Value Network Design Approach for Sanitation System In Developing Countries - Lessons from two Japanese Model –

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MDGs Target 7C : Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

With half the population of developing regions without sanitation, the 2015 target appears to be out of reach



Proportion of population by sanitation practices, 1990 and 2008 (Percentage)

Note: Data for Latin America & the Caribbe an and Oceania are not sufficient to provide regionally representative estimates of the proportion of the population who use shared sanitation facilities.

(UN MDGs report 2010)





Why are sanitation is difficult?

Water Supply Service



What is the benefit of sanitation system for individual users?

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Sanitation Service

Current sanitation system in urban slum in Southeast Asia (case of Metro Manila)





For individuals, there is no big incentive to install treatment facilities
Regarding sanitation issue, value flow have to be designed very carefully

In Japanese history, we have two success model of sanitation;

- (1) Current sanitation system
- (2) Sanitation system in Edo period (1603~1869)



These two cases are analyzed in light of value flow network.

Current Japanese Model



We have three options

- 1. Centralized sewerage system
 - \rightarrow for high population density area
- 2. Decentralized Johkasou System
 - \rightarrow for low population density area
- 3. Community plants
 - → for community for agriculture, forestry and fishery.

2. Current Japanese Model

Value flow network in Centralized sewerage system/ community plants



2. Current Japanese Model

Decentralized Johkasou system



2. Current Japanese Model

Six key points to drive the sanitation systems

- National government sets clear policy
- National government established institutions who manage or support the system
- National (or local) government prepared financial support system for institutions or individuals
- Technology is being developed and kept by institutions and private sectors.

Value flow of current Japan model is well designed by government as an public service.
The system requires advanced government ability and high economic level

Sanitation, Hokkaido University

Japanese Edo period model

Počeby K. Ushijima

3. Japanese Edo period model

History of human excreta use

- From 10th century (or earlier) until middle of 20th century.
- •Edo-period (1603~1869):
 - Human excreta was traded
 - There existed human excreta market.
 - "Excreta trader" could exist and earn big money.



3. Japanese Edo period model



3. Japanese Edo period model

- Edo model worked as MARKET ECONOMY independently from government
 All stakeholders were successfully motivated to attend this system

 system were automatically spread

 All capitals and assets are managed by private sector under the business manner
 - Concept of market economy based sanitation model, such as Edo model, seems to provide suitable framework and tactics for developing countries

6. Conclusion

- Both two Japan model fulfill six key points to drive sanitation system: Users, policy, institutions, finance, information and technology.
- Value flow of current Japanese model are well designed system as public service, but it requires high leveled governance and too much cost.
- Edo period model worked as MARKET ECONOMY.
 - All stakeholders were successfully motivated to participate this system
 - All capitals and assets are managed by private sector under the business manner



 Concept of market economy based sanitation model, such as Edo model, seems to provide suitable framework and tactics for developing countries This study was supported by JST-CREST, JST-JICA, and JSPS-science research.

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Thank you for your attention.