

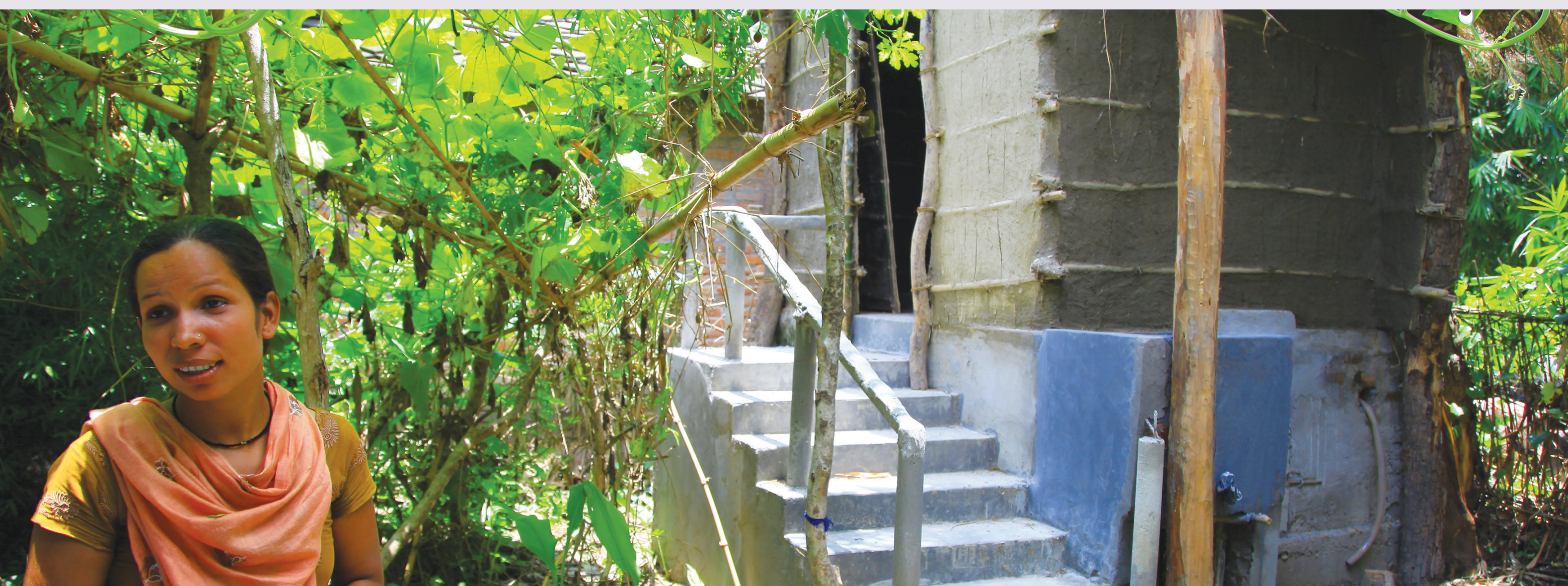
Eco-San Toilet in North Bihar

Eklavya Prasad¹, Vinay Kumar¹, Avash Pandey², Aneel Piryani²

¹ Megh Pyne Abhiyan, ² ICIMOD, Kathmandu

Abstract

An odorless and integrated sanitation method for individual households, the eco-san has been regarded as a blessing for the people of North Bihar. Without the need for flushing, it saves water and protects groundwater from contamination. A constant access to sanitation even during floods, thereby providing hygiene and privacy especially for the women- the eco-san is helping in the resilience of the vulnerable population of Northern Bihar. It also provides for agriculture and kitchen gardens manure.



Methods

The construction and use of the toilet involves the following steps:

- **Planning**
 - choose an area close to or even attached to the house / close to the kitchen garden,
 - exposed to direct sunlight to enhance decomposition of the excreta and
 - Preferably elevated to protect from floods.
- **The dimensions of the toilet**
 - The construction of chambers for urine and faeces should be either side by side or in a row. The recommended volume of the two chambers should be 2,546 l (dimension per chamber of 100x 119 x 107 cm).
 - The gaps on the upper edge of the wall are for the pipe that drains anal wash water (left hole) and for the urine pipe (right hole)
- **Construction**

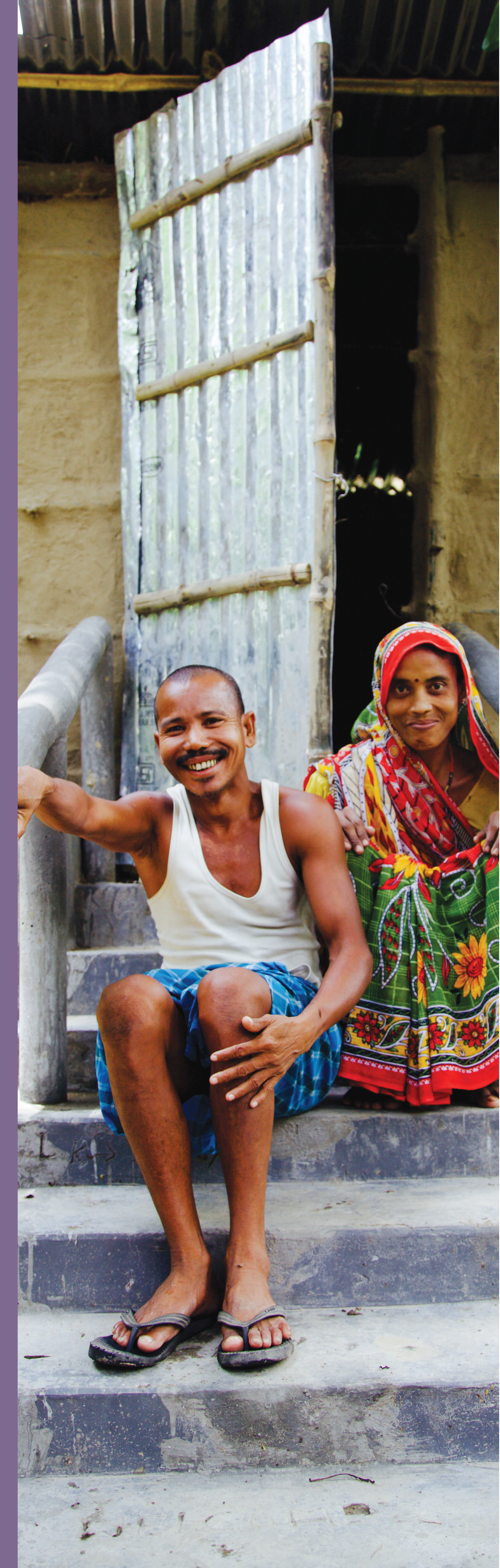
Superstructure can be constructed using bricks and cement which is more expensive, but longer lasting, or with woven mats made of bamboo, ropes and local grasses that can be plastered with mud. This is cheaper but needs to be replaced every second year and requires frequent plastering with mud.

Conclusion

The eco-san toilet is an answer to the sanitation and hygiene issue especially in flood infested northern Bihar. Access to functioning sanitation facility during flood due to its technology and design has led to its acceptability. It has changed defecation behavior and attitude towards human excreta and urine. Further, the productivity of various crops and vegetables has increased as a co-benefit of the eco-san. One of the major achievements of these toilets is on positive health impacts for the family especially during the flooding season. The poor households are also gaining by selling the extra manure as an additional income.

Introduction

Flood is a major disaster that hits the Northern state of Bihar where hundreds of thousands get affected every year. One of the major impact that frequent flood and flash flood have in this area of Bihar is sanitation. Although mostly overlooked as an indirect affect with less attention from the state government, this issue has a long term impact on the livelihood of the population. Generations have lived in Bihar without access to proper sanitation, for example the census of India (2011) shows that Bihar has only 18.6% sanitation coverage, thus ranking it in the bottom four amongst all the states in India, and the situation worsens when the floods arrive. Massive inundation forces the public to defecate openly in the water which is also used for drinking purposes which might lead to an epidemic. Eco-san toilet is introduced as an adaptive measure for providing resilience to climate change induced disasters such as floods and maintaining sanitation and hygiene.



Impacts

- Reduces open defecation (also during floods) and avoids associated problems such as restricted timing for defecation
- In gendered perspective women and adolescent girls can avoid physical and psychological harassment which open defecation subjects them to.
- The urine and the faeces can be used as fertilizers for the crops as well as for small scale home garden.



Figure 1: Illustration of urine and faeces outlet of the Eco-san



Figure 2: Home garden using fertilizers from eco-san



Figure 3: Fertilizer extracted from Eco-san



Figure 4: The Eco-san (The elevation as an adaptive measure to inundation)