

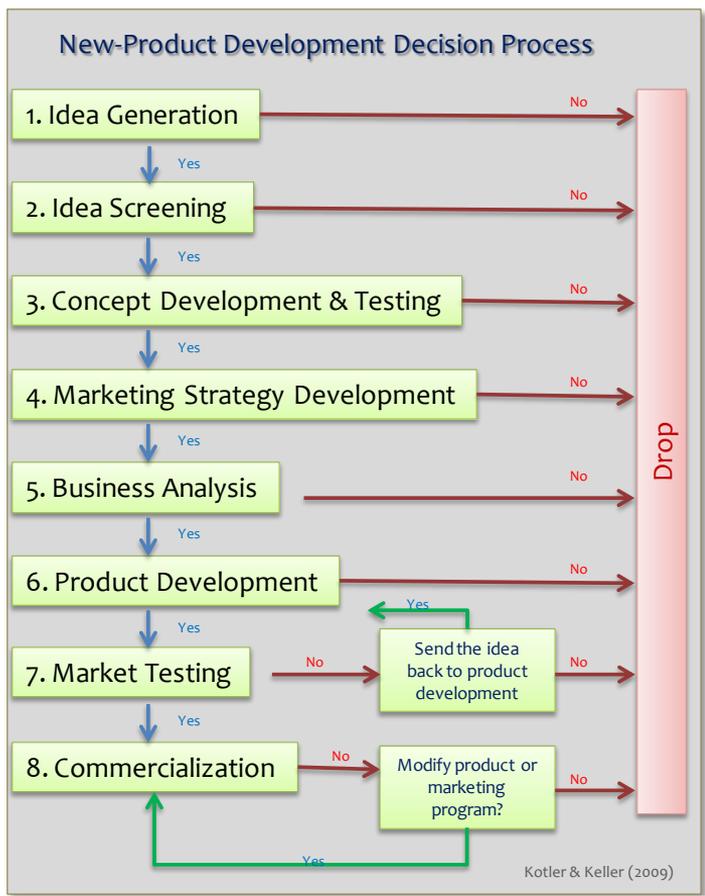
Reinvent Septic Tank Based On User Demand In Cambodia, Thailand & Vietnam

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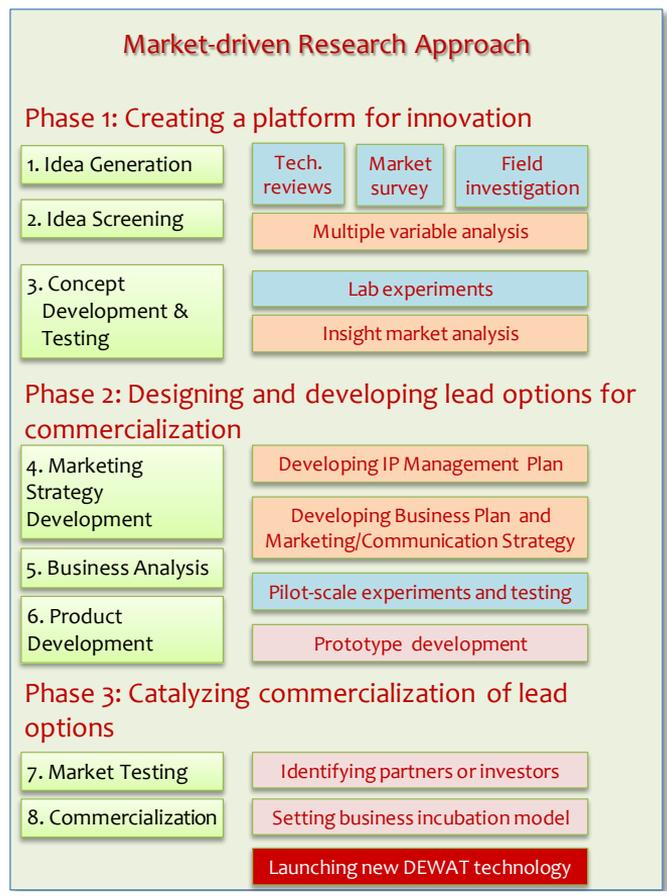


AIT
Asian Institute of Technology

BACKGROUND



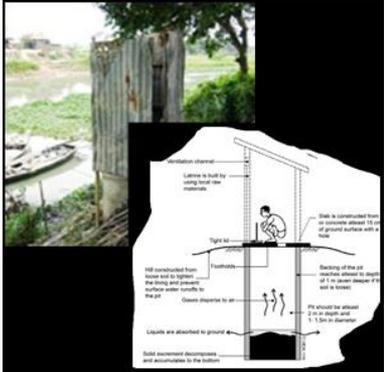
(a) New-Product Development Process



(b) Market-Driven Research Approach

METHODS

Desk research, In-depth interview, Focus group & Questionnaire survey



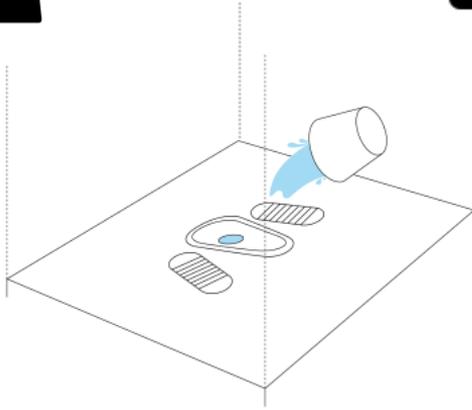
RESULTS

SITUATION IN THREE COUNTRIES

Toilet type

Thailand and Cambodia

Vietnam



RESULTS

SITUATION IN THREE COUNTRIES

DEWAT system

Thailand

Cambodia

Vietnam



Cement ring



Septic tank



Commercial Treatment Package

RESULTS MARKET MIX

Product

DEWAT system :

- 1) Cement ring (no brand)
- 2) Septic tank - plastic or fiber tank
- 3) Commercial treatment package (many brands)

Price

- Cement ring cost USD20-USD60
 - Concrete septic tank USD50-USD700
 - Plastic or fiber septic tank (Thailand only) : USD100-USD200
 - Commercial treatment package: USD77-USD1,450 (6000 L.)
- (Not included installation cost.)

Market mix (4P)

Place

- 1) Retailer - Hardware store
 - Category killer
 - Interior stuff store
 - Supermarket
- 2) Salesperson

Promotion

- Advertising
 - Mass media (TV, radio) ,Display product, Signage, Brochure or leaflet
- Personal Selling: salesperson
- Sales promotion: discount & premium

RESULTS

SITUATION IN THREE COUNTRIES

Unmet needs (Problems & expectation)

Thailand

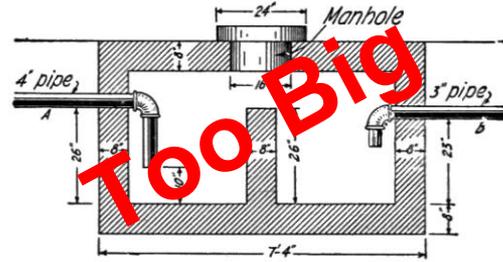


Clogging toilet



Tank full

Cambodia



Too Big

Bad design

Vietnam



NO SOLUTION

RESULTS

KEY UNMET NEEDS

Factor

Description

1) Affordable Price

Most of households have low income

Cambodia and Vietnam (with unimproved toilet and no toilet) are very **sensitive to price** with low purchasing power. Price should be affordable to them.

2) Compact size with high efficiency treatment

Small space. High population growth caused the land and living space get smaller especially in urban area.

High efficiency treatment and eco-friendly is suitable for urban living.

3) Maintenance free (no FSM service)

Free Service fee

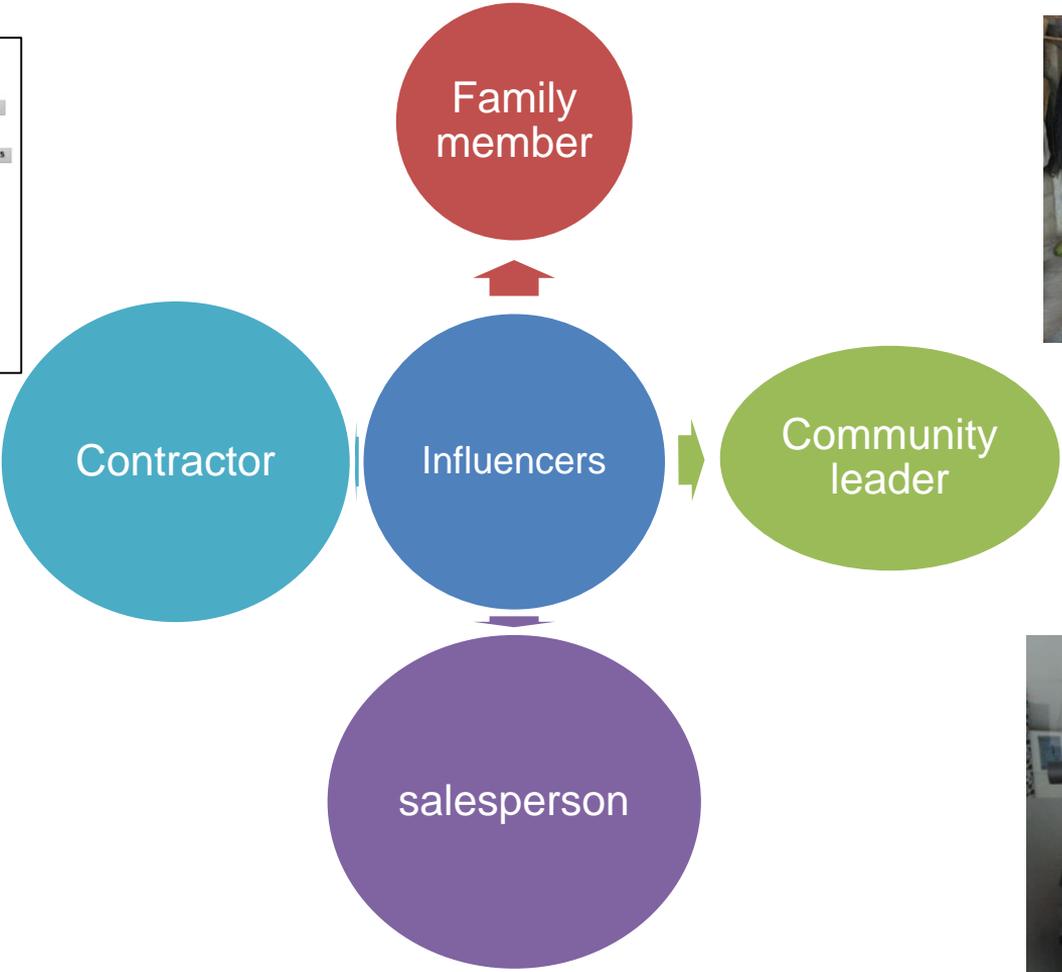
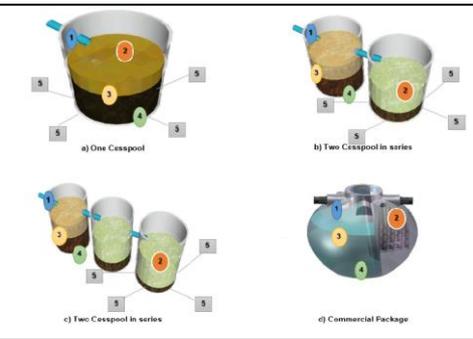
RESULTS

- Segmentation criteria that use to divide the target market in three countries is income (average) per month per household.
- Household owners had **little knowledge** and understanding toward a DEWAT system.



RESULTS

INFLUENCERS OF HOUSEHOLD BUYING DECISION



RECOMMENDATIONS

PRODUCT DEVELOPMENT

Product 1: Use a closed system of cement ring or cement tank as a body and contain treatment system such as media to treat the waste product.

Cess-to-fit DEWAT

Product 2: Develop the microorganisms that can survive in the alkaline environment resulting from the use of household bathroom cleaner and can digest sludge better.

Zyclone Toilet

Product 3: The DEWAT system which introduces the value-added technology and green technology

Solar Septic tank

Technology available on onsite treatment system

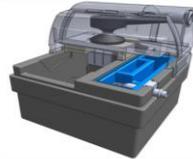
Solar septic tank



Advantage

inactivating pathogens, converting organic wastes into methane biogas and alleviating the environmental concerns associated with fecal sludge handling

Zyclone cube toilet



Advantage

- No need of sludge emptying vacuum truck
- Disinfection of solid and liquid
- Reuse /re-cycle options (soil conditioner/ fertilizers)
~ 10 kg solid/month
~ 100 L water/day

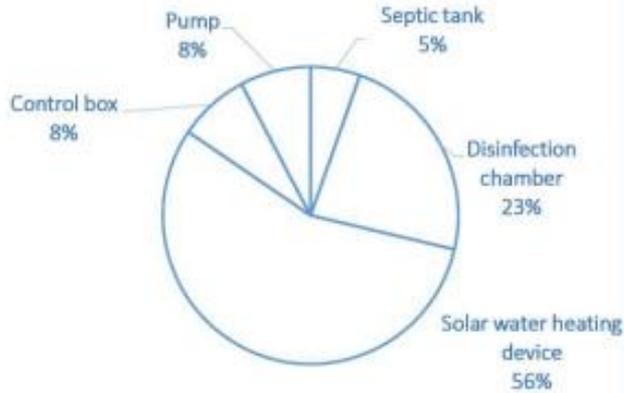
Cess to fit



Advantage

- Easy to retrofit
- Reduce the organic matter conc. in effluent
- Reduce sludge accumulation rate
- Protect the existing system from flooding

ANNEX KEY MESSAGE NOVEL SEPTIC TANK

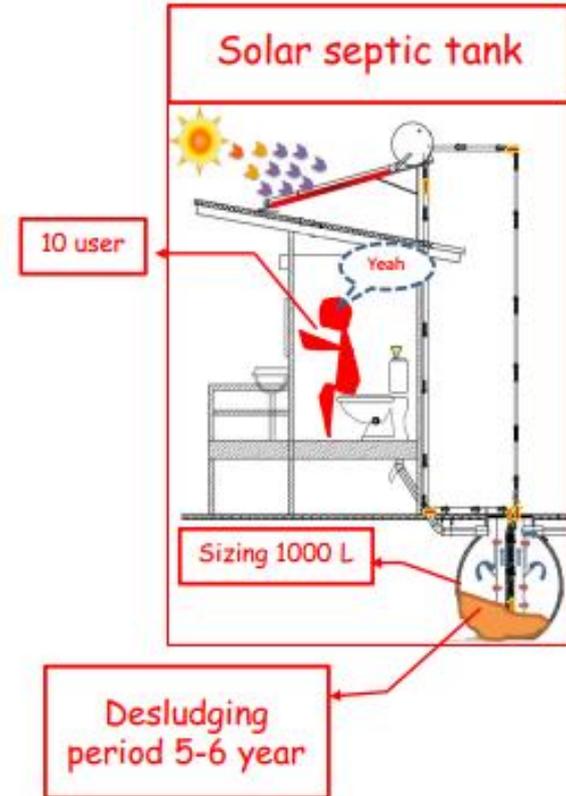


Septic tank	140 \$
Disinfection chamber	600 \$
Solar water heating device	1,440 \$
Control box	200 \$
pump	200 \$
Total	2,580 \$

Solar heated water

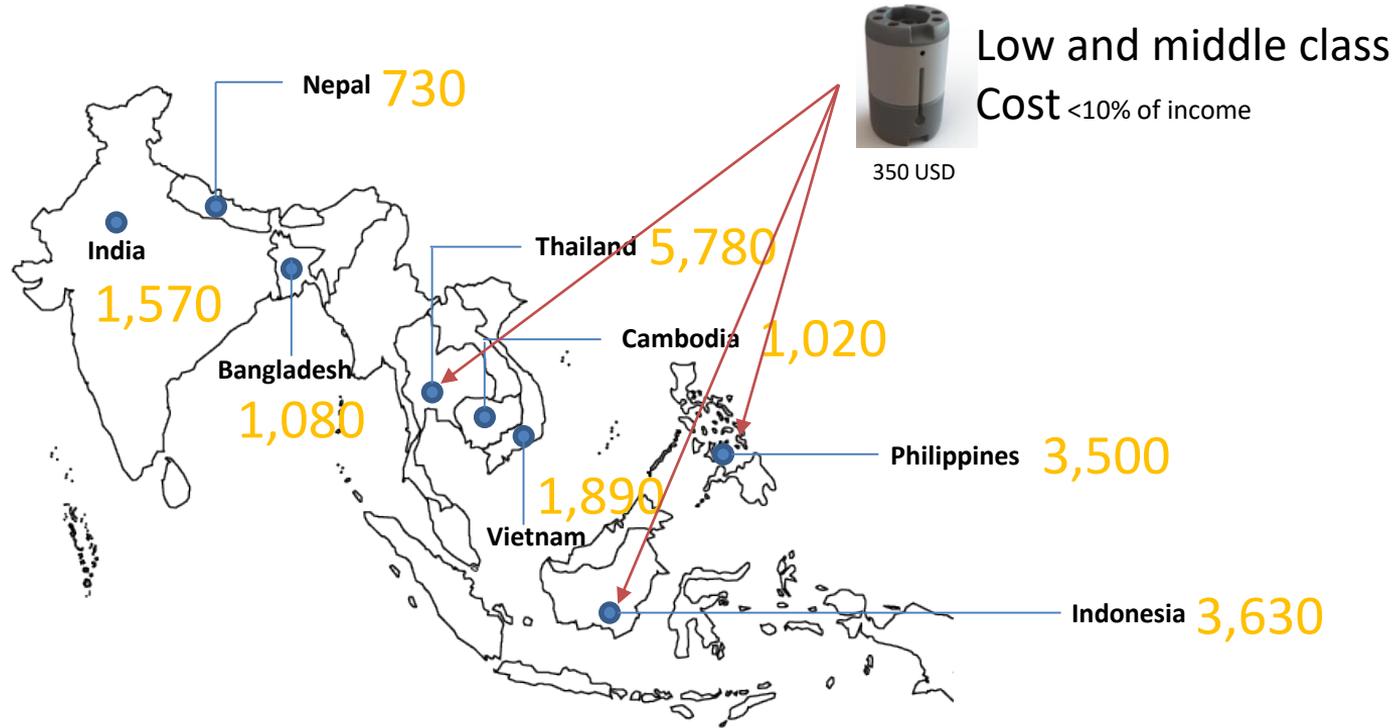


Solar septic tank



Market in South and Southeast Asia

Average annual household income (USD)

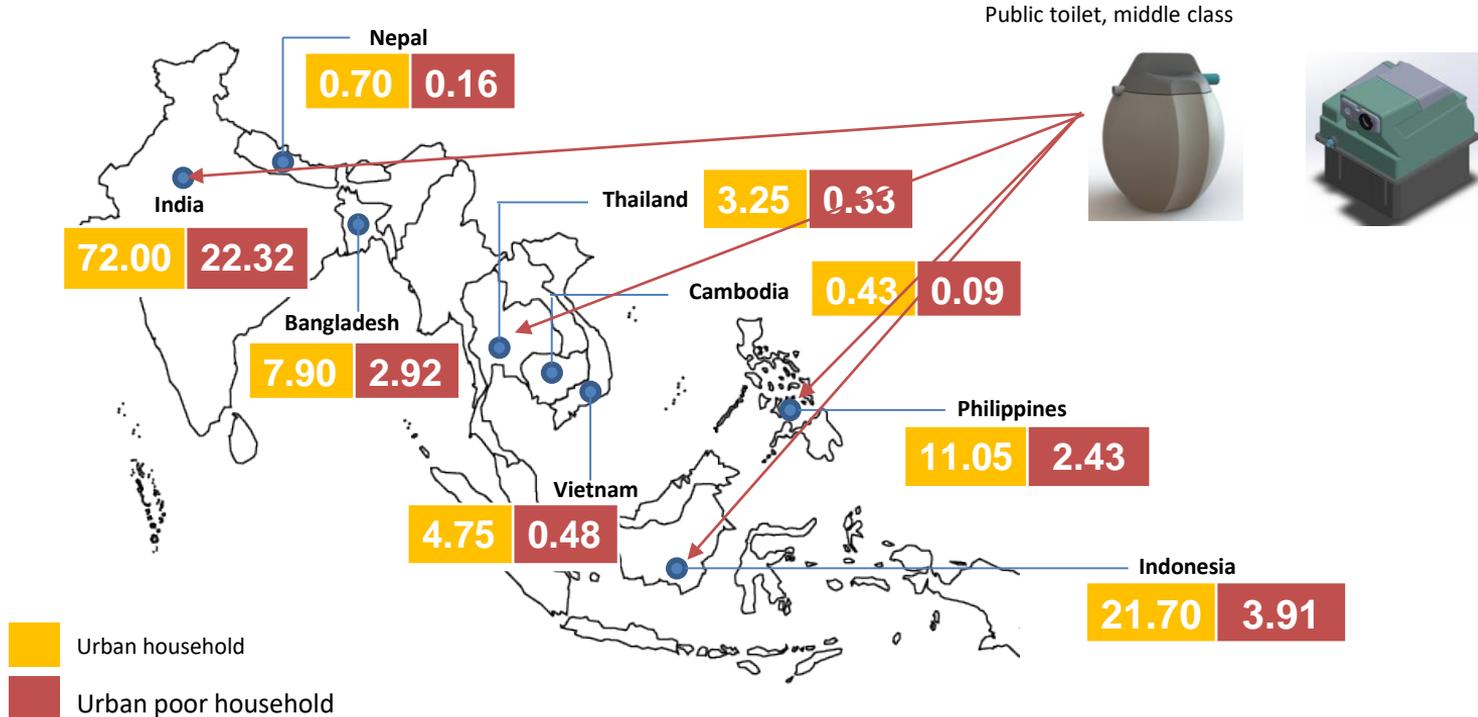


Sources:

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- Aprodicio A. Laquian., *Who are the Poor and How Are They Being Served in Asian Cities?*. University of British Columbia, Vancouver, Canada
- UNHCR - The UN Refugee Agency, 2014

Market in South and Southeast Asia

No. of Household (Millions)



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PILOT TESTING



FIELD TESTING



Technology Evolution

AIT Reinvented Toilets

ANNEX





obrigado

Dank U

Merci

mahalo

Köszi

спасибо

Grazie

Thank
you

mauruuru

Takk

Gracias

Dziękuję

Děkuju

danke

Kiitos