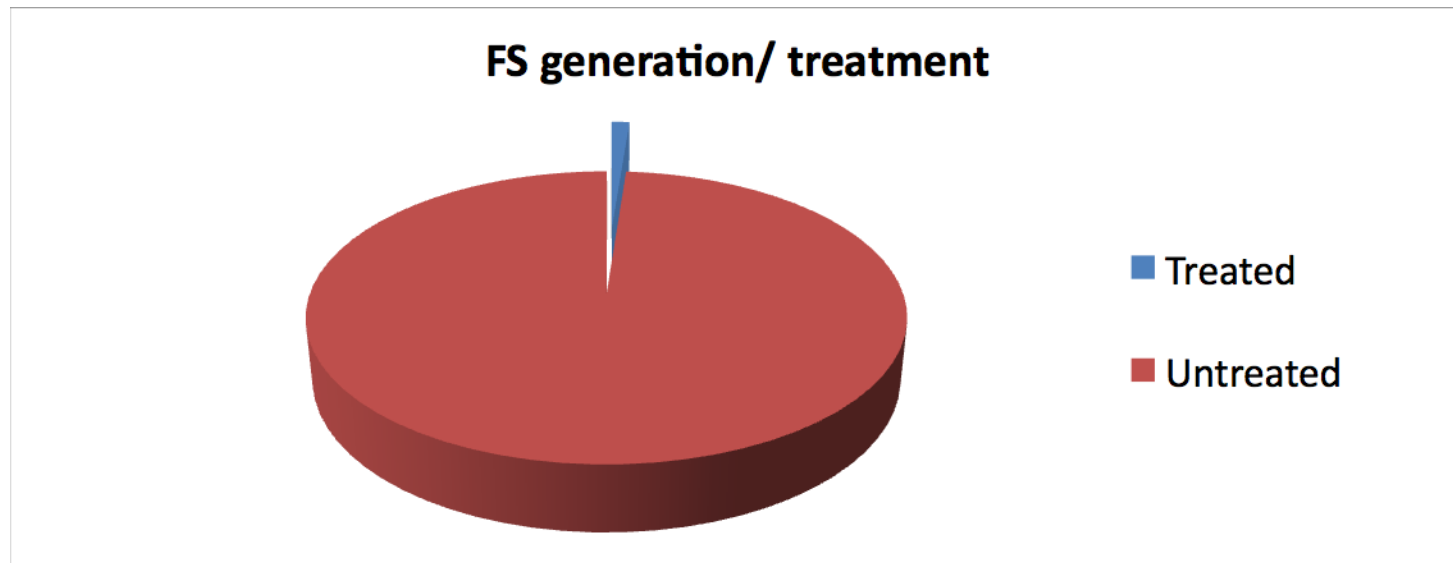
# Magnitude of the problem

- » **Open defecation reduced to 4.4 % in 2010 which is a significant achievement**
- » **Does it mean that the magnitude of the problem is also reduced?**



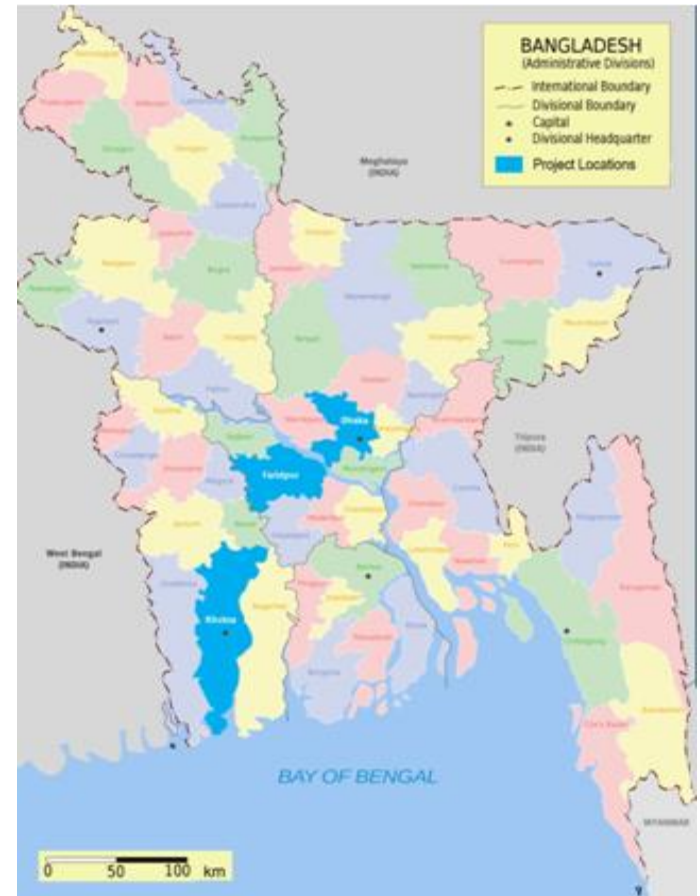
# Magnitude of the problem cont...

- » **FS generation - 80,000 MT/day**
- » **FSTreated 960 MT/day**
- » **What happens to the remaining volume?**

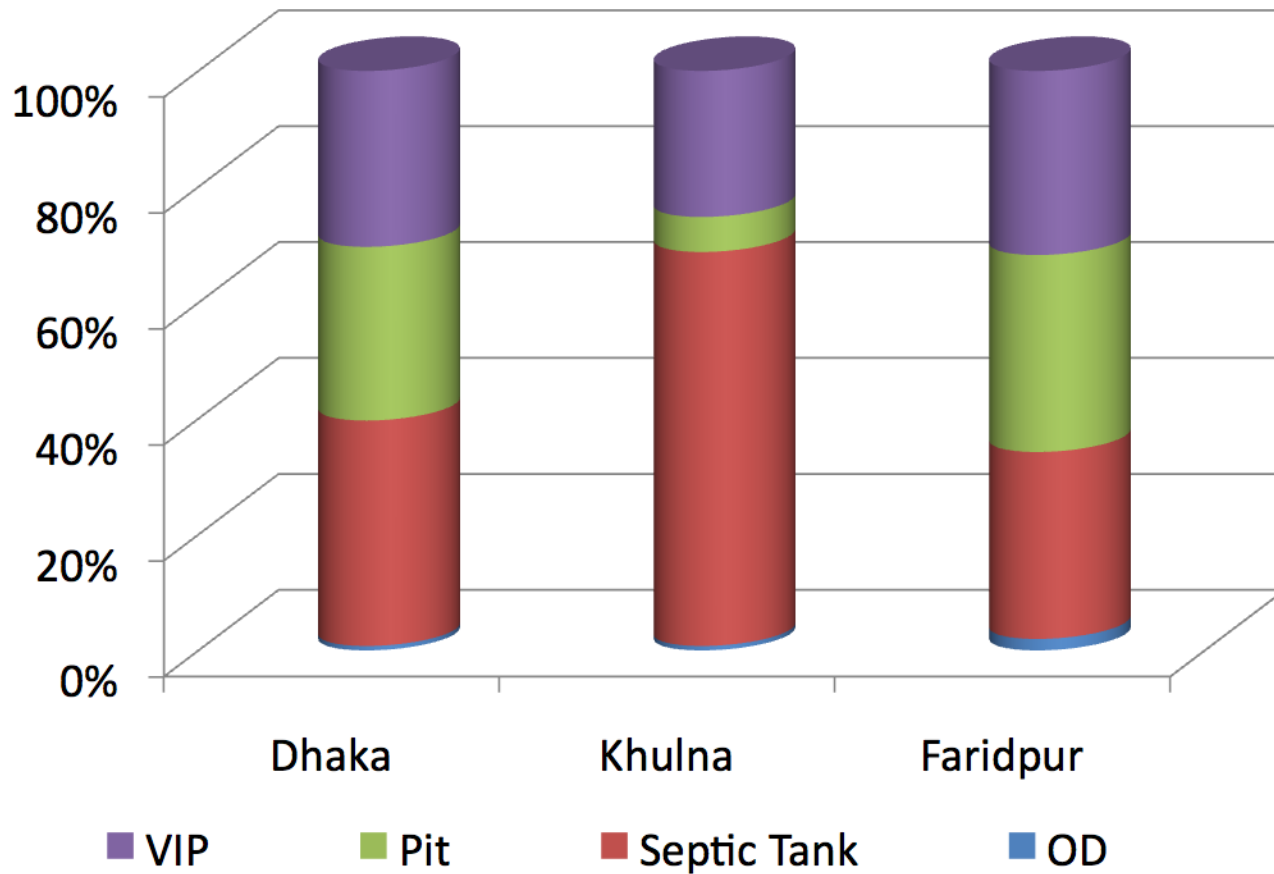


# Methodology

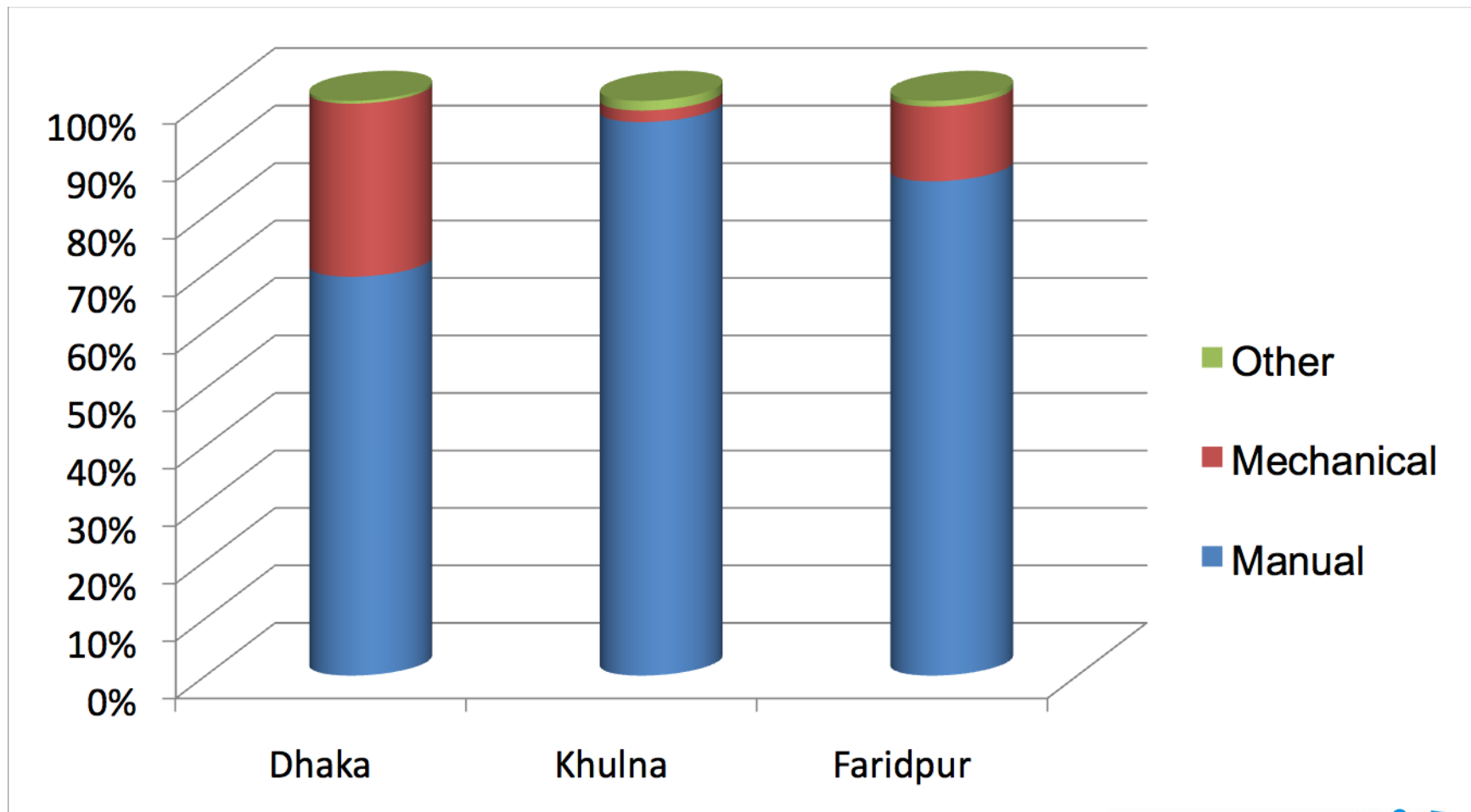
- » 1220 household interviewed in 3 cities
- » Samples in Khulna and Faridpur were statistically representative for the cities
- » Samples in Dhaka were not representative for the city



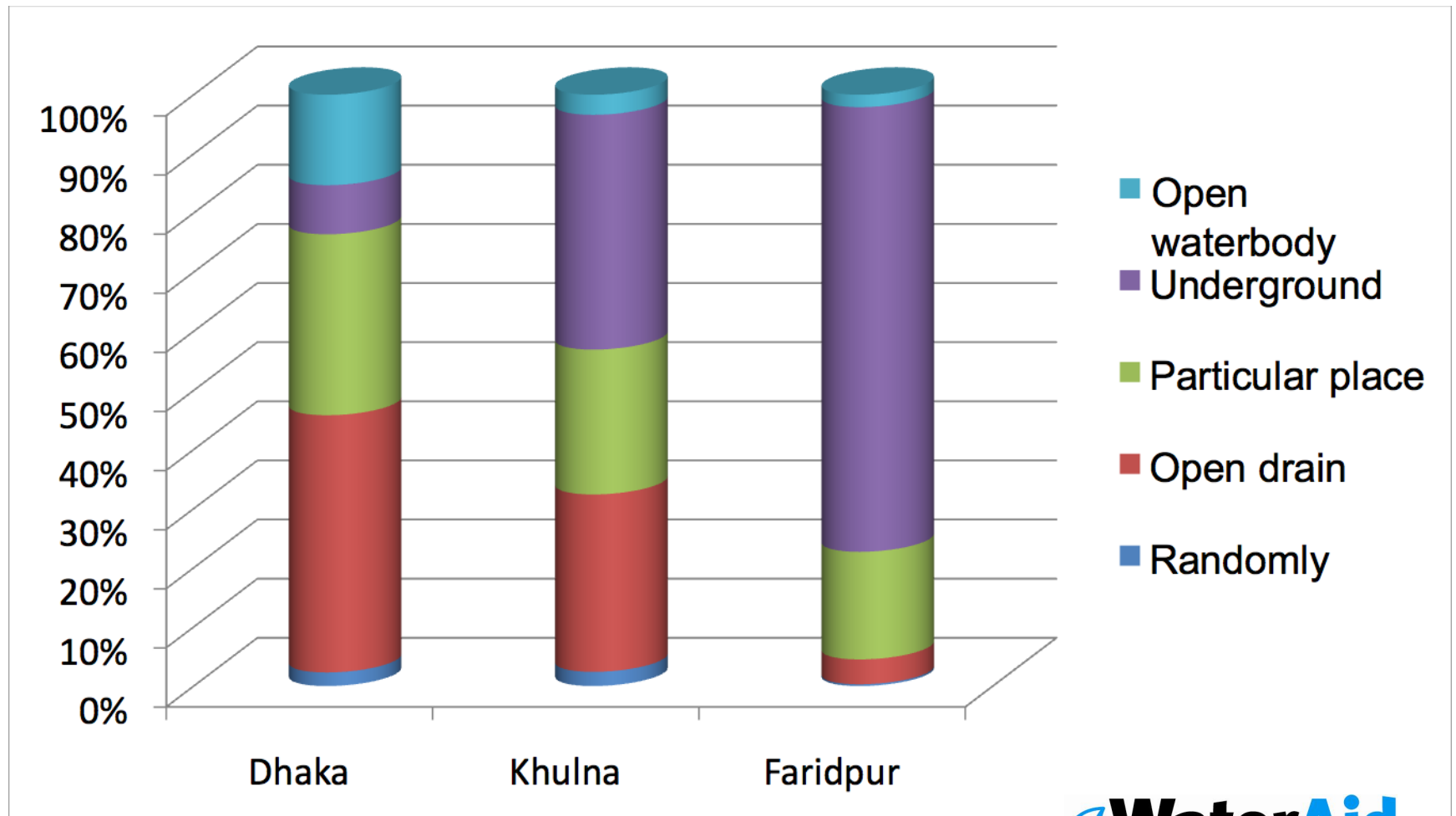
# Toilet types



# Pit/tank emptying and transportation methods



# Destination of sludge

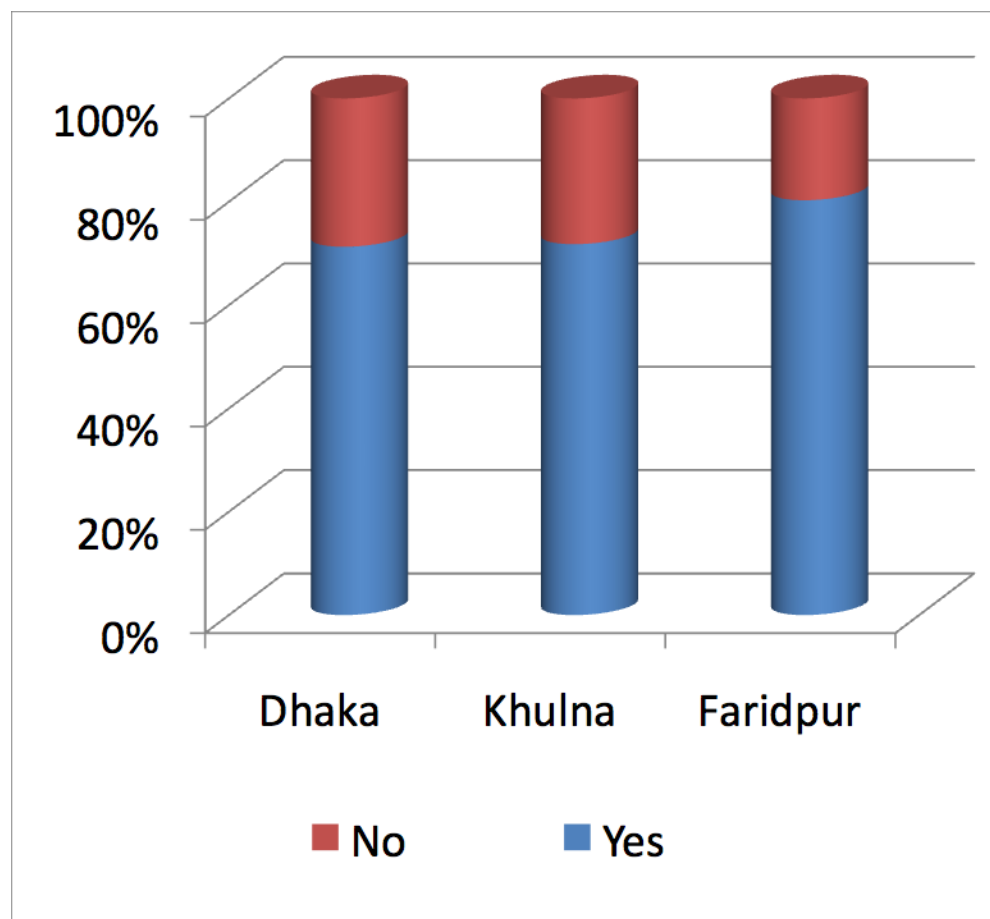


# Expenses of emptying to nav

# Willingness

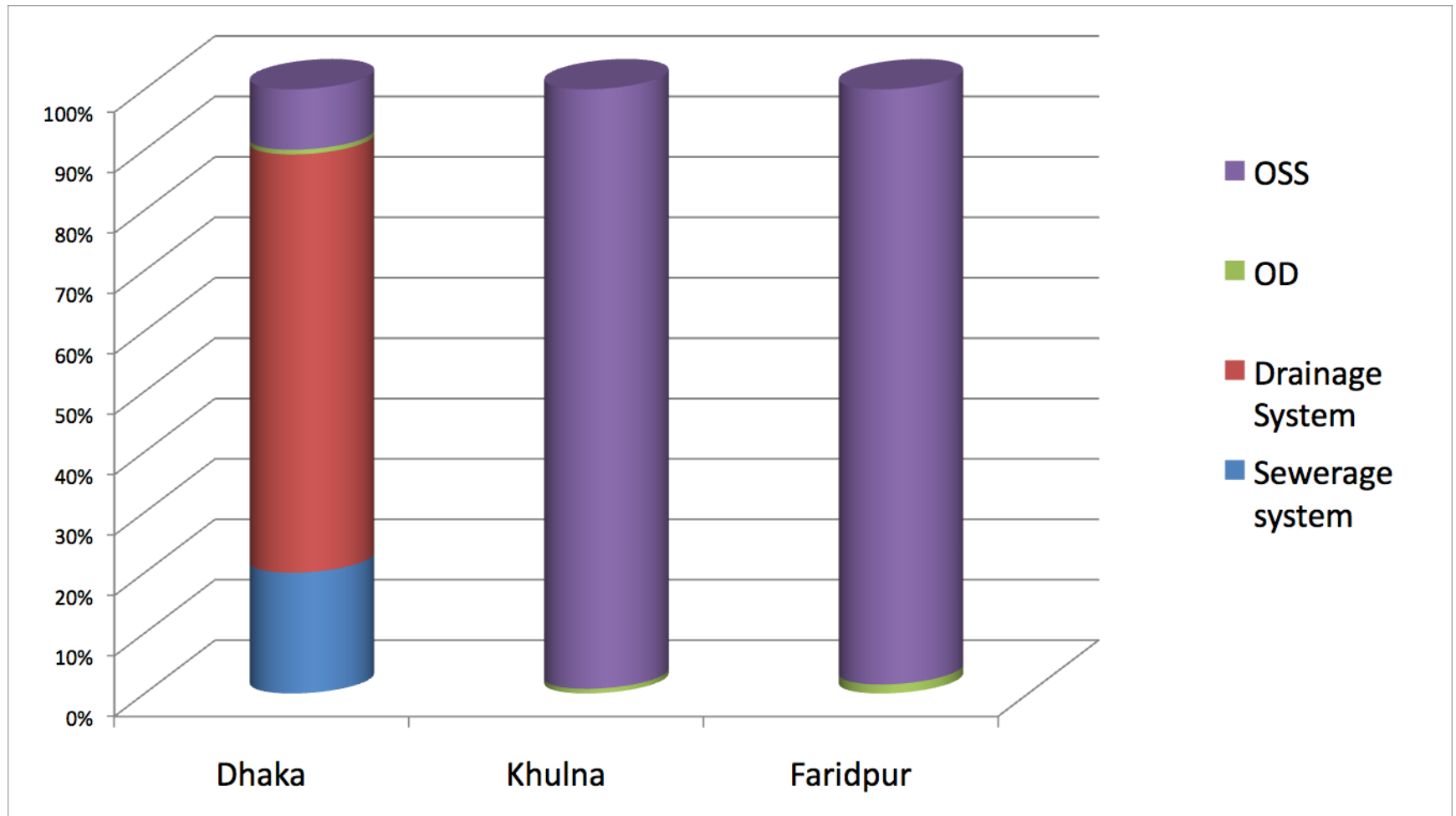
for improved service

- » Manual  
US\$12-US\$17
- » Mechanical  
US\$ 17 – US\$40

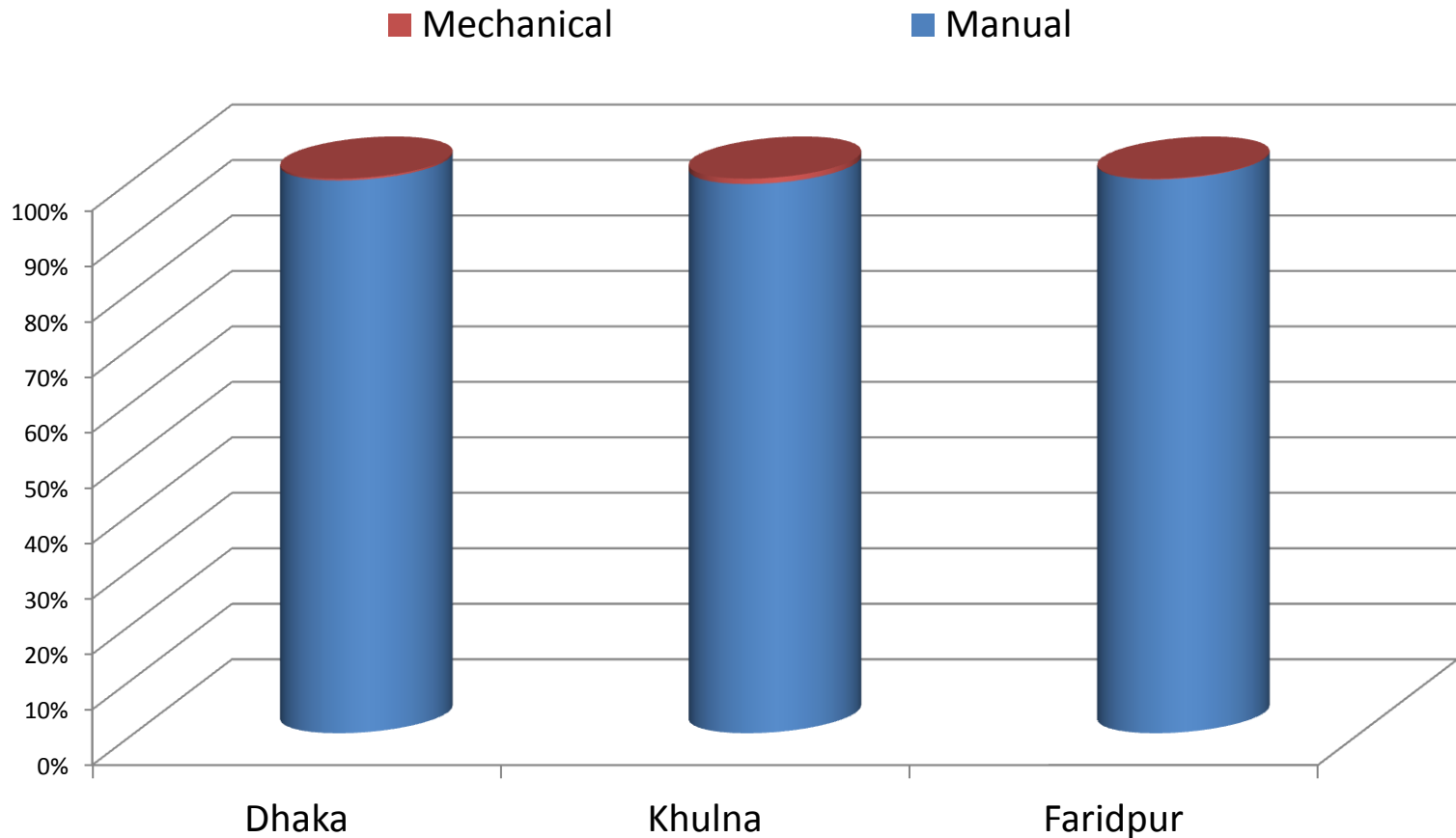




# Demand estimation for on-site sanitation



# Service coverage



# Mechanical emptying service

**Locally made  
Mark II type vacu-  
tug (2 m<sup>3</sup> capacity)**



# Inappropriate technology

- Low efficiency against high investment cost
- Time intensive (transportation)
- Cannot climb more than 3% steeper slope
- Difficult to move through narrow roads
- Short pipe length
- Maintenance difficult
- Costly compared to manual service
- Difficult and costly to access

# Consequences

- Manual emptying service continue to dominate
- Vacu-tug based emptying service become economically non-profitable
- Environment risks continue to exist and increase

# Acknowledgement



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