A Constructed Wetland System for Flood-Resilient Sanitation

John Allen
Wetlands Work! Ltd., Cambodia
Flooding: a sanitation challenge

- Worldwide, increasing with climate change
- Asia: large populations live in flood-prone areas
- Cambodia: severe flooding in 2013 affected more than 700,000 people
- Even predictable, annual flooding is a challenge
Cambodia: progress on (dry season) sanitation

- 37%
Sanitation systems → unsuited for floods

Septic tanks/pit latrines can contribute to fecal contamination of flood water

Public health risk created

A technical solution is needed
Constructed Wetlands System
System in Dry Season
Natural Wastewater Treatment

- Rich array of microorganisms break down waste
- No energy or chemical inputs required
- Small footprint
- Materials easily sourced
- Minimal operational upkeep
- Aesthetic and green
Effective Treatment

- Testing: one household

**Median Effluent E. coli/100 mL (CFUs)**

3.00×10^2

**Median Reduction (LRVs)**

5.2
Next Steps

- January 2015: 40 households pilot / product testing
- Human Centered Design: interviews, focus group discussions
- Optimization: design, costs
- Deployment: Cambodia → other countries
Recommendations

• Governments and development partners recognize that flooding (and high groundwater) poses a challenge to sanitation and FSM

• Donor and institutional support for development of products that are suitable to flood-prone environments

• Development partners to help scale appropriate solutions (hopefully this one!)
Thank you

Wetlands Work! Ltd., Cambodia
Taber Hand, Irina Chakraborty,
Puthea Khon, Chansolyka Tep, John Allen

Royal University of Agriculture, Cambodia
Pheara Sam