

## **MoSan - Mobile Sanitation**

### **Toilet for the Urban Poor in Bangladesh**

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Overview development process  
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This document outlines the development process of a non-infrastructure based dry-separation toilet for urban slums in Bangladesh.

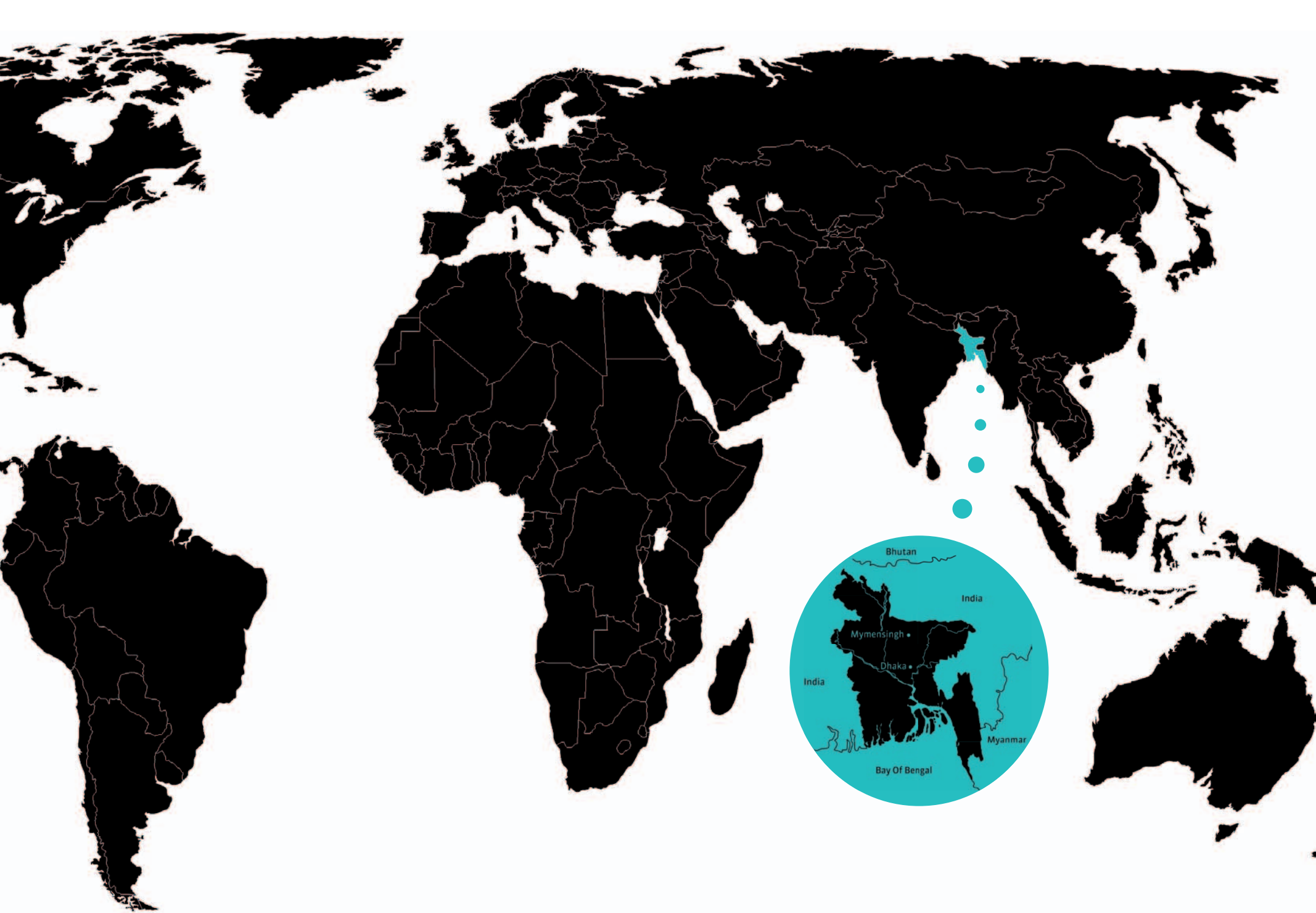
Technical and design work was done by the Industrial Designer Mona Mijthab under guidance of Alexander Jachnow. Additional support by Karsten Gjefle and the SuSan Design team in Sweden.

A first functional test of two toilet prototypes was organized by Ashley Wheaton, Mona Mijthab and Omar Khayam in April 2011 in Mymensingh, Bangladesh.

The further development is the production of a small-scale series of functional prototypes followed by user tests.

For more updates, please follow our blog:

[mosan-bangladesh.tumblr.com](http://mosan-bangladesh.tumblr.com)





**Bangladesh 2010**  
149 million total population <sup>1</sup>  
28% live in urban areas <sup>2</sup>

ফ্রেশ  
সিमेंট  
**FRESH CEMENT**  
QUALITY  
MIND

## Poverty

40% of total population live below national poverty line <sup>3</sup>



**Overcrowding**  
dense population  
in urban slums





**Natural disaster: Flooding**  
75% of Bangladesh is less  
than 10 m above sea level <sup>4</sup>



**Location** of slums over lakes or next to railways



**Religion and Gender**  
90% of population are Moslems  
traditional role of women  
no gender equality <sup>5</sup>



**Sanitation**

47 % of population have no access to improved sanitation  
Prevalence of "Open Defecation" <sup>6</sup>





## **SANITATION CHALLENGES IN URBAN SLUMS**

- Land tenure  
threat of eviction reduces incentive to invest in infrastructure
- Overcrowding  
little space available to build new infrastructure  
public toilets fail by bad maintenance
- Social arrangements limiting access  
existence of sanitation facilities does not guarantee access
- Gender concerns  
violence to women when going to a public toilet at night
- Location of slums  
difficulties to install conventional toilets in slums located over lakes



## **SHORTCOMINGS OF EXISTING SANITATION**

(e.g. pit latrines)

- bad maintenance
- too little space to install enough toilets
- unhygienic conditions
- potential contamination of water sources
- overflow in flood-prone areas
- water required for flushing
- prevalence of open defecation

Reasons cause failure of conventional sanitation solutions.



## **ALTERNATIVE TOILET SOLUTION**

- private use per household
- dry separation toilet
- no infrastructure required
- mobile, carrying option
- part of a sustainable sanitation system
- create added value by recycling human waste



**Research Work with dwellers**  
discussing urine separation



**Discussions and interviews**  
separate meetings with men

**Cardboard prototypes**  
describing the sitting toilet





Ergonomic research





## **RESULTS OF RESEARCH**

- interest for sitting toilet
- men are also willing to use toilet
- space for toilet inside dwelling
- willingness to organize private space for toilet
- toilet should be easy to carry
- material for covering faeces available (ash from cooking stove)

## **INTEREST FOR SITTING TOILET**

(opinion of slum dwellers, interview results)

- withdrawal from open defecation
  - status symbol (western model toilet)
  - improvement
  - higher willingness to spend money
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- benefits for elderly, disabled people and small children