



Water and Sanitation for the Bottom of the Pyramid

Group 1. Team 7.
Hult Global Case Challenge



Water and Sanitation are two sides of the same coin.

Current Situation

1\$

per

Day

1/2 of world population live in urban centers.
1/3 of the urban population lives in slums.
The poorest slum dweller lives on 1\$ /day.

No Watsan solution to date has built a business model that empowers the bottom billion.
Microcredit cannot reach this segment.

Why the bottom billion?

Costs High Philanthropic dollars to reach them.
Massive opportunity to effect change.
If you can reach them, you can reach anyone.

The greatest unmet demands lie with the bottom billion



The Problem

- The communities with the greatest water and sanitation needs have the least ability to obtain them.

The Solution

- Transform human waste into profit generating business of biogas and fertilizer.

There is opportunity to transform a problem into a solution

Insights

People want toilets

Human waste contaminates
community

Bottom billion are too poor to
access micro-credit

Bottom billion are caught in the
poverty-disease cycle

Recommendation

Free public toilets

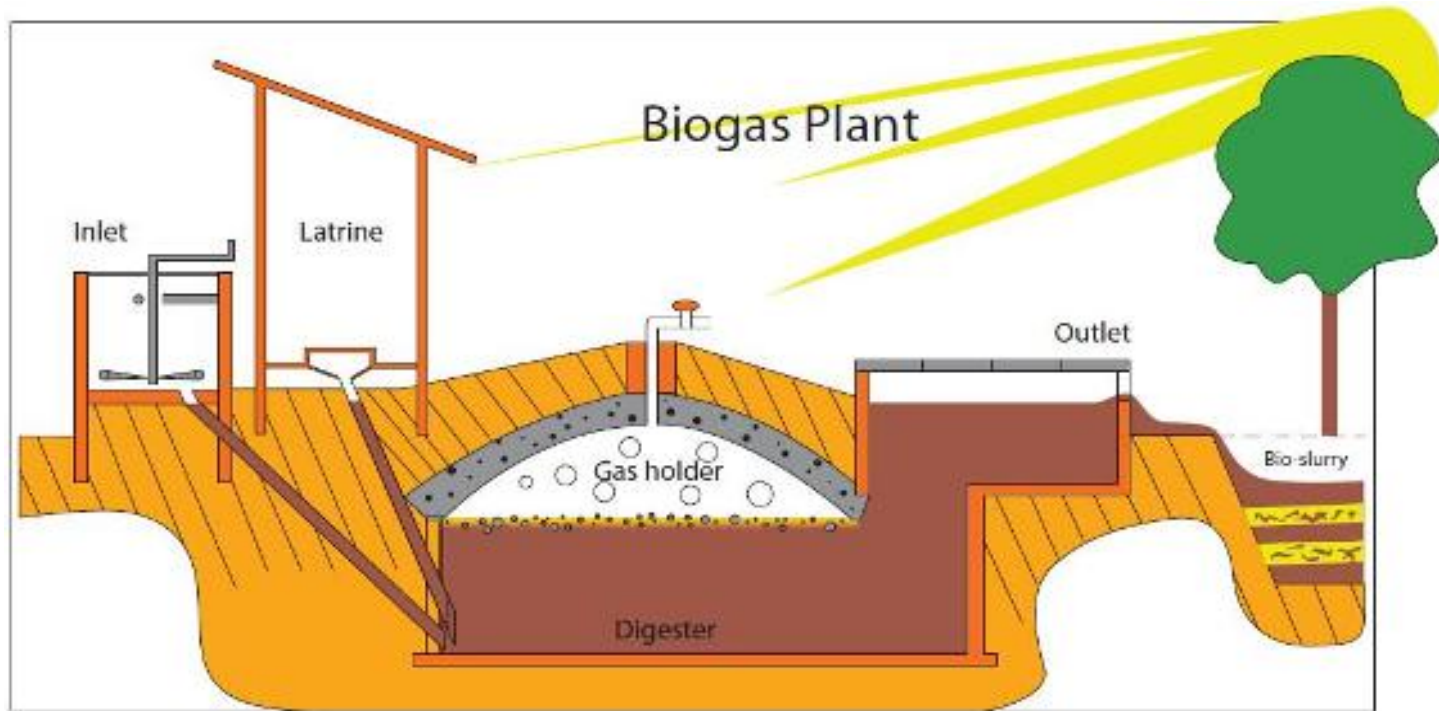
Collect waste through access to
toilets and incentives

Design a business model that does
not depend on micro-financing

Break the cycle by creating business
opportunities & more sanitary
conditions

One solution resolves many problems

Transforming a problem into a solution



- Fuel is produced from human excrement.
- Micro-organisms break down the waste in oxygen-free "digester," producing a gas (mostly methane and carbon dioxide).
- The slurry that remains becomes fertilizer.

Infrastructure is locally built and generates income

Solution: In Practice

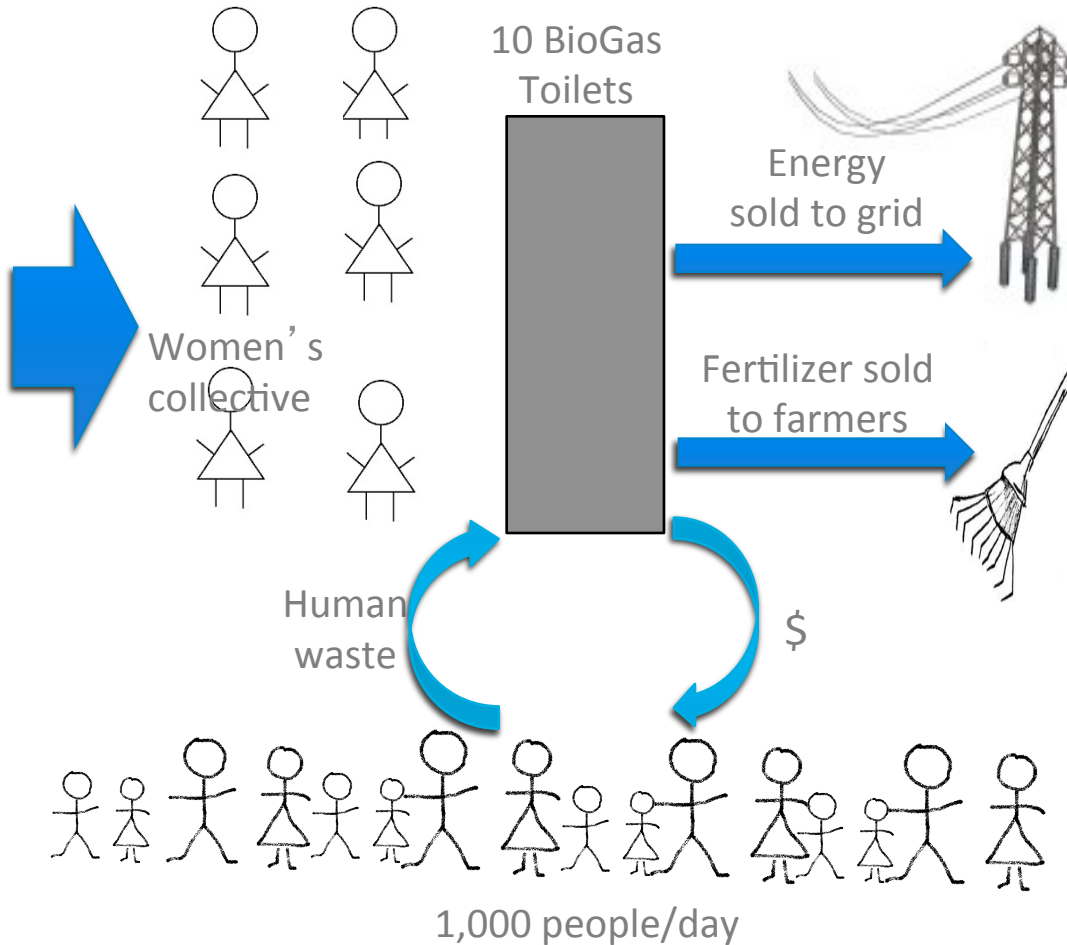


Funder



NGO
NETWORK

Manager/
Mentor



In Numbers...

Women/Collective:

6

Start up funding:

\$1,950

Repayment:

less than 1 year

NGO Mentoring:

2 years

Toilets/collective:

10

People served/
collective/day:

1,000

Biogas produced/
year: **36,500 kwh**

Revenue/year:

\$6,555

Profit/woman:

\$875

Managing human waste is a means for survival

Financials

	Year 1	Year 2	Year 3
<i>Initial investment</i>			
Construction	\$1,400	\$0	\$0
Engine	\$200	\$0	\$0
Connection	\$50	\$0	\$0
10 cement toilets	\$300	\$0	\$0
Total Start-up	\$1,950	\$0	\$0
<i>Revenue</i>			
Electricity	\$2,555	\$2,555	\$2,555
Fertilizer	\$4,000	\$4,000	\$4,000
Total Revenue	\$6,555	\$6,555	\$6,555
<i>Costs</i>			
Tech Training	\$800	\$500	\$500
Logistical	\$96	\$96	\$96
Pay for poop	\$1,200	\$1,200	\$1,200
Operations	\$2,190	\$3,285	\$0
Maintenance	\$10	\$10	\$10
Total Costs	\$4,296	\$4,591	\$1,306
Total "Profit"	\$309	\$1,964	\$5,249
Profit per woman	\$365	\$548	\$875

A profitable business model for the bottom billion.

Criteria-based results

Demand-based

- Women collective self-initiates
- People want toilets

Philanthropically efficient

- Essentially zero cost per customer serviced
- Growing venture capital

Effectively serving Customer

- Strategic location in slums
- Free toilets publicly available in slums

Actionable in 6 months

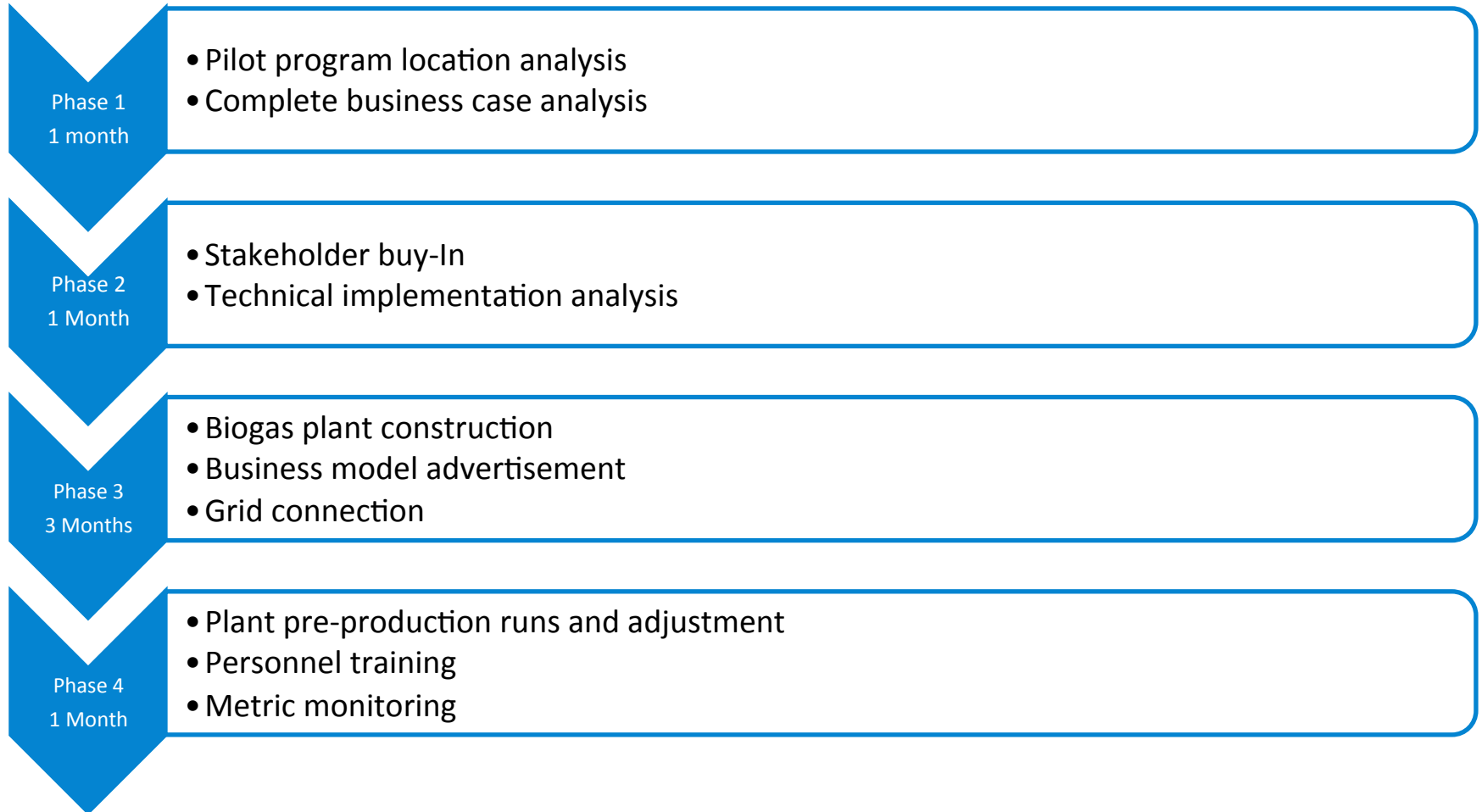
- Collaboration with local partners
- Existing technology
- Action plan

100 million impacted in 5 years

- 146 million with access to sanitation in 8 years
- 1.5 million toilets built
- 900,000 women with profitable businesses

Solution meets Water.org criteria

Implementation Plan



Within 6 months we can complete a pilot

Global Implementation Plan

Pilot
6 months

- Measure success
- Innovation and opportunities

Growth Analysis
Yearly

- Business model expansion (Global Seeds)
- Goal forecast and adjustments
- Yearly global workshops (idea sharing)

Goal
Achievement

- Results analysis
- Reflection
- Advertise success to other NGOs

	Year 1	Year 2	Year 5	Year 8
Collectives funded externally	400	440	586	779
Collectives through internal growth	0	511	7913	57730
Total collectives	400	951	8498	58509
Cash made from collectives	\$920,000	\$2,987,556	\$28,203,088	\$196,561,926
Philanthropic cost	\$800,000	\$880,000	\$1,171,280	\$1,558,974
Collectives started	400	1,351	16,322	122,139
People reached directly	400,000	1,351,111	16,321,654	122,138,787
People reached indirectly	-	135,111	3,264,331	24,427,757
Total people reached	400,000	1,486,222	19,585,985	146,566,545

In 8 years **146 million** will have access to proper sanitation

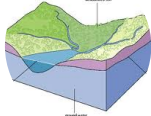
Big Idea. Big Impact.



Income



Access to Toilets



Cleaner Water Table



Health



Awareness/Attitudes on Sanitation



GHG Emission Reduction



Opens up Opportunity



Thank You.

Financials Projection Facts

Financial Projection Facts	Measurements
Waste's Energy Potential	0.1 kWh/person/day
Kenya repurchases electricity	\$0.07/kWh
Human fertilizer production potential	40 kg/person/day
The market price of fertilizer in Kenya	\$0.1/kg
Digester construction cost	\$1,400
10 toilets can accommodate 1000 people	
Digester life span	15-20 years
Local technicians provide technical training and support	
Technicians charge double the local minimum wage	
Technicians are paid to visit one full day per week	
\$2555 of electricity	Per 1000 people
\$4000 of fertilizer	Per 1000 people



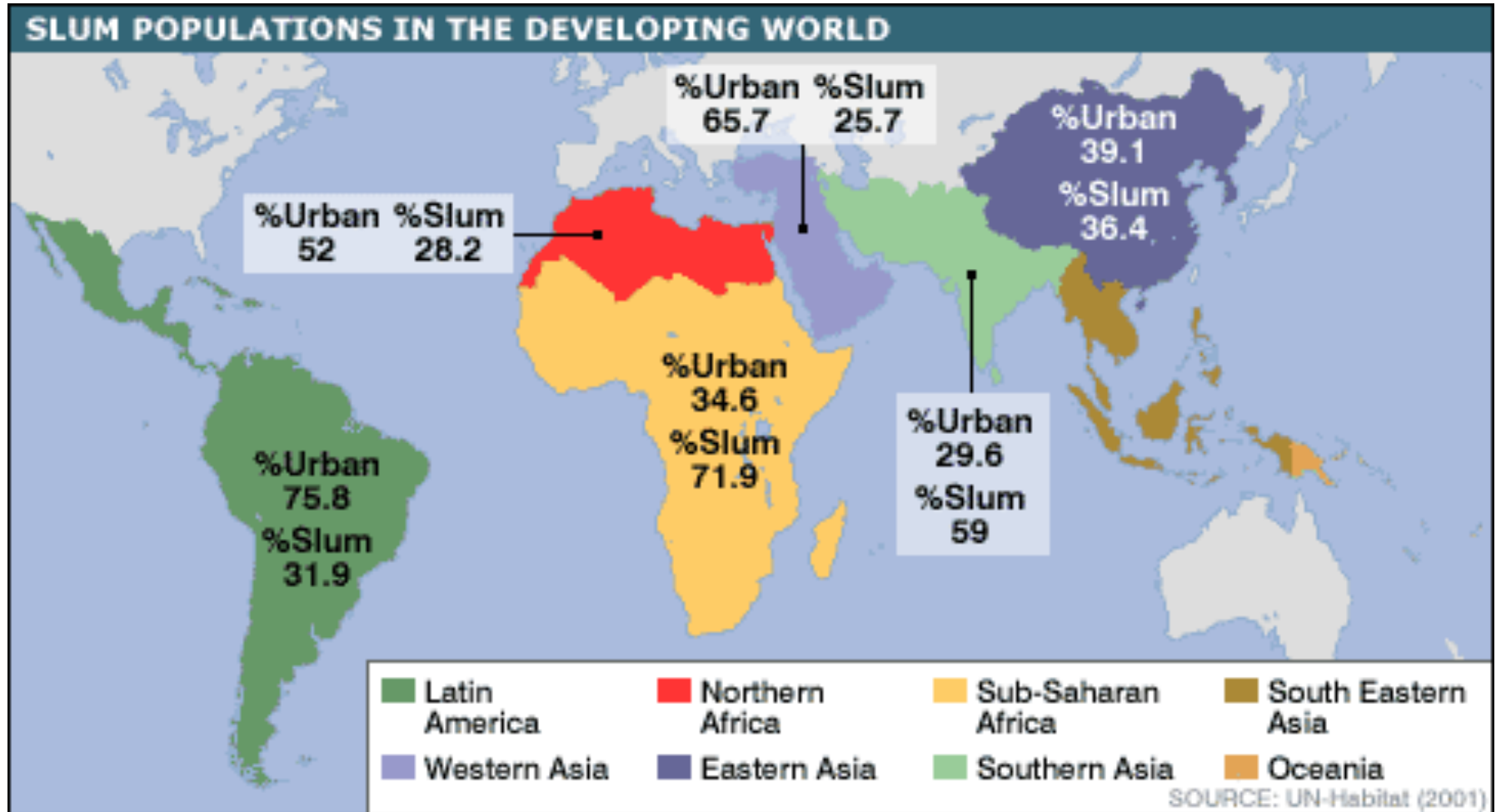
Risks and Mitigators

Cultural attitudes towards using indoor toilets and collection of human waste

Scalable horizontally: local supplies

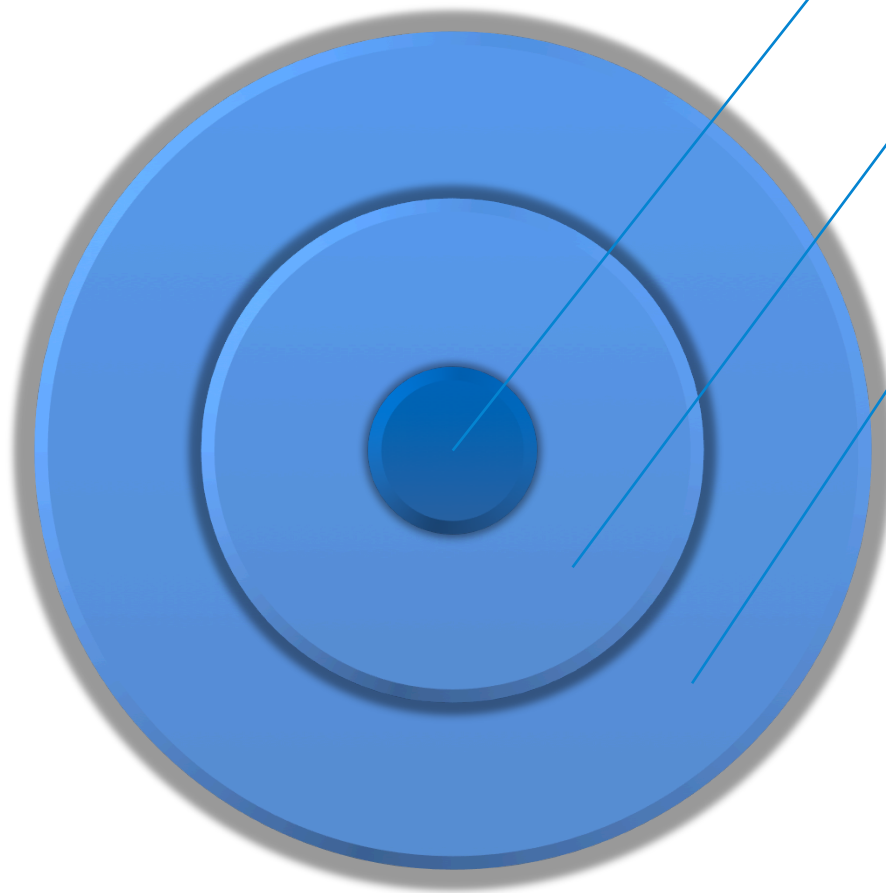
Corruption surrounding “scorecard”

Current Situation: Rapid Urbanization



The poor migrate to the city seeking *opportunity*

How will this spread?

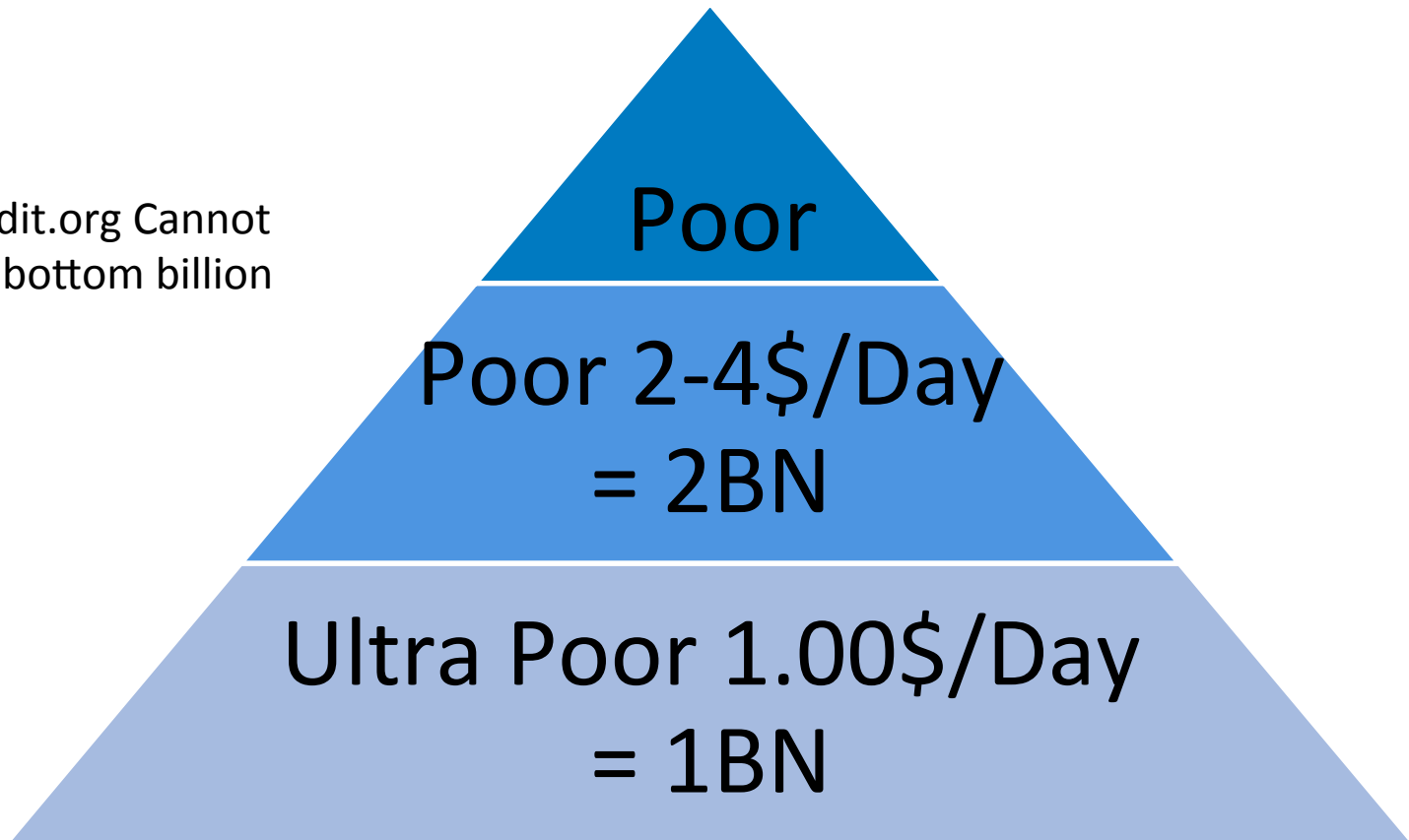


Water.org
launches

NGO
Community
copies

Spreads to
slums across
the world

WaterCredit.org Cannot reach the bottom billion



The Bottom Billion is not being reached