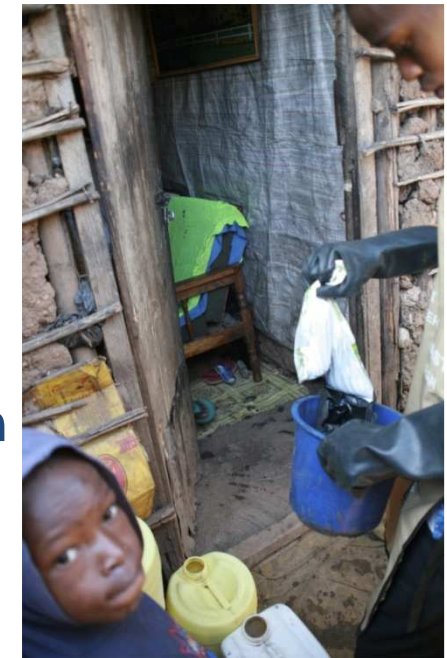


# Urban slum dwellers in Kenya and Bangladesh benefit from using Peepoo bags which are self-sanitising and biodegradable



**Camilla Wirseen, Peepoople**  
**Elisabeth v. Münch, GTZ Germany**  
**Deepa Patel, Consultant**  
**Ashley Wheaton, Consultant**  
**Alexander Jachnow, GTZ Bangladesh**

14 Aug. 2009, Dry Toilet Conference, Tampere, Finland

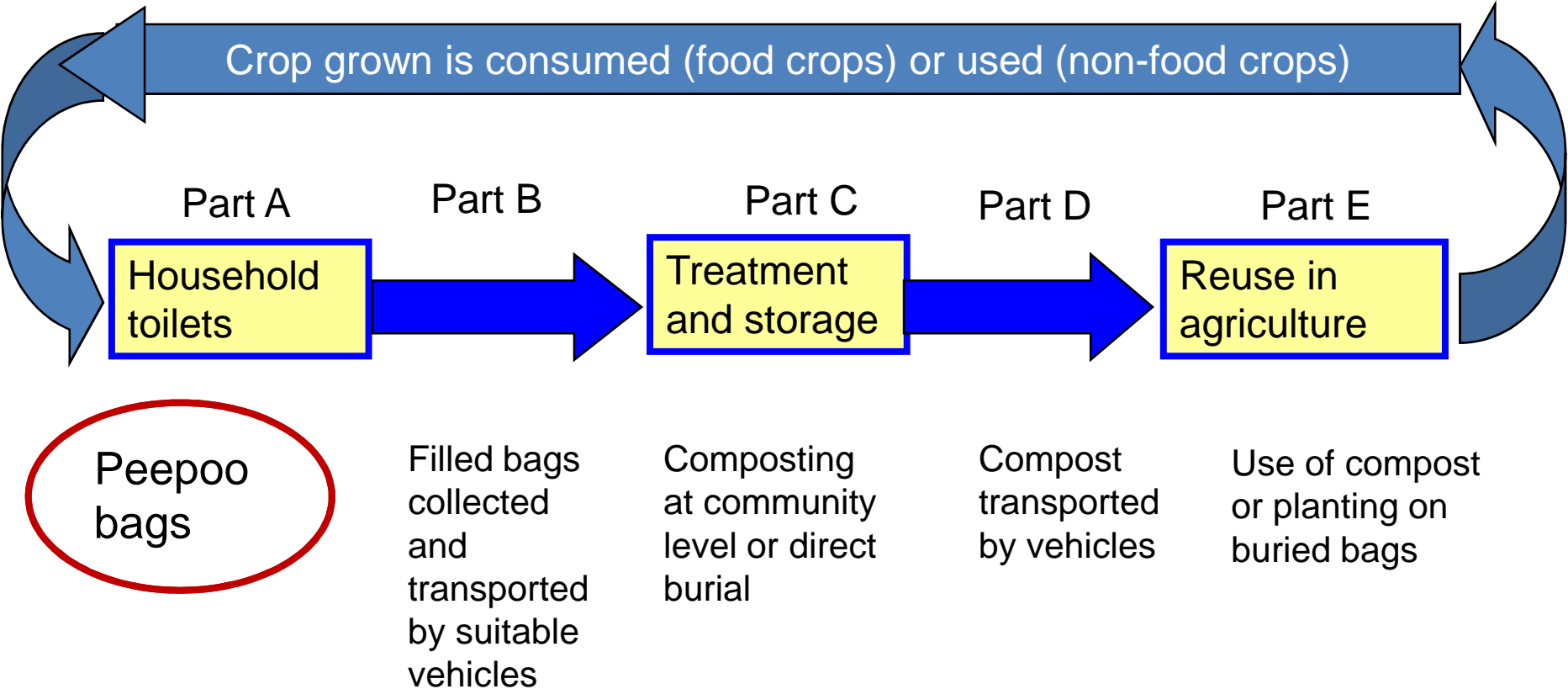


# The Peepoo is a personal toilet that is:

1. Self-sanitising (urea / ammonia in the bag kills pathogens in faeces – 2-3 weeks at  $> 20^{\circ}\text{C}$ )
2. Bio-degradable (bioplastics from BASF)
3. Single use, personal and mobile
4. Valuable after use (fertiliser)
5. An attractive, well-designed product
6. Practical (wider inner bag acts as a funnel and protects hands)
7. Affordable - predicted price: EUR 0.04 (when mass-produced)



# Peepoo bags need to be embedded in a sanitation system

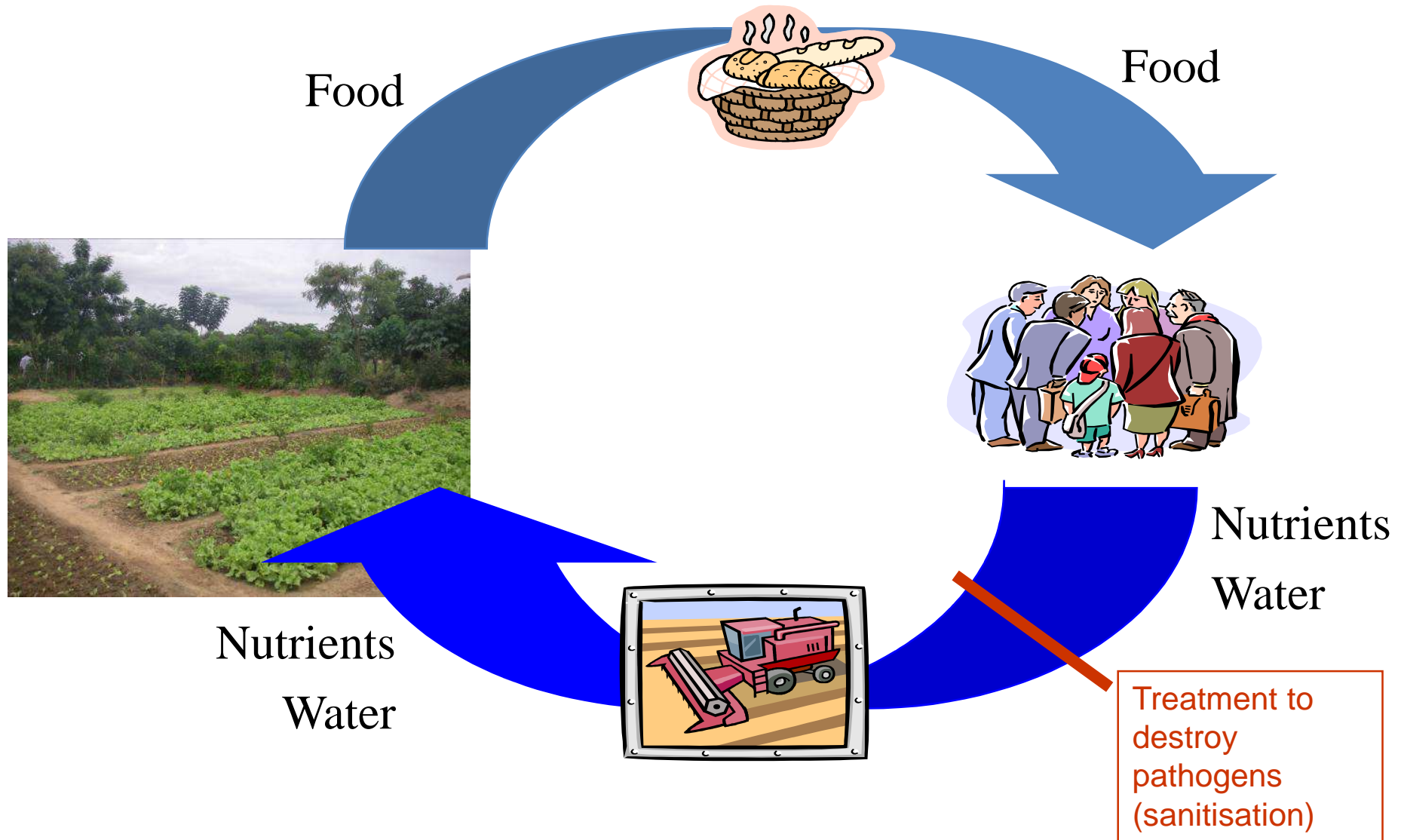


# Two main areas of application

1. Emergency situations (e.g. flooding, refugee camps)
2. Urban slums
  - Particularly beneficial for women
  - Easy to use for children



# Are Peepoo bags in line with the ecosan approach? – Yes, they are



# Are Peepoo bags in line with sustainable sanitation?

Needs to:

1. be economically viable, ?
2. be socially acceptable, ? – Yes! (see below)
3. be technically and institutionally appropriate, OK
4. protect the environment & natural resources, OK

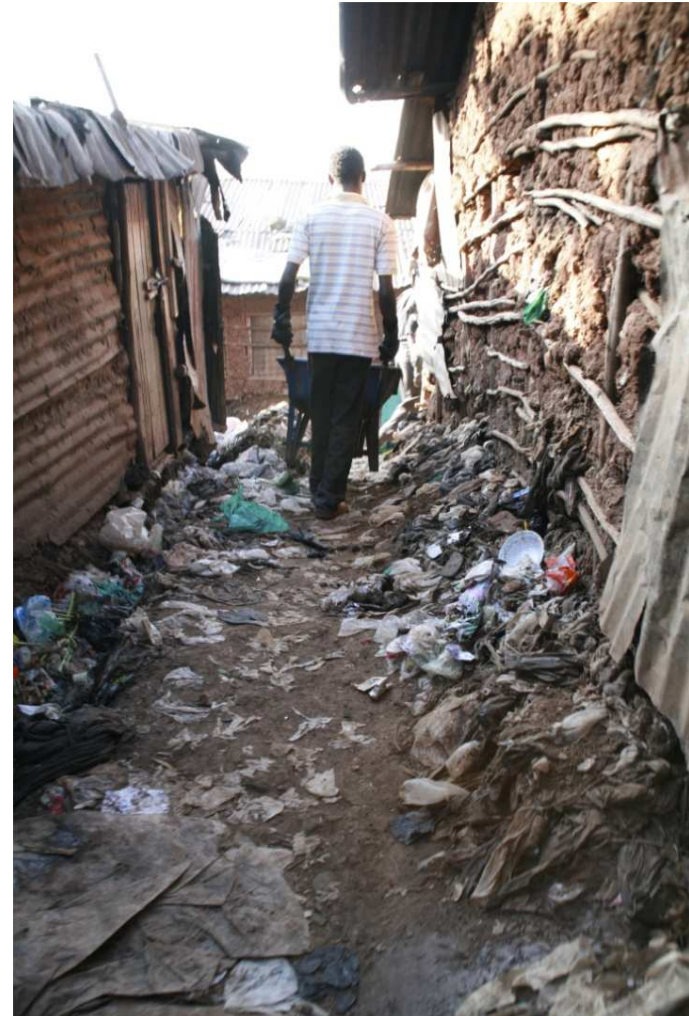
→ Needs to be proven in the field

# First field test: Silanga village, Kibera, Nairobi, Kenya

- 278 participants
- 3,354 Peepoos used
- 28 days
- Used mostly by women and children

## *Objective:*

*to evaluate if the Peepoo meet individual's sanitation needs with respect to socio-cultural expectations.*



## Second Field test: Three slum areas in the city of Mymensingh, Bangladesh

- 100 participants (92 users)
- 738 Peepoos
- During 10 days
- Women 8.7 Peepoo/day and men 7.2 Peepoo/day



*Objective:*

*to gauge the socio-cultural and religious acceptability and perceptions of users of the Peepoo in water-washing practices*



# How is the Peepoo used?

Either hand-held or placed in a small container

The inner green tube is wider and acts as a funnel



# Mymensingh, Bangladesh

Collection



Transport



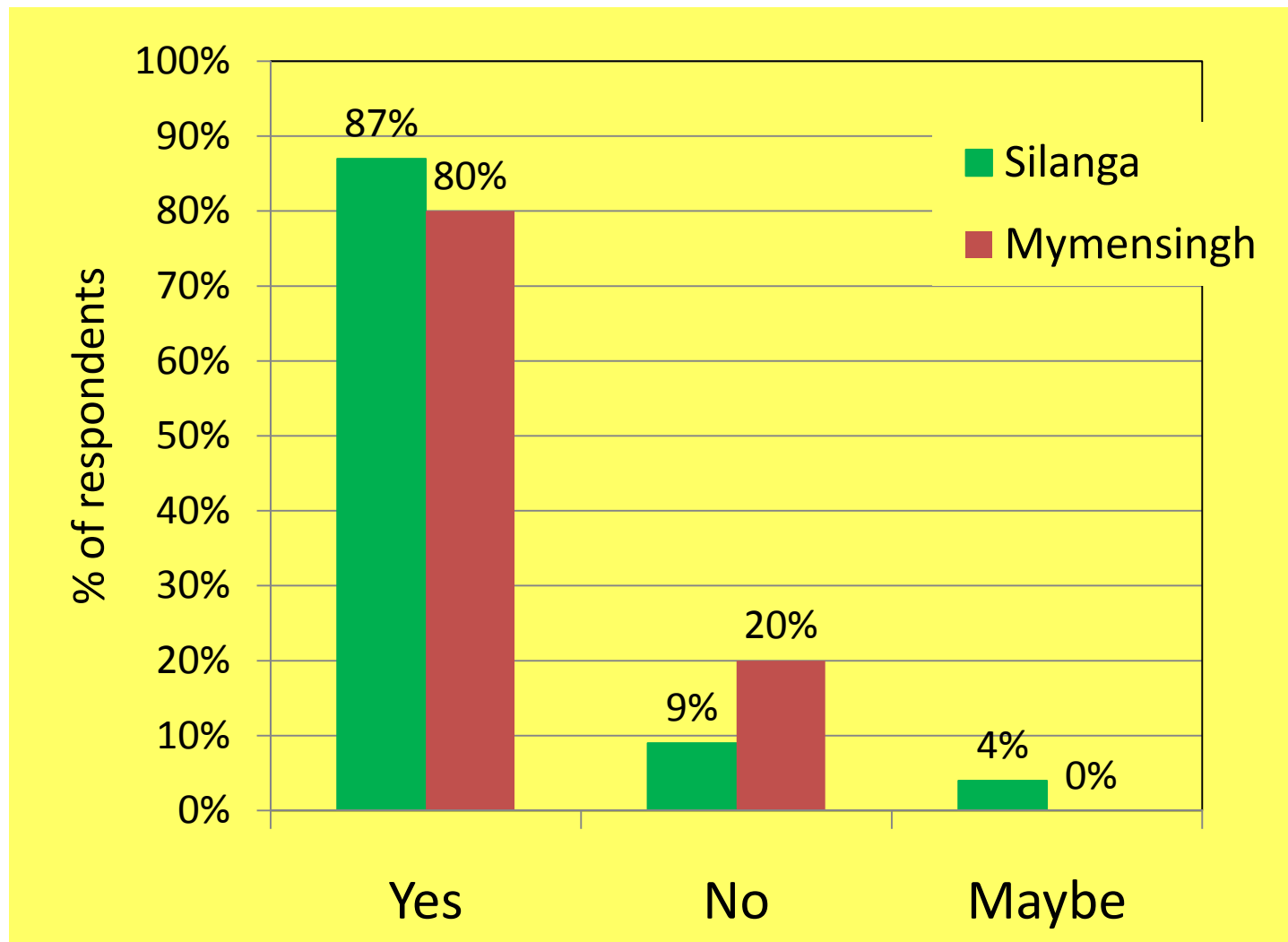
Burial / reuse



Trolley provided by the municipality.

Burial and reuse field at Bangladesh Agricultural University in Mymensingh.

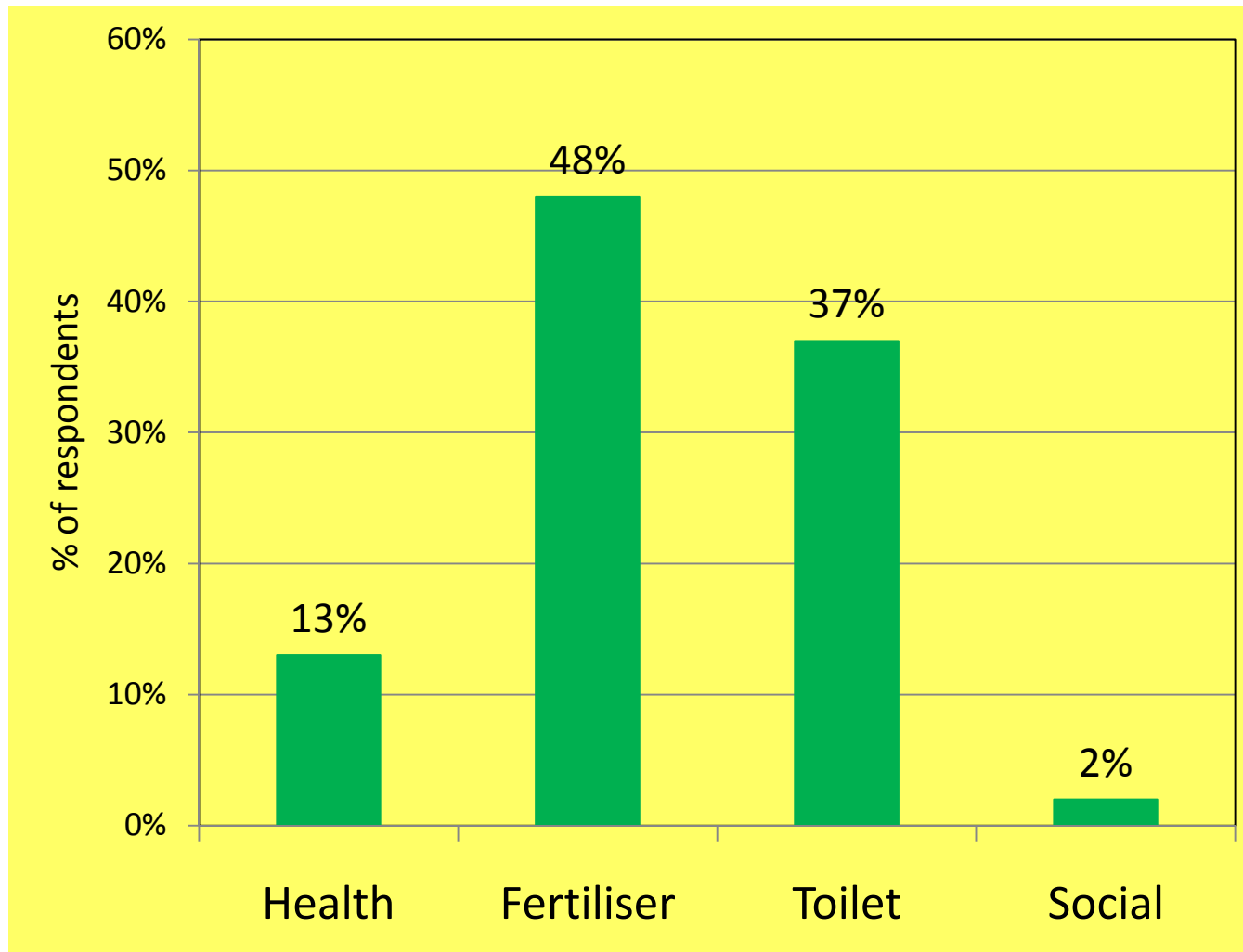
”Would you consider using the Peepoo every day (for all your urination and defecation needs)?”



Answers from Silanga (53 answers) and Mymensingh (90 answers)

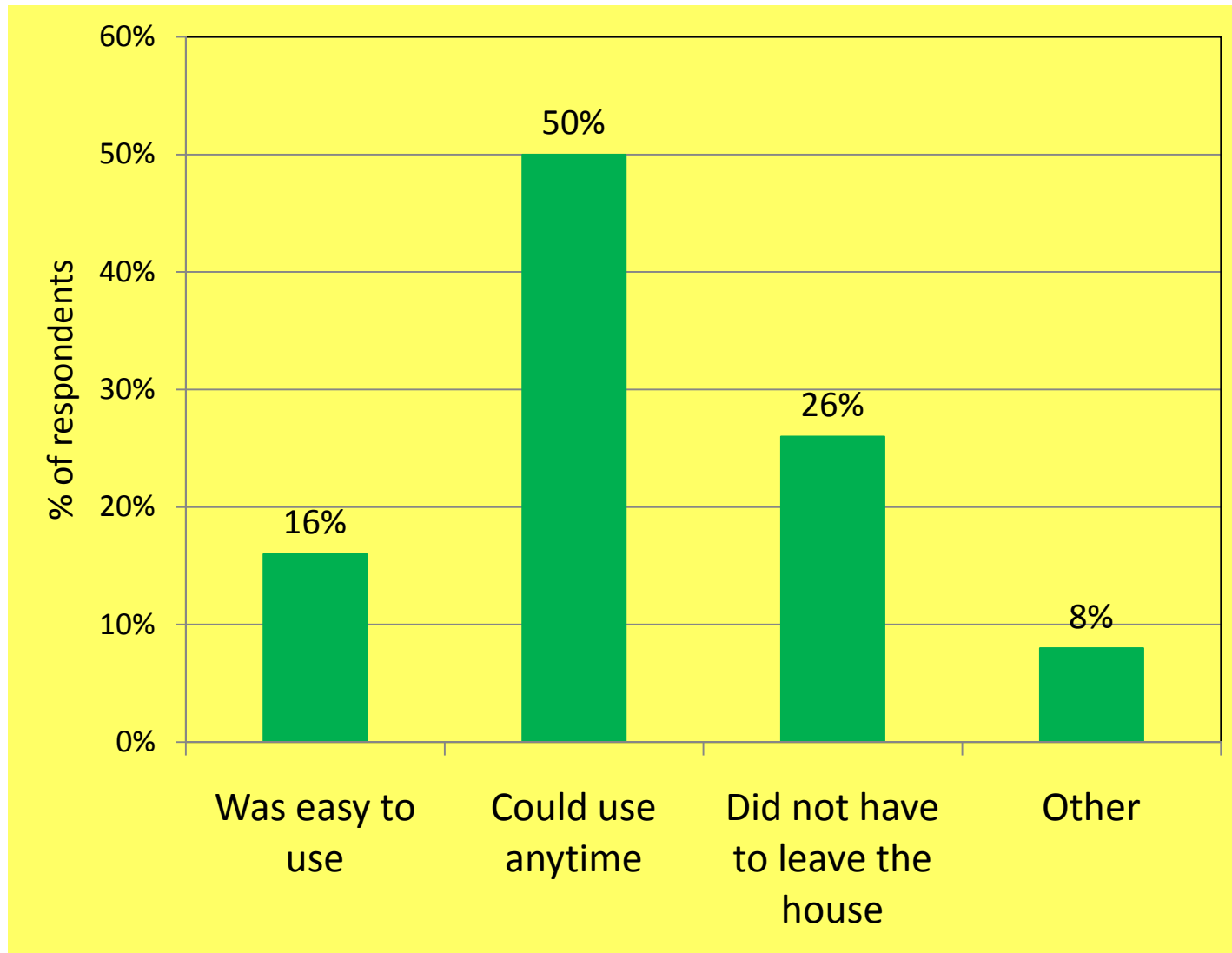
# ”What aspect do you appreciate the most?”

Answers from Silanga participants (53 answers)



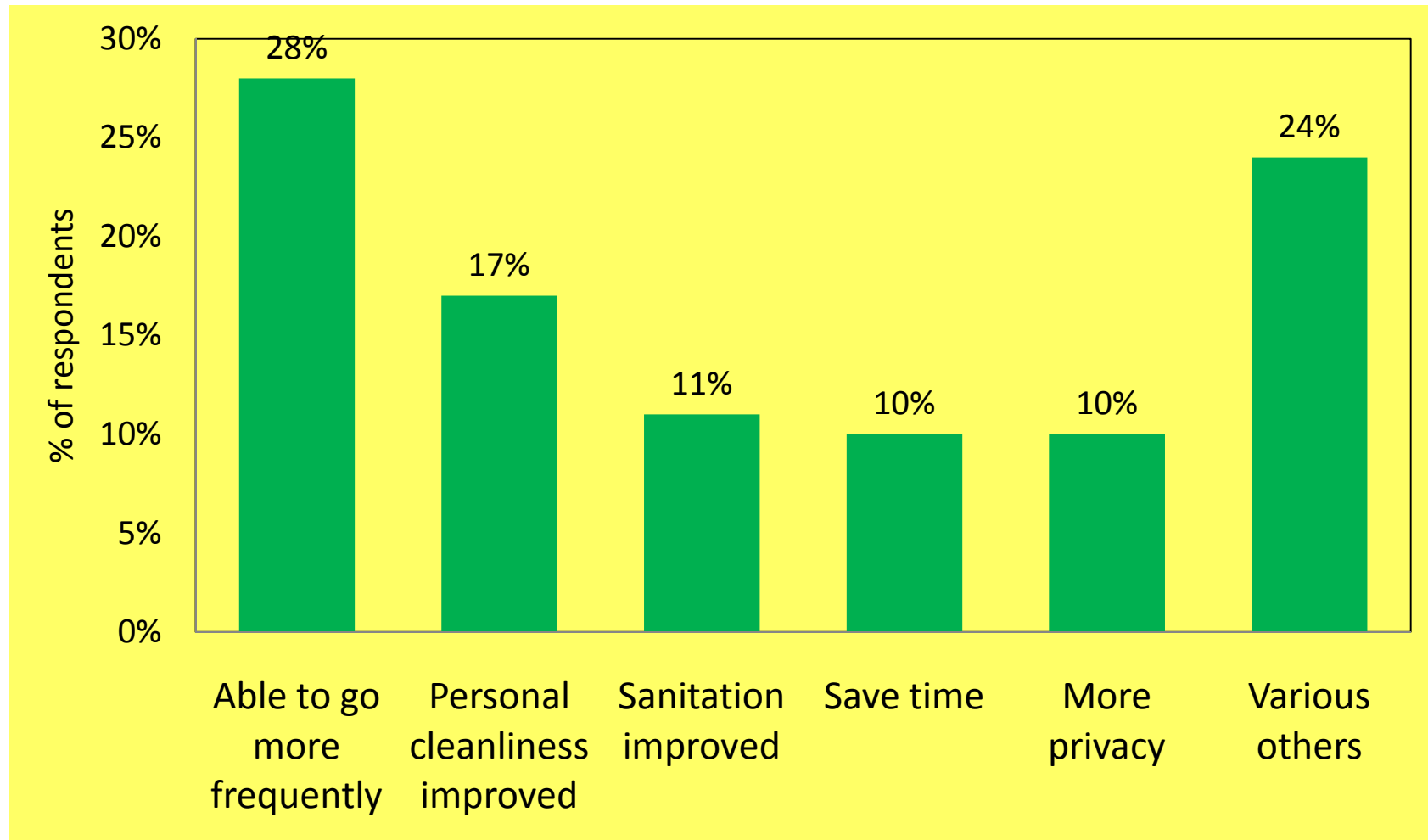
# “What did you like about the Peepoo bag?”

Answers from Mymensingh participants after they had used the bags (92 answers).



# “What benefits did you get from the Peepoo bag?”

Answers from Mymensingh participants after they had used the bags (82 answers).



## ”Does a used Peepoo smell?”

In Silanga 94% and in Mymensingh 88 % stated that the used Peepoo did not smell or smelled only a little.



Peepoo bags are designed to be odourless for 12-24 hours.  
When collected in large numbers, odours occur during transport.

# Choice is linked to dignity and sanitation stops being a taboo!



Silanga resident handing over her filled Peepoo bag to a collector - in front of her neighbours.



# Further survey findings

- In Silanga (Kibera):
  - 90 % strongly recommended the Peepoo as a sanitation solution within Kibera
  - 94% thought the Peepoo is safe and clean to handle
  - 60% felt that the bag should be bigger
- In Mymensingh:
  - 87% thought the Peepoo is better than their normal sanitation practices
  - 57% felt that the bag should be bigger

# Conclusions

- The Peepoo can be an immediate solution for urgently needed sanitation improvements in urban slums.
- Government subsidies for the bags and collection system might be necessary (as for other sanitation systems).



Mayor of Mymensingh plants lemon tree in soil fertilised with Peepoo bag

# What are the next steps now?

1. Carry out 1-3 Initial Launch Projects (ILPs) in Kenya, Bangladesh and in other emergency situations – for demonstration and research
2. One ILP involves 20 000 users daily for 2 years
3. Secure orders for Peepoos that will enable the development of the production unit
4. Save millions of children's lives, reduce morbidity



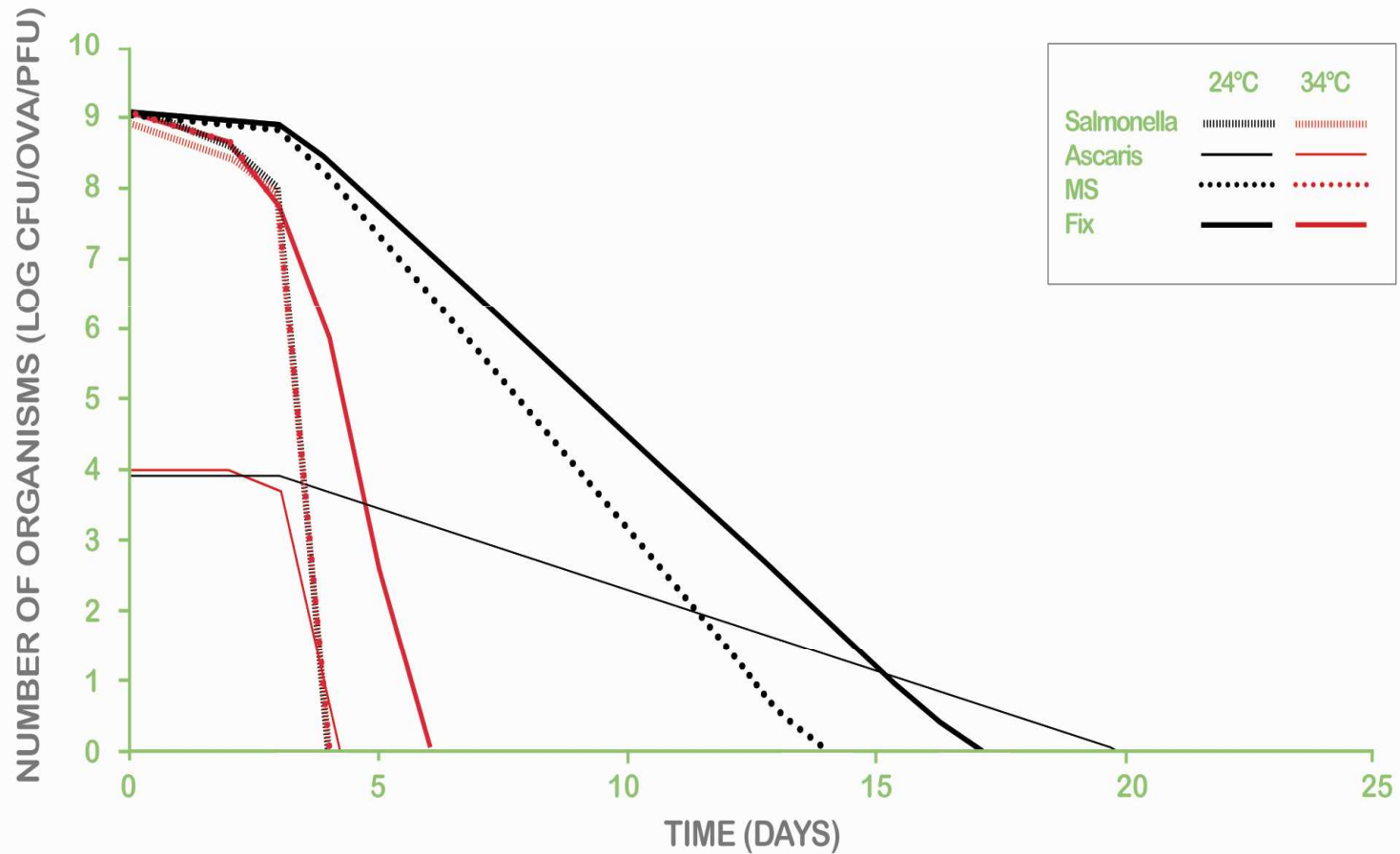
# Thanks to:

- GTZ Bangladesh (Urban Governance and Infrastructure Improvement Project)
- GTZ Ecosan Program ([www.gtz.de/ecosan](http://www.gtz.de/ecosan))
- The people of ward 7, 9 and 10 in Mymensingh
- Mymensingh Pourashava
- Bangladesh Agricultural University, Mymensingh
- The people of Silanga village, Kibera
- Silanga Youth Group
- Millennium Environmental Services and JAC Nairobi

# Appendix

Within 2-3 weeks the disease-producing pathogens found in the faeces are inactivated.

### REDUCTION OF ORGANISMS IN PEEPOO BAG



Research at the Swedish University of Agricultural Sciences by Björn Vinnerås and Annika Nordin

## Micro-treatment plant



Inside the  
Peepoo there are  
4 grams of urea



With the help of  
the enzyme  
urease present  
in the  
faeces, the urea  
breaks down to  
carbon dioxid  
and ammonia



The ammonia  
acts as a  
microbicidal

**Pee  
poople**<sup>®</sup>

The Peepoo is made of a high performance bio-degradable plastic which meets EU standard EN13432





# The Peepoo – a new way of thinking sanitation

**PRIVACY AND SECURITY FOR USERS**



**Use of Peepoo bag**



**PREVENT DISEASE TRANSMISSION**



**Discharged in environment**



**Reuse in home gardens**



**Structured collection and reuse**



**Minimised environmental pollution**

**Increased food production**

**Peepoo**<sup>®</sup>

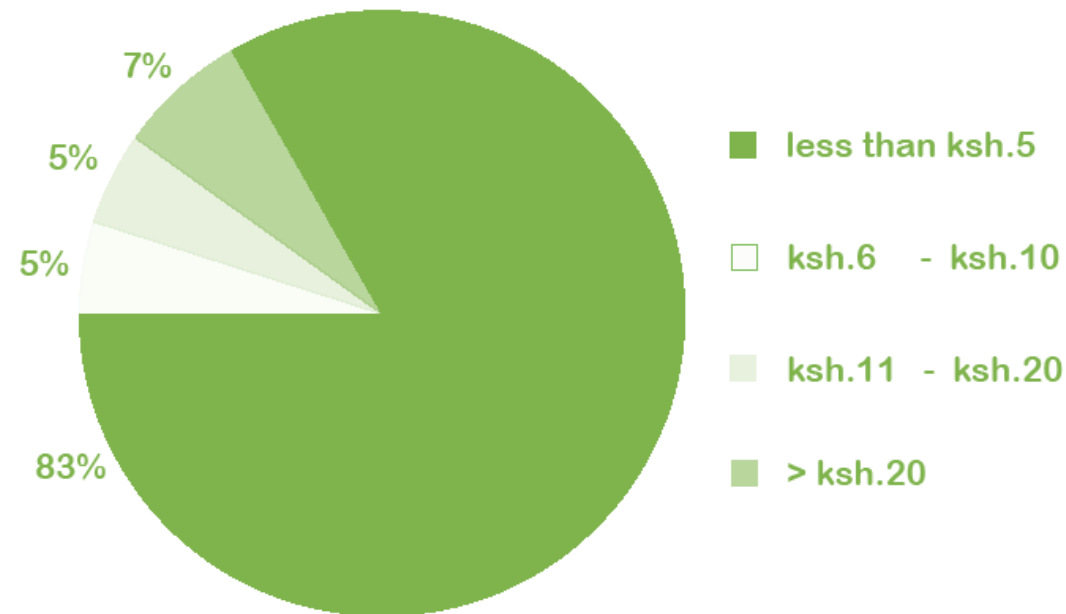
84 % of the Silanga users said they would use the resulting fertiliser themselves.

83% of the Mymensingh participants would consider selling the used Peepoos.

99% of the Mymensingh participants would buy and eat food produced with the Peepoo fertiliser.

# "How much do you think is a fair price for a Peepoo?"

Answers from Silanga participants (53 answers).



Average price suggested in Mymensingh was EUR 0.007.

19% agreed to pay price of 1 TK (EUR 0.011).

# Kibera



Collection and distribution by Silanga Youth Group under the supervision of Millennium Environmental Services