

72403



Report

Opportunities to Improve Sanitation: Situation
Assessment of Sanitation in Rural East Java, Indonesia

Jaime Frias

Global Scaling Up Sanitation Project

April 2008

This report is part of the WSP Scaling Up Sanitation Project funded by the Bill and Melinda Gates Foundation. A major focus of the project is on learning how to scale up. The project is testing proven and promising approaches to create demand for sanitation and the use of marketing techniques to generate demand and improve the supply of sanitation-related products and services among the rural poor.

This series of reports document the findings of work in progress and are disseminated to encourage the exchange of ideas and information and to promote learning. We invite comments and feedback. Please send your feedback to: wsp@worldbank.org

The Water and Sanitation Program (WSP) is a multi-donor partnership of the World Bank.

WSP helps the poor gain sustained access to improved water supply and sanitation services (WSS). For more information visit our website: www.wsp.org

Credits

Editorial Support: Paula Whitacre

Production: Katri Kontio, Hannatu Ogunnaike

Photos: WSP-EAP

ABOUT THE AUTHOR

Jaime Frias

Jaime Frias has more than 6 years experience in project design, including applied research skills for micro-enterprise development, rural business and facilitating pro-poor business enterprises. He is experienced in consumer goods market development and worked at Procter and Gamble where he developed strategic communication and promotion programs. He was the Country Director for International Development Enterprises (IDE) in Hanoi, Vietnam and a Brand Manager for the Procter and Gamble Company in Chile and has also provided advisory services for international agencies such as the World Bank and the Asian Development Bank. He has a graduate degree in Public Administration from the Kennedy School at Harvard University.

The findings, interpretations and conclusions expressed in this report are entirely those of the author. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations or those of the Executive Directors of the World Bank or the governments they represent *The World Bank does not guarantee the accuracy of the data included in this publication and accepts no responsibility whatsoever for any consequence of their use. The boundaries, colors, denominations and other information shown on any map in the document do not imply any judgement on the part of the World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.*

Table of Contents

ACKNOWLEDGEMENTS.....	v
LIST OF ACRONYMS AND ABBREVIATIONS.....	vi
SUMMARY.....	vii
1. INTRODUCTION.....	1
The Global Scaling Up Sanitation Project.....	1
A Two-Pronged Strategy.....	1
National Context.....	2
Market Appraisal.....	4
2. BACKGROUND AND CONTEXT.....	4
East Java.....	6
Drinking Water Sources in Rural Areas.....	6
Defecation Practices in Rural Areas.....	6
Decision to Install a Toilet and Family Participation.....	10
3. MARKET CONSTRAINTS.....	11
4. SANITATION DEMAND.....	13
Disposable Income.....	13
Space Limitations and Home Ownership.....	14
Awareness of Benefits.....	15
Awareness of Latrine Models and Costs.....	17
Awareness of Threats from River Defecation.....	17
Social Acceptance.....	17
Expectation of Subsidy.....	17
5. SANITATION SUPPLY.....	18
Latrine Alternatives.....	18
Access to Products and Services.....	18
6. MARKET ENABLING ENVIRONMENT.....	20
Microfinancing.....	20
Women’s Self-Help Groups.....	20
Government Support.....	21
Interaction between Demand and Supply.....	22
7. ROLES AND RESPONSIBILITIES.....	23
The Private Sector.....	23
The Water and Sanitation Program.....	23
Local Governments.....	23
Influence Preferences to Motivate Consistent Use of Latrines.....	27
Segmentation and Target Groups.....	28
Targeted Messages and Promotion of Latrine Defecation.....	29
Improved Variety of Latrine Models and Customer Responsiveness.....	32
Improved Latrine.....	33
Popular Latrine Models.....	36
Increased Availability of Masonry Skills for Improved Options.....	38
8. CONCLUSIONS AND RECOMMENDATIONS TO MOVE FORWARD.....	45
Moving Forward.....	46

Strategies that enhance Technical Correctness.....	46
Strategies that enhance Political Support.....	48
Strategies that enhance Administrative Feasibility.....	48
REFERENCES.....	50

List of Tables

Table 1 Qualitative Data Collection (individuals interviewed by type and location.....	viii
Table 2 Complementarities Between CLTS and Sanitation Marketing.....	3
Table 3 Summary of Selected Demographic Indicators.....	6
Table 4 Selected Housing Indicators by Usage and Ownership of Latrines.....	14
Table 5 Main Advantages and Disadvantages Reported About River Defecation and Improved Latrines.....	16
Table 6 Three Scenarios for Latrine Installation Under Self-Help Saving Groups.....	21
Table 7 Roles in the Management of Latrine Supply Chains.....	25
Table 8 Summary of Intended Transformation.....	28
Table 9 Examples of Selected Segmentation Criteria.....	29
Table 10 Exposure of Women to Mass Media.....	30
Table 11 Media and Promotion in Rural Areas.....	31
Table 12 Customer Values and Latrine Solutions.....	35
Table 13 Popular Latrine Models.....	36
Table 14 Major Types of Sanitation Service Providers and Suppliers.....	39
Table 15 Product and Service Options.....	44

List of Figures

Figure 1 Indicators influencing growth of latrines markets in Indonesia (simplified version)...	viii
Figure 2 Indicators influencing growth of latrines markets in Indonesia.....	12
Figure 3 Access to sanitation by expenditure quintile (% of households).....	13

Acknowledgments

The fieldwork could not have taken place without the support and assistance of the Government of Indonesia (Ministry of Health); the Government of East Java; the health departments of Jombang, Lumajang, Madura, Megaluh, and Probilinggo; and the Water and Sanitation Program – East Asia and Pacific.

Findings from the two field visits in January and August 2007 are the result of the collaborative effort of Febriantina Dewi, Amin Robiarto, and the field facilitators. I want to extend special thanks to Almud Weitz, Alex Buechi, Ratna Josodipoero, Djoko Wartono, Nila Mukherjee, Andy Robinson, Isabel Blackett, Alfred Lambertus, Gary Swisher, Pak Wano, Jacqueline Devine, and Jema Sy for their kind assistance, provoking comments, and invaluable support in helping me to understand sanitation markets in rural East Java. Special thanks go to Mai-Anh Hoang for helping me to express my ideas on paper. Finally, I want to thank Sasya Arifin and Evie Turang for facilitating my travels.

List of Acronyms and Abbreviations

BPS	Badan Pusat Statistik (Central Bureau of Statistics)
CLTS	Community-led total sanitation
DHS	Demographic and Health Surveys
ESP-USAID	Environmental Services Program–United States Agency for International Development
FGD	Focus group discussion
GOI	Government of Indonesia
IDR	Indonesian rupiah
JMP	Joint Monitoring Programme
MDG	Millennium Development Goal
PAMSIMAS	Third Water Supply and Sanitation for Low-Income Communities Project
PKK	Family Welfare Movement
SUSENAS	Survei Sosial Ekonomi Nasional (National socioeconomic household survey)
TSSM	Total Sanitation and Sanitation Marketing
UNICEF	United Nations Children’s Fund
VIP	Ventilated improved pit (latrine)
WHO	World Health Organization
WC	Water closet
WSP	Water and Sanitation Program

Summary

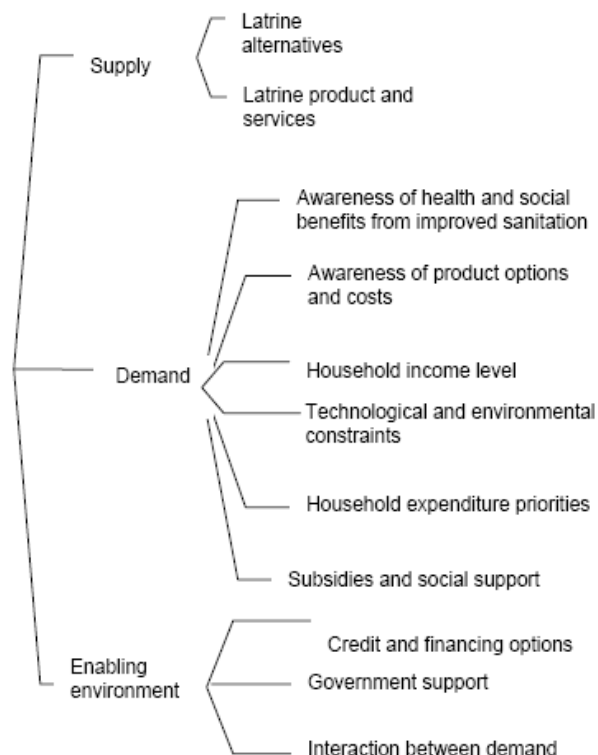
What is needed to improve sanitation markets in rural East Java, Indonesia? To answer the question, a team of experts conducted a qualitative diagnostic assessment of sanitation-related opportunities and constraints in rural East Java between January and August 2007. The team conducted two field visits to the districts of Lumajang, Madura, Megaluh, Probolinggo, and Jombang and the city of Surabaya. In selected districts, the team conducted in-depth interviews, focus group discussions, and a desk review of published data to identify factors influencing three key areas—demand, supply, and a market-enabling environment. The bottom line: Although the team found little evidence of supply-side constraints, catalyzing supply is an opportunity to improve sanitation. However, the biggest challenge lies in increasing demand. Factors inhibiting improved sanitation include social acceptance of open defecation, unawareness of the health benefits of using hygienic latrines, and incorrect information on costs of installing and maintaining hygienic latrines.

The assessment was conducted as part of the Global Sanitation Scaling Up Sanitation Project to test proven and promising approaches to create demand for sanitation and to use marketing techniques to improve the supply of sanitation-related supply and services for low-income, rural communities. These approaches are called Total Sanitation and Sanitation Marketing (TSSM).

Methodology

To assess the latrine market's potential for growth in rural East Java, a team of consultants developed a diagnostic tool to guide their assessment and based their indicators on factors influencing demand, supply, and an enabling environment, as illustrated in the framework below. (The complete framework appears as Figure 2 in section 3 on Market Constraints .)

Figure 1: Indicators Influencing Growth of Latrine Markets in Indonesia (simplified version)



The analysis differs from previous assessments in Indonesia because it relies on both qualitative data from a diverse group of stakeholders and quantitative data from previous socioeconomic surveys. In total, seven focus groups and 50 key informant interviews were conducted in six districts and included discussions with local residents, provincial and district health staff, community leaders, suppliers and manufacturers, and installers of latrine equipment (see Table 1).

Table 1: Qualitative Data Collection (individuals interviewed by type and location)

	Surabaya	Madura	Lumajang	Megaluh	Probolingo	Jombang
Local Residents			2		36	27
Health Staff	2	1	4	4	3	1
Community leaders		1	2	3	4	3
Suppliers and manufacturers	1	2	1	2	1	4
Installers of latrines		2	2	1	2	2

To assess the growth potential in the latrine market, the team looked at each indicator that influenced the viability of the market and assessed if either demand could be stimulated or if constraints affecting demand, supply, or an enabling market environment could be removed. As part of the team’s assessment, qualitative data were sought to give program managers and sanitarians a contextual understanding of why unhygienic sanitation behaviors have persisted and why latrine markets have failed in some cases. To address some of the underlying personal, social, and environmental reasons for lack of growth in latrine markets, focus group discussions and in-depth interviews elicited perceptions, opinions on barriers to latrine market growth, and recommendations on how to stimulate demand for hygienic latrines.

The consultants complemented the qualitative information with data from three different surveys: 1) the Survei Sosial Ekonomi Nasional (SUSENAS) , the national socioeconomic survey, conducted in 2004; 2) an environmental survey commissioned by the Environmental Services Program of the U.S. Agency for International Development (ESP-USAID), conducted in 2006; and 3) the Demographic and Health Surveys (DHS) for Indonesia, conducted in 2003. Survey data give information on defecation practices, sources and use of drinking water, household characteristics, expenditure patterns, and media habits. However, limitations to the survey data include: 1) the surveys were not conducted at the same point in time as the qualitative data; 2) survey data are representative of East Java, but have not been disaggregated for each district; and 3) in 2004, sanitation-related indicators from SUSENAS were not harmonized with indicators later proposed by the Joint Monitoring Programme (JMP) of the World Health Organization and UNICEF. Despite limitations in the survey data available, these quantitative data give some scope to the situation in Indonesia, suggest sanitation targets, and highlight areas that pose challenges.

Highlights of the Assessment

The assessment uncovered the following:

- Inadequate sanitation practices not only are widespread but also are socially accepted in East Java. More than one-third of rural families practice river defecation. None of the families interviewed expressed dissatisfaction with river defecation and tolerate their neighbors and others defecating in rivers.
- Defecating near running water is an important criterion for all. The benefits of defecating near running water outweigh any benefits of a private latrine if water for anal cleansing is not available.
- Demand for improved sanitation facilities is low and households ranked installing latrines last on their list of priorities. Level of income does not entirely predict open defecation. Investing in hygienic latrines is a low priority for those families who prefer to spend their disposable income on other goods, such as motorbikes or televisions.

KEY FINDINGS (A level head)

- More than one-third of families in rural East Java practice river defecation, and few wash their hands with soap after defecation.
- Neither inability to pay for hygienic latrines nor lack of space predicted open defecation. Investing in hygienic latrines was a low priority for those families who prefer to spend their disposable income on other commodities.
- Social marketing of hygienic latrines is needed to change social acceptance toward open defecation and to stimulate demand.
- Promotion messages should emphasize the benefits of privacy, convenience, prestige, and maintenance of modesty.

- Increased social prestige motivates households to install latrines. People commonly identified social prestige and reputation, privacy, convenience, and maintaining modesty as key benefits of installing a latrine. Few people stated health benefits.
- Most respondents overestimate the costs of installing improved sanitation facilities. Many overestimated the costs of installing improved sanitation facilities by six to eight times the actual costs. In addition, many do not realize that improved sanitation could be as simple as a hygienic pit latrine and does not need to be an elaborate flush toilet.
- Enhancing services for latrine installations presents a big opportunity. Although there was little evidence of supply-side shortages in products or services, enhancing latrine installations and improving maintenance would enhance the latrine market and improve customer satisfaction.
- Local health departments should invest in social marketing for improved sanitation. Awareness of diseases from unsanitary defecation practices is extremely limited. Local health departments can provide invaluable help in stimulating demand for hygienic latrines and hand-washing.

1. Introduction

This document summarizes preliminary findings from two country missions conducted in Indonesia between January and August 2007. These missions were the first of a series of steps to develop a comprehensive sanitation marketing strategy as part of the WSP Global Scaling Up Sanitation Project.

In the context of the project's sequenced approach, the findings from these missions have primarily served the purpose of advancing strategies to stimulate demand and enhance supply of sanitation. First, the missions identified valuable insights related to sanitation habits and practices of low-income families living in rural districts of East Java. These insights have informed triggering strategies of Community-Led Total Sanitation (CLTS) in terms of motivators, levers, and behavior change incentives and disincentives.

Second, the findings have contributed to the formulation of research questions and design of questionnaires for quantitative consumer and household surveys. The quantitative appraisals will contribute to the task of identifying demand constraints and of designing behavioral strategies.

Third, the findings have helped the Indonesia country team of the Water and Sanitation Program (WSP) to develop working hypotheses to enhance provider and retail strategies. These hypotheses have contributed to design of training programs for installers and vendors and to development of an accreditation program, including a university diploma for sanitation masonry. Trained and accredited service

providers will participate in both CLTS triggering and sanitation promotion activities.

Fourth, the findings have contributed to design of promotion and communication strategies. Findings from these missions informed the task description for an advertising agency and advised communication requirements in the creative brief. In particular, the preliminary findings have served to develop contractual arrangements with advertising agencies and to clarify their tasks.

In addition, the findings from these missions have indirectly contributed to the identification of internal needs for support, including internal staffing, and to the engagement of provincial officials in the marketing framework. The missions have helped WSP and its partners to validate the market potential for improved sanitation, including an estimate of the existing capacity of local artisans, small businesses, and supply chains, as well as the availability of sanitation and hygiene products and services. Finally, the mission helped the WSP country team to develop a detailed cost estimate for the marketing strategy component of the project.

The Global Scaling Up Sanitation Project

The primary goal of the project is to learn about scaling-up and about effective and efficient interventions that improve health. It is a large-scale effort to meet the basic sanitation needs of the rural poor who do not

currently have access to safe and hygienic sanitation. This aim will be accomplished by developing practical knowledge for designing sanitation and hygiene programs that are effective at improving health and are sustainable at large scale for rural areas. The project will test proven and promising approaches to create demand for sanitation and to use marketing techniques to improve the supply of sanitation-related products and services.

The project has three related objectives: 1) to generate demand for improved sanitation services, 2) to strengthen supply for improved sanitation services, and 3) to enhance the enabling environment so that improvements in sanitation coverage can be scaled up and sustained. A sanitation marketing component and Community-led Total Sanitation (CLTS), as explained below, form a two-pronged strategy to meet these objectives.

Acting together, CLTS and sanitation marketing will generate consumer demand not just for sanitation facilities, but also for a set of improved sanitation behaviors that comprise total sanitation and promote the development of a self-sustaining demand and supply mechanism. These two strategies are complemented with targeted advocacy with local governments and capacity-building for local government agencies.

Actions steps embedded in these strategies include project road shows and ownership workshops; the project institutional framework; sanitation market assessments; implementation of local supply improvement programs; capacity-building of local government agencies, local sanitation service providers, and community organizations; implementation of demand generation activities; monitoring and

evaluation; and documentation and dissemination of lessons learned.

The initiative is consistent with the overall direction of the national strategy for rural sanitation in Indonesia and will be implemented in all 29 rural districts of East Java. The project is seen as a major institutional capacity-building intervention that will strengthen district-level governments in East Java in managing all aspects of scaling up a population-wide sanitation and hygiene improvement program. By the end of the four-year project, 1.4 million people in East Java will have gained access to improved sanitation services.

A Two-Pronged Strategy

Early interventions of CLTS strategies have proven successful in transforming sanitation behavior in rural Indonesia during the past years. Community-led total sanitation triggers change by raising collective awareness of the consequences of open defecation. In relatively short time frames, entire communities have built latrines, which they have paid for themselves without external financial help. For example, communities in the Lembak subdistrict of Muara Enim have spontaneously mobilized themselves to plan further action and implement plans to stop open defecation. Families from 18 villages installed 1,394 household latrines in a matter of weeks after triggering (WASPOLA, undated).

The behavioral approach of CLTS has been extremely effective to bring about the desire to stop defecating in the open without prescribing toilet designs or setting targets for communities to achieve. Participatory approaches such as CLTS have reached the poorest rural households and have given them the opportunity to achieve total sanitation, even if they were not able to

afford investments in improved sanitation in the short term.

Desire for change has been a necessary, but not sufficient condition for improved sanitation. CLTS has become a potent demand-generator for achievement of Open Defecation Free (ODF) status, but not necessarily for improved sanitation. In addition to demand for improved latrines, effective supply of sanitation products and services need to be in place for complete and sustained adoption. In most countries, progress in increasing access to sanitation has been completed by private suppliers serving individual households. Thus, it is imperative to offer rural families the opportunity to make the transition from simple desire to inclusive adoption of improved sanitation. Without the availability

of appropriate services, desire for change could frustrate customers who cannot find the products they need and could drive families towards adoption of unimproved latrines.

Sanitation marketing adds to CLTS strategies by driving potential customers up the sanitation ladder (see Table 2). Consistent with the new direction of the government to adopt international sanitation standards, sanitation marketing links the community's desire to stop open defecation with the availability of and demand for improved sanitation options. Sanitation marketing expands the menu of strategies for policy makers to extend sustainable provision of construction and masonry services and to improve distribution and availability of key sanitary material.

Table 2: Complementarities between CLTS and Sanitation Marketing

	CLTS	Sanitation Marketing
Communication concept	<ul style="list-style-type: none"> • Open Defecation Free Community • Awareness of negative consequences of open defecation 	<ul style="list-style-type: none"> • Value of improved sanitation.
Communication delivery	<ul style="list-style-type: none"> • Community-based triggering • Transect-walk • Sanitation mapping, collective calculation, and flow diagrams 	<ul style="list-style-type: none"> • Masons promoting options • Hygiene promotion • Leaflets, posters, and videos • Village contests and events • Product demonstrations • District radio • Infomercials • Local TV • Village billboards
Product options & informed choice	<ul style="list-style-type: none"> • No toilet prescriptions or toilet designs 	Promotion of <ul style="list-style-type: none"> • vent-pipes • netting for flies • lining of pits • impervious slabs
Distribution of sanitary materials and spare parts/ points-of-sale	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Franchise of participating retailers • Supply chain development for improving availability of key sanitary spare parts

promotion		<ul style="list-style-type: none"> Point-of-sale merchandising, promotion material, informed choice, and product demonstrations
Service providers	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Training, accreditation to deliver installation of services

TSSM offers a dual solution by combining sanitation marketing and CLTS into a two-pronged component design. This two-pronged strategy allows markets to promote and make available a range of improved options from the rural centers, helping to build supply chains and local capacity, and enables CLTS to focus on stopping open defecation in the most remote, underserved rural communities.

National Context

The Government of Indonesia (GOI) has recently introduced a national operational strategy for rural sanitation and hygiene improvement. This strategy seeks to translate into practice the GOI national policy for community-led water supply and environmental sanitation established in 2003. The national strategy is based on lessons learned from past sanitation and hygiene-related programs in the country, and consensus from sector experience analysis with a wide range of stakeholders.

Indonesia is a signatory country to the Millennium Development Goals (MDGs) for sanitation. The GOI has adopted Total Sanitation as the objective of its rural sanitation and hygiene strategy, as expressed in its draft “National Operational Strategy for Rural Sanitation and Hygiene Improvement in Indonesia.” The government has also adopted definitions of improved and unimproved sanitation from the Joint Monitoring Programme (JMP), which monitors worldwide progress towards the MDGs.

To reflect this commitment, GOI requested World Bank loan assistance of US\$137.5 million to implement the Third Water Supply and Sanitation for Low Income Communities (PAMSIMAS) project (World Bank 2006). The project aims to increase the number of low-income people living in rural and peri-urban areas accessing improved water and sanitation facilities. The project will help GOI meet its MDG targets in water supply and sanitation through programmatic mainstreaming and scaling-up of a nationwide community-driven approach. Of the US\$137.5 million, approximately US\$24.7 million will be allocated for improving hygiene and sanitation behavior and services (Component 2) through a phased program of CLTS and development of local markets to tap into the emerging demand for sanitation. The Global Scaling Up Sanitation Project will provide strategic guidance to GOI for the successful implementation of the “improving hygiene and sanitation behavior and services” component under PAMSIMAS.

Market Appraisal

A team of four consultants visited the districts of Madura, Lumajang, Megaluh, Probolinggo, and Jombang to qualitatively assess latrine markets. The team conducted personal interviews and focus group discussions with cement manufacturers, provincial and district health officers, community leaders, heads of the PKK, retailers, manufacturers, installers of sanitary material, and villagers.

Information from three additional sources complemented the findings of the field visit: SUSENAS, the national socioeconomic survey, conducted in 2004; 2) an environmental survey commissioned by ESP-USAID, conducted in 2006; and 3) the Demographic Health Survey, conducted in 2003.

Data from the socioeconomic survey generally describe the sanitation problem. Quantitative data describe defecation behavior, sources and use of drinking water, household living conditions, family expenditures, and education levels in the project areas. The quantitative data reveal the diversity of the sanitation challenge. When possible, qualitative information provides further insight of customer behavior. We are aware, however, of the limitations of the quantitative and qualitative data contained in this report. First, the set of sanitation questions from SUSENAS (2004) were been harmonized with those proposed by JMP at the time of the survey. WSP has adopted JMP standards for this project. The focus of SUSENAS in 2004 was marginal to the sanitation problem. Second, the qualitative data cannot be used to infer parameters for the entire population of East Java. The qualitative data may not be valid outside of the interviewed sample in the selected districts. Finally, this report presents a deductive approach to describe some of the root problems constraining the latrine market. The facts are general to East Java and are not specific to any particular location. Individual districts in East Java present a different situation to the general one described in this document. A process of critical inquiry is important to identify those factors that constrain installation and consistent use of latrines in each location.

This report aims to provide project managers with insight on sanitation markets and practical information to guide contracting

services of marketing research and strategy design. It describes potential marketing challenges and areas of the TSSM Project in Indonesia that deserve further attention.

2. Background and Context

To understand the context in which the assessment took place, a brief summary of East Java's demographics, as well as its rural water and sanitation situation is useful.

East Java

The Province of East Java is 46,689 square kilometers and includes the islands of Madura and Bawean. The province is divided into 29 districts and 9 cities, with 8,448 villages within 657 districts. The capital of East Java is Surabaya, the second largest city in Indonesia and a major industrial center. In 2007, the Central Bureau of Statistics (BPS) projected a population of 35,843,200 in the province, with a density of 798.5 people per square kilometer (Table 3). In 2005, the temperature of the province ranged between 19.8°C and 35.0 °C, with the minimum

temperature in July and the maximum in November. Annual rainfall averages about 1,900 millimeters. Islam is the major religion.

In 2006, the average literacy rate for East Java was 90.5 percent for males and 78.9 for females, as compared to the national average of 94.0 and 86.8 percent, respectively. The average number of years of schooling in the province was 7.2, compared with 7.8 nationally. Secondary school enrollment was 52.8 percent. The poverty rate was 20.5 percent. In rural areas, the poverty rate was about 27.9 percent in 2004, and 51.5 percent of the population lived in rural areas. In the two weeks preceding the survey, the percentage of children under age 3 who had diarrhea and diarrhea with blood was 11.6 percent (DHS 2002/03)

Table 3: Summary of Selected Demographic Indicators

	East Java	Indonesia
Area (squared kilometers)	46,689	1,860,359
Population		
Rural	51.5	51.7
Urban (percent)	48.5	48.3
Total (Thousands in 2007)	35,843.2	224,904.9
Female literacy rate (2004)	78.9	86.8
Percentage of households with pump/well/spring water as source of drinking water (2005)	53.9	46.1
Population below the poverty line (2004)	20.5	16.7

Source: Selected Indicators: Social-Economic of Indonesia, July 2006, Badan Pusat Statistik

Drinking Water Sources in Rural Areas

Almost all (94 percent) Eastern Javanese obtain drinking water from a source within 2

kilometers from their residence (SUSENAS 2004). Forty-five percent of respondents used protected wells to obtain drinking water, and 28 percent of respondents obtained drinking water from protected

springs and from pumps lifting groundwater. Less than 0.5 percent of the respondents stated rivers were the main source of drinking water for their families. Half of the wells were either shared or public, whereas water pumps were mostly private. SUSENAS surveyors neither collected data about nondrinking water sources nor asked about availability of water between the rainy and dry season. Information about water availability would provide valuable insight about the convenience of flushing latrines in each season. Information from focus groups suggests that people who live in relatively dry areas experience water shortages frequently.

Defecation Practices in Rural Areas

East Javanese defecation practices in rural areas vary. Private latrines were most common in 2004. Fifty-one percent of the SUSENAS survey respondents reported using their own toilets, and 34.5 percent of the respondents did not use latrines. Latrines were shared by 12.1 percent of respondents, mostly with neighbors and relatives. Unfortunately, the surveyors neither collected information about the number of latrine users nor collected data on people who switch between river defecation and toilets. Of Javanese who lacked latrines, 78.2 percent defecated in rivers and 13 percent defecated in yards.

The rate of families without latrines varied substantially in 2004. Among the province's 29 districts, the rate of households with no latrines ranged between 5.6 percent and 76.4 percent. The districts also varied in the rate of open defecation, with a median rate of 30.7 percent and a standard deviation of 17.9 percent.

Additional information is based primarily on the findings from focus group discussions (FGDs) commissioned by WSP Indonesia during January and August of 2007. Seven focus groups and 50 key informant interviews were conducted in six districts with local residents, provincial and district health staff, community leaders, suppliers and manufacturers, and installers of latrine equipment. That information is combined with findings from SUSENAS and a formative sanitation and hygiene study (ESP-USAID, 2006) to enrich insights and to fill information gaps.

Open Defecation

Open defecation is strongly associated with river defecation. River defecation is practiced by 78.2 percent of families with no latrines (SUSENAS 2004), although they also use irrigation canals or small rivers. The remaining 22 percent defecate in ditches, fishponds, paddy fields, gardens, and house yards. The distance from most families' homes to rivers or irrigation canals is relatively short, between 5 and 50 meters. Other inappropriate practices include *WC Terbang* ("Flying Toilet"), which refers to defecating on a piece of paper or plastic, putting the feces into a plastic bag, and throwing it into a garden, river, or some other place far from the person's home. Another practice, *WC Gali*, refers to digging a small hole in the ground to defecate, then covering it up (ESP-USAID 2006). At night, some villagers defecate in plastic bags and dispose of the bags the next day. These practices suggest that villagers do not know of the dangers of human contact with feces.



Canal defecation site with fiber-bag cover, Jombang district, August 2007

Defecation spots in rivers have side covers made of plastic or bamboo and footsteps made of wood or bamboo to provide privacy and convenience. Females reported wearing sarongs for privacy. Daily activities influence defecation practices. For instance, when Javanese work in the fields, they defecate in gutters, ditches, or rice field irrigation canals. Open defecators walk to locations farther than 200 meters during the dry season, when there is no water in irrigation canals and streams. Children defecate in kitchens or inside their homes and throw away their feces in yards. Most river defecators have used public toilets in places like mosques and other public places, as well as private toilets of hosts.

Unimproved Latrines

Unimproved latrines are mostly pit latrines (Figure 3). One popular unimproved latrine is the “Jumbleng.” Bamboo and wood are the most common materials used for the Jumbleng’s squatting slab and superstructure, and plastic sacks function as walls. Most of these latrines do not have roofs and waste goes directly into irrigation canals or rivers through PVC pipes, contaminating water nearby and the environment with pathogens that cause diarrhea.



Unimproved pit latrine with rattan panels to offer basic privacy, Probolinggo district, August 2007

Use of Public Latrines

Reported use of public latrines is low (SUSENAS 2004), although this information may not be accurate because of a misunderstanding in the survey wording between private sharing and use of public latrines. Use of public latrines was clearly not the preferred choice of respondents. Qualitative reports indicate public latrines are in poor condition or are not properly maintained. The World Health Organization (WHO) and UNICEF define defecation in public latrines or intensely shared private latrines as an unimproved sanitary practice (JMP 2004). Reported deterrents to use public latrines include inconvenience for females in need of a male escort because of distance, isolated or dark locations, extended waiting time in queue, 24-hour unavailability, and lack of privacy.



Concrete flush latrine with no air trap. Reservoir available for flushing and anal cleansing, Megaluh district, August 2007



Simple pit with wooden plug and coarse log surface, Jombang district, August 2007

A few respondents reported that a caretaker is responsible for cleaning public facilities. Where there is a caretaker, users are generally charged a fee. Where there is no caretaker, the facilities are usually free. However, when the community is responsible for maintenance of public toilets, latrines are normally not properly maintained. In some cases, facilities are closed down because they are clogged and not maintained. Public latrines with caretakers are generally better cared for (ESP-USAID 2006).

Switchers

A few neighbors and relatives reported switching between using a shared latrines and open defecation. However, sharers also defecate in rivers periodically. Embarrassment, convenience, and water availability are the main reasons to substitute river defecation for private latrines.

For instance, family members sometimes have to queue when others are using the toilet. Sometimes latrines are locked. When possible, respondents prefer irrigation canals to their neighbor's toilet, particularly at night for greater privacy. During the day, river defecation disrupts neighbors washing clothes in the river. Nighttime defecation was reported less disrupting.

Anal Cleansing

Most East Javanese wash after defecation and favor water availability. Open defecators use running water from rivers, canals, and streams for anal cleansing. Use of soap for washing hands after anal cleansing is irregular. Use of soap is more frequent if defecation is done along with bathing. In situations other than bathing, a few respondents reported rinsing with water first and then washing their hands with soap at home. Under these circumstances, the use of soap for anal cleansing remains unclear.

Individuals reported practicing post-defecation anal cleansing at home when defecation is done in the fields or yards and running water is unavailable, especially during the dry season.

Several respondents reported performing water-based anal cleansing (i.e., no soap) regularly. A few individuals, mostly males, consider water less of a necessity for anal cleansing, especially during the dry season. They reported wiping practices and the use of stones, pieces of wood, or leaves for anal cleansing. Most respondents who practice open defecation in places other than their home yard are not compelled to dig holes or to cover their feces. Even though anal cleansing with soap may not be culturally appropriate, project managers should promote washing of hands with soap as the most effective mechanism to prevent direct human contact with feces.

Individuals who defecate in latrines reported using water from a bucket or other container for anal cleansing. Individuals clean themselves with water from the container in the latrine or at home. In these situations, the use of soap during the anal cleansing is erratic.

Sharers reported a particular anal cleansing etiquette when using a neighbor's latrine. Even if water is available, they choose to clean themselves when they return to their own home. They use water only to flush their feces. The rule is that sharers must bring their own water for anal cleansing.

Some respondents do not favor sharing because they would need to clean other people's feces and the latrine would fill at a faster rate. Respondents stated that cleaning private latrines is a fairly normal practice. Women generally clean the facility to

eliminate brownish marks that look like feces, get rid of unpleasant odors, and clean the floor (ESP-USAID 2006).

Decision to Install a Toilet and Family Participation

Toilet installation relies on family roles and responsibilities. Installation requires many decisions: the toilet type, location, design, functionality, time of installation, financing, construction, digging services, and provider of construction material. Respondents reported that the whole family participates in the installation, although, installation is either done or supervised by the father.

Fathers make decisions on durable expenditures such as electronics, motorbikes, and house construction, including house upgrades and animal pens. In the case of flush toilets, installation of latrines requires the male to contact builders, negotiate installation fees, buy construction inputs, oversee installation, dig, and perform masonry work. In the case of simple pits, he manages the work without assistance from a builder and buys construction inputs.

Mothers play a key role in planning for the installation and financing of a latrine. They participate in choosing the model, location, and timing of the installation. Mothers reported guiding the financing and supporting installations by preparing food for builders. They play a key role in the initial decision to install a toilet because they seek medical attention when children experience episodes of diarrhea and because privacy and convenience of a new toilet appeal strongly to them (ESP-USAID 2006). Children participate in discussions regarding the type of latrine. Motivated by school education, children regularly play a role of initiators or catalysts of installations.

3. Market Constraints

Demand for latrines is based on the aggregated decisions of families to install toilets. Sanitation supply includes availability of construction materials and services for installation. To assess enabling opportunities, we consider local rules regarding sanitation, financing, availability of community support, and government commitment to sanitation.¹ These dimensions are used in this report because of their close relationship with market outcomes. However, WSP has developed a more comprehensive framework to assess an enabling environment that focuses on a broader set of dimensions that are necessary for programmatic scaling-up of the initiative. (For further information, see Robinson 2007.)

Determinants of functioning markets are mutually enhancing (Figure 2). If any of these dimensions fails, the total result will be zero, regardless of investments in any of the other two dimensions. When the market is weak, district health officials (as a catalyst) should remove constraints in any of these three dimensions.

Experience from Vietnam and Bangladesh suggests that demand is the most important determinant. If markets function properly, supply will emerge. However, demand is a

necessary but not sufficient condition. Rural sanitation markets do not always function as anticipated. Installers often do not internalize adequate returns from investments in promotion and are unable to bear the risks of developing the market.

¹ The enabling environment consists of nine dimensions that are considered essential to the scaling up, sustainability, and replication of total sanitation and sanitation marketing approaches in rural areas: Policy, strategy, and direction; Partnerships; Institutional arrangements; Program methodology; Implementation capacity; Availability of products and services; Financing and incentives; Cost effective implementation; and Monitoring and evaluation. The document “Enabling Environment Assessment, Assessment area: East Java, Indonesia” (Robinson 2007) provides a detailed assessment of each of these dimensions.



Problem: lack of improved sanitation

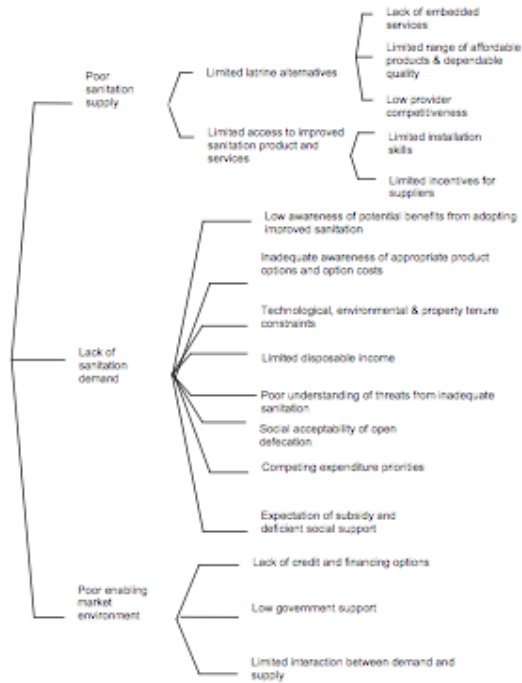


Figure 2: Indicators Influencing Growth of Latrine Markets in Indonesia

There is a big payoff in reducing constraints. Diagnostic analysis should be used to identify market strategies that are responsive and specific to local constraints. Market failures fall in four categories: a weak sanitation supply, a weak sanitation demand, a poor enabling environment, or a combination of these.

Figure 2 integrates planning with monitoring of promotion activities. For the market to work effectively, each constraint must be removed. The following sections briefly explore each of these in detail: demand, supply, and enabling environment.

4. Sanitation Demand

Demand is a key determinant of a functioning sanitation market. Among the reasons given for a lack of demand, however, many do not seem to be supported by the available quantitative data.

Disposable Income

Provincial health officials and sanitarians have argued that low incomes result in widespread river defecation. These health officers rank work impairment and unemployment as the principal reasons for low incomes. Villagers mentioned lack of disposable income as the main factor preventing installation of a septic tank (ESP-USAID 2006).

If this argument were correct, the heads of household of the majority of families living below the poverty line would be unemployed. Second, most people living below the poverty line would defecate in rivers or simply would not own latrines, while the wealthiest portion of the community would defecate in improved latrines.

However, the data reveal a different situation (Figure 3). While low incomes are associated with open defecation, poverty does not fully account for open defecation.

Those living below the poverty line do not necessarily have unemployed heads of households. Many families living below the poverty line defecated in improved latrines and one-third of the richest 40 percent of the population defecate in rivers (SUSENAS 2004).

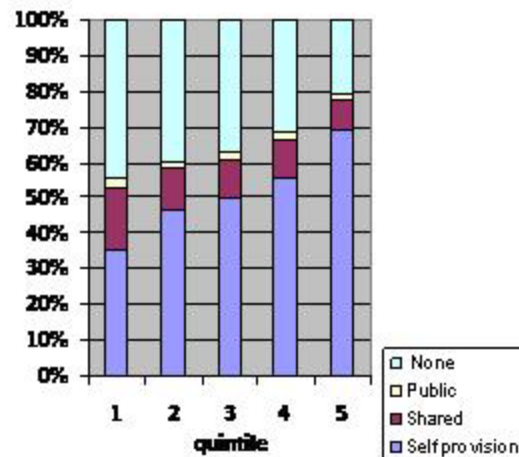


Figure 3: Access to sanitation by expenditure quintile (% of households)

Source: Susenas 2004

Qualitative findings suggest that competing preferences constrain demand for latrines. Preferences have little to do with a family's ability to pay and more to do with the household's choice of expenditures.

Root causes behind these preferences include poor awareness of the potential benefits of latrines; low awareness of latrine designs, models, and other sanitary options; lack of understanding of the health dangers from river defecation; and social acceptance of open defecation.

The cost of basic improved latrines seems affordable for the average family that defecates in rivers. A basic flush latrine cost IDR 250,000 (US\$27). This figure corresponds to approximately 12 percent of the average income per capita and about 3 percent of the average income per family in East Java in 2002 (Selected Indicators:

Social-Economic of Indonesia, July 2006 edition, BPS). Thus, river defecation cannot be caused from limited household expenditures alone.

Space Limitations and Home Ownership

Local sanitarians also blamed river defecation on limited space in the family’s residence that would not allow for the placement of a tank or pit. Other constraints cited include unsuitability of latrines models for flood-prone areas and lack of ownership of property. If these arguments were correct, families practicing open defecation would live in residences with limited space.

Second, the difference in residential space between those families with no latrines and those families with latrines would be substantial. Finally, river defecators would lease and not own their residence buildings.

Indonesia’s living standards survey shows a somewhat different reality (Table 4). Although open defecators live in smaller residences than those defecating in latrines, reports indicate that houses of similar sizes have accommodated latrines. Government housing programs offer residences that are about 60 square meters and include toilets. Ownership levels of residences are high. No evidence of latrine deficiencies in flood-prone areas was found.

Table 4: Selected Housing Indicators by Usage and Ownership of Latrines

	Respondents who self-provided a latrine	Respondents who shared a latrine	Respondents who did not have a latrine
Median of the residence building area (m ²)	72**	60**	55
Home ownership (percentage of households)	95.1**	88.8**	95.0

** The reported differences between self providers and sharers and those having no latrines is significant at least at the 5 % level
Source: SUSENAS 2004

The size of the residence building varied significantly across segments in 2004 (SUSENAS 2004). Self-providers had more space than sharers and open defecators. Median values of the residence area in 2004 were 72 square meters for self-providers, 60 square meters for sharers, and 55 square meters for open defecators. Thus, the median area in a residence building for self-providers was 31 percent higher than the median value of the area in a residence

building for open defecators. WSP should further understand the significant correlation between smaller residences and open defecation. Efforts to promote installation among these families may prove futile. The team should investigate whether technical improvements may allow adequate toilets for small spaces to place a tank or pit, or whether family-shared strategies can deter open defecation.

Renting is low. More than 95 percent of open defecators owned their homes in 2004

(SUSENAS 2004). Ownership rates ranged from 78.9 percent in the case of sharers to 99.9 percent in the case of self-providers. About one-fifth (20.9 percent) of sharers were renting the residence building in which they lived, and 69 percent of open defecators lived in their parents' residence building.

Awareness of Benefits

The evidence suggests competing preferences result from low awareness of benefits from defecating in latrines and latrine models, incorrect understanding of health dangers from river defecation, and social acceptability. Qualitative interviews revealed villagers' satisfaction with river defecation and poor awareness of latrine models and benefits. If individuals were unsatisfied with river defecation, they would have searched for alternative latrine options.

Satisfaction

Most FGD participants expressed appeal for defecating in a latrine. However, none of them expressed discontent with open defecation. Several respondents said that river defecation was socially acceptable. Satisfaction with open defecation was strongly associated with availability of water for anal cleansing. Respondents were reluctant to substitute river defecation for alternatives that lacked running water.

Respondents without latrines reported increased preferences for rivers, followed by

irrigation canals, streams, , neighbor's latrines, and, lastly, backyard defecation. Preferences were based on proximity, water availability, and social acceptance. In addition to the reported advantage of river defecation for convenience for anal cleansing from flowing water, respondents reported that river defecation was an odorless, effort-free, brief, and inexpensive practice.

There is a clear opportunity to drive villagers' preferences from interest to strong demand for latrines and to transform latrines from an unessential good to a necessity. However, alternatives that do not offer water for anal cleansing are unlikely to outweigh the satisfaction from river defecation.

Relative Benefits of Defecating in Latrines

Respondents expressed interest in practical and social benefits over health and environmental benefits. Social benefits included modernity, privacy, safety, and convenience. Some respondents made reference to the advantage of septic tanks to prevent contamination of drinking water from wells.

A few respondents mentioned a latrine would better address children's needs and allow the family to host guests with dignity. Table 4 summarizes some of the relative benefits and drawbacks of river defecation versus improved latrines.

Table 5: Main Advantages and Disadvantages Reported about River Defecation and Improved Latrines

	River defecation		Improved latrines	
	Positive	Negative	Positive	Negative
Convenience	<ul style="list-style-type: none"> • Ease and accessibility • Avoidance of fetching water for flushing • No queues as when using neighbors' latrine, although queuing is needed when river defecating • Averting unpleasant smells • Inexpensiveness 	<ul style="list-style-type: none"> • Exhaustion when the river location is far • Time pressure when river, irrigation canal, or stream is in densely populated areas. • Unfriendliness to children, especially at night or when river is distant - during the dry season 	<ul style="list-style-type: none"> • 24/7 access, especially at night • Enhancement of property value • Briefness • Secured proximity 	<ul style="list-style-type: none"> • Regular efforts for cleaning and maintenance • Efforts to install the latrine • Time cost of fetching water for flushing and cleansing (if water is unavailable at the latrine site) • Costs of material and installation
Comfort	<ul style="list-style-type: none"> • Difficulty of squatting if sick, old, or pregnant 	<ul style="list-style-type: none"> • Discomfort of nighttime or rain time defecation • Discomfort of muddy paths and murky water 	<ul style="list-style-type: none"> • Enabled longer stay • Privacy 	
Safety	<ul style="list-style-type: none"> • Avoidance of potential drinking water pollution • Reduced exposure to feces when running water carries the feces away 	<ul style="list-style-type: none"> • Threats from strong river currents, especially during the rainy season • Vulnerability to threats from snakes and other wild animals. • Difficulty of rough terrain when walking long distances at night. • Exposure to pollution from industrial effluents such as chicken processing, tofu manufacturing, and concrete factories 		<ul style="list-style-type: none"> • Threat of placing the tanks close to drinking water source when space is limited
Social acceptance	<ul style="list-style-type: none"> • Evading disturbance of neighbors with unpleasant smells when sharing 	<ul style="list-style-type: none"> • Embarrassment in front of guests of unavailability of latrines • Exposure of female intimacy when women and girls defecate in rivers 	<ul style="list-style-type: none"> • Modesty of wives and daughters • Civilized image and prestige when hosting visitors 	<ul style="list-style-type: none"> • Social sanctions when preventing neighbors to use the latrine

Awareness of Latrine Models and Costs

Two common problems arise from incomplete information of latrine choices. First, potential customers overestimate the cost of latrines. Thus, several open defecators are deterred from installing a toilet since they perceived they cannot afford them. Villagers estimated that improved latrines would cost in the range of IDR 2–3 million, six times the estimate for a basic pour flush latrine. A source of the problem was the misconception that only septic tanks are improved latrines. Second, families reportedly have chosen wrong models, resulting in bad experiences. One example comes from a group of villagers living in a relatively dry area who installed flush toilets (UNICEF) When water became scarce, these families had to adapt the air trap of the flush pan in order to operate it as a dry pit latrine. Installing a flush system proved to be an expensive option that performed poorly when the water conditions changed.

Awareness of Threats from River Defecation

The level of knowledge about health practices and sanitation was unequal among respondents. Many villagers defecate in rivers, clean with water and without using soap, and tolerate children defecating in river, yards, ditches, drains, and streams. Hand-washing after defecation is rare.

Many families hold erroneous beliefs about hygiene and safety. Some sample comments include the following: “water cleansing is enough to get rid of germs”; “the flow of rivers and streams will take care of germs after defecation”; “if it does not smell, it does not pose health threats”; “children’s

excreta contains less germs than adults feces”; and “diarrhea is caused by ingesting spicy or raw food and not necessarily through contact between humans and feces.”

Social Acceptance

Social norms exert important influences on defecation behavior. Social acceptability for open defecation reduces demand for improved latrines. For example, a few respondents indicated that parents encourage open defecation. Because norms are poor, parents deter children from defecating appropriately. Open defecation is socially accepted and common. One respondent mentioned his village head publicly prohibits river defecation, but few villagers comply with the ordinance.

Villagers reported that defaulting on a loan results in greater social disapproval than river defecation. Some villagers stated money for smoking is more important than money for latrines. Women condone tobacco expenditures as a reward for a husband’s hard work. Individuals mentioned other social norms that support open defecation, such as the preference to not be seen carrying water from the well to the latrine. In addition, the community allows individuals to defecate anywhere, as long as it is not near private property.

Expectation of Subsidy

International experience shows that expectation of a subsidy curtails demand for latrines. However, respondents showed little evidence that they expect subsidies, although health officers running district hygiene programs were giving hardware subsidies. This information is further discussed in the section on enabling environment.

5. Sanitation Supply

The assessment does not point to a deficiency in supply as a reason for low use of latrines. However, as described more fully below, the supply of improved products and services could stimulate demand.

Latrine Alternatives

For one-third of the villagers, benefits of river defecation outweigh any costs (SUSENAS 2004). Satisfaction with defecation is strongly associated with water availability for anal cleansing. Respondents are reluctant to change from river defecation to any alternative that lacked running water. Thus, latrine options need to consider water availability even if cleansing occurs in places other than latrines. Proximity to water may pose the greatest challenge in satisfying needs of potential customers.



Unimproved pit latrine with plastic “walls” exposed to flies, Jombang district, August 2007

Most of the pit latrines built in the surveyed project areas had no proper ventilation system, dark settings, or fly nettings to prevent insects (Figure 8). Reportedly, neither tanks nor pits of latrines walls are lined, even in areas with sandy soils. Finally,

slabs surfaces are neither durable nor impermeable. However, villagers and sanitarians are unaware of these problems. The most common reported problems are water shortages in the dry season and back-flushing during the rainy season.

Access to Products and Services

Competence and competitiveness of providers determine availability of quality services. If demand is strong, providers are known to respond efficiently. Reportedly, qualified masons are available in East Java. However, several respondents and sanitarians expressed concern over the level of masonry skills available for installation of flush latrines. Most installers are neither specialists in sanitation masonry nor aware of simple yet improved latrines. Sanitarians agreed that capacity building of installers would be useful; however, few of them thought training installers would be economically viable.

Sanitarians mentioned that increased density of construction workshops and vendors of sanitation materials would stimulate the latrine market. Many of these workshops already exist and provide basic services. For instance, prior to installation, villagers buy cement, bricks, iron, and sanitary pans. A few vendors offer transportation to the installation site included as a mark-up fee in the price of materials. However, bricks are not regularly offered at these stores. Purchase and delivery of bricks is offered for an extra fee. None of these stores offered information about installation. Most payments for sanitation material are made in cash, by either the owner or the commissioned installer.



Concrete pit latrine with traces of previous use, Megaluh district, August 2007

Workshops of pre-made concrete materials could become solution centers under the concept of one-stop shops. These solution centers could offer an array of relevant

services such as financing, transportation, tools, installation, sludge removal and advice about latrine models. Villagers said that rental of tools would be useful. These vendors could serve as promotion centers, educate self-installers, and sell inexpensive materials such as coated slabs, vent pipes, and fly nettings, which would increase customer satisfaction. Villagers are likely to install simple latrines, such as pit latrines or even certain models of flush latrines, without the assistance of a professional installer. For self installations, solution centers can fill technical gaps and offer useful guidance.

6. Market-Enabling Environment

The third necessary component for sustained adoption of sanitation is the enabling environment, including availability of financing, government support, and the interaction between demand and supply.

Microfinancing

Findings on the availability and relevancy of microcredit programs were mixed. Although several sanitarians and representatives of community organizations spoke of the benefits of microcredit programs, most respondents declared no intention to borrow funds.

Some FGD participants did not know about sources of microfinance. Lack of awareness could be a problem of limited credit supply. However, it seems a problem of lack of demand for financing services. In fact, many villagers declared they would not borrow money for installation of toilets but rather would borrow for the Muslim celebration of Lebaran. Another example came from a microcredit program run by the Family Welfare Movement (PKK) that allocated IDR 200,000 per family in loans. None of the money was used for installing latrines. Most loans served as investments for small enterprises, including livestock, tools, and vehicles. Unlike a latrine, investments of this type generate cash flows to repay the loan principal and interest.

Women's Self-Help Savings Groups

Self-help savings groups run by women, known as Arisans, are an alternative to microcredit programs. These groups are

common and run as joint-liability programs. They allow for screening of reliable group members, monitoring frequent capitalization, and enforcing repayment. Social capital motivates saving behavior and addresses the issues of adverse selection and moral hazard² inherent to joint-saving schemes. In East Javanese self-help groups, women take turns to use the proceeds of a common fund. Capitalization of these funds is done weekly and nomination for the user takes place through a lottery. Some villagers

² Credit is an inherently risky business for lenders because of asymmetric information—borrowers know more than lenders do about how willing and able they will be to pay back a loan. If lenders had perfect information about borrowers, they could charge each borrower the interest rate appropriate to their level of risk. Because they don't have perfect information, they can only charge one interest rate. This causes a problem of adverse selection: the lender would like to charge a high interest rate in order to make more money, but borrowers who are poor credit risks may be the only ones who can afford to take out loans at the going interest rate because they have no intention of repaying them. Another problem among borrowers who obtain loans is the problem of moral hazard, which may arise after a loan is given if borrowers are induced to act more recklessly than they would if they were dealing with their own money (McCullough 2008)

expressed doubts about repayment. Effectiveness of self-help groups depends on saving rates, number of members, and skills of the leader.

Savings Rate

Several villagers reported IDR 2,000 would be a reasonable amount for weekly contributions. Assuming no interest rate bearing from savings, 10 members, and a latrine cost of IDR 300,000, the rate of installations would be low, with a latrine installed every 15 weeks. On average, a member of this self-help group could expect to install a latrine in 18 months. (The first member would install a latrine before the fourth month, but the last would do so after

2 years and 9 months.) In contrast, a contribution of IDR 6,000 per week would allow members to install a latrine every 5 weeks (Table 5). A member of this group would expect to install a latrine within the first 5 months, while the last one would wait a year. The latter rate is more appropriate as installations are feasible and less exposed to default risk during the life of the scheme. Assuming four members per family, a weekly contribution of IDR 6,000 represents between 3 and 5 percent of the weekly expenditure per family of 2002 for East Java (Selected Indicators: Social- Economic of Indonesia, July 2006 edition, BPS).

Table 6: Three Scenarios for Latrine Installation under Self-Help Saving Groups

Weekly contribution (IDR)	Frequency of installations	Expected time to installation per family	Expected time until last installation
2,000	Every 15 weeks	1 year and 6 months	2 years and 9 months
4,000	Every 8 weeks	8 months	1 year and 5 months
6,000	Every 5 weeks	5 months	1 year

Members

The size of the group should be small enough to encourage effective monitoring and enforceability. We assumed 10 members per group in the reckoning above. If fewer members were in a given group, leverage would be lost. Accountability to the rest of the group dilutes as the group increases. Conventional knowledge from microlending suggests 8 to 10 women per group is optimal.



Women from the Family Welfare Movement ranking their toilet preferences during focus groups, Probolinggo district, August 2007

Leaders

Effectiveness of the group depends on leadership. The leader is crucial for coordination, monitoring, and follow-through. Previous experiences suggest members default on contributions when leadership is weak. An ideal leader is the wife of the village head or the deputy head. These women would encourage strong participation and discipline.

Government Support

Local governments allocate few resources for sanitation and invest them ineffectively. The district health department counts with few full-time sanitarians at the district and

sub-district levels. However, the budget of local health departments is low. Outside of infrastructure, expenditures in health and hygiene are slight; health and hygiene investments represented less than 1.7 percent of the national health budget in 2006 (World Bank 2007). Officials from Jombang district were not convinced of the association between poor sanitation and prevalence of diarrhea. Their response to sanitation was conventional. Few of the decentralized funds were allocated for preventive sanitation expenditures. Health services, vaccination programs, and other curative services represent how the bulk of funds are spent.

The investment strategy to improve sanitation includes expenditures in schools latrines and targeted subsidies (*Stimulasi*) for selected families to pay for construction of septic tanks. Officials allocated one-third of the funds for targeted subsidies during 2006. Prospect beneficiaries had to express interest and to prove water accessibility. Mass mobilization and piloting of projects were two additional features of the subsidy program. Officials did not appraise performance of these expenditures, although reports indicate school latrines remain in use.

The annual average expenditure of the targeted subsidy program for the past three years was IDR 42.5 million (US\$4,270). The average expenditure per family subsidy was IDR 280,000 (US\$31). At this rate, 152 families benefited each year. This strategy cannot lead to total sanitation. Jombang needs 120,000 new latrines to reach 100 percent sanitation. It would take district health department more than 2,000 years to subsidize the whole district, clearly an impossibility. Although officials adhered to the national guidelines for environmental

sanitation, which covers pit latrines, the subsidy program exclusively promoted septic tanks to avoid families reverting to open defecation when water is unavailable.

Interaction between Demand and Supply

We did not find evidence of unmet market demand. However, promotion could increase the rate of latrine installations. Uninformed customers would benefit from discussing options with informed installers. Village masons are available and known in villages. Sanitarians could encourage contacts between potential customers and installers during promotion meetings and CLTS triggering in villages.

Contacts between installers and potential customers were successful in the sanitation marketing experience in Vietnam. Sanitarians introduced qualified installers to potential customers during promotion meetings. At these meetings, accredited providers displayed catalogues with several latrine options to customers. Catalogues targeted different preferences and budgets. Potential customers could request direct price quotations, set up appointments, and request visits for technical assessments. Our estimates indicate that each village in East Java accommodates 6 masons servicing about 600 households. The market potential for installations and upgrades is 360 improved latrines per village.

7. Roles and Responsibilities

This section assesses the role that the private sector, Water and Sanitation Program and government currently play, as well as potential roles they could take on. It also suggests ways that consumer preferences and other factors could be segmented for effective promotion and targeted with improved products.

Private Sector

The private sector has clear strengths in installation, retail, and distribution of sanitary materials; manufacturing of cement rings and spare sanitary parts; and servicing and operating latrines. Local installers have the ability to quickly respond to rapid demand increases. Masons have long-term capacity to participate in the market, given sufficient financial returns. However, rural installers have limited motivation and tolerance for risk. They have shown limited ability to innovate, adapt supply to the needs of customers, and promote their skills. In addition, installers operate at a modest scale, often with limited financial capacity. Installation of latrines yields modest revenue and margins for them. Latrine installers operate in a fragmented way. In economic terms, this fragmentation implies that a subdivided pool of players experience coordination externalities: in other words, they cannot coordinate marketing efforts or obtain benefits from scale. They have minimum marketing expertise, latrine innovating capability, and quality control.

Water and Sanitation Program

The Water and Sanitation Program (WSP) has the ability as a catalyst to mitigate risk

for installers, stimulate demand for latrines and consistent use, and encourage local governments to mobilize communities and support change. WSP has the ability to coordinate supply chains and draw from expertise in key sanitation disciplines, including marketing and quality assurance. WSP can stimulate improvement initially, but in the long run, communities and the local governments will take over.



Girls expressing their preferences on the floor, Jombang district, August 2007

Local Governments

Local governments must understand what constrains the latrine market. When information fails, governments should develop hypotheses about the root causes of the sanitation problem and update them as information becomes available.

Governments should refrain from directly servicing families. Its strengths are in mobilizing communities; co-financing hygiene promotion, including airtime on TV

and radio; warranting service quality; coordinating capacity-building of installers; facilitating contact between customers and installers; and monitoring progress of hygiene improvements.

Table 6 summarizes proposed roles and responsibilities of these three groups of stakeholders in sanitation marketing.

Table 7: Roles in the Management of Latrine Supply Chains

Value Chain Component	Recommended Private Sector Role	Recommended GOI Role (short term/long term)	Recommended WSP/Catalyst Role (short term/long term)	Rationale	Recommended Private Sector Role	Recommended GOI Role (short term/long term)	Recommended WSP/Catalyst Role (short term/long term)
Development of latrine product range (sanitation ladders)	Low Link with supporting local governments to provide market feedback on customer requirements and effectiveness of development initiatives. Improve installation and processes to increase profit margin.	Medium/High Performing product diagnostics according to local conditions to meet local demand Adaptation of product range to local conditions	High/Low Invest in product development to increase product demand and support quality assurance programs. Investigate appropriate product options to increase overall adoption and size of market and to attract new customer segments	Installation, servicing, operation and maintenance Financial returns from investments in each target product segment and marketing are insufficient to attract private sector installers, distributors or manufacturers to invest in this part of the value chain. Indonesian product and service providers do not have the skill set and financial capacity to invest in product development.	High Perform direct service delivery ensuring choice availability for each target segment High Manufacture key sanitary material and spare parts and participate in product improvement programs.	Low Monitor customer satisfaction at the local level and provide feedback to manufacturer when applicable.	Low Consumer test potential market improvements such as cement rings, sanitary pans with standard installation instructions and branding. Kick start the manufacturing chain by supporting initial consumer tested improvements (i.e., mold for a new design of sanitary pans).
Quality Assurance	Low Participate in accreditation programs and retail network educational programs to support government developed quality assurance programs.	Medium/High Engage local sanitarian to certify installation meets consumer and environmental standards.	High/Low Facilitate comprehensive quality assurance program attacking the issue of appropriate standards and consumer satisfaction at multiple points along the supply chain.	Initial involvement of a catalyst is critical given limited government infrastructure to protect new consumers from unimproved design of existing distribution networks and economies of scale.	High Distribute the product to take advantage of existing distribution networks and economies of scale.	Low Ensure efficient distribution of key sanitary material and coordinate sufficient stock availability.	Low Develop the existing distributor network and link manufacturers to approved distributors. Distribute the product to “insufficient”

Value Chain Component	Recommended Private Sector Role	Recommended GOI Role (short term/long term)	Recommended WSP/Catalyst Role (short term/long term)	Rationale
			markets where demand does not support the establishment of a private sector network.	demand from CLTS/Marketing
Marketing	Low Utilize marketing materials provided by supporting agents and provide feedback on marketing program effectiveness.	High/Low	High/Low Develop a branding, that supports the quality assurance and accreditation initiatives and the supporting product promotion campaigns necessary to drive market penetration and increased adoption of improved sanitation.	Most private sector agents will not have the expertise, incentives or financial capacity to develop a comprehensive marketing campaign to stimulate demand for improved sanitation.
Sales	High Sell key sanitary material and spare parts in each market where there is sufficient demand. Avoid Out of Stocks	Low	Medium Develop the initial retail network in each market through merchandising, Point of Sale communication and provide the technical education necessary to increase the product turnover of each retailer.	Private sector retailers understand their customer base and are already established in the local market.

Note: Low/Medium/High refers to the expected degree of engagement.

Influence Preferences to Motivate Consistent Use of Latrines

Our summarized findings suggest the following:

- Open defecators feel relatively satisfied practicing river defecation. Satisfaction associates strongly with the availability of running water for anal cleansing.
- Latrine installations rank among the last items in a family priority list.
- Villagers hold erroneous beliefs regarding threats of human exposure with feces and the benefits from hand washing and cleansing with soap. However, the understanding level varies among locations.
- Open defecation, especially river defecation, enjoys social acceptability.
- Practical and social benefits from latrines prevailed over health benefits. Both a rational set of benefit (privacy, convenience, and

safety) and an emotional set of benefit (pride and purity) were identified.

- Potential customers overestimate the costs of installing and constructing latrines, and villagers believe good latrines must have septic tanks. A latrine is “improved” only when it averts contamination of water bodies, prevents direct contact between humans and excreta, confines excreta and makes it inaccessible to flies, and suppresses emissions of foul odors. Despite these characteristics, consistent use and proper operation of latrines hold the greatest relation with appropriate hygiene. Therefore, effective hygiene promotion programs should empower villagers to understand the ways diseases spread and the features that make a latrine “improved.” Local governments should dispel the myth that only septic tanks are improved latrines.

Based on these findings, Table 7 presents the intended change of paradigm that relates with the use of latrines and soap.

Table 8: Summary of Intended Transformation

What the target group currently does	What marketers want the target group to do
<ul style="list-style-type: none"> • They defecate in rivers, creeks and irrigation canals. Soap, for washing of hands, is used rarely, mostly if they practice defecation while bathing. If rivers are far and canals dry up, they defecate in yards or unimproved pit latrines. When water is unavailable, they perform anal cleansing when they arrive home. • They defecate in relatives or neighbors' latrines sporadically. 	<ul style="list-style-type: none"> • They defecate in the latrine they have installed. They don't substitute their latrine for anything, including the river. • All the family makes use of the latrine. The latrine has a water reservoir, a scoop and soap. A family member is responsible for filling the reservoir and ensuring soap is always available.
What the target group currently thinks	What marketers want the target group to think
<ul style="list-style-type: none"> • They would like to install a latrine but it is not an urgent need. They would rather spend these funds on education, social events and religious ceremonies. Besides, defecating in rivers brings pleasure as cleansing results easy. • They have defecated in the neighbor's latrine but they prefer not to disturb the neighbor. These latrines are private property. They don't like to use the neighbor's stock of water in the latrine for cleansing, as this would make their neighbor replenish water more often. They'd rather defecate in rivers. At the end, they think everyone defecates in rivers. • After defecating, they know that running water from the river cleans them thoroughly. Cleansing with soap is not necessary. • They solicit credit only for investments that generate cash. A loan to install a latrine brings risk to their family. 	<ul style="list-style-type: none"> • A latrine would give them privacy, especially for women and girls, who should conceal their intimacy from the eyes of strangers and remain pure. • A latrine at home gives their children the benefit of not traveling long distances. Their children should not walk alone at night. They feel civilized and modern. They feel pride of hosting guests from the city at home. • They think open defecation disgraces their community and it should not be accepted any more. • Water cleansing does not eliminate germs. They know germs cannot be seen through the naked eye. Soap, however, can keep them clean. They can therefore, touch their children, even after defecating in the river. • They did not even realize how fast they saved for installing a latrine. The commitment with the group helped them to keep up with the weekly installments.

Sources: Focus group discussions, personal Interviews, and ESP-USAID (2006).

ownership, stage in the installation process, and preferences or needs.

Segmentation and Target Groups

Segmentation relies on the division of the market into subgroups of potential customers who share similar motivations to install latrines. Table 9 provides an example of four different ways to segment the market, distinguished in terms of usage,

Segmentation increases effectiveness and efficiency of marketing programs, as promotion targets specific groups. Analysis based on these subdivisions enriches planning and monitoring of hygiene

promotion programs. For instance, usage-based segmentation allows district health officers to monitor progress of promotion activities, self-help groups, and community discussions against stated goals. Preference-based subdivision enables installers to

respond to particular needs of a family. Stage-based segmentation lets officials to target specific promotion strategies to transition potential customers from river defecators to satisfied users of improved latrines.

Table 9: Examples of Selected Segmentation Criteria

Usage based	Ownership based	Stage in the installation process	Preference (or need) based
<ul style="list-style-type: none"> • Regular open defecators • Switchers 	<ul style="list-style-type: none"> • Sharers of relatives or neighbor latrines • Owners of private latrines • Sharers of public latrines 	<ul style="list-style-type: none"> • Intention • Planning • Choice 	<ul style="list-style-type: none"> • Flush toilets • Dry pits latrines • Septic tanks
<ul style="list-style-type: none"> • Users of unimproved latrines • Users of improved latrines 			

Note: These stages are defined in *Assessing Sanitation Demand in Ghana: A Behavioral Approach for Designing Marketing Programs*, Marion W. Jenkins and Beth Scott.

Other subdivisions may include income level, poverty, education level, and anal cleansing practice. The project marketing team may choose to conduct analyses based on any of these market subdivisions.

Targeted Messages and Promotion of Latrine Defecation

Installers and retailers promote their services to specific audiences. The choice of ways to convey promotion messages depends on the media habits of potential customers and the impact of these messages on customers' perceptions. The following table summarizes media habits of East Javanese women in several age categories in rural and urban areas (Table 9).



Males pricing latrine models, Lumajang district, January 2007

Table 10: Exposure of Women to Mass Media

	No mass media (%)	Reads newspaper (%)	Watches television (%)	Listens to radio weekly (%)	All three media (%)	Number of respondents
Age in 5 year categories						
15-19	5.5	8.9	74.9	46.3	5.5	956
20-24	3.9	14.4	79.2	41.5	8.8	3,875
25-29	4.5	17.8	80.1	41.8	11.1	5,375
30-34	4.3	18.6	78	40.3	10.8	5,428
35-39	6.2	16.2	75.1	36.1	9.3	5,181
40-44	6.2	12.6	74.7	34.8	7.2	4,581
45-49	7.7	11.2	70.6	31.5	6.3	4,086
Region						
East Java	2.6	12.7	80.8	35.9	7.8	5,367
Residence						
Urban	1.7	23.7	87.4	39	13.6	13,499
Rural	8.6	8	67.1	37.4	5	15,984
Total						
Women	5.4	15.2	76.4	38.1	9	29,483

Note: Exposure to mass media is the percentage of women who usually read a newspaper at least once a week, watch television at least once a week, or listen to a radio daily (weekly) by selected background characteristics.

Source: 2002-2003 Indonesia Young Adult Reproductive Health Survey (IYARHS), retrieved ORC Macro, 2007. MEASURE DHS STATcompiler. <http://www.measuredhs.com>, December 23 2007.

Television and radio captures the attention of individuals in all age categories,

especially respondents in their 20s.

However, rural East Javanese are exposed to

fewer mass media, on average, compared to urban East Javanese. This highlights the importance of community gatherings and direct consumer contact to promote hygiene and installations in rural areas.

East Java has several regional media outlets. Jawa Pos Group, one of major newspaper groups in Indonesia, is based in Surabaya. Surabaya Post is a well-established newspaper with provincial circulation. Television viewing was extremely popular at the time of the survey in early 2002

(IYARHS, 2002-2003), including "JTV" from Surabaya and those in the Malang

areas: Batu TV, Agropolitan TV (ATV), Malang TV, and Mahameru TV (East Java provincial Website, East Java <http://www.jatim.go.id/>).

Some of the main findings from the field visit related to media and promotion are summarized in Table 10. These findings come from personal interviews and should be interpreted cautiously as they may only be valid in the surveyed areas. At the time of writing this report, the WSP country team in Indonesia had contracted a marketing research firm to collect more accurate data on media habits.

Table 11: Media and Promotion in Rural Areas

TV & radio	<ul style="list-style-type: none"> • Females watch TV programs aired from 7 to 9 pm. Most of these programs feature films, soap operas, quizzes and talk shows. • Most East Javanese favor shows featuring artists from Jakarta.
Radio	<ul style="list-style-type: none"> • A popular practice entails dedicating songs to family and friends through local radio programs. Villagers purchase greetings broadcasts through vouchers. A voucher costs about IDR 1,000 and is valid for 4 songs.
Print	<ul style="list-style-type: none"> • We found through the field visit that print communication, including posters, were not effective to promote hygiene or the installation and use of latrines. • Official health departments currently place posters in local health posts, hospitals and other government buildings. Posters, however, raise awareness of local events and village gatherings effectively. Thus, these are ideal for awareness building, especially for community gatherings and local events. • Effective printed material display local languages and use bright colors.
Local performances	<ul style="list-style-type: none"> • Respondents signaled mix messages regarding local performances. A few villagers revealed local orchestras ‘dangdut’ catch people’s attention effectively but folk performances fail to engage villagers. Other villagers, in contrast, stated folk performances entertain villagers successfully. • Local performances mixed with competitions that feature local villagers are useful to encourage participation. • A few villagers suggested hiring local artists to incorporate hygiene and sanitation lyrics into popular melodies
Direct-to-consumer	<ul style="list-style-type: none"> • Participants of FGD stated product demonstrations would attract the masses. (Latrine Demonstrations convey visual concepts to introduce new features and support

contact

product claims)

- Demonstrations guiding installation and construction would help villagers to self-install latrines and to gain confidence when hiring a mason.
- Demonstrations in local languages would reach wider audiences.
- Villagers stated interest in watching videos of hygiene and sanitation (Visuals can effectively convey messages through animations, including complex concepts such as a fecal-oral contamination route).
- Villagers stated that health cadres and local leaders could visit houses of villagers to advise and instruct on sanitation.
- Teachers, local politicians and district-level health personnel represent ideal facilitators to support face-to-face hygiene promotion discussions at village gatherings. (The project can support content and structure of these discussions. Local leaders could combine village-level discussions with CLTS triggering and village meetings)
- Villagers reported interest in promotional supplies including T-shirts, key holders, piggybanks and caps
- Tournaments ascending from village to subdistrict level and from subdistrict to district level would create interest among villagers. Tournaments could include songs and poetry and combine product demonstrations.

Source: Focus group discussions, August 2007

Improved Variety of Latrines Models and Customer Responsiveness

According to the ESP-USAID study, “Several respondents reported the ideal sanitation facility is a squat WC in a small building, either inside or outside the house, depending on their particular preferences. Improved sanitation was associated with the gooseneck water seal feature, and the availability of a bucket or small water tank filled with water beside the WC and a dipper within reach. Many of them mentioned that an improved facility should look clean (or not dirty), and should not smell. Well working drainage system and a ‘comfortable size’ of the facility were also mentioned as ideal features” (ESP-USAID 2006).

Improvement of the latrine product line increases value for potential customers. These improvements need guidance from customers in order to respond to their

preferences. Understanding preferences of potential customers and ways of experimenting to improve performance of latrines in terms of design, materials, and affordability can reward installers well. In well-functioning markets, installers invest in understanding customers and improving their product line. The rural latrine market, however, prevents installers from investing because of small returns and fragmentation of provision. The role of the catalyst, therefore, is to take over strategic investments such as expanding the product line on behalf of installers, masons, and villagers.

Polypropylene Pans from Pune, India

An example of a potential improvement in latrines comes from the “missing” niche of plastic pans in East Java, an opportunity that is worth exploring. Qualitative assessments suggest plastic pans are the “missing middle item” in the line-up of squatting pans, placed between glossy ceramic containers and coarse concrete pans. Estimates indicate polypropylene pans lie between the two in

terms of pricing and performance, surpassing the concrete version in ease of cleaning yet at a higher price, and right below the impervious ceramic product that has a much higher cost. WSP Indonesia explored a similar pan option made of fiberglass. However, reports from the Pune producer suggest that polypropylene products outperform the fiberglass versions.



Curious retailer exploring the unusual polypropylene pan, Madura district, January 2007

Another concern relates to the willingness of retailers to sell innovative options at their stores. A stock of an unknown squatting pan product represents a risky investment because of slow turnover and costs of unsold product inventories. During the field visit, we introduced the polypropylene version to

a rural retailer of hardware tools and construction material in Madural. He hesitated at the opportunity. The retailer argued against the unusual design, which featured a steep gradient to allow for water efficiency. The retailer anticipated these pans would be difficult to install and require excessive amounts of construction material. He declared his unwillingness to stock the product before it becomes “popular.” However, he recognized that a varied supply of pans featuring different designs could widen the spectrum of potential customers. This is a clear example of a small vendor intimidated by market risk. WSP has the unique advantage to mitigate learning risk on behalf of an in-existent and willing private sector. Small retailers operate with thin profit margins. This experience is also indicative of information asymmetries between WSP and individual retailers of the untapped market potential.

Improved Latrines

According to Unicef, “In places where water is available, the ideal situation is the existence of a water reservoir, a tap with running water (*Mundi*), and a scoop to flush and wash after defecation. In places where water availability throughout the year is irregular, the ideal situation is to have a bucket with a scoop. The bucket plays the same function as the reservoir. Important to highlight is that despite some people own sanitation, they still defecate in river or streams.”(UNICEF)



The “top of the line” ceramic closet, featuring air-trap to prevent foul smells, Megaluh district, August 2007

Latrines present attributes to potential customers, including functionality, location, design, material, and performance. Findings related to these attributes include the following:

- **Functionality:** A few villagers anticipated they would place a bathroom within the building that houses the latrine. Other villagers, however, anticipated the chosen model would not work with a bathroom, as family members would have to queue to use either the bathroom or the latrine.
- **Location:** The installation site would be chosen to avoid disturbing the neighbors. The location depends on the residence space, and whether the bathroom building would house the latrine in order to make best use of the limited space of the house.
- **Design and material:** Villagers favored the ceramic “closet” (referring to the squatting pan). Pans made of wood, are brittle, coarse and therefore costly to maintain. Ceramic pans are easy to clean. Ceramic is strong and durable.
- **Concrete and reinforced ferrocement:** iron bars and steel strengthen concrete structures. Several villagers stated cement lasts less, therefore reinforcement makes a difference. Villagers were prepared to pay more for better quality sanitary parts. A few villagers spoke of the attractiveness of wood and bamboo because of their availability and affordability.
- **Performance:** Most villagers favored goose-neck water traps because of their capacity to prevent emissions of foul smells.
- **Service needs:** A few villagers favored latrine designs with simple installation. Such models would not require installation from a qualified mason.

Competitive supply of latrines encompasses awareness of customer values, concepts of needs, and solutions to existing problems. WSP promotes affordability, quality, choice, flexibility, and responsive design. Table 11 links these values with marketable solutions for potential customers.

Table 12: Customer Values and Latrine Solutions

Values	Concepts	Problems	Solutions
Affordability	Purchasing power of end users	<ul style="list-style-type: none"> • Reduced disposable income • Limited access to savings and unwillingness to request credit 	<ul style="list-style-type: none"> • Affordable design • Upgradable product range • Credit, savings & retail finance schemes
Quality	Access to construction inputs of sanitation options Masonry and servicing know how	<ul style="list-style-type: none"> • Reduced line-up of sanitary products • Limited access to easy to use installing material 	<ul style="list-style-type: none"> • Pre-made certified sanitary material • Certification of masonry, disludging and emptying service skills (cement mixes and casting skills) • Franchising solutions • Quality control and supporting performance guarantees
Choice and flexibility	Construction know how	<ul style="list-style-type: none"> • Limited expertise in installation of water-borne latrines • Limited promotion know how of small concrete product producers 	<ul style="list-style-type: none"> • Introduction and adaptation of new designs & materials to expand the range of options • Point-of-sale education and informed choice delivery to end-user and installer • Creation of end-user & supplier interface to promote market information exchange (and subsequent follow up linkages)
Responsive design that meet local life-styles and needs	Local housing systems, access to natural resources and the environment	<ul style="list-style-type: none"> • Beliefs and perceived social norms • Informal training / constructions traditions • Limited livings spaces • Floods and unreliable year-round access to water 	<ul style="list-style-type: none"> • Provision of a varied range of latrines for several user groups • Enabling availability of water for anal cleansing • One-stop-shop: Integrated provision of product and services (pre and post installation)

Popular Latrine Models

Popular latrine models are briefly described in Table 12. Most of the installations

correspond to improved versions of simple pour flush latrines and ventilated pit latrines. The descriptions are based on the Guide to the Development of On-Site Sanitation (WHO 1992).

Table 13: Popular Latrine Models

Type of Latrine	Main Model Variants	Main Advantages	Self-Help Compatibility	Cost	Target Group
Pour-Flush Discharging into a Lined Pit or Tank	Pits can be off-site or on-site. The latrine stands over either single or double pits and may or may not include leach pits.	Offers fly control and absence of smell, and contents of the pits are invisible. Provides the convenience and status of a WC (especially if the latrine stands over on-site pits). The latrine can be sewer upgradable and its superstructure can become a permanent solution. However, requires regular access to emptying services every 3–5 years, and the sludge needs careful handling	Requires local craftsmen skills	US\$30–50	Appropriate for washers and families who live in low density populated areas with continued access to water supply
Pour-Flush Discharging into Septic Tank	Charge disposed either into septic tank or into aqua privy, depending on water availability and incomes.	Offer advantages of pour-flush but, in addition, the tanks partially treat the sewage and sludge. When pits are lined, emptying of solid sludge is less frequent. Aqua privies do not need piped water on-site and cost less than septic tanks. Multiple families can share tanks when space is limited.	Local craftsmen skills required. The latrine needs availability of a vacuum tank, or any other appropriate equipment for emptying.	US\$70–100	Suitable for washers with ample access to water supply and living in low-density housing. Septic tanks require more than 0.5-2 liters for a single flush. Septic tanks suitable only where the soil is relatively permeable.

<p>Ventilated Improved Pit (VIP) and Pit Latrine with Slab</p>	<p>Vent pipes and single or double pits</p>	<p>The latrine allows for dry operation, but because most East Javanese use water for washing, this technology is unpopular. The VIP reduces smell and flies. The unventilated version allows immediate access to sanitation for low-income groups. Technology very simple to operate. All dry systems are off-site, outside the house, and they offer no sludge treatment.</p>	<p>Allows for self-installation</p>	<p>US\$20-70</p>	<p>Suitable for wipers (not for washers) without reliable access to water supply. Suitable for low-income populations and households that are self-installing sanitation. Not suitable for densely populated areas (because of relocation of the pit once full)</p>
--	---	---	-------------------------------------	------------------	---

Other relevant points about selecting from among latrine options:

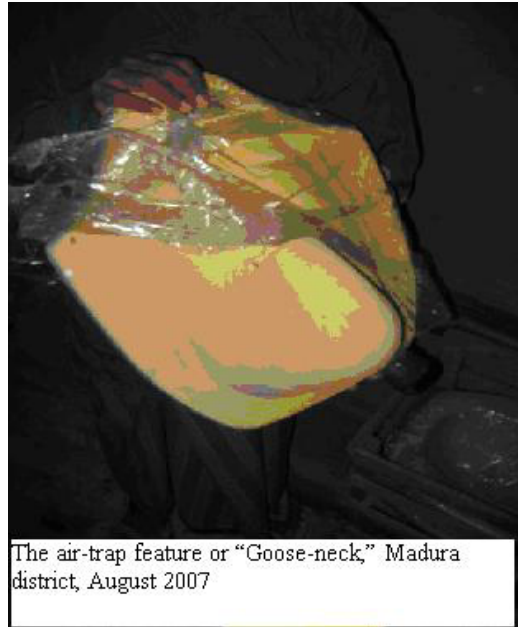
- Composting latrines: Field records indicate composting latrines are not popular in East Java. The composting latrine offers versions with one or two vaults. Adding organic material to feces such as straw and vegetable waste supports the composting process. These latrines can be constructed without experts. These are relatively inexpensive models US\$40-70



Four-flush latrine with air trap and ceramic pan without reservoir, Probolinggo district, August 2007.

- Latrine upgrades: Most unimproved pit latrines in the visited areas would benefit from increased availability of slabs and from impervious platform surfaces. When water is available, squatting pans should be water-sealed. If soils are sandy, pits need lining.
- Defecation benefits from proximity of hand-washing facilities to latrines: Because of the water based anal cleansing habit of Javanese, the availability of water reservoirs (Mandi) in latrines provides comfort.

Fly-screens should be present in all vent-pipes and VIP need to be dark to avoid flies inside the latrine.



The air-trap feature or "Goose-neck," Madura district, August 2007

- Finally, de-sludging and emptying latrines need regulation for disposal and adherence to safety procedures.

Increased Availability of Masonry Skills for Improved Latrine Options

We define a provider of sanitation services as someone who installs and maintains latrines for another person, group, or entity. He or she provides a service, not an asset or facility, has a business or service focus, even if not full-time, and provides ongoing, not just occasional or incidental service. Providers may include installers, masons, bricklayers, drain-layers, carpenters, plumbers and other artisans who perform work related to sanitation. These workers often have experience in construction of houses and other buildings. Special skills are required for the construction of water-borne latrines and associated works. Sanitation

suppliers may include suppliers of pre-made material, construction inputs and sanitary spare-parts.

concrete materials and mass-produced sanitary material.

Table 14 provides a brief description of the major types of provider of sanitation services and suppliers of locally made

Table 14: Major Types of Sanitation Service Providers and Suppliers

Type of provider by sanitation product or service	Providers of sanitation services		Suppliers of pre-casted material, construction inputs, and sanitary spare parts		
	Disludgers, pit emptier	Installer/masons, including sub-groups, i) experienced/trained masons, ii) mason apprentices and iii) laborers (i.e. pit diggers),	Producers of pre-casted sanitary products, such as: concrete rings (of several diameters - for wells and pits) Concrete slabs Concrete pans	Retailer of hardware and construction material, including: Ceramic/fiber-glass latrine pans Squat-plates Construction material/commodos	Sanitary product importer and wholesaler
Estimated number per district	60	1,236	60	Small-scale: 120 Medium-scale: 20	
Estimated number per province	1,740	35,844	1,740	Small-scale: 3,480 Medium-scale: 600	1-2*

Notes: A small-scale supplier is a village-level vendor of hardware material or retailer of construction inputs. A medium-scale supplier is a sub-district level vendor/distributor of construction inputs or hardware sanitary spare parts.

Source: Field visits and customer interviews, Indonesia 2007

Most villagers installing simple pit latrines could do so without the assistance of masons. Some FGD respondents mentioned neighbors occasionally help each other, taking turns to build toilets in groups of five. In contrast, few villagers would be able to install either flush latrines or septic tanks without the assistance of a mason. We found villagers anticipate installation of modern toilets would require hiring a construction hand. Villagers reported limited skills to design septic tanks, place pipes and fittings, and construct reinforced structures. Several

villagers spoke of masons taking less time, operating tidier, and incurring less waste than the average self-installing villager.

Villagers declared masons are relative easy to find.

However, FGD participants stated that masons' skills vary significantly. Few village masons have extensive experience in sanitation masonry and none is certified. Latrine installation requires specific masonry skills; as one respondent noted, "A toilet construction worker is not the same as

a normal construction worker.” Thus, villagers recognized that not every mason is capable of building a quality flush toilet. They also recognized that specific sanitation masonry skills are worth more in the market.

The improvement of masonry skills in these communities is an opportunity, provided the market for flush and septic tanks latrines is sizable. Most masons learn sanitation masonry informally. Apprentices assist experienced masons. Junior apprentices start their careers performing the most menial and simple tasks, such as digging, while their mentors perform the most complex ones such as mixing cement and designing the toilets. Because formal training is rare, learning by trial and error and through on-the-job training prevail.



The yard of a pre-made concrete ring workshop, Jombang district, August 2007

The Vietnam experience created a market supply of latrines through a targeted and tailored training program aimed at masons. The program served not only to increase technical and promotion skills of masons, but also to enhance their credentials before the eyes of potential customers.

Several conditions would make such a program valuable in the context of the TSSM Project in Indonesia. First, it could

help local masons address an unmet market need. For example, the program content would allow local masons to offer installation of quality flush latrines at relatively affordable prices. In addition, it could not only allow masons to accurately assess the sanitation needs of the family, but also to promote the benefits of different latrines effectively. Second, to succeed, local masons should value the potential benefit of the training program. Masons should be seriously interested to participate in the program and prepared to absorb the intended improvements of skills. The clearest demonstration of the potential value of a sanitation masonry training program starts with a mason’s willingness to pay for training services. Partial or full cost recovery of training services demonstrates the potential value of these targeted improvements. Finally, families should perceive the value of improved sanitation skills. Evidence of this value arises through increased rate of installations, choice of improved models, and preferences for accredited services. The program would brand skills by either accreditation or by word of mouth, with potential customers learning of the new skills by those families who had installed latrines using the services from accredited masons.

Findings from the field suggest a supply-enhancing program represents an opportunity. Most of the masons interviewed endorsed the idea of masonry training services. Village masons expressed interest in learning skills to manufacture pre-made concrete material, including cement rings and slabs.

In addition, district health officials declared that training programs for masons have potential, provided the instruction promotes water-borne systems with air traps. Officials

stated community members would build dry latrines without the assistance of masons. Thus, training programs need not target masons exclusively.

Accreditation of Skills

We found an accreditation program has the potential to market masonry skills and to establish a standard of installation service. Sanitarians were emphatic about the issue of marketing skills. People in rural areas rely on word-of-mouth and references from neighbors and relatives to adopt new ideas. The sanitarians suggested public endorsement and posting the lists of qualified masons in public places will serve as to market masonry skills.

Vendors of Sanitary Material

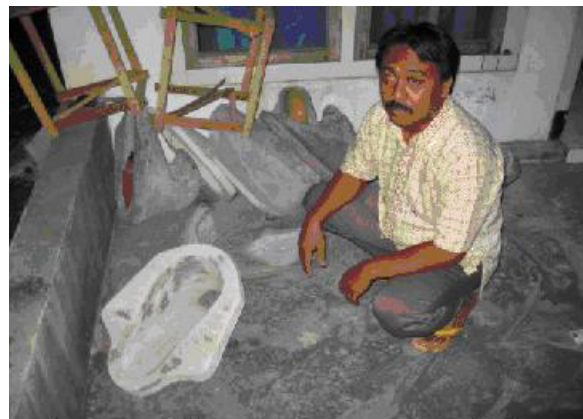
Inputs and materials for sanitation refer to hardware and sanitary materials typically associated with the construction of latrines. Based on field visits and interviews with customers, these materials include

- Locally pre-cast concrete materials, such as pre-made concrete tank-rings, concrete pans, and floor slabs
- Mass-produced sanitary material, such as ceramic squat pans, plastic or fiberglass pans, or toilet bowls
- Other general building materials, such as PVC pipe, thatch, wood, corrugated metal sheets, and iron bars

Other general building materials are often used, but not considered specifically in this report. The use of these materials varies significantly, are easily replaceable, and are often recycled. The field visit instead focused on locally pre-made concrete

materials and mass-produced sanitary materials. Sanitarians suggested retailers of pre-made concrete materials are central to any development plan of the toilet supply chain, including rings, slabs, bowls, and squatting pans.

Vendors of pre-made sanitary are not easy to find. The district sanitarian proposed that the project should increase the density of retailers of pre-made concrete materials in the area. Sanitarians said that the current average is two of these retailers per subdistrict, yet the project could develop these businesses to have at least four per subdistrict.



Producer proud of his pre-made concrete pans with air-trap, Lumajang district, January 2007

Informed Choice and One-Stop Shopping at Point of Sale

Several retailers declared masons and households visit their stores to buy latrine parts. Therefore, one-stop shop and product information (known as informed choice) at vending centers are important opportunities to reinforce informed decision-making and promote convenience. A one-stop shop offers visitors the convenience to buy most latrine spare parts. For example, a one-stop shop could feature “packages” of

construction material for the most popular latrine models (i.e., pour flush), including choices of pans, scoops, pipes, buckets, pipes, and pre-made cement mix for concrete with strong visibility.

Retailers could combine one-stop shopping with informational material and expert advice to enhance the visitors' purchasing experience. District officials could pre-test information and promotional materials to ensure customer appeal and understanding and engage retailers in promotion programs. Retailers could learn of installation and the products from training modules to provide expert advice to visiting customers.

Co-Marketing

District officials will promote the availability of retailers featuring one-stop shopping and informed choice as co-marketing. Co-marketing expands options for self-installers to get expert advice without the need to consult local masons. Co-marketing motivates retailers to adopt one-stop shops and informed choice. Branding one-stop shops and informed choice is an opportunity. The brand may be shaped similarly to HOLCIM's household solutions (Solusi Rumah) as a sanitation solution (see Box 1).

Housing Solutions (Solusi Rumah) of PT HOLCIM Indonesia

A way of transferring project improvements to the local market is through collaboration with the existing private sector. The team explored a potential alliance with PT HOLCIM, a major cement manufacturer in Indonesia, motivated by the opportunity to sustain the effect of strategies. HOLCIM Indonesia runs a sustainable development program called Solusi Rumah.

Solusi Rumah is a package of solutions for the construction of robust, low-cost homes, based on simple, but earthquake-proof systems created in the wake of the tsunami disaster. Holcim's franchisees feature one-stop shops and offer integrated housing solutions, including financing and post-sale service. Although Solusi Rumah targets middle to lower-income families, and TSSM targets the poorest, the potential scope of synergies between Solusi Rumah and TSSM is real, given Holcim's expansion plans in East Java. Holcim has developed standards for quick-to-build, affordable, robust homes to meet the significant nationwide demand for housing, using local resources and avoiding the depletion of local timber. Solusi Rumah provides technical support through key distributors and concrete product manufacturers in order to facilitate the entire process for the end user from initial inquiry, through supplier financing to a finished home, using proper standards in cement-based building materials (Holcim website, www.holcim.com/id).

Some examples of potentially beneficial collaboration between WSP and HOLCIM include: product development for pre-made latrines, franchise expansion, promotion, financing, and customer research. The following table summarizes some of the benefits from a collaborative agreement.

Water and Sanitation Program

- Understand functioning of sanitation supply networks
- Adopt promotion expertise from cement manufacturer to develop distribution channels of sanitation and its related services.
- Improve and expand the range latrine alternatives for rural East Javanese
- Develop the franchise model and expand density of one-stop-shop vendors in rural areas.
- Improve sustainability of project efforts through prompt involvement of the private sector
- Leverage resources and promotion efforts on private investments

HOLCIM Indonesia

- Enhance sustainable development program, Corporate Social Responsibility and affordable housing
- Leverage the extension of Solusi Rumah through the partnership with WSP (to penetrate the market of East Java)
- Expand access to WSP's key partners of the project and other initiatives, including government agencies.
- Improve the sanitation component of Solusi Rumah with investments for demand creation and hygiene improvement from the project.

Availability of Retail Services

Another marketing strategy with potential is the provision of integrated sanitary solutions. Related to one-stop shopping, potential integrated retail services include:

- Expert advice on latrine products such as pans, fly screens, and concrete mix
- Transportation of construction inputs for latrines such as sand and gravel
- Financing of materials
- Accredited installation
- Servicing of pits and tanks
- Rental of tools and molds for self-installers.

District officials should seek to introduce these services gradually because most of them are not currently part of the standard provision of rural retailers. A gradual introduction allows for adaptation and adjustments. Finally, embedded services need to bring in and sustain profits to the retailer.

Management of Inventories

Retailers and potential customers would benefit if inventories of sanitary material are sufficient to meet rising demand. Previous experience in CLTS programs in Indonesia revealed missed installations due to out-of-stocks. Out-of-stocks threaten improved sanitation and frustrates motivated customers. District officials can avoid out-of-stocks by coordinating with retailers when to place orders of sanitary products. Overstocking brings costs for the retailer as well.



Steel rings to shape concrete, Lumajang district, January 2007

Franchising

Findings from this study suggest a franchise scheme can bring together informed choice, one-stop shopping, integrated sanitary solutions, and co-marketing. District officials could include quality control, access to working capital finance, and branding of these concepts. Currently, cement manufacturers develop informal

markets through franchise models as best practice. District officials and project managers would benefit from adopting private sector models and integrating private sector initiatives to the sanitation project. Franchised integrated solutions may include those listed in Table 15.

Table 15: Product and Service Options

Solutions of product options	Solutions of service options	Post-purchase service options
<ul style="list-style-type: none"> • Pre-made slabs with options of custom-made concrete, fiber-glass or ceramic pans • Custom-made improved concrete pans Pre-casted concrete rings of several diameters for lining wells, pits and tanks • Upgradeable sanitation option schemes, with style superstructures • Innovative option designs (Color, texture & shapes) & materials (thatch, bamboo, concrete,) options 	<ul style="list-style-type: none"> • Access to network of certified installers and masonry services • Product information support and Informed choice • Access to product and service finance / differed payments • Access to transportation • Rental of tools & molds (do-it-yourself installing option) 	<ul style="list-style-type: none"> • Certified disludging and pit emptier services • Custom-made upgrades and repairs

Source: Field visits and customer interviews, January and August, 2007

8. Conclusions and Recommendations to Move Forward

Inadequate sanitation practices are widespread in rural East Java. More than one-third of rural families practiced river defecation in 2004 (SUSENAS 2004). Interviews and focus group discussions show that washing of hands and anal cleansing with soap are rare. The use of latrines appeal to most river defecators, although none of them is dissatisfied with river defecation. For these individuals, the benefits of defecating in rivers outweigh using a latrine due to availability of water, proximity of water source, and social acceptability of open defecation. The findings suggest that choice of defecation associates strongly with availability of water for anal cleansing.

Competing preferences and social acceptance of open defecation limit installations of improved latrines, rather than inability to pay for installations or space limitations. Latrine installation ranked among the last items in a family list of priorities. The causes of competing preferences are varied. First, river defecation enjoys social acceptability and most villagers tolerate the practice of open defecation. Second, villagers do not know the dangers of human exposure to feces and the benefits of cleansing with soap. Finally, villagers overestimate the costs of improved latrines, underestimate the benefits of improved pits, and overrate the benefits of septic tanks. Villagers rated social benefits over health benefits for installing improved latrines, with privacy, convenience, reputation, and modesty (i.e., purity and decency) as the most frequently reported motivating factors.

Enhancing latrine installations and improving maintenance services represents an opportunity. However, we found little evidence of supply shortages. Most villagers recognized the value of specialized skills for sanitation masonry, particularly for installing flush toilets. Services to improve installation standards should be economically viable when delivered from experts to masons and from masons to customers. Viable improvements will factor as price markups in installation costs. Vendors supplying integrated solutions such as one-stop shops, expert advice, informed choice, transportation, and financing of installations will be most competitive.

Local health departments would benefit from increased spending in sanitation and improved efficiency of sanitation expenditures. Eliminating hardware subsidies would represent the first step in the right direction. Sanitation strategies should reinforce the social benefits from consistent use of latrines; eliminate social acceptance of river defecation; dispel wrong beliefs related to hand-washing; standardize market information prices and models of toilets; and bring convenience, information, and service to the customer.

Defecating practices, however, vary substantially among districts. The rate of households with no latrines ranged between 5.6 percent and 76.4 percent in the 29 districts in 2004 (SUSENAS 2004). Communities present varied constraints and opportunities in terms of demand for latrines, supply of latrines, and an enabling environment. District health officials should

target marketing strategies to address these three dimensions. Health officers need to identify which constraints bind local sanitation markets and remove them. Market diagnostics, promotion programs, and provision of integrated service solutions can identify barriers and advance tailored strategies that remove these barriers.

Moving Forward

The findings from this field study identify some of the challenges and areas of the project that deserve further attention and carry implications for project managers in terms of strategic direction, staffing, and contracting of marketing.

For sustainable solutions, strategies that only work in theory will not be enough to succeed. Effective strategies to market latrines need to be technically correct, politically supportable, and administratively feasible. Based on these three conditions, the following steps as the way forward are recommended.

Strategies that Enhance Technical Correctness

- *Employ expert advice to develop promotion strategies:* Government health staff currently develops the majority of the promotion material, yet villagers ignore their conventional printed health material. Effective communication needs to be persuasive, engaging, and distinctive. We recommend that WSP contract out design of a state-of-the-art communication campaign to an advertising agency or another contractor with similar specialized skills. The agency should also strengthen capacity of partner NGOs,

local health departments, the family welfare movement (PKK), and community-faith organizations and create communication concepts based on the findings from consumer research and other secondary sources. The promotion strategies should be integrated into CLTS triggering. Likewise, successful triggering mechanisms should inform design of the marketing communications strategy. Both strategies are meant to be mutually reinforcing.

- *Test the strength of convenience, prestige, modesty, and local beliefs as elements of the communication strategy:* The findings suggest that communication concepts should include benefits of privacy, modesty, and prestige because these were mentioned as most relevant during the field visits. In addition, the findings suggest that referring to local beliefs such as harmlessness of children excreta and etiquette of sharing toilets would increase appeal and relevancy of messages. Findings from qualitative research and concept testing should be incorporated into the CLTS triggering methodology.
- *Educate villagers of the threats of excreta and reduce social acceptability of open defecation:* The communication strategy should dispel the wrong beliefs regarding contact and manipulation of excreta. Educational strategies should complement community-led outreach activities and leverage on Community-Led Total Sanitation to reduce social acceptability of river

defection. Because of the strength of CLTS on creating incentives to modify behavior, triggering should be used to reduce the acceptability of open defecation.

- *Test effectiveness of promotion strategies:* The contractor should pre-test the marketing campaign, including commercials, announcements, sponsorships, point-of-sale materials, leaflets, videos, and promotional items to be used by partner agencies to ensure they reflect the desired positioning and a call to action.
- *Invest in developing solutions to address limited residential space and water unavailability:* The SUSENAS survey suggests differences in living space between some open defecators and self-providers. WSP and project partners should investigate and quantify the depth of the space problem in detail. In the short term, unavailability of technical solutions should push for social solutions that build on sustainable sharing arrangements among neighbors. Because choice and satisfaction correlate with availability of water for anal cleansing, motivating the consistent use of latrines should start by responding to this need. Latrines that offer efficient use of water and availability of cleansing water after defecation may be the first step in the right direction. Service standards should be risen to include latrines designs with dark settings, fly nettings, firm understructures and impervious surfaces to prevent vectors, avoid collapse, and facilitate cleaning.
- *Sustain investment early on through private involvement:* The earlier the program involves the private sector, the earlier the catalyst will be ready to withdraw support. Private involvement also generates market feedback loops and brings efficiency to training, installations, and vending. Training of local masons as a business offers long-term sustainability. The project unit should aim at facilitating qualified masons and national-level cement producers to offer workshops to villagers and local masons with full cost recovery. Partial subsidies for demand (i.e., vouchers) might help in situations in which commercial training between masons is not viable. The issue of skills accreditation seems promising and worthwhile for the project to explore. The team should give special attention to marketing new skills and the accreditation standard.
- *Simple transformation of construction inputs would allow for branding and differentiation of sanitary products:* Promoting proliferation of workshops offering premade concrete sanitary material and integrated solution centers with our without a franchise presents an opportunity.
- *Dispelling of myths:* The team should use promotion to dispel the myth that hygienic latrines need to be expensive and are exclusive to septic tanks. Product design strategies would benefit from options that offer efficient use of water and support reservoir for anal cleansing

Strategies that Enhance Political Support

- *Advocate for local diagnostics analysis:* Local leaders should develop their own priors of the problem based on rational thinking and available facts, despite unavailability of high quality data. A diagnostics frame could guide the leaders' thinking and help them to identify solutions that respond to real constraints.
- *Include findings from diagnostics into the planning and monitoring framework:* If leaders formulate priors of the problem, these should be documented and monitored with frequency. In addition, these priors would inform allocation of financial resources. We found in Jombang that funding and investment strategy of sanitation was weak. However, before leaders decide to increase funding, they should revisit investment strategies and spend only to leverage resources. (i.e., draw on private investment)
- *Build capacity of local sanitarians:* Guidance and support to local implementation would help planning and execution of marketing strategies. Hired consultants should support local organizations in making efficient use of marketing material.
- *Promote dissemination of lessons learnt and early experience:* changing the way the local community addresses the problem of sanitation takes time. Learning presents increasing marginal returns.

WSP and its project partners can accelerate take-up rates of successful practices by promoting inter-district exchange of experiences of early implementation, what works and what has not. Consultants, villagers and the private sector should take part of the process to enhance the critical assessment from multiple angles.

Strategies that Enhance Administrative Feasibility

- *Recruit a local marketing coordinator:* Implementation of promotion strategies, introduction of the marketing campaign and establishing collaboration with the private sector requires time and effort. The challenge calls for a full-time Indonesian marketing coordinator to lead the process from beginning to end. The responsibilities of the coordinator should link with intermediate marketing outcomes that hold a causal relationship with project goals.
- *Design modular promotion strategies and menus of marketing options:* Market strategies need to be adaptive to local needs. Modules or menus of options offer adaptation. With a modular design, local leaders could select based on their own beliefs of the problem. The findings from the media study (IYARHS, 2002-2003) and our findings related to local beliefs indicate that community gatherings present an important mechanism to convey educational messages. It is worth noting, educational messages need to

be engaging, distinctive and persuasive to motivate change towards consistent use of latrines.

- *Explore a formal long-term collaboration agreement with Holcim and other cement manufacturers:* Initial momentum was developed towards a mutually beneficial alliance between WSP and PT HOLCIM Indonesia. Collaboration with cement manufacturers could facilitate improvement of latrine models and concrete parts, trade marketing and promotion strategies while leveraging efforts and ensuring transferability of the initiative to the local market.
- *Increase marketing facilitation capacity for district officials:* Sanitation marketing represents a major shift in the role of the government, from direct provider to an indirect facilitator. Resource agencies and supporting partners need to build capacity of local sanitarians and district health officers in identifying binding constraints, formulating facilitating strategies and monitoring demand and supply improvements. Facilitating capacity should be targeted to two main areas, harnessing the power of market incentives by linking providers of credit services, trainers and technology transfers and avoid practices that crowd out the private sector such as external financial support for sanitation hardware and centralized procurement.

References

- Badan Pusat Statistik (BPS). 2008. Selected Indicators: Social-Economic of Indonesia. July 2006 edition.
- Environmental Services Program, United States Agency for International Development (ESP-USAID). 2006. Formative Research Report, health and hygiene.
- 2002-2003 Indonesia Young Adult Reproductive Health Survey (IYARHS) **[[cited in text—need more information]]**
- Joint Monitoring Programme on Water Supply and Sanitation (JMP). 2004. Guide for Water Supply, Sanitation and Hygiene Related Survey Questions, October 2004
- Jenkins, M. W., and Scott, B. 2007. Behavioral indicators of household decision-making and demand for sanitation and potential gains from social marketing. *Social Science & Medicine* 64(12):2427–2442.
- [ORC Macro. 2007. MEASURE DHS STAT compiler. Available at: http://www.measuredhs.com.](http://www.measuredhs.com)
[Accessed December 23, 2007.](#)
- Kar, K. and K. Pasteur. 2005. Subsidy or self-respect? Community led total sanitation. An update on recent developments. IDS Working Paper 257, November 2005.
- McCulloch, C. 2008. “A Micro-finance credit bureau for India”, Second Year Policy Analysis. Unpublished draft.
- Robinson, A. 2007. Total Sanitation and Sanitation Marketing: New approaches to scale up, sustain, and replicate sanitation approaches. Enabling Environment Assessment, Assessment Area: East Java, Indonesia.
- Survei Sosial Ekonomi Nasional (Susenas), Badan Pusat Statistik (BPS). 2004. Dataset compiled by BPS (Central Bureau of Statistics).
- Water Supply and Environmental Sanitation Policy and Action Planning Project (WASPOLA). Undated. *Awakening Change: Transformation of Sanitation Behavior in Rural Indonesia*. Jakarta.
- World Bank. 2006. Project Appraisal Document on a proposed credit to the Republic of Indonesia for a Third Water Supply and Sanitation for Low Income Communities (PAMSIMAS) Project, June 1.
- World Bank. 2007. *Spending for Development: Making the most of Indonesia’s new opportunities. Indonesia public expenditure review*. Jakarta and Washington: World Bank.
- World Health Organization. 1992. *A Guide to the Development of On-Site Sanitation*. Geneva: WHO.