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ENVIRONMENTAL ESP SERVICES PROGRAM

FORMATIVE RESEARCH REPORT HYGIENE AND HEALTH

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This report was produced in collaboration between USAID's Environmental Services Program (ESP) and the World Bank's Water and Sanitation Program for East Asia and the Pacific (WSP-EAP). USAID's ESP designed and conducted the formative research, and jointly produced this report with WSP-EAP's Indonesia Sanitation Sector Development Program (ISSDP).

Photo Credit: Risang Rimbatmaja.

Children in Wonokromo enjoying clean water flowing from a hand pump in there village.

FORMATIVE RESEARCH REPORT HYGIENE AND HEALTH

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USAID's ESP and WSP-EAP hope the information in this report contributes to improved delivery of sanitation and hygiene services across Indonesia.

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EXECUTIVE SUMMARY

Diarrhea, a preventable disease, is one of the major causes of death among Indonesian children. Furthermore, recurrent diarrhea is a well documented cause of child undernutrition that limits full child development and increases the risk of death. A recent study (Fishman, et al., 2004) estimated that worldwide, undernutrition (low weight-for-age) accounted for 60% of diarrhea mortality among children 0-4 years old. This study also found that of the total deaths caused by undernutrition (3.6 million), 23% were diarrhea deaths. A recent study of the prevalence of diarrhea conducted in the provinces of Aceh, North Sumatra, Banten, Jakarta, West Java, and East Java found that 28% of children under the age of three in Indonesia had suffered from diarrhea in the past two weeks (BHS Baseline Survey Report, 2006).

An effective way of preventing diarrhea is by blocking the main pathways of fecal-oral transmission of bacteria, viruses and pathogens that cause diarrhea. Hygiene behaviors have been shown to block these pathways and include 1) handwashing with soap at appropriate times, 2) using improved sanitation facilities, 3) washing food before cooking and covering cooked food, and 4) treating and safely storing drinking water (USAID-EHP, 1999).

The Environmental Services Program (ESP) is a fifty-eight month program funded by the United States Agency for International Development (USAID) and part of USAID/Indonesia's Basic Human Services (BHS) Strategic Objective (SO), which focuses on the interdependence of health and the environment, and their effect on health outcomes. ESP works with government, private sector, NGOs, community groups and other stakeholders *to promote better health through improved water resources management and expanded access to clean water and sanitation services*. To accomplish its goals, ESP partners with other programs under the BHS umbrella including the Health Services Program (HSP), the Safe Water Systems (SWS) and the Food Security and Nutrition (FSN) Program.
ESP activities are focused in six High Priority Integrated Provinces (HPPs): Nanggroe Aceh Darussalam, North Sumatra, East Java, Central Java/DIY Yogyakarta, West Java and DKI Jakarta. ESP also supports a limited set of activities in Padang, West Sumatra; Balikpapan, East Kalimantan; Manado, North Sulawesi; and Manokwari and Jayapura, Papua.

To develop an integrated hygiene and health communication strategy, ESP conducted, with the technical assistance of the Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), formative research to obtain a detailed picture of the local hygiene practices and the factors facilitating and inhibiting these hygiene behaviors. The design of the research followed a participatory approach to the discussion of hygiene in the study communities, drawing from the PHAST methodology (Wood, et al., 1998, 2000). Furthermore, the abundant literature in this area suggests that people in the developing world do not associate hygiene behaviors with diarrhea prevention; as a result, interventions that focus on health messages as motivation for hygiene practices have typically failed or seen limited success (Curtis, 2003; Hoque, 2003; Biran, et al., 2005; Waterkeyn & Cairncross, 2005; Figueroa & Kincaid, 2007). Therefore, the ESP formative research used a psychosocial and environmental approach rather than a health-centered perspective.

The formative research was conducted in 8 provinces across Indonesia, including 18 districts distributed in urban, peri-urban, rural areas and also upper, middle, and downstream areas. Through group discussions and in-depth interviews, the formative research used a larger environmental perspective to understand several factors related to hygiene behavior,

including 1) the underlying motivations and barriers to sustained hygiene behaviors –water treatment, hand washing, sanitation and waste management, 2) the role of gender norms, 3) people's meaning of the concept of clean, 4) people's grouping of hygiene-related behaviors, 5) perceptions of PDAM services, 6) local initiatives on hygiene and water source protection, 7) people's preferred and trusted communication sources regarding health and hygiene, and 8) media habits.

The approach to this study was based on the Fecal-Oral Cycle to Diarrhea Prevention (USAID-EHP, 1999) and CCP's Communication for Safe Water and Hygiene Behaviors Model (Figueroa & Kincaid, 2007). The former allowed the researchers to focus the study into the population's diarrhea-related hygiene behaviors, such as hand washing, food handling, latrine use, disposal of children's feces, and water treatment. The CCP model guided the study into the underlying factors of hygiene behavior including skills and knowledge about hygiene practices, psycho-social elements (e.g., beliefs, values, and perceived norms), and environmental elements (e.g., access to services and resources). Waste management and water source protection are also included as part of the overarching model of hygiene behavior.

Diarrhea path

The results of the formative research study confirmed that many people tend to believe that diarrhea is caused by factors unrelated to hygiene, such as food poisoning, unfriendly climate or weather, growing up, and mystical forces. Among those who associated diarrhea with hygiene, garbage and flies were seen as the most important routes for diarrhea transmission. The paths people most often described were:

1) Garbage → Flies → Food → Child
2) Garbage→ Dirty playground → Dirty hands → Child
3) Garbage→Dirty environment→ Dirty hands → Child

Less common paths found throughout the study were:

1) Dirty water → Child; and
2) Defecation → Dirty hands → Child

The results also show that most people knew how to treat diarrhea. People knew about *oralit* (ORT), and when to get the child to health services. Results also show that other beliefs about diarrhea treatment remain entrenched, such as the use of traditional and herbal medicine and the powers of mystical healers. In some cases, people were not very aware of the need for re-hydrating a sick child.

The concept of clean

The study explored people's perceptions of cleanliness at three levels—what makes a clean person, a clean house, and a clean neighborhood. Results show that the concept of a clean person is associated with physical appearance—a clean body, good scent/fragrant, combed hair and other signs generally associated with the higher social classes. The clean person concept was also associated with good mental or moral standing. The results suggest some connection between concepts of a clean person and good health practices.

The concept of a clean house showed a strong connection to elements of the outside environment. This is reflected in people's description of a harmony between the home and the environment. For example, people mentioned that a clean house should have a sanitation facility such as latrine and garbage bin, good air circulation or ventilation, and plants and trees that provide a sense of comfort and beauty. People also strongly associated sunlight passing through the windows with good health. People overwhelmingly linked the concept of

a clean neighborhood to improved solid waste disposal management and collective action for environmental cleaning.

Hygiene behaviors

The study explored hand washing, food handling and sanitation practices.

The results show that although handwashing is common, it has not incorporated soap at critical junctures. Only some women, even after probing, mentioned that they used soap, particularly after defecating or cleaning a child's bottom. Psychosocial factors that were found to facilitate soap use include

1. the belief that soap is only needed when the hands are noticeably dirty, sticky or smelly like after handling garbage or fish. By dirt, people referred to tangible feelings, thus no need was expressed if the hands looked, smelled or felt clean.
2. emotional responses such as feeling more satisfied, comfortable, assured, and the sense of having lighter hands.

Across the study sites, we did not find any problem related to access to soap.

The study found that washing raw food was common among Indonesians, although some reported washing it in such a way as to allow it to be re-contaminated. People reported that they avoided using running water and preferred still water instead. They soak the food in the water because they can see the dirt being detached, which makes them feel assured that the food is clean. In general, the study found that there are three types of food that people believe do not need to be washed: packaged food, food with a shell (such as eggs), and raw food that people believe will loose nutrients if washed. In general, the study found that women regarded food hygiene (washing food) as the most important of all hygiene practices.

In regard to sanitation, the study explored latrine access and use, disposal of children's feces, and solid waste. Results showed that in their view, people have access to different resources that they see as sanitation options, which they use interchangeably. Having a latrine in the house does not prevent many people, particularly in rural and peri-urban areas, from using open spaces such as the river or the gutters. Cognitive, emotional and economic factors were found to contribute to this behavior. Cognitive factors included

1. The belief that defecation in the open is harmless to the environment and therefore is practical
2. it is the norm, everybody does it and therefore there is no moral sanction and parents support it
3. the motivation to save water given its scarcity.

Emotional factors to defecate in the open, particularly rivers, included the feeling of comfort, such as a good view, the open space with fresh air, relief (not confined in a small room) and avoiding the bad smell and view of feces that are eventually washed out into the river.

The study also revealed that many people that have a latrine without a septic tank channel feces directly to the river or gutter. The findings also revealed that barriers to good sanitation vary by location.

1. People in the rural area lack septic tanks mainly because of economic limitations.
2. In urban areas, people dislike septic tanks because of the belief that it will contaminate their underground water sources, and because there is often either no service, or an insufficient one, for emptying septic tanks.
3. In peri-urban areas, practicality and subjective norms (everybody does it) play the biggest roles in people's behavior for channeling feces directly to the river or gutter.

Disposal of children's feces show similar patterns as described above. Facilitators for open disposal include: (1) the belief that it is harmless to the environment, (2) the value for practicality, and (3) the absence of social norms that prevent it and the lack of sanctions against it.

Solid waste

The results showed that people are facing a very complex situation when it comes to the disposal of solid waste and that people consider it to be a problem that should be a main priority for their community. Findings reveal the following:

1. Littering the river is a common practice not just among those who live near or along the river or gutter, but also among factories and slaughterhouses. This problem is perceived by people as beyond their control and it is the cause of frustration.
2. There exists a weak community management system that is not capable of handling the magnitude of the waste problem. In most people's view, the responsibility for managing solid waste lies in the hands of the community organizational structure and the government (chief of RT/RW/ Dusun).
3. Garbage and river contamination due to littering is strongly associated with disease among children and adults.
4. Waste sorting initiatives were found highly appreciated by households, community leaders and community organizations in those locations that have been exposed to these initiatives. Interestingly, in the areas where sorting is not promoted, people have very negative perceptions toward the practice. Yet, in places where this practice is promoted, people showed support for garbage sorting practices. People who live in communities that are practicing waste sorting described results that were quite visible, such as seeing less disease among children, fewer flies, and fewer rats. They also reported a reduced amount of household garbage and the elimination of bad odors.

Water sources

Research identified four main water sources: surface water, ground water, PDAM, and bottled water (few users). In many sites, people have more than one source yet people use what they think is the best water source for drinking. There are four indicators that people apply when making this decision: (1) the absence of color, (2) taste, (3) smell and (4) whether the source is contaminated.

Those who used PDAM services commonly expressed dissatisfaction. Most users complained about (1) the quality of PDAM water, (2) the lack of water or the inconvenient time that water flowed —at night, (3) perceived unreliable measurement (they are charged more than they use), and (4) the unresponsiveness on the part of PDAM.

Water treatment

Despite treating water at home, villagers including children, drink raw or untreated water particularly when they are outdoors. Facilitating factors of this behavior include its practicality, the belief that there is no risk, and the positive characteristics attributed to raw water such as natural, uncontaminated, fresh, and cold. Drinking untreated water is also not discouraged by friends and relatives, including parents. Most people, however, do drink only treated water at home, mainly boiled water. A source of recontamination, though, of boiled water is the tendency to leave the container open for the water to cool.

Community resources

There are many types of collective action in communities, including religious, environmental cleaning, health, social, economic, and sports activities. Some are regularly conducted while

others are not. In most communities, cleaning the environment is more often a reactive activity where people are motivated for non-environmental related reasons such as joining a group activity. Moreover, cleaning the environment is mostly the domain of men and considered to be an activity that should be initiated by the local leader rather than by community members themselves.

Sources of health information

The research showed that most people rely on mass media, especially TV, and word of mouth for health information. Printed materials such as posters, leaflets, booklets, and banners tend to go unnoticed. There are three characteristics people demand from a source of information: 1) it has to be interactive so they could raise questions and receive answers, 2) the resource person must be highly credible, for instance a medical doctor, and 3) communication has to be focused and not distorted by any other activities.

Gateway behaviors

Lastly, the study also identified perceived gateway behaviors to other health and hygiene behaviors. Most people considered handwashing with soap and dialogue/discussion to be the two important gateway behaviors. People selected hand washing with soap because: 1) it is an activity that should be conducted prior and after many other activities, 2) it is also the practice that corresponds to women and children, and 3) it is related to health, particularly to block pathogen transmission. Others thought "discussion" was more important because it is necessary to initiate collective actions to improve communities.

Conclusions

Overall, the results of the formative research provided new information to the current knowledge about the social, cultural and behavioral factors associated with hygiene practices. In particular, for the ESP H&H strategy, the findings strongly suggest that communication activities need to

1. be anchored in the value that people have for a clean home and its connection with the larger environment
2. address waste management as the entry point to handwashing with soap as reflected by the path to diarrhea that people described
3. use dialogue within the communities as a key channel to trigger discussion, reflection and collective action about hygiene practices
4. coordinate with PDAM and providers of services (waste collection, latrine construction and cleaning) to support healthier practices
5. promote alternative viable practices when there is a lack of resources and services (waste collection and latrines) so that people have other means to practice healthy hygiene behaviors.

The findings indicate that current practices about hygiene have been learned from childhood and continue to be taught to the next generation of children. They have been the normal way of life but the critical state of the environment around villagers and urban residents are creating a new awareness that hygiene programs can benefit from to promote healthy hygienic practices. Limited access to resources and services from water, to latrines to waste disposal mechanisms represents important barriers to learning and practicing new hygiene behaviors. And handwashing with soap needs to be reinvented and promoted widely to become a practice among a population that washes their hands at critical junctures but rarely with soap.

INTRODUCTION

Diarrhea, a preventable disease, is one of the major causes of death among Indonesian children. Furthermore, recurrent diarrhea is a well documented cause of child undernutrition that limits full child development and increases the risk of death. A recent study (Fishman, et al., 2004) estimated that worldwide, undernutrition (low weight-for-age) accounted for 60% of diarrhea mortality among children 0-4 years old. This study also found that of the total deaths caused by undernutrition (3.6 million), 23% were diarrhea deaths. A recent study of the prevalence of diarrhea conducted in the provinces of Aceh, North Sumatra, Banten, Jakarta, West Java, and East Java found that 28% of children under the age of three in Indonesia had suffered from diarrhea in the past two weeks (BHS Baseline Survey Report, 2006).

An effective way of preventing diarrhea is by blocking the main pathways of fecal-oral transmission of bacteria, viruses and pathogens that cause diarrhea. Hygiene behaviors have been shown to block these pathways and include: 1) handwashing with soap at appropriate times, 2) using improved sanitation facilities, 3) washing food before cooking and covering cooked food, and 4) treating and safely storing drinking water (USAID-EHP, 1999).

The Environmental Services Project (ESP) is a fifty-eight month program funded by the United States Agency for International Development (USAID) and part of USAID/Indonesia's Basic Human Services (BHS) Strategic Objective (SO), which focuses on the interdependence of health and the environment, and their effect on health outcomes including diarrhea prevalence among under 3. To develop an integrated hygiene and health communication strategy, ESP-USAID needed a detailed picture of the local hygiene practices and of the factors facilitating and inhibiting these hygiene behaviors. Findings from existing data about hygiene and diarrhea prevention prompted ESP-USAID to conduct a qualitative formative research, focusing on identifying the psycho-social and environmental factors that affect practices related to hygiene. Specifically, this formative research aimed to understand the following:

- The basic motivations for and impediments to sustained hygiene behaviors, including those related to the environment and, specifically, to conservation of community water sources;
- The role of gender norms in facilitating and inhibiting behaviors;
- People' perceptions of concepts of clean, at the individual, family and community levels;
- Categories of behaviors related to hygiene;
- People' perceptions of PDAM services (for those who receive PDAM services).
- Past and current local initiatives related to hygiene and conservation of water sources; and
- Choices of trusted sources of communication on health and hygiene in various communities, media perceptions, and availability of media (conventional and non-conventional)

This document is the Hygiene and Health Formative Research Report, and is divided into 11 sections. Section one includes the conceptual framework, and the methodology used for the data collection. Sections 2 to 11 describe the specific results related to each of the topics investigated: Section 2) Concepts of clean, 3) Hygiene, 4) Sanitation, 5) Water Sources and Conservation, 6) Water supply utilities (PDAM), 7) Processing of drinking water, 8) Health and sources of health information, 9) Joint initiatives, 10) Media habits, and 11) Findings of pile sorting.

1. CONCEPTUAL FRAMEWORKS AND METHODOLOGY

1.1. THE FECAL-ORAL CYCLE OF DIARRHEAL DISEASE

The transmission routes of viruses, bacteria and pathogens that cause diarrhea into the human body are easily represented as the 4Fs, which were first described by Wagner & Lanoix (1958). The 4Fs are fluids, fields, flies, and fingers. According to Wagner & Lanoix, the cycle begins with contamination by human feces through the 4Fs. This contamination is then transferred to food, which is then consumed by humans.

With these descriptive pathways of transmission routes, several preventative models have been developed. The formative research study makes use of the model developed by EHP (Preventing Child Diarrheal Disease: Options for Action, 1999), which emphasizes four main hygiene practices: 1) using improved sanitation;, 2) processing and safely storing drinking water, 3) cleaning and covering food, and 4) handwashing with soap at critical times (see model below)

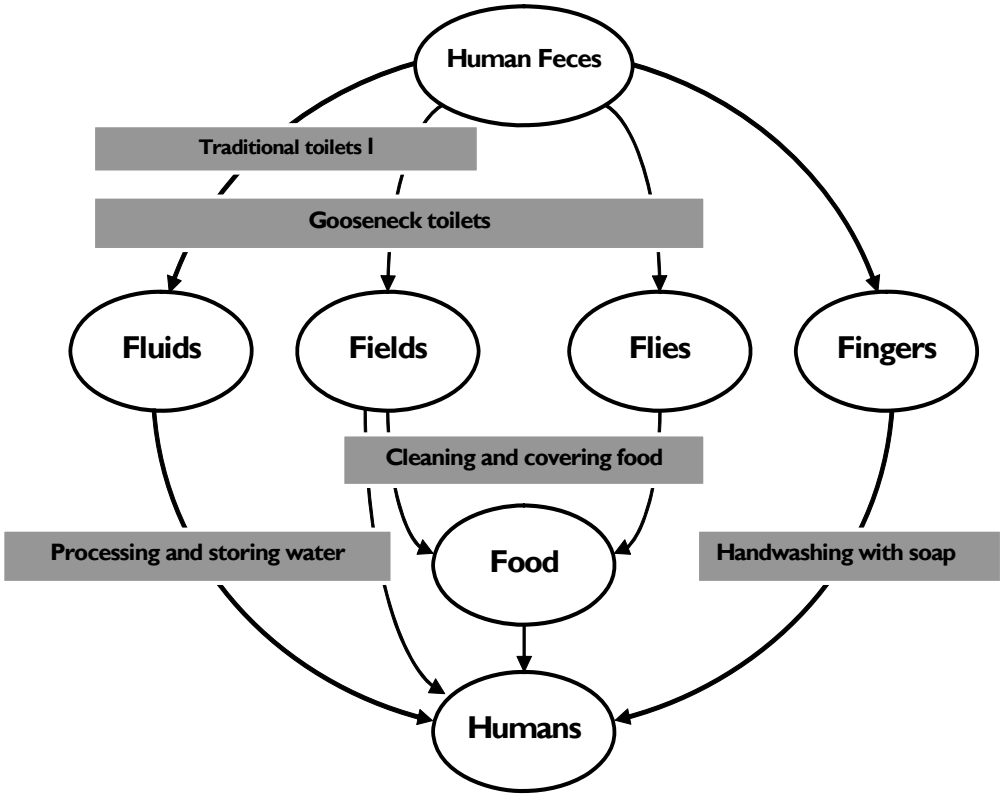


Figure 1-1. Fecal-Oral Transmission Cycle.

Diagram of the Transmission of the Causes of Diarrhea and Preventative Methods
EHP (Preventing Child Diarrheal Disease: Options for Action, 1999)

1.2. A MODEL OF COMMUNICATION AND HYGIENE BEHAVIOR CHANGE

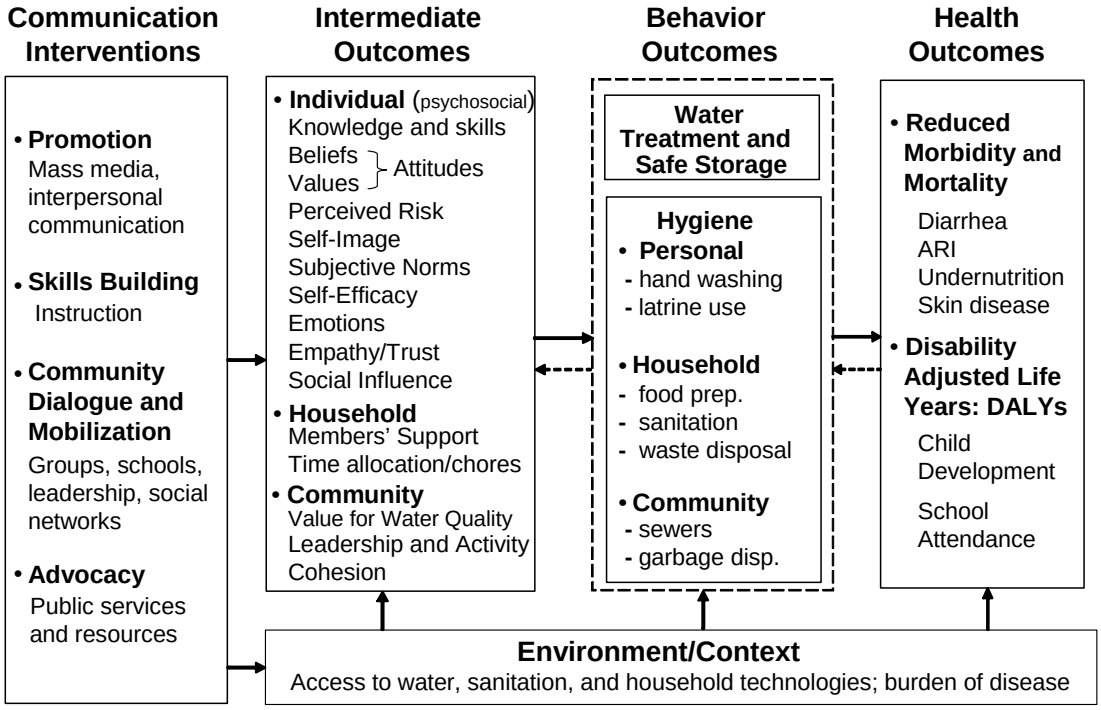
Research has shown that hygiene interventions that rely on the motivation of diarrhea prevention have had limited success. Emerging research is calling attention to the role that psychosocial factors and other intermediate variables have on water treatment and hygiene practices (Curtis, 2003; Hoque, 2003; Biran, et al., 2005; Waterkeyn & Cairncross, 2005; Figueroa & Kincaid, 2007)

The design of the ESP formative research used a model of communication and behavior change that draws from a wide variety of theories of social and behavior change (See Figure 2 below). The model shows that water treatment and hygiene behaviors (column 3) are influenced by a set of intermediate factors (column 2) and the conditions prevailing in the environmental context such as access to water and hygiene technologies. The model also suggests that the intermediate factors and the conditions in the environment can be affected by strategically designed communication interventions (column 1).

At the individual level these intermediate variables or psychosocial factors include skills and knowledge about diarrhea transmission routes and preventive measures. Literature reviews revealed that this factor, especially knowledge, has been quite well researched, among others by a BHS (Basic Human Service) study just completed in 2006 in Indonesia. Other factors however, such as beliefs, perceived norms, emotions caused by the new practice and social influence from relatives and neighbors has received very limited if any attention in hygiene promotion programs. Likewise, intermediate factors related to the household environment and communities where individuals live, have also been overlooked when developing hygiene promotion interventions. Therefore, the focus of this formative research was on the intermediate and environmental factors.

Within the category of individual psycho-social factors three dimensions can be differentiated: cognitive, emotional, and social. The cognitive dimension includes rational elements such as beliefs and values, perceived risks, subjective norms, and self-image. Emotional factors consist of personal feelings related to the practice of the specific behavior such as the emotional response to the feeling of clean hands or the taste of chlorinated water, 2) empathy/trust with the source of a hygiene message, and 3) self-efficacy for performing the new practice properly.

In the social dimension, aspects studied comprised 1) the influence of binding norms, and 2) personal advocacy. For the household and community level, factors explored included value for clean house and clean community as well as elements of leadership and community organizing for collective action. As for environmental factors, this formative research explored people's access to water sources, sanitation facilities and services, and community organizations.



Adapted from Figueroa and Kincaid, 2007. JHU Center for Communication Programs.

Figure 1-2. A Model Communication for Safe Water and Hygiene Behavior.

1.3. DATA COLLECTION METHODS

This Health and Hygiene Formative Study takes a qualitative approach to the subject of its research and employs a participatory approach with two data collection techniques: 1) group discussions with community mapping and pile sorting, and 2) individual interviews.

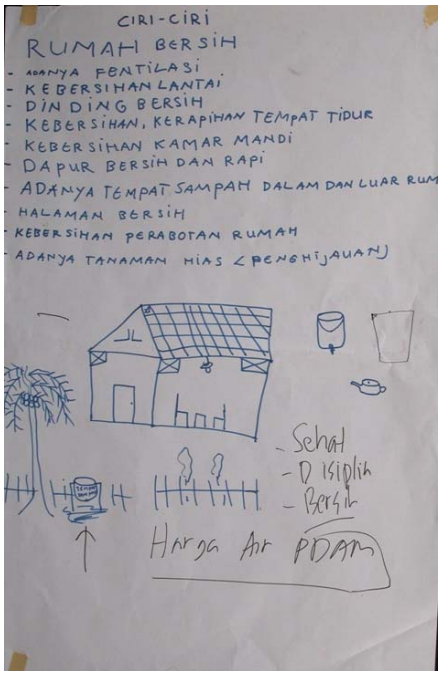
During group discussions a variety of participatory techniques were used to generate informal, relaxed and open interaction among the participants and between the participants and the facilitator. There were basically four main stages in the group discussions.

Mapping the local environment.

Stage one consisted of a participatory mapping of the local environment. Here, the villagers were asked to draw a map of their own village with reference to key markers such as water sources and sanitation facilities. Besides the drawing of the village map, villagers were also asked to draw floor plans of several of the houses in their village. During this first stage, the discussion kicked off with issues related to hygiene, sanitation, water sources, or conservation efforts. The issues discussed depended on the markers that the villagers had identified and focused on.

During **stage two** of the discussion, the villagers talked about concepts of clean. Organized in groups and using the map they drew, villagers were asked to think about and note down the characteristics of a clean person, a clean house, and a clean village. Discussion among the villagers continued when the groups presented their ideas to the other groups in the discussion. Besides discussing characteristics, the villagers also discussed the relationships between a clean person, a clean house and a clean village. To provide further impact to their presentations, villagers were asked to visualize their ideas on flip chart paper.

In stage three the discussion evolved naturally from the first two stages and focused around hygiene behaviors and their connections with health. Villagers talked about issues of sanitation, water sources, and water conservation and their relation with health problems (especially diarrhea in children). Collective initiatives to resolve some of the identified problems were also addressed as well as media habits. villagers had identified and focused on.



A discussion result on clean house concept

Some of the thirty pile sorting cards

Stage four, the final stage, involved pile sorting. Here, the villagers were divided into two groups and each was given 30 cards with illustrations related to health and sanitation. Each group was asked to sort the cards into three groups: 1) good, b) bad, and 3) not sure (whether good or bad). After sorting the cards, the villagers discussed their rationale for sorting the cards they way they did, and they also selected what they considered to be key cards or key leading or gateway behaviors.

Overall, 30 discussions were held in eight provinces. The duration of the group discussions was between 6 and 14 hours, depending on how smoothly the discussions went. Most discussions took two days, a few lasted one day, and even smaller number lasted three days.

For the individual interviews, informants were identified to verify, clarify, reconfirm, or enrich the data obtained from the group discussions. They included 1) grandmothers taking care of children under the age of three; 2) local leaders, especially heads of neighborhood and sub-neighborhood associations (RW and RT) and local informal leaders; 3) people involved in the health service, such as village health post (*posyandu*) and Family Welfare Movement (PKK) cadres, midwives, and primary health center staff; and, 4) in some locations, selected informants from government organizations.

1.4. THE STUDY LOCATION

This formative study was conducted in eight provinces: NAD, Sumatra Utara, Sumatra Barat, DKI Jakarta, Jawa Barat, Jawa Tengah, Jogjakarta, and Jawa Timur. To ensure intensive discussion yet produce a comprehensive picture, the study locations were limited to the level of village or neighborhood/hamlet/settlement. Selection of the locations was based on representation of different local characteristics: urban, semi-urban, and rural; upstream, mid and downstream. Selection was made in collaboration with regional teams believed to have more detailed knowledge of the region than the Jakarta Team (see the next section for a description of the team). Using indicators from the Village Potential (Podes BPS) document relevant to the work of ESP-USAID, 29 study locations in 14 districts were selected. The locations selected are as follows:

Hygiene and Health Formative Research Locations
(See appendix for benchmarks for selection of locations)

No	Province	District	Village	Number of Discussions
1	NAD	Aceh Besar	Nusa	2 (Women & Men)
		Aceh Besar	Saree	2 (Women & Men)
2	Sumatra Utara	Karo	Doulu	2 (Women & Men)
		Deliserdang	Beringin	2 (Women & Men)
		Medan	Aur	1 (Women)
			Belawan	1 (Men)
3	Sumatra Barat	Padang	Kotolalang	2 (Women & Men)
4	DKI Jakarta	Jakarta Pusat	Petojo Utara	1 (Women)
		Jakarta Barat	Jembatan Besi	1 (Men)
5	Jawa Barat	Subang	Pangarengan	1 (Men)
		Subang	Cijambe	1 (Women)
		Kota Bandung	Taman Sari	1 (Women)
		Kabupaten Bandung	Mekarjaya	1 (Men)
6	Jogjakarta	Sleman	Sinduadi	1 (Women)
		Sleman	Sendang Rejo	1 (Men)
7	Jawa Tengah	Magelang	Salaman	1 (Women)
		Magelang	Muntilan	1 (Men)
8	Jawa Timur	Surabaya	Gading	1 (Women)
			Medokan Semampir	1 (Men)
			Wonokromo	1 (Men)
		Malang	Bareng	2 (Women & Men)
			Oro-oro ombo	1 (Men)
			Temas	1 (Women)

1.5. THE TEAM

The formative study local team consisted of two groups: the National (Jakarta) Team and the Regional Teams. The National Team consisted of two university-level research consultants with solid expertise in qualitative methodologies and a four-person core team from the ESP. The research consultants were responsible for facilitating the research process in each of the islands: Java and Sumatra. The four-person core team was responsible for training regional teams and taking part in facilitating the group discussions. As part of the Regional Teams were two collaborating parties: a team from the regional ESP office and local partners namely University of Muhammadiyah in Aceh, North Sumatra Coalition for Healthy Indonesia on North Sumatra, West Java Coalition for Healthy Indonesia in West Java, Pusdakota University of Surabaya in East Java Region, University of Muhamadiyah in Jogjakarta/ Central Java. These organizations assisted with logistics for recruitment and organization of sessions and provision of refreshments. Selection of local partners was based on their experience in organizing research, and knowledge of the study sites. The search process produced local partners with differing characteristics. Some of the local partners were of an academic background. Others were local and international NGOs. The local study team was supported technically by a core research team from JHU-CCP Baltimore who helped conceptualize the formative research design, the topics to address and the participatory approach that was used.

1.6. DEVELOPING DATA COLLECTION GUIDELINES

Data collection guidelines were designed by the Research Core Team from JHU/CCP Baltimore. These guidelines were tested in several of the potential study locations and during formative research training activities for the regional teams. Members of the regional teams and the Jakarta team together facilitated villagers' discussions to see whether the guidelines were applicable. Some revisions were made following these trials. The complete set of guidelines for group discussions, individual interviews and supportive materials (criteria for selection of locations, participants, and picture cards) can be found in the appendix to this report.

During the trials in Karo, North Sumatera

1.7. TRAINING ACTIVITIES

Formative research training was provided to 1) harmonize perceptions between the National Team and Regional Teams about the formative research, 2) share experiences of formative research, and 3) field test the formative research guidelines. Training took place in different locations for each of the two teams. The team working in Sumatra received their training in Brastagi, Sumatra Utara, and the team working in Java had their training in Surabaya, Jawa Timur. The training lasted three full days.

Try out briefing as part of training sessions

1.8. DATA ANALYSIS

In total, 29 group discussions and 49 interviews were conducted in the 22 villages included in this formative research. Overall, the data represent men and women between the ages of 25 – 45. Nine villages are situated in urban, eight in rural, and five in peri urban areas.

A team comprised of the two research consultants and the ESP local lead researcher was responsible for the overall data analysis. A three-stage data-analysis process was conducted. In the first analysis stage, verbatim notes from each group discussion and interviews were reduced to 4 – 10 pages of synopsis. In this data reduction or condensation phase, researchers identified key thematic areas using both inductive and deductive methods. The recurrent information was classified using the categories that had been anticipated in the study design as well as new ones that emerged during content analysis. The second analysis stage consisted in transferring the compiled data into matrices or display tables. This allowed the identification of regularities and patterns between and among sites at the district level. The recurrent themes were then transferred into regional-level matrices. In the third phase, conclusions were drawn based on analysis verification of the recurrent themes, regularities, patterns, and causal flows observed.

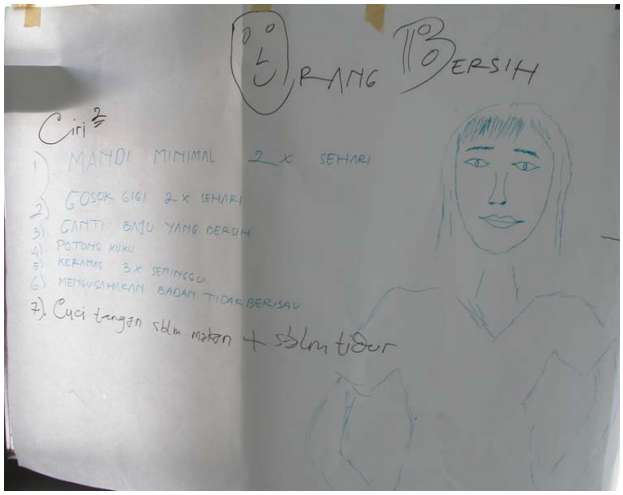
The results included in this report do not represent frequencies of responses but recurrent themes, perceptions, beliefs and practices among participants in the study sites, representative of ESP program areas. The intrinsic nature of qualitative research is not to provide numbers as quantitative research does, but to provide insights and depth about the issues explored. In this sense, the results represent insights into the underlying motivations and barriers regarding hygiene practices, as well as descriptions of environmental constraints as perceived by participants. Except when noted in the report, most of the findings reflect recurrent themes and exceptionally the findings were exclusive of one specific group or location. When this happened, it is noted in the report.

Overall, the findings indicate that current practices about hygiene have been learned from childhood and continue to be taught to the next generation of children. They have been the normal way of life but the critical state of the environment around villagers and urban residents are creating a new awareness that hygiene programs can benefit from to promote new hygiene practices. Limited access to resources and services from water, to latrines to waste disposal mechanisms represents important barriers to learning and practicing new hygiene behaviors. And hand washing with soap needs to be reinvented and promoted widely to become a practice among a population that washes their hands at critical junctures but rarely with soap.

2. CONCEPTS OF CLEAN

2.1. THE CONCEPT OF A CLEAN PERSON

Participants discussion about what makes a 'clean person' yielded some similar and some unique perceptions related to this concept. The formative research also found that people made an association, but not all the time, between the respondents' description of a clean person and health. The most remarkable finding was the substantial gap between people's perceptions of a clean person and their own daily habits.



In general, the characteristics of a clean person identified by respondents related to four dimensions: 1) habits, 2) appearance or visible attributes, 3) smell, and 4) mental and moral attributes. These dimensions appeared in all the group discussions, both in Java and in Sumatra.

Regarding behaviors, most respondents identified a clean person as one who takes care of and cleans parts of their body "regularly". Some behaviors were perceived by respondents to be closely associated with health. Others were perceived to do so only partially because these behaviors were what made a person clean. Cleanliness is important because it is associated with the religious obedience, maturity, education and social acceptance of a person. Regarding the word 'regularly', respondents made reference to the frequency of behavior within a certain timeframe. Interestingly, in several of the group discussions, ideal frequencies were suggested: three times a day for behaviors that were perceived necessary on a daily basis, once a week for weekly behaviors, and once a month for monthly behaviors. Behaviors mentioned as characteristics of a clean person were as follows.

Table 2-1. Summary of the characteristics of a clean person - behaviors.

No	Category of behavior	Form of behavior
1	Behaviors to keep the body clean and cared for	**Cleaning** • Bathing • Brushing teeth * • Washing hands * • Cleaning ears, nose
		Cutting • Cleaning, cutting nails * • Cutting hair, beard *
2	Behaviors to keep healthy	**Cleaning** • Brushing teeth * • Washing hands *
		Diet • Eating nutritious food
		Physical movement • Exercise
		Health checks • Having regular check-ups at the primary health center

* One behavior, but perceived by respondents to have multiple goals

As shown in table 2.1, a behavior that in theory is associated with health was not necessarily perceived by respondents as a healthy behavior. Bathing, for instance, was perceived more as a behavior to keep the body clean than related to health. There were also behaviors that for some were perceived as behaviors to keep the body clean, but for others these behaviors were perceived as necessary to keep healthy, and still by others these behaviors were associated with multiple aims – to keep the body clean and to keep healthy. Table 2.1 shows that brushing teeth, handwashing, cutting nails, and trimming beards fell within the category of behaviors with two goals –clean and healthy. To illustrate, during a discussion in Java, an agreement was reached, which concluded, among other things, that: "*(a clean person)…bathes frequently to keep clean…brushes his teeth every day to prevent toothache…has his hair trimmed when it gets too long so he looks clean…*"

Other characteristics encountered during group discussions made reference to appearance or visible attributes. Characteristics typically mentioned by respondents made reference to: 1) clothing and 2) hair.

Table 2-2. Summary of the characteristics of a clean person - Appearance

No	Category of appearance	Form of appearance
1	Clothing	**Clean and tidy** • Clothes must be clean and tidy • When wearing short sleeves, hands must be clean
		What is worn • Long trousers, • A belt and shoes, • Footwear (shoes, sandals), • Underwear, • Shirt
		• **How it is worn** 1. Shirt tucked in
2	Hair	**Tidy** • Hair must be tidy

Although some of the characteristics mentioned by the respondents can be associated with health (for example, use footwear), most respondents perceived these characteristics only as a part of what makes a person appear clean. In the list of characteristics above, health was typically perceived to be of no relevance.

For appearance, there were marked differences between the characteristics identified by respondents in Sumatra and those in Java. Characteristics rooted in religious teachings were frequently mentioned by groups in Sumatra, especially Sumatra Barat and Aceh. For them, headscarves for women were an important characteristic of a clean person. As concluded during a discussion in Sumatra Barat, "*Wearing a headscarf* (jilbab) *makes you look tidy, clean; women are only allowed [by Islamic law] to show their faces. So they should cover their heads. This is the age of the headscarf – everyone's wearing them, so they look tidy. Headscarves are compulsory now for local civil servants and school kids."* In Java, during discussions about the appearance of a clean person there was generally no mention of characteristics rooted in religious teachings.

Still on the topic of appearance, another difference that emerged had to do with physical appearance. In Sumatra, particularly Sumatra Utara, there was general agreement among men, that a masculine strong physical appearance was an important characteristic of a clean person. For them, a healthy person is one whose body is muscular. This characteristic was not mentioned in Java.

Body odor was one characteristic that was mentioned in both regions. According to group participants, a clean person is someone with a fragrant or sweet-smelling body. For the body to be fragrant, most respondents said that a person must clean his or her body (bathe), and also perhaps spray the body with perfume or use powder.

Table 2-3. Summary of the characteristics of a clean person – Mental and moral.

No	Mental and moral categories	Characteristics	Location where mentioned
1	Character	• Confident • Enthusiastic • Patient • Happy • Bold	• More so in Sumatra
2	Crime free	• Not involved in drugs • Not involved in crime	• More so in urban areas of Java
3	Related to religion	• Devout	• Sumatra Barat and Aceh
4	Mental health	• Sane	• In Java

The final dimension frequently raised during group discussions was the mentality and morality of a clean person. Here, respondents focused on the non-physical characteristics of a clean person, rather than on the physical characteristics. The concept of clean was also associated with a social dimension, with some respondents making a link between the concept of clean and social standing. As concluded during a discussion in Java, "*clearly it's not just about physical health…it's about mental health, too…if someone's mind is not healthy then they're not clean…they don't know about clean…"* As shown in table 2.3 above, three mental and one moral categories were identified: character; involvement in crime; religion; and mental health.

When discussing the mental and moral dimension, respondents made an association with a variety of other issues. Some groups associated it with religion, concluding that clean behaviors can affect the quality of a person's mentality and morality. Making reference to their religious teachings, they concluded, "*Cleanliness is a part of faith. (Cleanliness) wards off malice…(a person's face)looks radiant with the water on it after ablutions, radiant".* Other groups perceived the importance of mentality and morality differently. Some associated it with health, concluding that piety wards off sickness. Others associated it with work activity, which they say, is beneficial if a person has a positive mentality and morality, which in this context means piety.

Surprisingly, what they concluded to be the characteristics of a clean person were based on their perceptions of others, not of themselves. As far as they were concerned, no one in their community displayed the characteristics that they had agreed on. A group in Java concluded, *"no…like that…people like that…there are hardly any…there's no one here like that. We can't be bothered [to bathe regularly], it's too cold…and if you don't bathe then you're not clean...*". In general, they perceived the characteristics they identified above as characteristics of rich people. As one group in Java concluded, *"A healthy person drives a car".* Looking clean and wearing clean things was something that was seen only at certain times, such as at ceremonies, not every day.

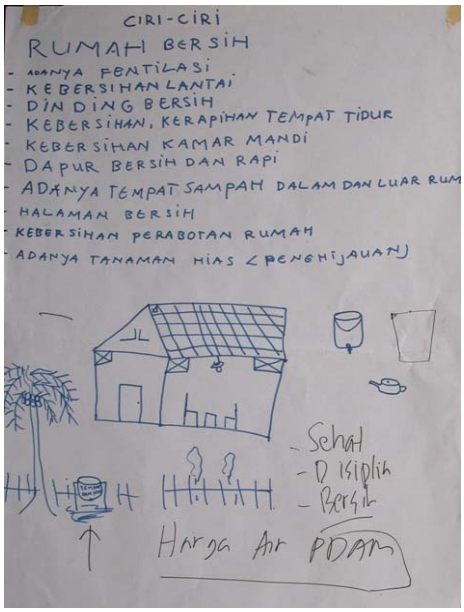
2.2. THE CONCEPT OF A CLEAN HOUSE

The characteristics identified by participants tended to concentrate on the physical characteristics of a clean house and the behaviors of its occupants. Several of the characteristics in these two categories were not mutually exclusive but inter-related. Comparison of the study findings revealed distinctions between the two islands and between rural and urban areas. Finally, the study found that in contrast to the concept of a clean person, respondents generally viewed the concept of a clean house with greater optimism, as something they could work to achieve, despite their perceived economic impediments.

Table 2-4. Summary of the characteristics of a clean house.

No	Physical characteristics of a clean house	Aim
1	Toilet, septic tank, bathroom, and water in the house	A tidy and clean house, shouldn't be too far from the house or exposed to rain (comfort)
2	The house has a rubbish bin	A clean house (comfort)
3	Specific components • Windows • Doors • Ventilation	A flow of fresh air into the house (comfort)
4	Has separate rooms (bedrooms, reception room, family room, kitchen, yard/terrace, washing and drying area)	Comfort
5	Has flowers, trees, and green plants	Cools the air, nice to look at, makes social interaction nicer (Comfort)
6	Flow of fresh air into the house	Fresh air (Comfort)
7	Sunlight gets into the house	Kills germs (Health)

As table 2.4 above shows, the physical characteristics emerging from the group discussions were: 1) having a toilet, bathroom and water, 2) a rubbish bin, 3) specific components (windows, doors, and ventilation), 4) separate rooms (bedrooms, reception room, kitchen, washing and drying area), 5) flowers, trees and green plants, 6) a flow of fresh air into the house, and 7) sunlight getting into the house. The latter two demand greater attention because these were the characteristics that the participants associated with other elements of cleanliness or health. For example, having flowers and plant is an important characteristic



of a clean house because it makes the air fresh and cool. They expressed the same sentiments when talking about other physical features such as windows, doors and ventilation. As a group in Java island concluded, "*The doors and windows should be opened every morning…to let the heat out and the fresh air in…"* The importance of fresh air and sunlight was also expressed by respondents who have difficulties getting fresh air and sunlight because of overcrowding or the construction of the house, and have to resort to unconventional measures, as concluded during one discussion, *"I have to push one of the roof tiles to one side…to let the air circulate so the house doesn't get damp…from seven in the morning to four in the afternoon…if it rains, I just put the tile back in place."*

Table 2.4 above also shows that in the minds of the participants, the physical characteristics of a clean house as they identified them, generally had little to do with health. Many of the discussion participants associated a clean house with a 'healthy house', a concept campaigned by the government to build adequate housing. In general, the respondents thought that it was important to have a clean house to make it comfortable. For example, on trees, during a group discussion in Java it was concluded that, *"It (a clean house) has shady trees to make a nice view, and a comfy spot to shoot the breeze."* This kind of perception differs somewhat from that of the environmental activists who see trees as a part of water conservation. In this study, the association between trees and the idea of conservation was made, but only in passing in the group discussions in rural areas of Jawa Tengah.

As for behaviors, three general characteristics of the occupants of a clean house were identified: 1) sweep and mop the floor every day, 2) dispose of rubbish in a rubbish bin, and 3) open and clean windows. Uppermost in the respondents' minds was that these activities were done to make the house comfortable. Sweeping and mopping, for example were done to get rid of annoying dust. Rubbish was disposed of in a rubbish bin to keep away flies.

Comparison of the findings on Java and Sumatra, and of the findings in rural and urban areas, revealed several distinctions. In Sumatra, the position of rooms in relation to the front and back of the house had distinct significance. In their minds, rooms at the front of the house were clean and those at the back of the house, dirty. Thus, it is not surprising that most rooms back on to a ditch or a dirty river rather than face it. In towns, conceptions of a clean house made reference to the position of the house in its environment. Here, the respondents perceived that the position of the house also determined whether a house was categorized as a clean house or not. During discussions in urban areas, conclusions were made regarding the position of a house that the inhabitants perceived as key, such as, "*The house shouldn't be near sewage", "Not near a factory," "Not under a bridge"*, and *"Not near a garbage dump where there are lots of flies."*

Unlike the characteristics of a clean person, the characteristics of a clean house identified by the respondents were seen as a depiction of what it was like where they lived. They did not perceive this as a picture exclusive to the rich. It was within the bounds of possibility to make their houses clean houses. For example, on green plants, respondents in one discussion said, *"you can do that in the yard…you can plant things…clean, green, flowering*

plants…flowers perhaps…or useful plants…like a medicinal herb garden." Basically, for the participants, the picture of a clean house above is not something that they have no hope of achieving, although economic impediments do frequently get in the way.

2.3. THE CONCEPT OF A CLEAN ENVIRONMENT

Group discussions in general concluded that were several factors that determined whether a village could be categorized as clean or not. These were: 1) the layout of houses in the village, 2) the presence of certain facilities, 3) waste management, 4) the attitudes and behaviors of the inhabitants, 5) greenery round the houses, and 6) the security situation in the village.

In the respondents' minds in general, a well laid out village was one where the four main components – houses, roads, trees, and facilities like rubbish bins, ditches, playing fields, houses of worship, etc, were laid out in an orderly fashion. As concluded by one group on Java island, *"We must arrange the environment, both in rural and urban areas, in an orderly way, especially, I think, the roads and houses. The houses should face the road. And there should be trees; never mind if they shed their leaves. There should be a space for recreation, and a house of worship, such as a mosque; three if necessary because there are so many people living here…".*

Some discussion groups perceived that there were examples of well laid out housing in their environments. As commented during a discussion in Sumatra, *"So, you know, so they're orderly, y'know?... the houses in Lingkungan VI, aren't like that, doors facing doors, no, it shouldn't be like that. Chaotic, a mess…they're not orderly because…Some people's doors open out on to another person's bathroom…the front door, the door you go in, right in front of a bathroom…A healthy village is neatly laid out…like the houses in BTN…neat…clean."*

Table 2-5. Summary of the characteristics of a clean environment.

No	Facilities in a clean environment
1	**Facilities related to cleanliness/health**
	Garbage collection point
	Clean ditches (to prevent mosquitoes breeding))
	Health facilities, primary health center
2	**Facilities related to religion**
3	**Facilities for children**
	Reading/play area
	Education facilities
4	**Facilities for interaction**
	Sports pitch
	Youth club
	Guard post
5	**Facilities for comfort**
	Paved roads
	Street lights
	Roadside plants/park

When discussing clean environments, the participants thought of several facilities for which they perceived a need. A garbage collection point was one public facility mentioned quite often during discussions. Other facilities related to environmental health were clean ditches, health facilities (primary health center, midwife, village health post). Facilities seen as places for interaction included sports pitch and youth club. Table 2.5 includes a list of facilities frequently mentioned during discussions.

Adequate garbage management was a characteristic that almost all respondents thought of when talking about a clean environment. By waste management, they were in general referring to: 1) the presence of rubbish bins in each house or some form of waste management practiced by each household, such as burning the rubbish, and 2) garbage disposal and garbage management sites. In urban locations, discussion of rubbish tended to focus on having an organized system of garbage management, especially house-to-house garbage removal. Innovative ideas such as recycling were also raised during discussion of the characteristics of a clean environment.

Group discussions about what makes a clean environment also revealed a desire or longing on the part of most respondents for harmony and cooperation among the inhabitants. In their minds, a clean environment was inhabited by people who helped each other out, worked together to keep the environment clean, were aware of the concept of a clean environment, and were not self-centered. For example, when talking about rubbish, most of them talked about the need for a decent garbage collection point, but they also pointed out the need for cooperation. As one discussion concluded, *"On a clean environment (village)…garbage is disposed of properly, in rubbish bins, the ditches are cleaned, the people work together to keep the village clean…work together, help each other out…"* In general, the respondents saw helping each other out as a form of social capital for undertaking development and maintaining the results of development. One group concluded, *"Cohesive, I mean cohesive er…in the positive sense! Make a park…Ha, ha…a park…Make some latrines for everyone to use…Things you're not allowed to do, you're not allowed to dump garbage all over the*

place, you mustn't be selfish, graffiti on the walls…No…that's not allowed…You mustn't damage the plants…"

Greenery was also associated with a clean environment. Respondents in general concluded that the presence of trees and green plants was an important characteristic of a clean environment, particularly because they made the air fresh and cool. As concluded during one discussion, "*…there must be big trees along the side of the main road to make the air cooler and fresher…flowering plants in pots are okay too…"* Moreover, greenery in the respondents' minds also included greenery in and around the houses. As one discussion concluded, *"Greenery around the houses. Plant pots in front of the houses. Plants beside the house, trees in the yard. The yards are not all dried up. The plants get watered…the environment's nice…"*

A clean environment was also one free from crime. But the notion of a safe village was more dominant in discussions on Sumatra island. For them, a safe environment was not only free from thieves, but also free from gambling and kinds of entertainment that bother the inhabitants. To quote from a discussion in Sumatra, *"(A clean environment)…is safe…not much gambling. A police station so that billiard hall can be got rid of and for security."*

To summarize, compared with the concept of a clean person, a clean environment was perceived as something that the villages could become with just a little effort for the inhabitants. In general, the participants believed that they could create a clean environment with the characteristics mentioned above. But most said that there were a number of fairly achievable conditions to doing so, namely, 1) cohesiveness among the inhabitants, 2) awareness of cleanliness among the inhabitants, and 3) having the necessary facilities.

2.4. RELATIONSHIP BETWEEN THE THREE CONCEPTS

In the analysis of the group discussions, it was found that in the minds of the respondents, the concepts of a clean person, clean house and clean environment were not necessarily related. Simplified, the relationship between the three concepts can be depicted as shown in Figure 2.1:

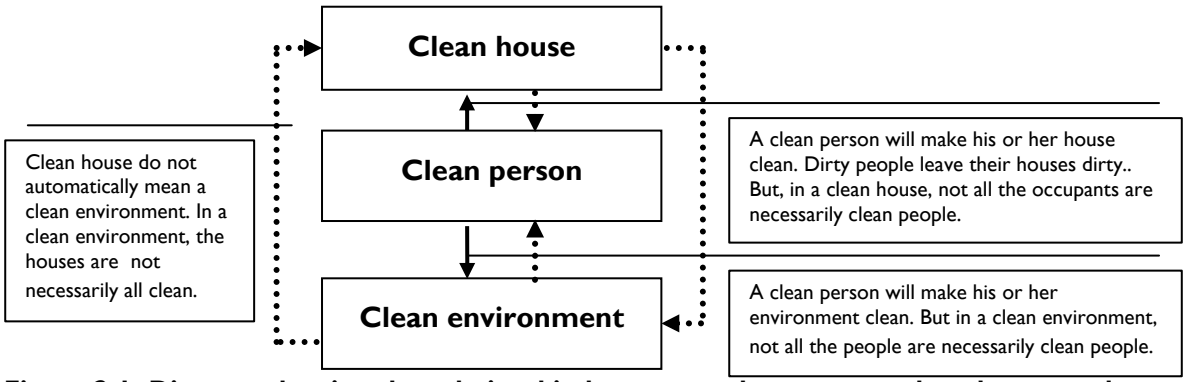


Figure 2-1. Diagram showing the relationship between a clean person, clean house, and clean environment.

The model in Figure 2.1 above shows that cleanliness centers around clean people. It shows that clean people will make their houses clean. Conversely, people who are not clean will

make their houses dirty. According to one group of respondents, "*if a person is dirty …it goes without saying that he can't be bothered to clean the house…a filthy person will have a filthy house. Dirty people don't bathe very often..sometimes they can't be bothered, they're too lazy. They're too lazy to even take care of themselves, never mind their houses."* But the converse is not true. In a clean house, not all the occupants are necessarily clean people. So, cleanliness is an individual thing, even if a group of individuals live under one roof or as a family, as mentioned during one discussion, *"(in one house)…there may be people who like things to clean and others who couldn't care less. Like the three of us – my younger siblings pile clothes up on the hangers, but I like things to be clean and tidy. So it depends on the individual. Maybe a house could to with being cleaned, but the people in the house don't like cleaning up, so like I said, it depends on the individual."* Another group that believed that a clean person was a healthy person expressed a similar opinion, *"the house might be clean, a nice house, but the people who live in it are always sick...they're too sedentary, because they have servants usually …".*

Basing their logic on the concept of a clean person, the respondents typically perceived a clean person as one who made his or her environment clean. Conversely, a clean house and clean environment were not indicative of a clean person. During the discussions, one group said, *"it depends on the person…the environment might be clean, but that tells us nothing about his behavior, whether he's decent person…you just don't know. So just because someone has a nice house…it doesn't necessarily mean…the person is a good person."*

Any relationship between the three concepts, other than the relationship between a clean person and a clean house and clean environment, are not so clear cut. According to the participants, clean houses do not necessarily make a clean environment. This is understandable, because for an environment to be clean, clean houses are not enough. There are lots of areas outside the house that have to be cleaned too. And conversely, a clean environment does not necessarily mean that all the houses in it are clean. This is understandable, too, because the characteristics of a clean house identified by the respondents focused on the inside, not the outside, of the house.

3. HYGIENE

Under hygiene we include the research results related to hand washing and food preparation and storage.

3.1. HANDWASHING

Current practice

Handwashing with water was a common practice found in all the study locations. As for when people wash their hands with water, many do so at times that are important from a health point of view. The infrequent use of soap however, when washing hands at key times was a consistent finding across all study locations. In general, the participants had access to soap. What was connected to the use of soap were psycho-social factors. In general, handwashing was perceived as the practice of women. The participants felt that schools had an important role to play in promoting handwashing with soap because they made the idea of using soap when handwashing acceptable. During discussions with participants, religion (Islam) was found to have notions related to the practice of handwashing with soap.

Handwashing with soap, the purpose of which is to prevent the transmission of pathogens that cause diarrheal disease, must be done properly and at the right times. Washing your hands properly means, 1) wetting your hands under running water, 2) using soap and rubbing your hands together at least three times, 3) rinsing your hands under clean, running water, and then 4) drying your hands on a clean, dry cloth. The right times for handwashing are, 1) before eating, 2) before feeding a child, 3) before preparing food, 4) after defecating, and 5) after washing a child's bottom after defecation.

This study found several practices that deviated from these ideals. The most common and critical findings were: 1) soap is rarely used, 2) hands are very rarely washed at all before feeding a child, which is one of the key times for handwashing, and 3) hands are very rarely dried on a clean cloth.

In all the study locations, handwashing using only water was a common practice. When washing their hands, most participants use running water or pour water over their hands (using a scoop for example). Men often use stagnant water and water that is not really clean

(for example water in the paddy fields) to wash their hands before eating or after working, especially when they are out of the house, for instance in the paddy fields, in the fields or in the forest.

Interestingly, the times when participants usually washed their hands (with water only) were mostly at key times considered crucial to block the transmission of pathogens that cause diarrhea. A summary of the times when participants wash their hands is shown in the table below.

Table 3-1. Tabel ringkasan waktu-waktu cuci tangan.

Times when respondents wash their hands (with water only)

1 **Before doing something** *Current practice*	2 **Before doing something** *Ideal*	3 **After doing something** *Current practice*	4 **After doing something** *Ideal*
1. **Eating** 2. **Preparing food (cooking)** 3. **Breastfeeding** 4. Religious activities (praying) 5. Sleeping	1. **Eating** 2. **Feeding a child** 3. **Preparing food**	1. **Defecating** 2. **Washing a child's bottom after defecation** 3. **Touching and disposing of dirt** 4. **Handling fertilizer** 5. **Cleaning out ditches** 6. **Working outside** 7. Disposing of garbage 8. Cleaning the house 9. Cooking 10. Eating 11. Mincing chili peppers 12. Playing with children 13. Waking up	1. **Defecating, and** 2. **Washing a child's bottom after defecation**

In the table 3.1 above, handwashing times that are crucial in terms of blocking the transmission of pathogens that cause diarrhea are shown in bold. Times that are also important for health purposes are underlined. And times that are less relevant for health purposes are shown in normal print.

The table shows that the participants typically washed their hands at times crucial for the prevention of diarrhea. Even in the category '*before doing something*', participants focused on the critical times, which are those associated with eating. It should be noted that handwashing was not practiced at one critical time in this category, namely before feeding children. Handwashing at this time is crucial because it is the final blockade against transmission of pathogens. The negligence among the majority of participants about washing their hands at this critical time has to do with the concept of dirt and the factors facilitating handwashing, which are explained in the next paragraph.

In the category *'after doing something'*, all the crucial times are covered by the participants' handwashing practices. In fact, many extended the practice of handwashing beyond these crucial times to times that are less important or even not relevant for the prevention of diarrhea.

As shown in the column three of table 3.1, participants wash their hands at times over and above the ideal times shown in bold in column four. However, some of these times were later categorized as important or quite important by participants because some of the activities in column three do carry a risk of exposing human hands to pathogens that cause diarrhea. For example, poor sanitation, as a result of people defecating in ditches or piping feces from household toilets into ditches, contaminating water in the ditch and the environment nearby with pathogens that cause diarrhea are common. Thus, when ditches are cleaned out there is a risk that pathogens causing diarrhea will be transmitted to the hands. Another window for contamination are unhygienic practices related to livestock rearing and crop /plantation farming, where the hands are in frequent direct contact with soil and manure.

In general, the study found that the participants in the 8 provinces perceived the practice of handwashing (with water only) as something that was easy to do and for which there were no significant inhibiting factors, particularly from sources outside the control of the participants or those categorized as environmental factors. In the participants' minds, hands could be washed in a variety of places, including the bathroom, the well, the place for doing ritual ablutions, in the fields, paddy fields, and in still water in a bucket or bowl, provided that water was available.

Facilitating factors

From an optimistic point of view, the above description suggests that the burden of the campaign for behavioral changes is lifted somewhat given that handwashing is already a common practice. The next task is to introduce soap into handwashing practices.

Handwashing with soap at crucial times is not common practice among the participants. As comments made during a men's discussion on handwashing with soap before eating at a study location on Java Island exemplify:

> "Well, really, the fact is that when they are going to eat most men just wash their hands with water. Like when they've been digging in the fields they don't have soap with them. Some use a spoon (to eat with); if they don't they was their hands in the water in the paddy field."
> "Almost, almost no one uses soap"
> "Frankly, I don't; sometimes I just forget."

The use of soap at crucial times was found to be practiced by some few participants, mainly women, and only at certain times: 1) after defecating, and 2) after washing a child's bottom.

Factors facilitating participants to wash their hands with soap had to do with how dirty their hands were, and the need to have clean hands. However, in the participants' minds, 'dirt' referred to something on the hands that could be *seen, smelled or felt*. This means that things that could not be seen, smelled, or felt, such as pathogens, germs or bacteria that cause diarrhea were not considered as dirt by the participants. The degree of dirt the participants referred to was that which water alone would not remove from the hands. Here, soap is

seen as an aid to removing dirt (smell, color, slimy/unclean feeling). Not surprisingly, most of the participants believed that it was not necessary to use soap if washing just with water could remove dirt that could be seen, smelled or felt.

Table 3-2. Summary of factors facilitating handwashing with soap.

FACTORS FACILITATING HANDWASHING WITH SOAP			
Factor / Dimension	**Description**	**Comments**	**Remarks**
Cognitive (1) / Belief in the benefits of using soap to remove dirt	Cleans dirt (that can be seen, smelled and or felt) that water alone cannot remove	• "If they are really dirty, I use soap, because they're dirty." • "If they don't smell, I don't use soap." • "Only when they're really smelly I use soap." • "..after eating…if I've touched something really hot (spicy) or smelly."	• Frequently expressed during discussions
Emotional / Emotional response	Feel clean, confident, feels pleasing, satisfying, nice on your hands, and your hands feel light / comfortable.	• "To get them cleaner" • *"Anggere mumpluk lak mantep"* (the more foam, the better the hand washing is) • "I like (my hands) to be clean and to smell nice."	• Frequently expressed during discussions
Cognitive (2) / Perceived risk of not washing hands	So they are sterile, germ-free, to remove bacteria, chemicals, to prevent disease	• "So they're clean, sterile." • "It helps get rid of (the germs)."	• Seldom expressed during discussions
Cognitive (3) / Belief in the health benefits	Stay healthy	• "One, so they're clean; and two, to keep your body healthy."	• Very seldom expressed during discussions

As shown in the table 3.2 above, the use of soap is also associated with emotional factors such as comfort from having hands that smell nice, certainty or feeling of confidence that the hands are clean, the pleasing, satisfying and nice feeling of soap on your hands, and feeling that your hands are light and comfortable. The tangible manifestation of these feelings is fresh, clean (no visible dirt) and fragrant hands.

Only a few of the participants who used soap expressed motivation to do so related to cognitive factors of perceived risk and belief in the health benefits. The perceived risk of not using soap was identified in many of the discussions in rural areas of Sumatra, especially among those who handled fertilizer or chemicals such as pesticide. In their minds, soap was important for removing toxins. Those that focused on the health aspect generally perceived soap as something that prevents diseases such as diarrhea, fever, vomiting, colds, coughs, worms, sore stomachs, and skin irritations.

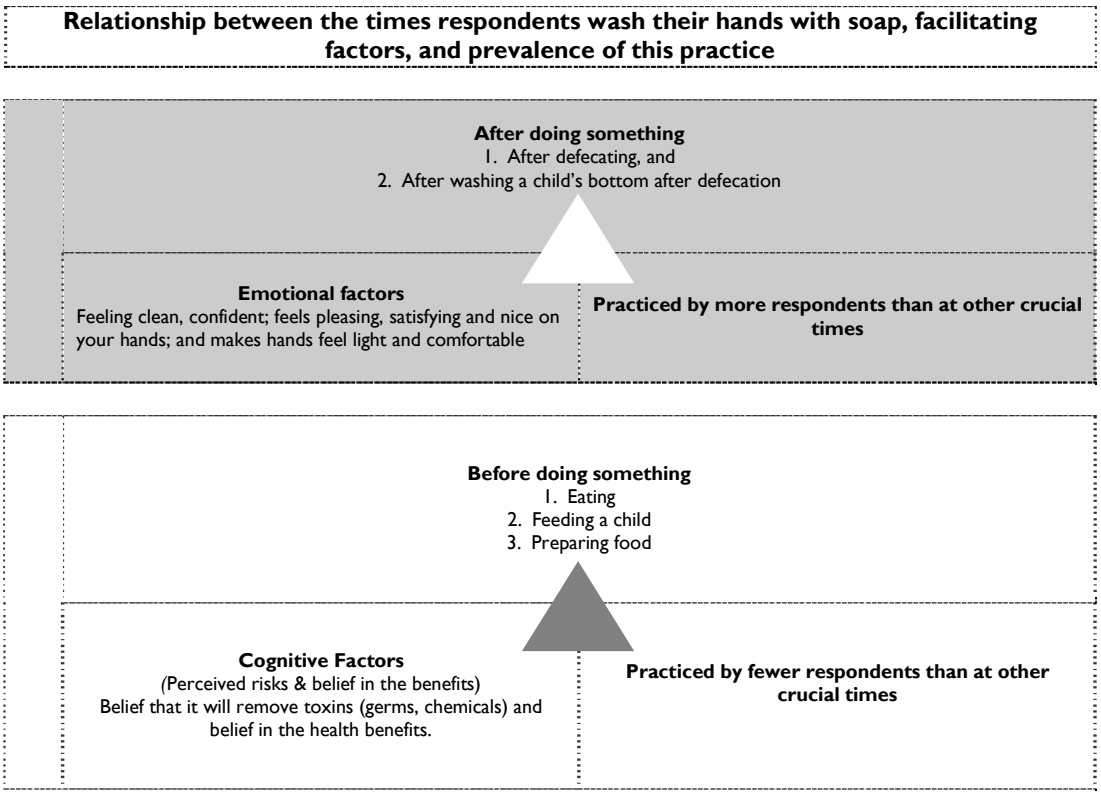


Figure 3-1. Summary of the relationship between the times respondents wash their hands with soap, facilitating factors, and prevalence of this practice.

Inhibiting factors

In general, access to soap is not a significant inhibiting factor in the use of soap. Generally, the participants are able to afford to buy soap. Even in high poverty areas, such as Belawan (Medan) and Gading (Surabaya), participants had access to soap.

"Quasi" limited access to soap was found among urban dwellers that use public toilets. The public toilets observed in the field did differ: some provided soap, but most did not. This absence of soap was also found in rural and semi-rural areas when people defecate in the open (in streams, paddy fields, gardens, ditches, etc).

But these examples of limited access to soap are dubbed "quasi: because they stem from psycho-social factors. Actually people mentioned that they have soap at home, but taking soap with them to the public toilet or river is not something they consider important. In the group discussions, the idea that soap was not important was aired time and again, in remarks such as, "water's enough", "practical", "forget", "no one takes soap down to the river or fields", and "I don't eat with my hands, I use a spoon."

Other factors, apart from psycho-social factors, were not as recurrent in inhibiting the practice of handwashing with soap. For example, in terms of knowledge, the participants were in general quite aware of the benefits of handwashing with soap rather than without. They also knew that running water is needed to wash your hands with soap. Seldom mentioned was the need to dry your hands on a clean, dry cloth after washing them.

Case: Soap substitute in rural villages
Rural dwellers have alternatives to soap which they believe can get their hands clean when they have been working. On Java, ash is believed to be a substitute for soap because it can clean burned and blackened pans. In the words of one respondent, "*well it gets the dirt off, le aku percoyo ae bukti ne ilho ono...panci le wis mari ge masak kan gosong, ghebek gae awu kok rijik maneh hayo...*". Other cleaners are the plant called *genjret*, which produces bubbles when crushed, rice straw, and the castor oil plant. In the fields and the forest, moist grass, dew, ash or sand are frequently used to clean the hands.

Summarized in the table 3.3 below are the scores for the coverage of handwashing practices along with the factors influencing them. The scores are based on recurrence of themes compiled by researchers. The scores represent level of commonness among groups of discussion. (1 = very few; 2 = few; 3 = quite a lot; 4 = many/common; 5 = all/almost all).

Table 3-3. Scores for coverage of handwashing practices and matters related to handwashing.

Factor/ Dimension	Score*					Remarks
	1	2	3	4	5	
1. Handwashing with water only					*	Practiced by almost all respondents
2. Washing hands under running/poured water				*		Fairly common
3. Using a clean, dry cloth to dry hands	*					Not common
4. Washing hands with soap at the five crucial times	*					Practiced by only a few and with a focus on two times (after defecation and after washing a child's bottom after defecation)
5. Using soap in other hygiene practices					*	Very common, especially for cleaning the body (bathing)
6. Knowledge of the benefits of soap				*		Common, especially that soap removes germs
7. Knowledge of the need to use running water				*		Common, especially that it makes hand cleaner
8. Knowledge of the need to use a clean cloth (to dry hands)						Not common, rarely mentioned during discussions.
9. Belief in the benefits of soap	*					Only a few really believe
10. The importance of using soap	*					Soap tends to be seen as not very important. This was concluded in statements like: "just use water, it's more practical", "usually forget". "no one takes soap with them to the river" etc
11. Perceived risk of not using soap	*					Generally thought that there is no great risk from not washing hands with soap
12. Role of emotional factor		*				Most soap users talk about comfort, confidence, etc
13. Access to soap				*		Most have access to soap
14. Access to water supply					*	Most have access to water supply

Gender, sources of information & potential religious aspect

In general, the participants perceived handwashing as the domain of women, with the mother or wife seen as having a greater need to practice handwashing and as being the main actor in teaching handwashing as a habit. The reasons for this relate to the concept of the division of domestic-public work, in which women are involved more in work that requires clean hands, such as preparing food and taking care of the children at home (domestic domain). Conversely, for men, handwashing is not as important because men are perceived to be involved in the more pressing matter of earning money outside the home (public domain).

Children are another group perceived to have a need for more frequent handwashing. This perception stems mainly from the fact that children are frequently seen playing with dirty objects, coupled with the belief that their immune systems are not as strong as an adult's. Children are often seen touching dirty things and then putting their hands in their mouths. As one respondent said, *"after they've been playing, the children sometimes chew on their hands…because there's no milk left."*

In discussions on the sources of information on handwashing, most participants made reference to parents, the mass media (especially TV), school, and habits in their environment. From TV, they learned mostly about the benefits of washing hands with soap, especially that soap kills germs. In the words of one respondent, *"information on the TV, says that Lifebuoy soap kills germs, so washing your hands is better than not washing them."* Urban dwellers were influenced by the jingle on a TV soap advert based on a children's song that talks about the importance of keeping your hands clean. As for school, the most common remark was that schools made the idea of handwashing easily digestible for the participants when they were children. One respondent recalled, *"Oh, so handwashing was a good thing and we must wash our hands like our teachers did."*

When talking about the environment, the most common comment was that they had imitated people of their own age. One respondent said, *"I learned from my work mates how to do it, from getting together with people of my own age, I learned that washing your hands made your hands nice, we just imitated each other."*

In addition to the sources mentioned above, during some group discussions, for example in Padang and Surabaya, handwashing was associated with religious (Islamic) teachings and practices. Participants were divided on this issue. Some considered handwashing with soap as having to do with purifying oneself, which is a part of religion; others thought of handwashing as a separate issue. But one thing they were all aware of was the concept of unclean dirt, or what is known in Arabic as *najis.* For them, being touched by or touching *najis* makes them *najis* too, whether or not the *najis* is visible. Human excreta are understood to be one form of *najis*. Information like this would be very useful if developed to encourage handwashing with soap at crucial times regardless of whether a person's hands look, smell or feel dirty.

3.2. PREPARING FOOD

Washing food

Washing food before preparing it for consumption was a common practice among the participants. In general, they do it to remove dirt that is considered to be a source of disease. During the discussions there was a fairly strong negative perception of people who did not wash food before preparing it. It was also found that the participants have certain guidelines or criteria to determine whether a particular kind of food needs to be washed or not. With regard to the actual washing, the study found that some participants used techniques that could re-contaminate the food.

Washing food before preparing it is done to remove the dirt stuck to the food. Dirt, in their minds, is a source of disease. But in contrast to the findings about handwashing with soap, the participants' conception of dirt in food did not always refer to something visible. As the table 3.4 below shows, in the minds of the participants, the dirt might have to do with the dirty environment, such as market, where the food came from. Or food might be dirty, though it might not look dirty, because it has come into contact with something that is considered dirty, like soil, fertilizer or dust. It might be dirty because it has had flies on it, which, needless to say, leave no visible trace. Or food might be thought of as dirty because there are bugs, such as maggots, in it.

Table 3-4. Summary of the rationale for thinking food dirty and in need of washing.

No	Why food is dirty and needs washing	Examples
1	It is in a dirty place	Market
2	It has come into contact with something dirty	Dust, soil, fertilizer
3	A dirty creature has touched it	Flies
4	It has bugs inside it	Maggots
5	It has sap in it	Vegetables

In most cases, the participants' perceptions of dirt were backed up by evidence. For example, after washing food, most participants had seen dirt, such as soil, floating on the bottom of the receptacle or on the surface of the water in which it was washed. Most said they had found maggots in food when washing it. Others, such as one group of women on Java island, talked about the taste of the food, *"Of course it's different (if it's not been washed)…spinach tastes like its got sand in it."*

Table 3-5. Summary of evidence, according to respondents, that food needs washing.

No	Evidence that food needs washing
1	Soil is visible on the bottom of the receptacle or floating on the surface of the water in which it was washed
2	Found maggots in food when washing it
3	Tastes different, sandy

Aside from reasons to do with dirt, other reasons for washing food identified by the participants had to do with food safety. Many participants believed that washing food was necessary to remove residual toxins or pesticides. In their minds, all food, especially vegetables and fruit, had pesticides on them. As mentioned during one discussion, *"They're sprayed to get rid of the pests. For instance, swamp cabbage that has caterpillars on it is sprayed. Long beans get sprayed too. It depends on what diseases it has. Like chili peppers, there are lots of different pesticides for them – they have to be sprayed too."*

Regarding the types of food that in the participants' minds did not need washing, people usually had practical guidelines. But from the health point of view, these guidelines did not necessarily guarantee that the food is hygienic or that that the transmission of pathogens is blocked. For example, some believed that washing eggs was not necessary. The rationale for this perception is that eggs are protected by a hard shell. In the context of avian flu outbreaks, this kind of reasoning is dangerous. The perceptions of the participants gathered from the discussions are summarized in the table 3.6 below.

Table 3-6. Summary of reasons for not washing food.

No	Reasons for not washing food	Sample of food
1	The food is in plastic packaging	Artificial flavoring, noodles, crackers, etc
2	The food has a shell or is in a pod, so it can't be dirty	Eggs, jengkol, petai*
3	The food will dissolve or disintegrate	Salt

**kind of tree beans which are often eaten raw*

When washing food, the participants applied different techniques. Most did not use running water, presenting a risk of re-contamination of the food. Most used a receptacle such as a bowl, can or bucket filled with water to soak and scrub the food in the water. One woman said, *"I don't use running water. Usually I wash it in one can and then in another."* Only a few used running water or poured water.

Despite the possibility of re-contaminating food that has been washed, the practice of washing food in still water is facilitated by cognitive factors, especially the fairly strong belief in the efficiency and effectiveness of this technique, as well as by emotional factors. In the participants' minds, using running water is wasteful. Conversely, using still water is believed to clean food more effectively because they can get into all the nooks and crannies and because they can see the dirt coming off. *"If you use a bowl you can see it, wash it off. I don't like using a tap. If you use a bowl, all the dirt sinks to the bottom"*, said one woman during a discussion on Java Island to the approval of the others. Here, belief in the effectiveness of a technique that could re-contaminate the food is strengthened by what, in the participants' minds, is evidence that the dirt has been removed – of dirt sinking or floating on the surface of the water and the discovery of caterpillars in the food.

Table 3-7. Summary of the rationale for using still water.

No	Rationale for using still water
1	Can see the dirt, including caterpillars, coming off
2	You can clean it more thoroughly
3	Using running water or pouring water on to the food is a waste of water

In their practice, the majority of participants wash their food more than once. The most common frequency was 2-3 times. But, in the eyes of the participants, the ideal frequency is three times. In their minds, they feel more certain if they wash it three times. Each time the food is washed, the participants replace the water in the basin with clean water.

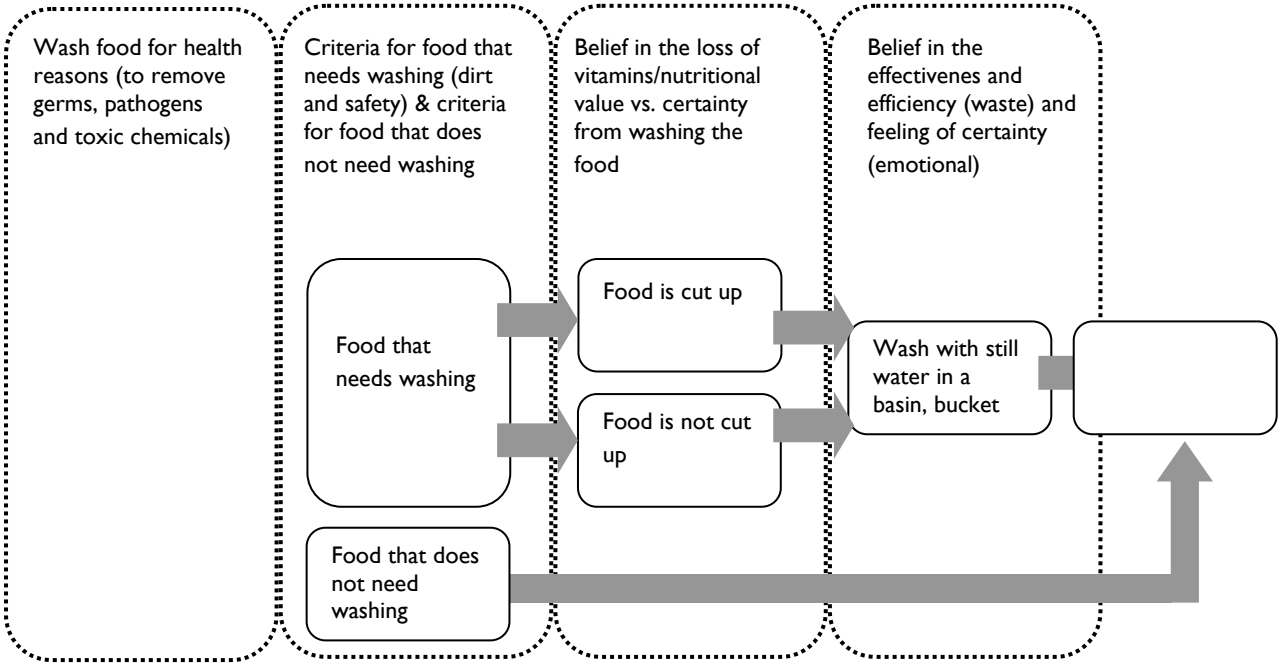


Figure 3-2. Model of food handling hygiene behavior.

Another area explored by this study was the cutting up of food before or after washing. Some participants cut up the food before washing; reasoning that they could clean it better; but others washed it first, then cut it up.

Table 3-8. Comparison of rationale for washing food at different stages in the food preparation process.

Rationale for cutting up food before washing	Rationale for cutting up food after washing
To be able to clean it more thoroughly	To preserve vitamins, nutritional value

Notably, those who washed food before cutting it up reasoned that they did so to preserve the nutritional content of the food. One woman during a discussion on Java Island said, *"…I wash carrots first, then cut them up. If you cut them up first, you'll wash away all the vitamins…lettuce, swamp cabbage, mustard greens (too)…so the vitamins (aren't lost)…if cut them up first then wash them, what's in them is lost."* Moreover, for some participants, not wanting to wash away the vitamins makes them more prudent in their washing of produce. In the words of one woman on Java, *"(if you wash them too much)…you lose all the vitamins…"*

Covering food

Like washing food, covering food is common practice among the participants. Food is covered in a variety of ways; it is covered with a bowl, plate, food cover, or stored in the fridge. The first two methods are the most common among people who feel they are less financially well off than those who use the latter two methods. Food covers are the choice of those who have more money because they are used on a dining table, which is something that not everyone can afford, especially poor people.

Interesting is the participants' rationale for covering food. As shown in the table 3.9 below, the facilitating factors include cognitive factors, especially perceived risk and belief in a particular benefit, and emotional factors, especially the feeling of disgust at something touching the food. During discussions with participants in urban areas, the rationale mentioned generally made reference to the health benefit and the feeling of disgust. People covered food to prevent dirt and germs entering the food. Dust, flies, rats and lizards were the contaminants most frequently identified during discussions. As one woman said, *"It's hygienic; the flies can't get in the food."* Another woman said, *"..there are lots of rats, house lizards, they're revolting."* Here we see that when the animals in question are rats or house lizards, the rationale for covering food is a feeling of disgust.

Table 3-9. Comparison of the rationale of urban and rural dwellers for covering food .

Reasons given by urban dwellers for covering food	Reasons given by rural dwellers for covering food
• Concern that it will be contaminated by dirt/animals, such as dust and flies, that could cause disease (perceived risk) • Disgust at food being touched by animals in the house/in the local environment, such as rats and house lizards (emotional factor)	• To prevent it being eaten by animals (rats, cats) or children (belief in the benefit of keeping dishes of food whole) • To protect it from dirt falling from the ceiling (belief in the benefit of protecting food from dirt)

As shown in the table 3.9 above, during discussions with participants living in rural areas, the main rationale for covering food were: 1) to prevent the food being eaten or taken by animals (rats, cats) or small children, and 2) to protect the food from dirt falling from the ceiling. Here, the participants did not associate dirt with sickness/health as did the urban participants. Participants in rural areas covered food mainly for tangible reasons, seldom for health reasons.

4. SANITATION

This section includes results related to defecation practices and waste management.

4.1. WCS AND THEIR USE

The present condition

During the group discussions, which were followed up by direct observation of several of the participants' houses and their environment, it was found that in general the participants have alternative defecation facilities. Some of the facilities are improved facilities. More are unimproved facilities. Facilities in rural and urban areas present different conditions. In general, use of facilities is largely motivated by psycho-social and environmental factors. Use of facilities, such as septic tanks for example respond to different factors; some inhibiting factors for rural and urban dwellers were different. In general, participants agreed that women are responsible for the cleanliness of WCs[1], especially private WCs. Participants perceive that responsibility for the cleanliness of commercial public WCs lies on the shoulders of those who are paid to clean the facilities or the owners of the facilities.

In rural areas, participants in general felt they had a variety of defecation facilities. Some of them had access to private WCs, which are usually also used by their neighbors, especially if the WC is outside the house. As one respondent in a discussion group in Jawa Barat expressed, *"If they don't have one, people usually defecate in their neighbor's WC."* Some participants had access to public WCs. Other fairly common facilities were open spaces, such as rivers, ditches, fishponds, paddy fields, gardens and even house yards.

Village dwellers who do not have access to private or public WCs defecate in the open. In the words of one respondent in Jawa Tengah, to the agreement of the rest of the group, *"Most of the people here don't have WCs, (we) run down to the river."* If there are no rivers or streams, they use other places. *"Where I live there's no river. So, usually in the villages where there's no WC or river, usually they just do it in the garden,"* said one respondent in a discussion group in Jawa Barat. In one village in Sumatera Utara, the terms "WC Terbang" or "WC Helikopter" were used, but not to refer to WCs suspended over a river or stream. *"WC terbang is when you throw away the feces after you've defecated,"* said one respondent. This means defecating on a piece of paper or plastic and then putting the feces into a plastic bag and throwing it into the garden, river or some other place far from the person's home. In the same location, the term "WC Gali" was used, meaning to dig a small hole in the ground to defecate and then covering it up when you have finished.

[1] We use WC and toilet interchangeably.

Table 4-1. Summary of WC facilities in rural and urban areas.

Facilities in urban areas	Facilities in rural areas
1. Private WCs 2. Public WCs (government and commercial) 3. A small proportion use rivers as WCs	1. Private WCs 2. Public WCs 3. Rivers 4. Ditches, irrigation ditches 5. Ponds, dams 6. Paddy fields, gardens 7. Yards 8. Arbitrary disposal of feces

As shown in the table 4.1 above, participants living in urban areas have fewer options. Private WCs, public WCs and rivers are the most commonly available defecation facilities. Private and public WCs were the facilities most commonly found in this study. Rivers are not much used in urban area. In Gading (Surabaya, Jawa Timur), since a ban was placed on people by local government, WCs suspended over rivers are now seldom seen. In their place are private WCs in individual houses, with the sewage pouring down plastic pipes into the river.

According to urban dwellers, rivers are not much used anymore. But that does not mean that no one defecates in rivers. During several observations, people were seen squatting at the riverside, defecating. In the minds of the participants, these are people from outside their environment. And those that were tracked down did hold identity cards from outside the area. They were perceived as the poorest strata of urban society, including pedicab drivers who live in their pedicabs, vagrants, and people who regularly sleep in doorways or public spaces.

The present condition: Public WCs

In urban areas and some rural areas, people who do not have private WCs have the option of going to public WCs. In urban areas, some public WCs are built and managed commercially, while others are built by local government and managed by the community or by individuals. In rural areas, most public WCs are government built and community managed.

Some participants felt quite satisfied with the public WCs. Others were dissatisfied. Observations of public WCs in several of the study locations found that some were more comprehensive facilities than others. In one location in Surabaya, several public WCs were observed that had adequate water supply,

buckets, water dippers, and even small pieces of soap. According to the caretaker, soap was always available though it quickly ran out. In other locations, the state of the public WCs was quite the opposite. At some, users had to bring the things they needed from home, *"There's no water there…you have to bring your own from home,"* said one participant. Some have no light. "*…there's none (no electricity), at night you have to use a candle…"*, said another. Because of darkness and desolate in some locations, women had to be accompanied by men if they use the facilities at night. Other complaints about public WCs were: 1) having to queue, 2) not open 24 hours, 3) not looked after (not clean, dirty, blocked up, smelly), and 4) lack of privacy.

Table 4-2. Summary of complaints about public WCs.

Complaints about public WCs
1. Queues, cannot use them whenever you need to
2. Some are not open 24 hours
3. Some do not offer a full set of facilities (for example, no water, water dippers, buckets, or electricity)
4. Some are not taken care of properly (not clean, dirty, blocked up or smelly)
5. Some do not guarantee privacy (people outside can see in, can hear people outside, people knocking on the door)

Psycho-social factors facilitating open defecation

In rural and semi-urban areas, the defecation facilities that are available are substitutive. This includes private WCs. Having their own WC does not stop a person from defecating in the open, particularly in rivers. Here, psycho-social, cognitive, and emotional factors are at work, as detailed in the table 4.3 below.

Table 4-3. Summary of factors facilitating defecation in rivers.

No	Facilitating factor	Dimension	Rationale
1	Cognitive	Belief in perceived practical advantages	• No need to flush, no need to draw water from the well • Feces gets washed away immediately
		Belief in the practice based on distance	• Close by when working in the river • While bathing or washing in the river • Happen to be close to the river • House is near the river
		Belief in the economic benefits	• Saves water, electricity • So the septic tank does not fill up too quickly
		Subjective norms	• Learned defecation in the river from parents • Everyone/lots of people do it
		Belief that the practice has no effects	• Water washes it away • It is a big river • It gets eaten up by the fish
2	Emotional	Comfort	• Not smelly like WC • The air is cold • The breeze is cool • Water wets you, making it easy to defecate • Feces are not visible (rather revolting), washed away immediately • Lots of water
		Better scenery	• Not boring, like in the WC • Natural scenery, trees, greenery • Wide open views
		Feeling of satisfaction and relief	• Easier to defecate than it is at home • Stomach feels nicer
		"Our practice"; Community identity	• Custom passed down by parents • What we have always done, the culture of our ancestors

Besides facilitating factors, this study also explored factors inhibiting open defecation such as in rivers and streams. Safety and comfort were two fairly dominant factors. These two factors explain why people do not defecate in the open when it is raining or at night time. They say that when it is raining, defecating is uncomfortable as well as risky. It is uncomfortable because they have to navigate muddy paths and defecate in the rain. What's more, the river water they are touching is murky, not clear like when it is not raining. At night, people do not defecate because of these two inhibiting factors. In several study locations, women expressed health concerns about the water they were using to clean themselves. They worried that the water might be polluted by effluent from industries, such as chicken processing, tofu manufacture, asphalt production, and others.

In several study locations, such as Koto Lalang, Padang, embarrassment was mentioned as a potential inhibiting factor for open defecation. Participants felt embarrassed if they were seen by others when they were defecating. This is indicated by the fact that this feeling of embarrassment motivates people to select certain times and places to defecate. For example, they prefer to defecate behind large buildings and not when children are coming home from school.

Table 4-4. Summary of factors inhibiting defecation in rivers and streams.

No	Inhibiting factor	Dimension	Rationale
1	Cognitive (perceived risk)	Risk	• Rising waters when raining, dangerous, fear of being swept away • Night time, dangerous • Risk of disease from polluted river water
2	Emotional	Discomfort	• Rain, wet, murky water • Nighttime, dark
		Embarrassment	• Can be seen by others

During discussions with participants, they talked about the dominant role parents played in introducing them to the practice of defecating in open spaces such as rivers, yards, irrigation ditches, etc. Even today, those who continue to defecate in open places admit that they teach their children to do the same. This indicates that the perceived norms play a key role in the introduction and continuation of this practice.

The Ideal WC

Participants use many different kinds of WCs. Some would be categorized as improved facilities; others as unimproved. From the health perspective, an improved facility is one with a gooseneck water seal (MoH) and which has a septic tank at least 11 meters from any well (Ministry of Public Works, 2001). Conversely, an unimproved facility is one that does not have a gooseneck water seal and has no septic tank.

During discussions with participants, a similar picture of the ideal WC was found. Their picture of an ideal WC appeared to be a common squat WC in a small structure. Some said that the structure should be inside the house; others said they preferred it outside. What they agreed on was that the WC should have a gooseneck water seal, and that there should be bucket or small water tank filled with water beside the WC and a dipper within reach. In their minds, this WC should look clean, not dirty, should not smell, should have good drainage, and be of a comfortable size.

Table 4-5. Summary of the concept of the ideal WC.

No	Concept of the Ideal WC	
1	Facilities	• Inside a small building • Squat WC with a gooseneck water seal • Bucket/small water tank full of water • Water dipper
2	Condition	• Clean; not dirty; not smelly • Good drainage • Comfortable size

From actual observations in the field, the ideal WC pictured by participants was mostly to be found in urban areas. In urban areas, most WCs were squat WCs with gooseneck water seals. In rural areas, a large number of WCs without gooseneck water seals were observed. Instead there were WCs consisting of pit covered with a board on which to sit when defecating. Some made a separate pit and place to sit when defecating, connecting the two with PVC pipe. Other WCs were housed in permanent buildings, but over rivers or streams.

The main factor inhibiting rural dwellers from building WCs is economic capacity. While the economic capacity of the participants was not a focus of this study, from the discussions and observations of several of the participants houses, their accounts were by and large confirmed.

Besides inhibiting factors, discussions with participants in rural area also revealed several facilitating factors for having a private WC. Discussions with those who do not have and those who have WCs indicated a number of factors that facilitated having a private WC: 1) the desire to have facilities that they perceive to be part of modern life, 2) to safeguard their privacy, and 3) the reassurance of being able to defecate at any time, even when it is raining or at night when it is uncomfortable and unsafe to defecate in the open. Thus, the factors facilitating rural dwellers to build WCs focus more on individual efforts to gain perceived advantages and to enhance their self image. WC ownership generally had nothing to do with environmental health concerns. This explains why during discussions , the participants had little to say about health in relation to septic tanks.

Table 4-6. Summary of factors inhibiting or facilitating construction of WCs in rural areas.

No	Factors Inhibiting / Facilitating Construction of WCs (rural context)		
1	Inhibiting	• Environmental factors	• Economic capacity
2	Facilitating	• Emotional factors	• Desire to own modern facilities • Safeguard privacy • Comfort when defecating, including at night and when raining when it is uncomfortable to defecate in the open.

Having your own WC in the house is also a dream of most city dwellers who currently use public facilities. They feel that having a WC in the house would be more comfortable because it would be private (nobody would bother them), practical (no need to go far), and

more convenient (can be used at any time; no queues, never closed). However, the main factor that inhibits the realization of their dream is economic capacity. Those not particularly motivated to add a WC to the houses they currently occupy are those who live in rented accommodation, of which there are large populations in big cities like Jakarta and Surabaya. Most do not wish to make improvements to the houses they live in, particularly if these improvements 1) cost a lot, and 2) are perceived to be the responsibility of the house owner.

Septic tanks

Most participants had a partial understanding of a WC. Their idea and image of a WC generally refers only to the building that they occupy when defecating. Few mentioned a more integrated system, especially with an integrated septic tank, as a system of disposal that prevents pollution to the environment.

The fact is that many WCs without septic tanks were found in the study locations. These were not limited to private WCs, but included commercial and government-built WC facilities. Where there is no septic tank, human feces are piped straight into a river or ditch. This was found in all locations: rural, urban, and semi-urban.

In crowded urban areas, many WCs were found that piped feces straight into rivers or streams. Factors inhibiting the construction of septic tanks included beliefs, subjective norms, and environmental factors. There are commonly held beliefs among urban dwellers that septic tanks 1) contaminate well water, 2) are a bother when they are full, and 3) emit unpleasant odors. Contamination, they say, is inevitable, because their plots of land are not large enough to allow a safe distance between the septic tank and well. In the words of one respondent in Surabaya, *"…it all goes straight in the river; if you use a septic tank, there's the worry that the well will get contaminated…so we dispose of it straight into the river…because the well would be only 4 or 5 meters away and the water [in the well and the septic tank] would get mixed up…".* In several locations, the belief that septic tanks pollute wells was associated with the contours of the land. In their minds, on sloping land from the septic tanks of houses higher up would run downhill into the wells of the houses below. As mentioned during a discussion in Malang, *"We can't use septic tanks…because the road slopes downhill…a steep slope…it can't be done, it's impossible. So we have to go down to the river to defecate".*

Subjective norms captured from discussions with city dwellers point to the role of parents in initiating and teaching this practice. Equally important, the participants see others in their environment doing the same. As one respondent from a location in Surabaya emphasized, "*Everyone goes there; everyone."*

As for environmental factors, the participants perceive that there are no free or low-cost services available for pumping out septic tanks. In their experience, having a septic tank emptied is costly. Many feel that it is a service they cannot afford. As an illustration, in Jakarta, the fee for pumping out a septic tank is around Rp 250,000 or about one-quarter of the regional minimum wage. But this factor does not apply to all sectors of society. Observations found middle-class homes on the banks of rivers or streams that dispose of their sewage straight into the river or stream.

In semi-urban areas, as shown in the table below, the factors inhibiting construction of WCs are similar to some of those summarized by participants in urban areas: 1) the house is close to a river or stream (belief in practicality), and 2) subjective and perceived norms – participants see others, including their own parents, doing the same thing.

Table 4-7. Summary of factors inhibiting the construction of septic tanks.

Factors inhibiting construction of septic tanks		
Urban areas	**Semi-urban areas**	**Rural areas**
1. Beliefs a. Septic tanks contaminate wells b. Septic tanks emit unpleasant odors c. Septic tanks are a bother when they are full (have to be emptied at great expense) d. Practicality, house is near the edge of river or stream 2. Subjective norms a. Everyone else has always done it b. Parents do it 3. Environmental factors a. Limited access to septic tank emptying services b. No land available to build a septic tank	1. Beliefs a. Practicality, house is near the edge of river or stream 2. Subjective norms a. Everyone else has always done it b. Parents do it	1. Environmental factors a. Cannot afford to build one b. Ground water is close to the surface

Many WCs without septic tanks were found in rural areas, too. As the table 4.7 above shows, for rural participants, economic capacity was the inhibiting factor for most people. Access to land is not a problem as sufficient land is available; but the cost of building a WC is not something that they feel they can afford at present.

With regard to septic tanks, some interesting views were found in rural locations. Unlike participants in urban and semi-urban areas, participants in rural areas had a more positive outlook. In their minds, septic tanks are important because generally they do not want human feces to contaminate well water or water in rivers where people bathe.

Case: Constructing septic tanks to build houses
While many see septic tanks as an economic burden, in Batu (Jawa Timur), septic tanks have to be constructed to get the sand and stone needed to build houses. So, construction of septic tanks and houses is concurrent. They dig a pit to get the building materials and this pit then functions as a septic tank. The pit for the septic tank is 5-10 meters deep." *The pit's just that, but later it will be sealed…with metal sheets, then reinforced, reinforced, but it can still be opened..."* The villagers see no need to put any other materials in the pit as percolators because the water or effluent is rapidly absorbed by the sandy soil, *"Water doesn't pool, it can't; it's absorbed, gone…[the septic tank] can't get full…even if it rains, it never gets full."*

Cleanliness of WCs

Participants said that cleaning private WCs was fairly normal practice. There are three main things that they aim to clean: 1) yellowish/brownish marks that look like feces, 2) unpleasant odors, and 3) slippery feeling of the floor. To clean WCs, participants generally use a scrubbing brush. Soap is also used to remove unpleasant stains and odors. Interestingly, although all use chemical cleaners, these were not mentioned much during discussions. They referred to them by trademark, for example *lisol* and *vostek* (as pronounced by participants).

In their minds, though not much used, chemical cleaners clean the WC better. One woman said, *"If you use rinso [washing powder]…it's kind of slippery, but if you use* lisol *it's not, it's like it's stripped."* Discussion about cleaning materials indicated a strong desire to keep their bathrooms clean.

In practice, it is the women (mothers, wives, daughters) who generally clean the WC. *"Sometimes mama does it…sometimes Lani [*daughter's name*]. I just get it all nice and clean (laughs)…,"* said one man during a discussion in Java. Men usually assume the role under special circumstances, for example if their wife is sick. In some cases where the woman works outside the home, the husband occasionally cleans the WC. Said one woman, *"Sometimes he does it, sometimes I do it…He likes cleaning…I'm tired out; it's hard work, selling stuff".*

In some locations, norms dictated that women cleaned the WC. For example, in a rural location in Jawa Timur, only women cleaned the WCs because it was not thought proper for men to clean the house. For them, it is the woman's job to clean the WC; the whole house, in fact. One woman said, *"In the house here, the girls do some of the housework, and I do the rest…in my house in Batu, my younger sisters do it…it's usually women who do it; the men are worried they'll be called names if they do it…"* . This practice was found in Jakarta too, but not for reasons of appropriateness. It had more to do with the division of domestic and public work. Men are perceived to have worked hard in the public domain (outside the house) and so it would be too much to expect them to do housework as well.

Responsibility for the cleanliness of public WCs depends on who owns them. Participants felt that responsibility for the cleanliness of facilities constructed and run commercially lies with the owner or person paid to take care of and maintain the facility. This perception is, for the most part, fueled by an understanding that public WCs are commercial enterprises and that the participants have paid to use them. Most participants said that they would complain to the operator if a public WC was not clean.

Responsibility for the cleanliness of public WCs built by the government lay either in the hands of the person given the job and paid to clean the facilities or in the hands of the local inhabitants in general. Users are generally charged a fee for using public WCs where there is a caretaker. Where there is no caretaker, the facilities are usually free of charge. The problem is that where responsibility for the public toilets is handed to the community in general, the facilities are usually not very clean. Some were even found closed down because they were blocked up and not maintained. Public WCs with caretakers were generally better cared for.

To make a general comparison, 1) WCs build and managed commercially and WCs built by the government that have paid caretakers tend to be cleaner than 2) WCs built by the government and where the responsibility for their cleanliness is handed over to the community in general. The lesson to be learned here is that collective participation in cleaning public WCs is not operational. This indicates a lack of a feeling of ownership of public toilets as communal facilities. Participants would rather pay to pass the responsibility to someone else, as indicated by the fact that when money does not exchange hands, there is no organization of the local people to clean the public toilets.

4.2. COLLECTION AND DISPOSAL OF CHILDREN'S FECES

Places where young children defecate

Many of the children in the study locations defecate in the open, such as in ditches, drains, streams, yards and gardens. Having a WC does not automatically make children defecate in the WC. Except when a child defecates in a drain or stream, children's feces are generally removed and disposed of in rivers or drains, or buried in the ground. Few dispose of children's feces in the toilet. Besides environmental factors, adult psycho-social factors are key contributors to the defecation practices of young children.

An attempt was made to understand this through discussion and observation of the participants' environment; the conclusion is that open defecation was common practice among young children. . Commonly used open spaces are ditches, drains, streams, yards and gardens.

In urban areas, ditches and drains in the immediate area are most commonly used for defecation. One respondent from Jakarta said, *"Well, if the ditch is not covered properly, if there are little spaces (children defecate through them).* Some children just defecate on the ground or on the street. In rural areas, open spaces commonly used are house yards (either on a piece of paper or not), gardens, and ditches. It is not only children from homes without a WC that defecate in the open. During discussions it emerged that many children from homes with WCs nevertheless defecate in the open. *"The children that defecate there have WCs at home, they have WCs, but they learn that behavior from their parents,"* said a volunteer at a village health post in Surabaya. A woman in Jawa Tengah sharing her experience, confirmed this: *"Where I live, I take them [the children] down the river in the day time, and at night they defecate at home."*

Children's feces that fall into ditches, drains or streams are, of course, left untouched by the parents.. As when adults defecate in these places, the water is thought to wash the feces away. However, if a child defecates in another open space, such as a garden, yard, or on the street, parents usually remove and dispose of the feces in streams, ditches or drains, or bury the feces in the ground. A mother in Padang said, *"Oh, sometimes (I throw it) in a ditch, or in a stream. If the ditch is too far away, I dig a hole and bury it.* Others said they disposed of children's feces in the WC.

A small proportion perceived the practice of children defecating in the open as something that polluted the environment and posed a health risk. But the majority tolerated this practice in children, especially if they defecated in a ditch, drain or stream. *"It they're small, it doesn't matter where they defecate. Their mother can clean it up,"* said one woman in Koto Lalang, Padang. And this practice is tolerated not only by the children's parents, but also

other adults in the local environment. Others, especially those who do not have their own WCs, actually teach their children this practice. As a person in Java who does not have a WC said, "*I don't have a bathroom, so I often take my children to the ditch in front of the house.*" Other parents try to tell their children to use the toilet, but fail. As a respondent in Jakarta said, *"If you tell a little kid to go to the public toilet, it's too far (he'll say)."*

From discussions with participants, factors motivating adults to tolerate the practice of children defecating in the open are as follows:

Table 4-8. Summary of the factors motivating adults to tolerate the practice of children defecating in the open.

No	Factors motivating adults to tolerate the practice of children defecating in the open		
1	Psycho-social (especially cognitive)	• Self efficacy: Children's defecation cannot be controlled	• Children defecate without warning on the street, or in ditches or drains • Unaware that a child defecates in the street, or in ditches or drains • Child cannot use a WC
		• Evaluation: Focus on practicality	• Focus on the practicality of taking a child to a ditch, drain or stream • Focus on the practicality of disposing of children's feces in ditches, drains or streams, or burying feces, rather then disposing of it in the WC
		• Belief that children defecating in the open has no bearing on the health of the local community	• The water in the ditch, drain or stream washes away the feces • The feces are removed and disposed of in ditches, drains or streams, or in the WC • The volume of children's feces is considered small • Children's feces are thought not to pose a health risk • It is just a matter of removing and disposing of children's feces • No risk, just spoils the view
		• Belief that children do not feel comfortable using public toilets (children who do not have WCs at home)	• It is believed that children cannot defecate comfortably in public toilets. • Children are less able than adults to control their defecation.
		• Belief that this practice has to be tolerated because they are children	• Tolerated because they are children
		• Social norms: facilitating	• No other adults reprimand parents who allow their children to defecate in the open. Most adults tolerate this practice • Some village health post volunteers reprimand parents, but parents do not always take notice
2	Environmental	• Access to WCs	• Households that do not have toilets

As table 4.8 shows, factors that motivate adults to tolerate the practice of children defecating in the open range from psycho-social to environmental factors. The psycho-social

category includes the factors of self-efficacy and locus of control, attitude, beliefs and social norms. Among these factors, three were more concurrent in people's discourse: 1) belief that this practice has to be tolerated because they are children, 2) belief that children defecating in the open has no bearing on community health, and 3) evaluation, especially of the practicality of this practice. The environmental factor motivating tolerance of this practice is access to toilets in the home. As explained above, not all families have their own toilets.

The belief that children defecating in the open have no bearing on community health is related to the participants' perception of children's feces. Most see a difference between children's feces and adults' feces. The rationale for this was based largely on what children eat. *"They don't eat just anything,"* said one respondent during a discussion in Jakarta. A respondent in Surabaya explained this in more detail, *"Adults eat anything and everything. But babies, their feces are like…fertilizer for the flowers. Fertilizer like manure from goats or whatever makes the flowers grow faster. Babies' feces, because they eat things like porridge, like milk, they don't really smell."* Along these lines, some participants felt that adults' feces posed more of a risk than children's' feces because they smelled stronger. A respondent during a group discussion in Surabaya said, *"Adult feces stink, that's why adult feces are dangerous."* Less recurrent was the view that adults' feces and children's' feces posed the same risk.

Most participants did agree that children's feces are hazardous when children are sick with flu or diarrhea, for example. One woman felt that children's' feces were hazardous only when they were sick. She said, *"Only when they've got sore stomachs…(are they hazardous)."* Children's feces can cause new diseases. *"The danger is when they are sick, with diarrhea (for example); that can cause itching (if touched),"* said one man in Padang.

Use of Temporary Means of Collection

During discussion on Java island, participants who have their own toilets typically taught their children to use the WC when they were 2-3 years old. In Sumatera, toilet training begins when a child is 3-4 years old. Before they are able to use toilets, some children use temporary means of collection, such as diapers (in the case of young children below the age of 12 months). A small proportion of participants used disposable diapers on their children if they had to go on long journeys.

The disposal of children's feces collected in traditional or disposable diapers is an environmental health concern. Feces in diapers that are not disposed of in the WC will contaminate the environment (soil) with pathogens that cause diarrhea. This contamination presents a risk of these pathogens being ingested by children and causing diarrhea.

Participants generally disposed of feces in diapers in a variety of places. Some disposed of the feces in toilets. But others disposed of the feces in rivers or dustbins. Once again, perceived risks dictate the behavior of adults. Many of those who disposed of feces in rivers or dustbins did so because they perceived that children's feces had no effect on community health. Thus, most adults were motivated solely by practicality (distance, ease of disposal, etc).

An interesting point worth noting: in communities of Javanese (Jawa Tengah and Jawa Timur) a mystical belief has grown that influences the behavior of most adults when it comes to disposing of children's feces. It is believed that because of the consequences, children's feces must be disposed of with the utmost care. In Jawa Tengah, it is believed that disposing of children's feces in ditches will cause stomach aches. In Jawa Timur, it is believed that if children's feces are burned, this will cause skin irritations or abrasions in children. Therefore, in Jawa Timur, most adults do not throw disposable diapers into the garbage

because they are concerned that the diapers will be burned. They prefer, instead, to dispose of them in rivers.

As a respondent in Wonorkromo, Surabaya related in detail, *"Usually people throw them away in the river. Because the Javanese say if you throw them away in the garbage, people used to say that they might be burned. That's what usually happens, the garbage at the collection point is burned, even though it's not allowed. They worry that their children will get abrasions on their skin. So they throw them away in the river. You can't burn a river, can you? That's what people believe."*

4.3. GARBAGE MANAGEMENT

Participants, especially those in urban areas, perceive garbage as a serious problem. Most are fed up with the garbage situation in their area. Garbage itself is seen as a bad thing, something dirty, the source of flies, and, as such, the source of disease. Although aware that it is bad practice, some participants nevertheless continue to pollute the environment by disposing of garbage in rivers or gullies.

In urban areas particularly, garbage is a complex problem in which each of the actors involved (local leaders, such as neighborhood and sub-neighborhood heads, garbage collection crews, and the local inhabitants) contributes to the poor state of the garbage management system. With regard to sorting garbage, a negative attitude was found among city dwellers who never have been exposed to garbage sorting campaigns.. Conversely, positive attitudes and participation were found from those who have been exposed to this type of campaigns. .

In rural areas, garbage is not seen as a serious problem. But in reality, a large number of people damage the environment by disposing of garbage in rivers or gullies. Like those living in semi-urban and urban areas, in the minds of people in rural areas disposing of garbage in rivers is no problem because, they say, the water washes it away.

Garbage in urban areas

Garbage is both an objective and subjective issue for urban communities. Objective because garbage is a visible problem. Rivers full of garbage or piles of garbage in drains or in the corners of open spaces are common sights in the locations studied. Subjective because the participants themselves define garbage as a problem. During discussions, the problem of garbage was inevitably raised by the participants without any prompting. Moreover, the problem of garbage was easily and spontaneously raised during dialogues with inhabitants during the field observations. Garbage related problems raised included: 1) the participants' dissatisfaction with the garbage removal service managed by the neighborhood/sub-neighborhood, 2) the piles of garbage everywhere that make them feel unpleasant, or, as found in several locations, 3) drains and ditches blocked by garbage.

Typically, each house has a rubbish bin in the form of a plastic container, tin drum, or plastic bag. It is in these containers that the participants temporarily store garbage inside the house. The problem that then arises is how this garbage is managed when it leaves the house. In general, in urban areas, garbage collection services go house-to-house collecting household rubbish. The frequency of collection varies from neighborhood to neighborhood, even from sub-neighborhood to sub-neighborhood. This is due to differences in the capacity of the garbage collection trucks. A fair number collect garbage from every house on a daily basis. Others collect several times a week. But some do not have a schedule for collection, and as a consequence, garbage piles up in the house and becomes increasingly unpleasant because of the odor it releases. People have negative perceptions of garbage. In their minds, garbage is revolting, filthy, the source of disease, and the cause of floods.

Table 4-9. Summary of factors motivating the practice of disposing of garbage in rivers.

No	Factors facilitating the practice of disposing of garbage in rivers		
1	Cognitive	Belief that garbage is a bad thing that has to be removed from the home and environment immediately	• Garbage is dirty, revolting and smelly • Garbage is a breeding ground for flies • Flies are a source of disease • Cause of flooding
		Belief in the practical advantages	6. More practical than going to temporary garbage collection points or rubbish carts
		Belief that water washes the garbage away	• Garbage is washed away • When the water rises, the river washes the piles of rubbish away
		Non-conducive subjective norms	• It's not prohibited • Everyone does it, especially those living upstream
		Non-conducive social norms	• Disposing of garbage in river is not an individual problem but a neighborhood/sub-neighborhood problem
2	Environmental factors	Environmental: Limited access to adequate collection services	• Collection sometimes not regular • Garbage collection not house-to- house but alley to alley (usually located at the edge of a stream/river)

For urban dwellers, the problems with garbage collection services are not limited to the scheduling of garbage collection. Another complaint that participants raised was that garbage collectors did not go into the narrow alleyways were most of them live. According to them, garbage collectors stop at the end of the alleyways with their rubbish carts and yell to people down the narrow alleys to bring out their garbage. A man in Jembatan Besi, Jakarta, said, "*Sometimes we go there, sometimes it's only when someone shouts: 'Garbage...garbage…garbage' that we know the collector is outside.* A respondent in Aur, Sumatra Utara explained, *"There is a garbage collector, but sometimes he's out front, sometimes out back. He never comes down, the garbage collector never comes down."* Sometimes people miss the opportunity to dispose of their garbage, but more fundamentally still, the people who live on narrow alleyways dislike this system.

The method and amount of payment for garbage collection differed from one study location to another. In some locations, payments were collected at sub-neighborhood level along with other fees such as local security fees. Some paid the garbage collectors directly. The cost differed too, from Rp. 2,000 to Rp. 5,000 or around 25 cents to 60 cents a month.

During discussions, participants also talked about the many unpleasant experiences they have had related to garbage collection. Many perceived garbage collector as industrious and meticulous about collecting people's garbage if they were given tips. In the words of one respondent in Aur, Medan: *"…if I don't give him a tip, he won't take it… won't take the rubbish away. So we just throw it in the river…."*

It is these problems that contribute to motivating some to dispose of their garbage in rivers or streams, at the side or roads, or in other open spaces. Others are motivated solely by the perceived practicality. Despite being aware of the fact that throwing rubbish away anywhere, especially in rivers, will have a negative effect on the environment, they still think that throwing garbage in rivers is acceptable. They believe that the water will wash the garbage away. "*It doesn't matter, the water washes it away…When it rains the water rises and the river flows really fast…so fast sometimes that it even washes away branches, trees, bits of wood, the lot,"* said one respondent in Jawa Timur. Thus, for them, the arrival of floods or heavy rain is a good opportunity to dispose of large items or large amounts of garbage.

As well as the belief that garbage is washed away by the river, people are also motivated to dispose of garbage in rivers by the belief that many others do the same. In particular, they refer to people living upstream, who are convinced do the same. So, people who dispose of garbage in rivers feel that they are not alone in doing so.

Some participants realized that disposing of garbage in rivers was against the law; specifically, in contravention of regional regulations. Nevertheless, they pay no attention to these regulations. In reality, social norms preventing river pollution are not generally found in communities. A person sees throwing rubbish in the river and thinks nothing of it. For them, garbage is a private problem. They also fear that if they reprimand someone their meaning might be misconstrued and spark conflict. In their minds, the only person that should issue reprimands is the sub-neighborhood/neighborhood head.

It is somewhat different in communities that are in the process of collectively cleaning up garbage from rivers, as in Wonokromo (Surabaya) and Petojo Utara (Jakarta). Social norms preventing river pollution have begun to take root, though are not yet totally established. Thus, people who dispose of garbage in rivers prefer to do so at night when no one, especially the sub-neighborhood/neighborhood head, can see them. "*…if someone talks about throwing out the garbage, it must be a person whose house is near the river…no way would it be a person whose house is far from the river. Usually they just chuck it straight out of the window, when it's quiet, y'know. If they do it when there's lots of people around, they'll get yelled at…,"* said one man during group discussion in Jakarta.

People respond only when garbage is disposed of in or near the environment where they live, and they are aware of it. In the words of one man in Jembatan Besi, Jakarta, *"You tell them off for throwing it away in front of your house. Especially if you're in the middle of sweeping up and they come and chuck away their rubbish. It's rather irritating, you know."* Besides that, once again, garbage disposal is a private problem.

Garbage is a complex problem in which each of the actors involved (local leaders, such as neighborhood and sub-neighborhood heads, garbage collection crews, and the local inhabitants) contributes to the poor state of the local (sub-neighborhood/neighborhood) garbage management system. Described above are the garbage disposal practices of some participants and the background to these practices. This study also found that garbage is in general perceived to be the responsibility of local leaders (sub-neighborhood/neighborhood heads). People do not feel the need to take the initiative to develop a solution (*See the case study below as an illustration)*.

Garbage collection: locals may be enthusiastic, but it all depends on the lead of chief neighborhood association
In Gading Surabaya, there is no system of garbage management in the community. Most people dispose of their garbage in rivers. A few take their garbage to temporary disposal sites, which are quite a distance away. The local people are very enthusiastic about establishing a garbage management system. The chief of neighborhood associations even had collected contributions to make it a reality. But the project stopped dead in its tracks for want of enough money to make collection carts. Though fed up with the performance of the chief of neighborhood associations, they were nevertheless willing to contribute funds if a garbage management system could get up and running. But they are still waiting, and asking, what exactly is chief planning?

Among garbage collectors there are many problems, too. In general they do not get paid enough for the amount of work they have to do. For example, in Aur (Medan), participants said there are only two garbage collectors for one ward. In Petojo Utara (Jakarta), the garbage collectors are paid only Rp 125,000 or around US$ 14 a month. For this reason, collectors in Petojo Utara supplement their incomes by collecting and selling plastic.

Local leaders (RT/RW), who are perceived by participants as the key force, are often less than sensitive to the problem. They generally feel that there is no problem with the garbage management system in their area. They feel the system is running well. As local leaders, participants said, they care very little about garbage management. To summarize, the problems with garbage management systems can be depicted as follows:

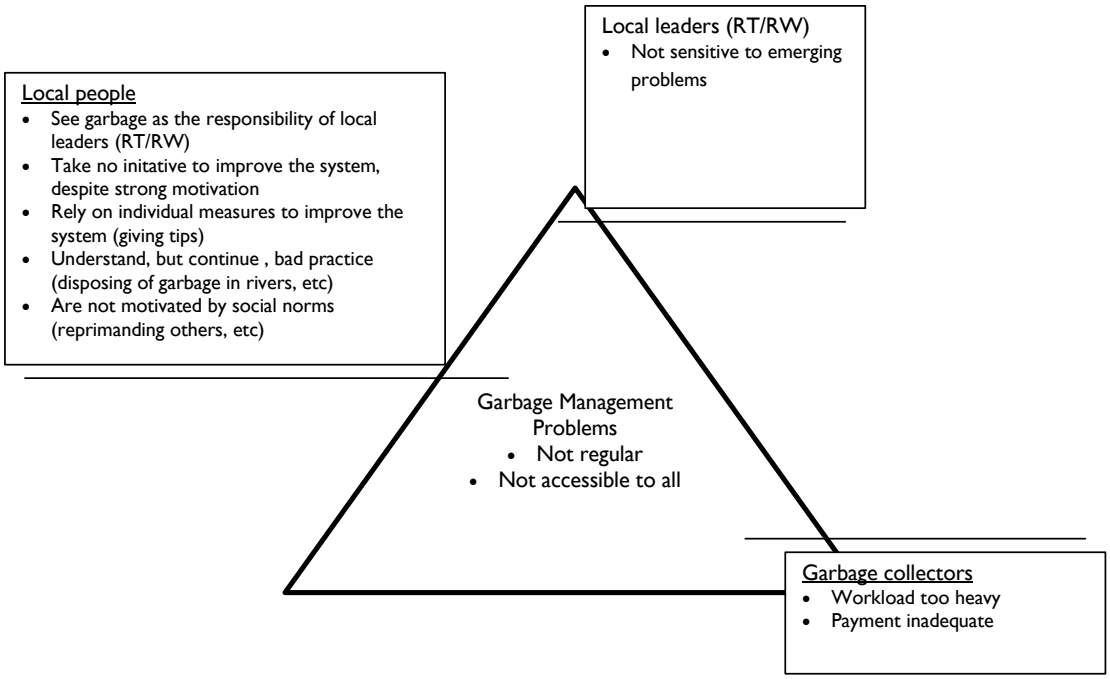


Figure 4-1. Model of garbage problems in urban communities.

Garbage in rural areas

For rural dwellers, garbage is not perceived as a problem. But, objectively, some people in rural areas do pollute rivers as a result of their garbage disposal practices. They burn, bury or dispose of garbage in gullies or rivers. As explained previously, disposing of garbage in rivers is considered acceptable because the rubbish will be washed away by the water.

This study found a fairly strong connection between garbage and compost. Many rural participants were strongly motivated to turn their garbage into compost. Some even do so, though in simple ways. As one man during a discussion in Jawa Barat explained, "*I have a pit out back. I burn rubbish from the yard in it and any grass left over from the cattle feed. When enough piles up, I use it as compost.*"

Sorting garbage

In general, participants in urban areas had heard of the idea of sorting wet and dry garbage. But most did not have a positive view of this practice. In their minds, sorting garbage: 1) is difficult, bothersome, and time-consuming, 2) is a dirty and smelly job, 4) requires space that they don't have, and 4) only benefits wastepickers. As a consequence, the practice of sorting garbage was non existent in the study locations.

The exception was in communities where the ESP is working to introduce and disseminate the concept of sorting garbage. For example in Wonokromo, Surabaya, participants had a positive view of this practice. Most felt that sorting garbage was an easy job. The perceived advantages that motivated people here to stay involved in the garbage sorting program were: 1) it reduces the amount of garbage that garbage collectors have to take away, which in turn solves the problem of delays in house-to-house collections, 2) it eradicates odors and reduces the amount of rubbish in houses, 3) the economic profits from the sale of plastic, 4) it reduces the rat and fly populations in houses and in the local environment, 5) there is prize draw or prizes for the highest sales of organic garbage, 6) it reminds people of the poor garbage management practices in Bandung that motivated people there to realize the importance of garbage problems, and 7) the necessary documentation from sub-neighborhood to ward level is facilitated because it promotes a garbage sorting program. Here people were motivated to participate by perceived individual benefits rather than collective benefits such as conservation of the broader environment. Not surprisingly, the study found weaknesses in people's understanding stemming from a lack of general knowledge, for example of the effect of plastic rubbish on the environment

By contrast, participants in rural areas generally respond in a positive way to the idea of sorting garbage. They perceive sorting garbage as beneficial to their farming enterprises. Wet garbage can be turned into compost. This rationale is understandable because fertilizer is a major expense for rural farming families.

Interestingly, in urban areas other than Wonokromo, garbage management is a woman's task. In Wonokromo, the situation is different. According to participants, men are just as much involved as women in sorting garbage at home. However, in activities in public domains (RT/RW/ward), women play more of a role than men do. In rural areas, it is usually the women who dispose of garbage in holes, rivers or gullies. The men play more of a role in processing garbage by burning or turning it into compost. To some extent, this has to do with the public work that men are required to do.

5. WATER SOURCES AND CONSERVATION OF WATER SOURCES

Water sources

Discussion and observation of water sources at the study locations identified main four categories of water sources: surface water, ground water, PDAM (municipal or district water supply companies), and (a small proportion) packaged water. Findings show that the perceived quality of these sources differs, as do their users. Some water sources are vulnerable to changes in weather.

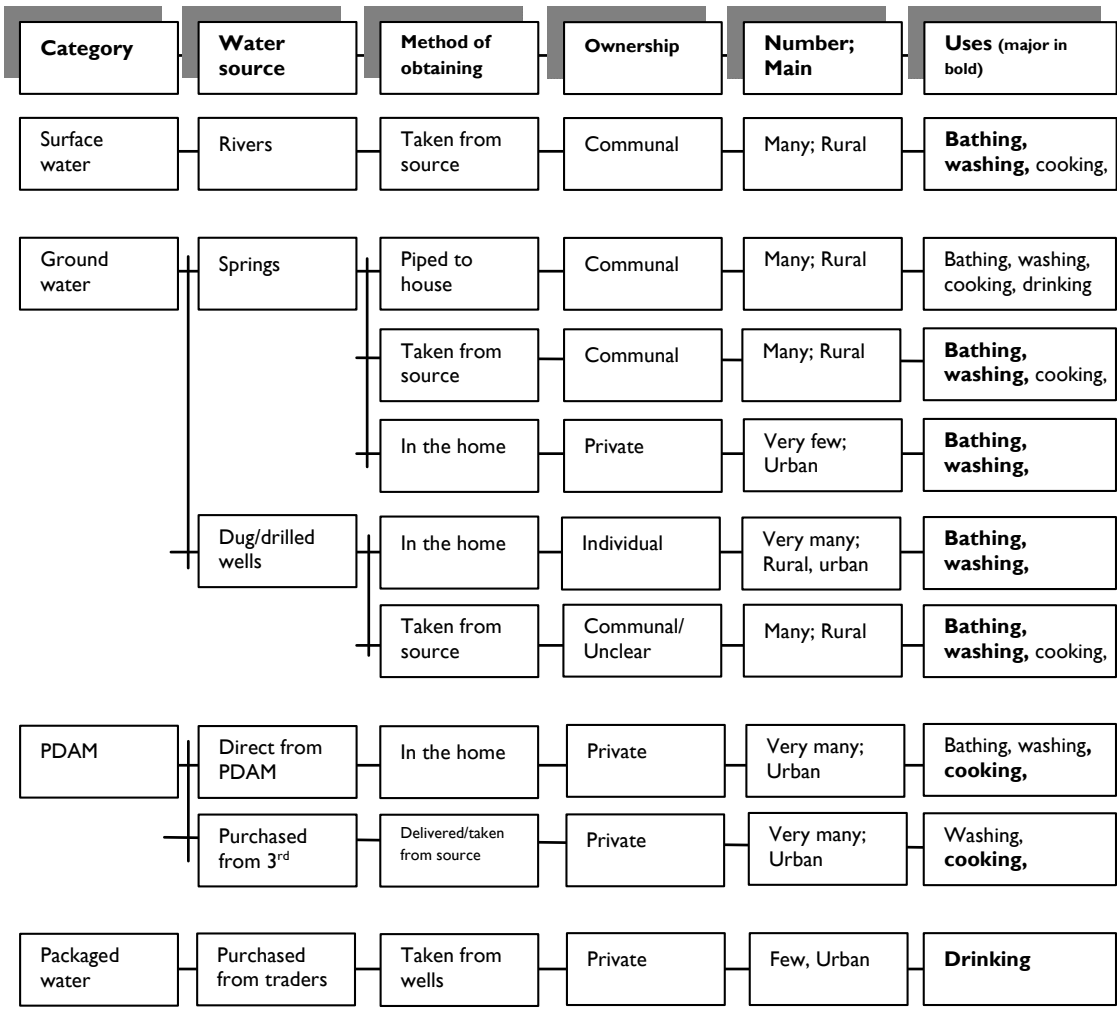


Figure 5-1. Diagram of water sources.

The main sources of water differ for people living in urban areas and people living in rural areas. In urban areas, people rely mainly on two sources, PDAM and ground water, especially well water. In rural areas, more people use springs and / or wells. In terms of ownership, wells in urban areas are generally privately owned. Wells, like PDAM pipes, are generally owned by individual households. In rural areas, more communal owned water sources are found. The types of communal water sources found in rural areas in this study included springs (with the water piped to homes or collected from the source), communal wells, and rivers. In three study locations in Sumatra – Saree (Aceh), Nusa (Aceh), and Doulu (Sumatra Utara) – water supply was piped from springs.

For drinking water, participants identified three general attributes when judging quality: color, smell and taste (after processing). These three attributes were often applied simultaneously. Meeting two of the attributes did no guarantee the quality of the water in the participants' eyes. As one person in Subang, Jawa Barat, said, when complaining about the well water, *"The water's kind of salty. Sort of flat. Yes, it's clear, but it tastes different. Like sea water."* Examples of applications of these attributes are as follows:

Table 5-1. Summary of the application of the criteria of color, smell, and taste to evaluate water quality.

No	Criteria	Examples of how respondents apply the criteria
1	Color	Yellowish Clear Muddy White
2	Smell	Smells like rusty metal Smells like ditch water
3	Taste	Fresh Salty; Like sea water Flat

In urban areas, an additional criterion for evaluating water that participants sometimes used is risk of contamination. The indicator used is the position of nearby septic tanks and or drains in relation to the well. Sometimes, without verifying the color, smell or taste, just knowing that there are septic tanks or drains in the immediate vicinity is enough for a person to deem the water source (well) poor.

The quality of water determines how it is used. For most participants, water perceived to be the best is reserved for drinking. The next level is for washing dishes, then washing clothes/bathing/personal hygiene. The blue ribbon is given to water used for drinking, cooking or otherwise ingesting. Water ranked with lower quality is used for cleaning or for activities that do not involve ingesting the water in any way (see Table 5.2).

Table 5-2. Summary of the uses of water ranked by water quality.

No	Uses of water ranked by water quality
1	Drinking/cooking (highest quality)
2	Washing dishes
3	Washing clothes, bathing, personal hygiene (lowest quality)

Many urban people do not use well water for drinking or cooking because it is not always clear, and in particular, they avoid it when the well is close to a septic tank which they deem not good for drinking. Many urban dwellers prefer to use well water for bathing, washing clothes, and cleaning the house. For drinking and cooking, many of them use PDAM water from home connection or through neighbors or other third parties.

For most people in rural areas, the main sources of water for drinking, cooking and washing dishes are wells and springs. The study found a few participants in rural areas with access to PDAM which is used for drinking. Some use surface water such as river, particularly for washing clothes and bathing. Despite having well water or PDAM, some still use river for washing and bathing to cut corner spending on electricity (for those who use well) or water bill (for PDAM subscribers).

Table 5-3. Summary of criteria, indicators and water uses.

No	Criteria	Respondents' indicators	Water uses
1	Water quality	Color, smell, taste, risk of contamination	Drinking, cooking
2	Efficiency	The cost involved	Washing clothes, bathing

As shown in the table 5.3 above, the attributes for water quality tend to be applied when the best quality water is needed, that is, for drinking and cooking. For other uses – washing clothes, bathing and personal hygiene – the criteria applied is efficiency. Here, the participants principally count the cost of paying for water. This explains why women in Koto Lalang, Sumatra Barat, go to the river to wash clothes and bathe rather than bathing in well water at home. They reckon that the more well water is used at home, the greater the cost of electricity. As one woman in Java explained, "*Though I have a well, I still go to the river…to bathe, do the washing right there. Bathing in the river is free … there's lots of water. If I use PDAM water I'd be worried about the cost….*"

The experiences of many participants indicate that their water sources are rather vulnerable to changes in weather. As one person in a group discussion on Sumatra island said, *"Usually…in the dry season, the water's yellow. In the rainy season, it turns white."* More generally, well water was scarcer in the dry season. In anticipation of this, most people dug their wells deeper. As one man in Wonokromo recalled, *"Once it got dry, and then I had it dug out, deepened (to reach the water)."* Those that use river water experience the same. When it is raining hard, the

water level rises and the water turns murky, making washing clothes in the river feel uncomfortable and unsafe. In Koto Lalang, if the river water rises, the women lose a source of drinking water –the small wells dug at the river edge. So they have to find other places near the river to dig new wells.

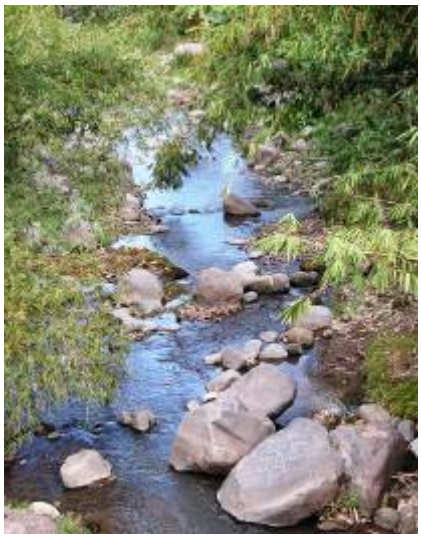
During discussions followed by observations, it was found that in some of the study locations, the supply of water for hygiene activities was perceived sufficient in quantity. For urban dwellers, the water supply was sufficient because they generally have more than one source of water. Usually they have access to PDAM water (at home or purchased) or well water. The difficulty is for people living in upland areas. Generally they rely on one source of water, usually a ground water source.

Communal conservation of water sources

In urban areas, discussion of conservation focused on conservation of well water. In rural areas, especially in upstream locations, discussion of conservation was more intense and focused on communal conservation of water sources. Most participants in rural areas saw conservation of water sources mainly as cleaning the area around the water source and water pipes that were thought to have an effect on the flow of water supply. A few understood conservation of water sources from its roots, such as protecting aquifers, the importance of trees, and others. Findings from this study suggest that a variety of models for conservation of water sources are emerging in communities. One **first model** is having someone appointed and paid to do the job –take care of the water source. The **second model** is the conservation of water sources initiated by an organized group of local people, and is generally voluntary in nature. The **third model** is more spontaneous and less organized. The **fourth model** is based on mystical beliefs. We describe these models further below. With the exception of the fourth, community participation is an integral part of all the other models observed.

During discussions with participants in urban areas, the topic of conservation of water sources, when it did arise, focused on conservation of well water. In general, participants in urban areas understood that septic tanks must not be positioned too close to wells. Also known, though only by some, is that the construction of a protected well includes concrete rings, a floor, and a cover. There was no discussion however about the need and process to clean wells.

In rural areas, especially in upstream areas, the focus of discussion was on conservation of communal water sources, especially springs that are used by the local people. When discussing conservation, the focus of most participants was on cleaning up the environment around water sources and removing rubbish and other debris from water pipes. So, the focus was mainly on ensuring the flow of water supply. In Mekarjaya in Jawa Barat, for example, the discussion first focused on the problem of extending the water pipeline and efforts to prevent damage to/blockage of the pipes by fauna (crabs), or by fallen trees (banana trees). As one inhabitant said, *"Crabs are always blocking up the pipes at the spring!"* Or as another participant, suggesting the regular replacement of bamboo pipes as a form of conservation, said, *"Once a week, any bamboo that's damaged should be replaced. Y'know, when the bamboo gets hot it breaks easily. So replace the bamboo, bury it again, replace it again (if it gets damaged again)!"* In Saree (Aceh), women gave an enthusiastic account of the efforts of people there, especially the men, to protect springs by communal cleaning of the pipeline and the area around the water source. An explanation given by a person during a group discussion on Java island is a fitting illustration of the focus of concern –ensuring water flow, that people raised when asked to discuss the topic of conservation: *"Well, there are big trees there…if there is lots of debris, we should sweep it up."*



Only after further facilitation, the more fundamental topics related to conservation were raised. Although their logic differed, a fair number of participants saw the connection between the existence of trees around a water source and the supply of water. During a discussion in Jawa Barat, for example, one person talked about his experience: *There is (a connection between trees and the supply of water). If the mountainside is bare…okay…oh, the dry season there would be boiling hot. There used to be lots of trees, so it was shady. Big trees, so the water just came out of the spaces between the rocks itself."* The opinion aired by a respondent during a discussion in Jawa Timur is an example of a different logic: *"Now the forest is stripped bare. That automatically has an effect on the water. Water comes from the roots of trees, so if the trees are cut down, no water comes out…."*

Furthermore, discussion of conservation during the dialogues with participants involved other issues too. Conservation issues can be grouped into two categories: 1) competition over the use of water sources, and 2) use of chemicals. The story told by a person living in Batu, Jawa Timur illustrates the competition for water sources: *"Darmi and Coban Rais get*

their water from Batu and in Malang there's not enough water…the flow of water here is getting smaller…if much more is taken [by PDAM], there'll be no water left in the river." The use of chemicals was raised during discussions in Mekarjaya, where people believe that chemicals will make their water safer.

To summarize, the topics and issues raised during group discussions, particularly with those living in upstream areas, were as follows:

Table 5-4. Summary of conservation topics.

No	Topics raised during discussions about conservation	Issues	Remarks
1	Flow of water supply	• Cleanliness of sources • Blocked pipes • Cleanliness of water tanks	• Topics raised in all discussions in upstream locations
2	Regreening	• Trees and supply of water • Neglect of trees • Clear cutting on mountainsides • Floods	• In some group discussions, topics raised after facilitation
3	Competition over use of sources	• Water pumped out by PDAM • Water pumped out by packaged water companies	• Topic raised in one location in Jawa Timur
4	Use of chemicals	• Chemicals make the water healthier	• A topic raised in one location in Jawa Barat

In several locations in upstream areas, examples of collective action aimed at the conservation of water sources were found. However, looking at what is uppermost in people's minds about water conservation, these collective initiatives were limited to cleaning up the area around the water sources. Only in one location were more fundamental conservation activities mentioned, such as planting trees around the water source. This has, to a greater or lesser extent, some bearing on the model of collective action taken by the community.

From analysis of the collective initiatives developing in several locations, four models of collective action were identified. The first model was having someone being appointed and paid to do the job. The second model consisted of conservation of water sources initiated by an organized group of local people, which is generally voluntary in nature. The third model is more spontaneous and less organized. The fourth model is based on mystical beliefs. A brief description of each of these models is presented in Table 5.5 below:

Table 5-5. Summary of water conservation models.

No	Model	Characteristics	Aims	Location
1	Model one: "Caretaker"	• A caretaker is paid by the local inhabitants by way of fixed contributions • The caretaker regularly monitors the water source and water distribution pipes • The caretaker regularly cleans up the water source and water distribution pipes • There is collective action if necessary. Locals are mobilized by the village head or other local leader	• Routine cleaning up of rubbish and debris (leaves, plastic, etc) around the water source and the distribution pipes	• Saree, Aceh • Temas, Jawa Timur
2	Model two: "Local groups"	• Group of local people who pay special attention to water sources and their supply of water • Voluntary task forces, responsible for monitoring and cleaning the water source and distribution pipes • On a day-to-day basis local people also participate in monitoring and report any important findings to the task force • For bigger jobs, the local people are mobilized by the task force to help • Routine meetings between group members and local inhabitants to discuss issues related to water and plan relevant activities	• Routine cleaning up of rubbish and debris (leaves, plastic, etc) around the water source and the distribution pipes • Planting trees to protect the water source • Water distribution innovations (control tanks, holding tanks, etc)	• Mekarjaya, Jawa Barat
3	Model three: "Incidental"	• If the pipes get clogged up, locals report this to local leaders • Local people clean up water sources together • In general, collective action is led by local leaders • There is no conservation activity plan	• If there's a blockage, cleaning up of rubbish and debris (leaves, plastic, etc) around the water source and the distribution pipes	• Salaman, Jawa Tengah
4	Model four: "Mystical"	• There are no planned conservation activities • Water sources are protected by taboos contained in mystical tales • Mystical tales are socialized by parents. In some locations, young people sometimes break the taboos • Not everyone believes in these mystical tales. They challenge others to be more religious.	• No activities related to conservation of water sources	• Koto Lalang, Padang • Doulu, Sumut • Lesser degrees of mysticism in Jawa Tengah

The **first model**, which was found in several locations is the "**caretaker model**". Water sources are monitored and cleaned by special caretakers, generally men. In some locations, like in Saree (Aceh), inhabitants pay routine contributions to pay the caretaker. The caretakers regularly monitor and clean up the environment around the water source, the source itself, and the distribution pipes. If the workload is heavy, caretakers generally inform the village head who then mobilizes the local inhabitants to collectively clean up debris, clear blockages, or repair pipes.

The **second model** is the **"local group model".** In this model, there is a group of local people who pay special attention to water sources and their supply of water. In locations like Mekarjaya in Jawa Barat, groups called Mitra Air, have been formed as the result of external facilitation by an NGO called Warga Peduli Lingkungan (WPL). In this model, a voluntary task force is the driving force behind conservation of water sources. However, because these groups are made up of local people, on a day-to-day basis local people also participate in monitoring and report any important findings to the task force. The existence of these groups facilitates mobilization of the local people to help protect water sources. That is not all; the action of these groups facilitates discussion among local inhabitants on issues related to water and planning of activities to protect water sources. A more critical awareness motivates collective action that has long-term effects, such as planting trees.

The **third model *is*** the **"incidental model"**. In other words, the local people take collective action to make repairs to their water sources if a blockage or a decline in water quality is detected. For collective action to take place, locals usually report problems in the first instance to their local leader. This leader will then mobilize the local inhabitants. So, everyone reacts if a problem is detected. There are no long term planned activities. Not surprisingly, these activities are limited to removing garbage and other debris from water sources.

The **"mystical model"** was found in several locations in Sumatra. People in these locations believe that water sources are protected by mystical forces whose taboos must be respected. Breaking of these taboos will have terrible consequences for the person breaking the taboo or for the water source. In essence, these taboos are a mechanism for conservation of water sources. In Koto Lalang, Sumatra Barat, for example, local people allowed only to draw water from sacred water sources. They are not allowed to wash clothes or dishes there. Even washing one's face is prohibited. If this taboo is broken, the local people believe that the water sources will dry up and the person who broke the taboo will fall sick. As one woman living close to this water source explained, *"Our ancestors forbade it. Because of the taboo. It is taboo. If you wash your face there, the water will dry up. Just like that! Not only will it dry up, little children, say, have got fevers and then recovered, been ill and then got better. There was once a child who washed his face here, and by the time he got home he had a soaring temperature that wouldn't come down. Then he went back there with his mother and burned some incense and asked the spring for forgiveness. By the time they got back home, the child's fever had gone."*

This model was also found in Doulu, Sumatra Utara. In this location the belief is that people must not contaminate the water source, by swearing, cutting down trees, or doing something that violates local norms, when in the vicinity of a sacred water source. In the words of one inhabitant in Doulu, *"You are not allowed to defecate here (by the water source); if you do, you'll be struck down by sickness. According to the beliefs of our ancestors. They say the place is haunted! Well, y'know, the spring has to be kept clean, doesn't it? So that was the belief that all the water sources there were guarded by, for example, invisible beings. Well, if you defecate there…then cut down the trees, take the wood, the place would be dead!"*

Parents continue to pass down these mystical beliefs to their children. But they are starting to come up against resistance from their own people, especially 1) young people, and 2) people with deeper religious beliefs. In any case, so far, these sources are still protected by these mystical tales. There are no specific activities to protect water sources that involve the local inhabitants.

6. PDAM

The majority of participants who do not have access to PDAM expressed a strong desire to have it. Pipeline availability, economic capacity and the response from PDAM, however, are all barriers discussed by participants. There are various ways of accessing PDAM water, but participants reported that they wanted to be direct customers. Participants who are PDAM customers do have some general complaints about PDAM: 1) the quality of water they receive, 2) the calculation of water usage, which they say is not reliable, and 3) problems with PDAM's responsiveness to customers' concerns.

Access and perceptions of barriers

Not all the people in the study locations had access to PDAM water. As shown in the table below, there were three main reasons why people do not have access to PDAM water. First, because there is no PDAM pipe network in their area. This is the case for those living in Mekarjaya (Bandung), Pangarengan (Subang), Saree (Aceh), Doulu (Sumatra Utara) and Koto Lalang (Sumatra Barat). Some participants living in areas where PDAM water is available also reported that the existing pipelines are "used up," that there are "no new pipelines available." However, there was no consensus among participants regarding this barrier. Some said that connections were still available and that the problem was the high cost of getting a connection. But others believed that no connections were available, and that new pipelines had yet to be built.

The second inhibiting factor was the household economic capacity. Some participants felt that they would not be able to afford the registration / connection fee and the monthly payments. In some cases, especially in Jakarta, some participants even believed that they would incur even more expense if they became PDAM customers because to get a decent flow of water they would need to install a jet pump and / or a water tank.

The third factor, mentioned by only a few, was the lack of response from PDAM to service issues. For example, in Surabaya, a group of residents, coordinated by the sub-neighborhood head, submitted applications for connections. After submitting their applications twice, they received a promise that their area would be surveyed soon. To date, their area has not been surveyed.

Table 6-1. Summary of reasons for not having access to PDAM water in the eyes of respondents and the desire to have access to PDAM water.

No	Reasons for not getting access (respondents' perceptions)	Example locations	Desire to have access to PDAM water
1	No PDAM network	Mekarjaya (Bandung), Pangarengan (Subang), Saree (Aceh), Doulu (Sumatra Utara), and Koto Lalang (Sumatra Barat)	High, especially in semi-urban areas like Koto Lalang. Low in upstream areas
2	Economic capacity	Jakarta, Surabaya, and other urban and semi-urban areas	High
3	No response from PDAM	In Surabaya	High

During discussions with participants in urban and semi-urban areas, a fairly strong desire to have access to PDAM water was indicated. They were motivated by the wish to have a better and more convenient source of water than they do at present. But access to PDAM water, in the participants' minds generally means getting direct household connections by becoming individual customers. A desire for collective access was seldom indicated.

In practice, there are in fact a variety of ways in which people have access to water from PDAM. While most are direct customers, some get it by purchasing it from neighbors, from PDAM water sales outlets, or from tankers transporting PDAM water. Others get it from public hydrants that are equipped with public tanks. But, once again, the ideal in the participants' minds is to be individual direct customers.

Table 6-2. Summary of ways respondents access PDAM water.

No	Ways respondents access PDAM water	Description
1	Direct customers	• Household connections with official meters
2	Purchase (not supplied directly to the house and paid for individually	• Purchase from neighbors at an agreed rate • Purchase from PDAM water suppliers at a fixed rate • Purchase from water sellers who deliver water house to house • Purchase in jerry cans from water tankers
3	Collectively (cost shared)	• From public hydrants, public water tanks • Piped from one point to individual houses

Complaints

Participants with access to PDAM service did have complaints about the service they received. Common complaints raised during discussions were about: 1) the quality of the water they receive, 2) the calculation of water usage, which they say is not reliable, and 3) the lack of response from PDAM. See Tables 6.3 and 6.4.

Table 6-3. Summary of complaints about PDAM (1).

No	Complaints about PDAM services	Issues	Examples of respondents' complaints
1a	Quality of water received	About things the respondents did not like	• Contains lime • Sandy • Wormy
		Susceptible to changes (weather, number of users)	• In the rainy season the water is yellow • If lots of people are using it, the flow of water slows
		Unpleasant color	• Black • Murky
		Unpleasant odor	• Smells foul • Smells of chlorine
		Unpleasant consequences	• Makes you cough
1b	Quantity	Limited supply	• Only a little comes out
		The times when the water does flow are annoying	• Comes out at night • Have to monitor it at nights

The main complaints found in most study locations were about the quality and quantity of water received from PDAM. As the table 6.3 shows, in terms of quality, five main issues were raised during the group discussions.

Complaints about the quantity of water were that: 1) the supply was limited and 2) the water sometimes only flowed at night. One woman in Jakarta said, *"The water comes out of the taps at 2 o'clock in morning… By 6 o'clock, there's nothing. At five (in the evening), it's all gone."*

Table 6-4. Summary of complaints about PDAM (2).

No	Complaints about PDAM services	Issues	Examples of respondents' complaints
2	Calculation of water usage	Thought unreliable	• The water is frequently off but it still costs a lot • They measure the air that comes out, not the water • The meter goes round too fast
3	Lack of response from PDAM (here respondents are talking about personnel who come as claiming to be representatives of PDAM)	Shirk their responsibilities	• Respondents make complaints, but personnel say it is their superiors' responsibility, not theirs
		No follow up action	• Respondents frequently make complaints but no follow up action is taken
		Think it necessary to give a tip to get a decent response	• Only if you give tips, do you get a response

Another complaint had to do with the calculation of water usage. In one participant's words, *"All that comes out is air...hardly any water, if any at all, but you still have to pay."* This is a reflection of the participants' dissatisfaction with the meters that measure water usage. They feel that the charges are substantial, even though the water is frequently off. They also reported seeing the meters turning even though only air was coming. Some think their meters go round too fast so it records more water volume than what people actually get.

Participants equate PDAM with the meter readers. One respondent from Jawa Timur reported that a meter reader told her that her concern was his *"boss's affair. I'm just a worker."* Participants in urban areas also believe they will get a serious response to a complaint only if they pay a tip.

Causes and Solutions

Participants believe that service issues are related to several factors that affect the quality and quantity of the water supply. The main causes identified during group discussions were: 1) the large number of users simultaneously using PDAM water, which reduced the supply of water, 2) leakages causing reductions in supply, and 3) repairs to pipes or installation of new pipes, making the water murky. Reasons such as these were generally accepted at face value by the participants. They tended to see these causes as outside the control of PDAM, as inevitable, and as transitory.

However, during the discussions, other more critical views were raised. A few participants pointed out two other causes: 4) people stealing water, thus reducing the supply for official customers, and 5) underhand dealings by personnel that result in some households getting more than their fair share of water.

Problems with the quality and quantity of PDAM water represented a burden to participants. In general, they tried to find solutions to their problems individually. No instances of collective action towards a solution were found, for example in the form of lobbying PDAM or local parliament, etc. Participants in general perceived these problems as private affairs, not of the public domain.

Table 6-5. Summary of routes taken by respondents to solve the problems with the services they receive from PDAM.

No	Ways Out	Examples
1	The usual routes, non-confrontational	• Switch sources • Ask neighbors • Distill/filter the water (siphon off the clear water) • Install collection tank
2	Ways perceived as rather confrontational	• Install jet pump to get a better flow of water

To get around the problems, some participants chose routes that would not upset others (non confrontational), but others took routes that would be detrimental to others.

Participants mentioned several "usual routes" to solve their problems. Some made the decision not to use PDAM water any more and to find a different source. Or they are forced to turn to their neighbors, as one respondent in Java explained, *"It's like this, PDAM puts chlorine in the water so the children won't drink it, it smells they say, so I go and ask my neighbor for water."* Many also make an extra effort, such as letting it stand for a night, or

filtering it. Others choose to construct large holding tanks for PDAM water, so water is available even when the supply is off.

A more confrontational route was mentioned during discussions in Jakarta – installing jet pumps to get the water out. Some use jet pumps along with "temporary holding tanks" to "store the water." The use of jet pumps illustrates unfair competition for water. Those that have don't have jet pumps say that they get enough water only when the electricity is off because jet pumps don't work without electricity. When there is electricity, most of the water goes to houses that have jet pumps. People who use water tanks (without jet pumps) have to be cautious. They say that when the tank water is full they have to close the crane at the meter right away, otherwise, they say, the water will be sucked back to the houses that have jet pumps.

Participants in general perceive the use of jet pumps as a violation of regulations. On the other hand, users of jet pumps are unclear as to whether they are breaking any laws. PDAM, in the participants' minds, has not addressed this issue or is not aware of it. They believe that PDAM focuses mainly on issues related to the water meters.

Feelings of discrimination

From the analysis of participants' statements, it appears that many feel that PDAM is overlooking their concerns and not providing access to their services based on socio-economic factors. In one group discussion on Sumatra, for example, a man said, "*[PDAM services] the area round the market. There are some users in the villages, too, but they're rich!"* "The area around the market" implies people of higher social strata or richer people.

Some participants (notably in large cities) who are PDAM customers felt that richer customers received preferential treatment. For example, one person emphasized that delays in handling complaints had to do with socio-economic class. *"[PDAM personnel] get a complaint today, there's no guarantee it'll be sorted out by tomorrow. It might be 3 or 4 days…[but[if it's a rich person who makes the complaint, they'll be round straight away."*

7. PROCESSING DRINKING WATER

The most common way of getting ready-to-drink water is to boil it, however, drinking raw water is a practice still found, especially in rural areas. After boiling the water, some participants take the additional step of allowing the water to settle or stand for some time. The purpose of this is to get cleaner water or to get rid of odors. For participants in rural and semi-urban areas, increases in the price of refined fuel oil have influenced their choice of fuel for cooking, and boiling water. Wood is sometimes used a substitute for kerosene. To determine whether water has boiled properly, the participants rely mainly on visual indicators (bubbling / boiling). How long the water boils tends to be a secondary indicator. Opportunities for recontamination of the water arise when people cool water in uncovered containers.

Drinking raw water

Study findings suggest that the practice of drinking raw water is still followed among some people living in rural areas particularly when they are not at home. From group discussions, it was found that drinking raw water was not limited to men, but was also practiced by women and children. A person living in Doulu, Sumatra Utara, explained, *"Children who are playing outside usually go to the spring if they're thirsty! They don't go home, they just go to the spring…"* The raw water that is drunk is generally spring water. In some locations, participants drink raw water straight from the source. A few are in the habit of drinking spring water flowing in the irrigation ditches in the paddy fields.

Drinking raw water is generally practiced throughout the day. Discussions with participants clearly illustrated that they indulged in this practice mainly when they were outside. For example when they are at their place of work, such as the forest or paddy field, or when children are playing outside. When at home, participants expressed that they generally drink water that has been processed. Some perceive that drinking raw water at home can cause disease, as one respondent living in a rural area of Jawa Timur said, *"... but if you drink raw water at home, you'll get a cold."* Others chose to drink processed water because that was the water that was available at home.

The non-availability of processed water when outside the house was identified as a factor motivating the practice of drinking raw water. But, of course, this does not indicate that participants in rural areas have limited access to processed water. Bearing in mind that they make ready-to-drink water at home, the factors motivating them to drink raw water are more of a psycho-social and environmental nature nature.

Comments from participants who sometimes drink raw water outside the home indicate that this practice is based on values, beliefs, and subjective norms that reinforce each other. The practice of drinking raw water is strongly motivated by the belief in its practical advantages. *"Take village in Aceh for example. We're digging and then sit down here, say, then start digging way over there. If all you bring with you is one jerry can of water, by ten o'clock it's all gone. Where else is there any water? It's too far to go home; you don't have a chance to fetch more water,"* said a resident of Saree (Aceh), explaining why he drinks raw water.

Table 7-1. Summary of the psycho-social factors motivating the practice of drinking raw water (rural context).

No	Psycho-social factors motivating the practice of drinking raw water (rural context)	
1	Evaluation; practical advantages	• In the fields or forest, did not bring any processed water or your water is all finished • Children playing outside, raw water sources are closer
2	Belief that drinking raw water is safe	• Drinking raw water is healthy • Doesn't make you sick • Drinking raw water is refreshing • Drinking it makes your body feel good • It's an ingrained habit, something I've done since I was child • When your moving around, you sweat a lot, working, so you won't get sick
3	Belief in the positive attributes of raw water	• Natural; straight from the mountain / source; the real thing • Not polluted • Tastes the same as boiled water • Tastes good • It's cool • It's refreshing
4	Subjective norms	• Parents did it too

The practical advantages of drinking raw water were not the only factor facilitating this practice. Behind this practice lie a number of beliefs and perceived norms. Participants believed that drinking raw water does not carry a health risk. *"Oh, it doesn't matter, it won't be cause of any problems. Raw water tastes just like boiled water,"* said one man during a group discussion in Jawa Barat. Drinking raw water, it is believed, will not cause stomach upsets or diarrhea. Quite the contrary, raw water is believed to have beneficial effects on the drinker. In the words of one person in Saree, Aceh, *"Lots (of us drink raw water). If we're in the fields and we're thirsty, we drink water straight. When we're at home though, we boil the water first. Drinking raw water feels good…it tastes good, it's cool and refreshing. Boiled water doesn't taste of anything."*

Besides values and beliefs, some participants talked about the role their parents had played. Their parents gave the example and passed on this practice to them.

In contrast to rural areas, in urban areas, drinking raw water does not seem to be practiced. Participants from urban areas believe that drinking raw water will cause disease, especially gastric problems. In their minds, instances of city dwellers drinking raw water are few and not common. And if someone did drink raw water, they would be considered odd / strange. In Surabaya, for example, a community health post volunteer viewed a neighbor who drank water straight from the well as a revolting person. However, she did believe that this habit of drinking raw water had made her neighbor immune to disease.

Where urban and rural dwellers agreed was on the dangers of drinking water which is half way processed or half-boiled. They believe that drinking this water will cause health problems, such as difficulty urinating, stomach aches and flu. Many local terms were used to refer to difficulty urinating. In Jawa Barat it is called *jeungjeurihen*. In Jakarta, people call it *anyang-anyangan*. In several locations in Sumatra, people described this problem as *terkencing-kencing.*

Processing water

The most common way of getting ready-to-drink water is to boil it. Generally, participants boiled the water because of the perceived risk of the water containing germs harmful to humans. A few were motivated by the belief that boiling water would remove odors from the water.

Before boiling it, some participants prepared the water first. There were two common methods. First, and most common, is to allow the water to settle or stand for a while. For some this meant overnight; for others, from morning to evening. Some PDAM customers let the water stand to get rid of the taste and smell of chlorine. *"That's right…you let it stand, so it evaporates, the smell of the chlorine evaporates. Usually by the next day it doesn't smell so much…not like it does if you use it straight out of the tap. It tastes different…,"* said one person in Jakarta. Some well water users allow the water to stand to get rid of smells, cloudiness, and colors. After letting it stand for some time, the water on the top is siphoned off and the water at the bottom is thrown away.

The second method is to filter the water. Only a few participants mentioned this, notably those whose water quality is poor. In the words of a respondent in Bandung: *"Well, as it happens, my in-laws' well is close to the Cikapundung…their well water is all yellow, but they put it in a drum, a big drum…, then they put stones and straw in the drum, and then using a small pipe and a big water bottle, a liter bottle, with foam in it. That's it…the water flows off, clean, clear, good water that doesn't smell."*

Recent increases in the price of refined fuel oil have influenced their choice of fuel for cooking, with some participants occasionally using wood as a substitute for kerosene. Wood is obtained in different ways. Some get it from their fields. But others strip it from forests. "*[As a consequence of the increases in the price of refined fuel oil] forests have been stripped of wood…most people here would rather run the risk of taking wood from the forest than not eating, than buying fuel,"* said one respondent in a rural area of Java island. However, during discussions, most participants said that this had not changed the way they boiled water.

To determine whether or not water has boiled properly, the main indicators used by participants are visual indicators. They made reference to the appearance of air bubbles. When they can see lots of big bubbles, the water, in their minds, has boiled properly. In other words, the germs are dead. This visual indicator was sometimes the only one mentioned off the top of their heads. *"Boil if first…let it boil…,"* said one respondent. Similar statements were common responses in all the study locations.

Table 7-2. Summary of indicators that water has boiled.

Indicators respondents use to determine whether water has boiled properly	
Primary/ Off the Top of Their Heads / Common	**Secondary / Result of probing / applied by some**
Visual Boiling Bubbling	*Time* 5 – 10 minutes (some respondents) *Visual 2* Boils over *Audio* The container makes a noise The whistle blows

Only after some probing, some participants come up with the secondary indicator of how long the water should boil before turning it off. But some said the exact opposite. Like one person in Jawa Barat, *"Take it off the stove! Take it off right away; it's ready, it's boiled."*

Those who mentioned the "time indicator" generally indicated too long a period. They have clearly not recalled or been exposed to the "let boil for 1 to 3 minutes" campaign (WHO and Ministry of Health standards). Most indicated a time of, say, 5 – 10 minutes.

Some used another visual indicator: letting the water boil over. Some even mentioned audio indicators. They took the container off the stove or turned the stove off when they heard the water boiling or heard the whistle blowing. These results are evidence that boiled water campaigns have managed to achieve acceptance of the concept (and they have done well), but the results suggest that there is no consistency about other important issues, such as how long the water needs to boil to kill germs.

Boiling water is not practiced by those who use refills of bottled water. Participants who use this water source on a daily basis say that boiling water is too time consuming. In the words of one respondent during a discussion on Java island, *"I use refills now… they cost 1,500…boiling water takes too long, I just buy it instead."* In the study sites, we found few participants using refills. In general, people have concerns about refills. Some worry about whether or not it is the real thing. *"I'd rather boil my own; I worry that the refills aren't the real thing,"* said a respondent in Jawa Tengah. Some aired their concerns about the health risks of drinking refills of bottled water. *"If you don't have a strong constitution, it could make you sick…my children don't have strong constitutions."* Analysis of the group discussions indicated that psycho-social factors play a dominant role in the participants' resistance to refills of bottled water. Following is a summary of these psycho-social factors:

Table 7-3. Summary of psycho-social factors inhibiting the use of refills of bottled water.

No	Psycho-social factor	Dimensions	Issues raised
1	Perceived risk	Health risks	• Those that don't have a strong constitution could get sick
			•
2	Beliefs	Belief that refills are not clean	• There's worms in it
		Belief that water doesn't taste nice	• Tastes bitter
		Belief that you need to do it yourself	• If you don't do it yourself, it wont' be done properly • Not sure if you don't boil it yourself

Storing water

One window for transmission of pathogens that cause diarrhea found in the processing of drinking water was at the cooling stage. To speed up the cooling process, participants generally take the lid off the water container. They are unsure as to how long the containers are left open and they do not watch over the containers continually. Thus, at the cooling stage, the boiled water could be re-contaminated. A respondent in Sumatra Utara explained, *"[Water that's already boiled], I move. I take the lid off first, then I move it, usually to the kitchen. I take the lid off to let it cool down. If you don't take the lid off, it won't get cold."*

Participants do understand the need to cover the water containers properly. They know that covering the container prevents their water from being contaminated by germs or bacteria. They also know that touching the water with their hands poses the same risk. However, they do not seem to apply this knowledge at the stage where the water is being stored ready to drink. They do not seem to understand the importance of keeping the water containers covered during the cooling stage.

8. HEALTH AND SOURCES OF HEALTH INFORMATION

8.1. DIARRHEA AND ITS CAUSES

Diarrhea was seen by most participants as a fairly common health problem among children. Some of the perceived causes of diarrhea were associated with hygiene, but the majority was not. Many participants understood that rehydration solutions were important in the treatment of diarrhea. In practice, participants reported using rehydration solutions, as well as over-the-counter medicines, herbal remedies, and / or mystical powers, which they believe can help people recover. The decision to take a child to a health service unit was based on the duration and frequency of the diarrhea and on whether the child was weak or pale.

During discussions, local terms for diarrhea were often used. In Jawa Tengah and Jawa Timur, the term *murus*, and sometimes the word *mencret* were used. In Sumatra, the word *mencret* was more common. Whatever the term, the condition it refers to is the frequent passing of watery stools in children.

Like coughs, runny noses and temperatures, diarrhea is seen as a fairly common health problem among children. However, the majority of participants considered diarrhea a minor illness. It was considered less serious than illnesses that cause fevers, such as dengue fever and malaria. Participants also perceived diarrhea as a treatable illness. In practice, most participants discussed attempts to deal with cases of diarrhea at home before seeking the assistance of the health services.

As to the causes of diarrhea, this research identified a great number of beliefs, which can be grouped into two categories: factors related to hygiene and factors not related to hygiene. Of the two, factors not related to hygiene were the more dominant. Of the hygiene related factors, the one perceived as most important was the **Garbage→Flies→Food→Humans** transmission route. Here, flies are seen as the main transmitters of diarrhea. As one woman in Java said, *"If there's garbage everywhere, and then flies land on it, and then go a child's food, the child could get sick."* The second major perceived route was **Garbage→Dirty play environment →Dirty hands →Humans**. Here, garbage is perceived to contaminate the children's play environment, so their hands are in contact with dirty things. When they play, the participants said, children often put their hands in their mouths even when they are not eating. This causes diarrhea.

In addition to these two routes, other routes were mentioned, though less frequently. The first was **Garbage→Dirty environment →Dirty hands →Food→Humans**. Here, it is the hands of the mother / caretaker or the hands of the child itself that are involved. The crucial handwashing after defecation and after washing a child's bottom were not mentioned as causes of dirty hands. In the participants' minds, dirty hands were the result of having contact with a dirty environment. The second route mentioned was: **Dirty water →Humans**. Here, drinking dirty water is seen as a cause of diarrhea. This route was mentioned during several discussions in Java island.

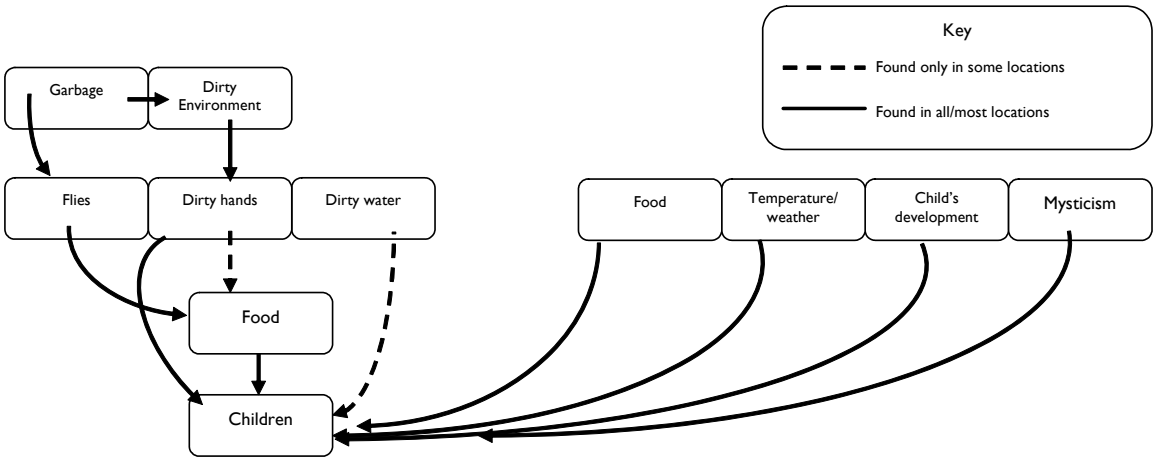


Figure 8-1. Model of the perceived transmission routes of diarrhea.

More dominant in fact were the non-hygiene related factors, such as food, temperature/weather, and the child's development. Interestingly, in quite a lot of locations, mysticism was mentioned as a cause of diarrhea in children.

Food as a non-hygiene related factor referred to the practice of feeding children spicy or sour foods, and foods hard for children to digest. As the comments made by one person during a group discussion on Java island illustrate, *"Mangoes, children who can't take mangoes, not too many anyway, get diarrhea. Jackfruit too, if they're not suited."* Besides fruit, many participants mentioned milk not suitable for children. In the words of one woman in Java island, *"If they're not old enough yet, if they're still babies, you mustn't give them milk from the shop… my child got diarrhea once from milk that a neighbor gave him. That night he had diarrhea."* Here, the food factor did not always refer to dirty food put in the child's mouth. Many participants believe that mothers who consume spicy food will pass diarrhea on to their babies through their breastmilk.

Another major perceived factor causing diarrhea was changes in temperature or the weather. Participants often blamed the change from the rainy season to the dry or vice versa as a cause of diarrhea. They also frequently perceived prolonged rain or heatwaves as causes of diarrhea in children.

Besides the negative perceptions, some participants perceived diarrhea as a positive thing. This was the case when the diarrhea was seen as a sign of child's development. In Java this is called *ngenteng-ngentegi*. "*Usually they get 'ngenteng-ngentengi' when they are about to start walking, or cut teeth…,"* said one woman. This was common in Sumatra too. As one woman explained, *"Look, it's not always do with dirt. In children under one year, who are cutting teeth, usually when they start cutting teeth, they get diarrhea."*

Mysticism was mentioned quite frequently also as a factor on both Sumatra and Java islands. There is a belief that diarrhea is caused by supernatural powers invoked by wicked people. There is also a belief that diarrhea is caused by ancestral spirits, spirits that are not evil. *"Some say, ooh, his grandmother's around…, "* said one woman in Java.

8.2. DIARRHEA TREATMENT

In general, participants usually treat cases of diarrhea at home in the first instance. In the words of one woman on behalf of the members of her discussion group, *"First aid, the parents give rehydration drinks to replace lost fluids. You can get these at the local health post anytime you need them."* Some administered fluids of a similar substance such as a salt and sugar mixture in water.

As well as rehydration solutions, many participants also administer over-the-counter medicines or herbal remedies such as guava, guava leaves, unsweetened tea, or yams. In Saree, Aceh, for example a remedy made from stems of the bamboo called *rebung kala* is given. *"If he doesn't get better, I give him 'rebung kala'. Here we rarely used medicines from the doctor. They're dangerous, When my child was six years old and had diarrhea at three in the morning I told my husband to go out and get some rebung kala, and after my child drank it he went straight to sleep and didn't have any more diarrhea."*

When home treatment does not work, the participants usually take children suffering from diarrhea to the health services. The decision to seek the assistance of the health service is generally based on the frequency of the diarrhea, how long the child has had diarrhea, and whether or not the child is weak or pale. If diarrhea occurs more than twice a day, parents usually pay more serious attention to the child. Other participants try home treatment and will seek assistance from the health services if the child continues to defecate 5-7 times or more in a day. Some participants decided to take their children to the health services after two days of continual diarrhea. Another common indicator is the physical condition of the child. If the child looks pale or weak, parents usually take the child straight to the health services.

Participants living in rural areas may also take their children to traditional healers. Some take their children to healers if the doctor cannot cure the diarrhea; others do the opposite, they take their children to the healer first, then to the doctor. One person in a location on Java said, *"Where I live, people take (their children) to the healer first, then only to the primary health center if they don't recover."* Another person in a different location said, *"If (the child) still doesn't get better, I'd take him to a healer."*

8.3. SOURCES OF HEALTH INFORMATION

Participants use two main sources of health information: 1) the mass media, and 2) face-to-face communication. Analysis of participants' discourse indicated several characteristics of ideal sources of information: 1) interactive, 2) with a technically credible source, and 3) through focused communication.

Television was perceived as an informative mass media source of health issues. Participants said they could get a lot of information from the television, including information about mother and child health, handwashing with soap, and use of traditional herbal remedies. Most participants liked television because it was visually attractive. In the words of one respondent during a discussion on Java, *"(The one that has the most impact on me) is TV! You can see it…see the picture. See how it's done…the demos."* When recalling sources of messages they had received, participants typically remembered programs rather than stations. They had fairly vivid memories of programs, even if they had been aired years before. For example, one respondent in Sumatra Utara, recalled a handwashing with soap message, *"I learned that from the TV, too. From that film, Unyil, that was on years ago. Ogah ate with his hands, and that's what scared me. He didn't wash his hands before he ate his food, and then he got a stomach ache. That's what made me scared. I still remember that."*

Radio has a very few listeners among the participants. Messages communicated via posters or leaflets were not much preferred, either. Although perceived as practical and acceptable, messages in posters and leaflets did not motivate the participants. *"It's read in a flash. By the next day, you've forgotten all about it. You read it, take it in, then forget it right away…then you fold it (the leaflet) up,"* said one person during a discussion on Java island.

Besides TV, another source of information that made an impression on participants was face-to-face communication. Resources perceived as important are shown in table 8.1 below.

Table 8-1. Summary of face-to-face sources of health information.

Face-to-face sources of health information
1. Health service personnel, such as primary health center staff, midwives, health workers, doctors
2. Health cadres and activities at the local health post
3. Parents
4. RT/ RW heads

Although perceived as important, in the eyes of the participants, each of these sources of information has their own weaknesses. A fair number of participants felt that they did not get accurate information from health service personnel. In fact, often the information they received gave them cause for concern. A man in a group discussion on Java said, *"Sometimes*

the midwife (gave information) that made my pregnant wife all worried…frightened that the baby might be a breech presentation, told her that she had to go for an USG."

There was dissatisfaction with local health post activities because they were limited to weighing children and giving immunizations. There were no health extension activities. In the words of one woman, *"As far as I'm aware all they do at the health post is weigh, weigh and weigh, and give drops, that's all. Information about child health, if we don't go…to the doctor…there's no information provided…at the health post they don't give you any information."*

Some participants perceived that tried and tested experience was one of the advantages of parents as a source of health information. As one person in Java put it, *"[My source of health information is] my parents! Yes, my parents have the experience, don't they?! So you have an example, you know what will happen!"* But many perceived parents as the source of conflicting or inaccurate information. *"Parents, y'know, in the past, they didn't know [about modern things]."*

As for RT/RW heads, participants tended not to mention their weaknesses because they realize that their job has nothing to do with health except for issues related to environmental health. For example, a participant in Java talked about getting information about dengue fever from the head of his RT. *"He gave me medicine to prevent dengue fever…Every household got a packet, and we were told to put in the bathroom."*

From the perceptions and experiences of the participants, several characteristics of the ideal source of health information were identified: 1) interactive, 2) credible source, and 3) through focused communication. Sources of information need to be interactive because the participants may want to ask questions. In the words of one woman in Java island, *"[You can ask]…so things are clear, so everyone understands…so they know…It's clearer…it's clear, you know!"* As well as being interactive, participants also want their sources to be credible. *"People are bound to be more convinced if the information comes from a health worker, because they have the expertise. Health post volunteers don't have the same level of expertise,"* said one respondent during a group discussion in Java island. Thus, information passed from one local to another tends to be less credible or effective. *"Sometimes someone knows something, then they pass it on to someone else. People don't believe (what they hear),* said a woman in Java.

Finally, they would ideally like to have focused communication, which means that communication of information if mixed with entertainment needs to be somehow organized, like the example of the film above. Particularly in outdoor performances like pop-traditional music performances people tend to get distracted. *"I don't' pay attention if there's music… all I can hear is the music…it makes me want to dance!"*, said one respondent during a discussion in Bandung district. In short, if it is not focused or well organized in an entertainment format most participants worry that they will focus on the entertainment rather than on the health message.

9. COMMUNAL ACTIVITIES

Participants in the study locations in general had several communal activities. A fairly typical range of activities included religious activities, cleaning up the local environment, health and social activities, savings club activities and sports. Some were regular activities, others tended to be incidental. This latter group included activities to clean up the local environment. Generally, there were no communal norms binding participants to take part in activities to clean up the local environment. Participants instead tended to be motivated by personal reasons. Communal activities were also differentiated by sex. Cleaning up the local environment was the domain of men, while health activities tended to be domain of women. Mobilization of the local people largely depended on the initiative of formal local leaders.

Types and regularity of activities

From the group discussions many communal activities carried out by participants were identified. Fairly typical were religious activities, cleaning up the local environment, health and social activities, savings club activities, and sports. Examples of religious activities at the grassroots level included *tahlilan, yasinan,* prayer meetings, and celebrations of religious holidays, such as *maulidan* (birthday of the prophet Muhammad). Examples of activities to clean up the local environment found during the study included cleaning up ditches and irrigation channels, cleaning up rivers, weeding, and cleaning up rubbish. As for health activities, many participants mentioned local health post activities such as weighing children and giving immunizations; in some locations, the local health post also distributes supplementary foods during these activities.

Still on health, many also mentioned Family Welfare Movement (*Program Kesejahteraan Keluarga* - PKK) activities, whose cadres are, typically, also local health post cadres. Social activities mentioned included making financial contributions to bereaved families or sick neighbors. Savings clubs, which can also be categorized as economic activities, were common in the study locations. In several locations, savings clubs involved not only cash savings but in-kind savings, too. Sports were common activities as well, especially team sports like football, volleyball or badminton. In other locations, communal artistic activities such as *jedor* or *terbangan* were found. In a small number of locations, participants had experience of doing communal activities to build public facilities such as roads, prayer houses, or other buildings.

Some of these communal activities were done regularly; others were done when the local people felt they were necessary. In the majority of the study locations, cleaning of the local environment fell into this latter category, with the local people taking collective action when problems emerged. As one man during a group discussion on Java island said, *"Yeah…community service, yes, we all do it…not regularly…in the rainy season when the ditches get blocked up…then we do it."* Similarly, a respondent in Surabaya said, *"It's not regular. Sometimes it's up to the RT head. If he receives a complaint from someone in the neighborhood about the cleanliness of the area, he issues a circular letter inviting us to do community service. That's here in RT 6, in my RT."* Because these activities are incidental, the response from the local inhabitants is in proportion to the magnitude of the problem. One respondent in Java share his experience, *"But usually only if it's crucial do people respond. If it's crucial, everyone gets out there…that's what it's like where I live anyway."*

If these activities are done regularly, it is usually because they are tagged on to other, more important activities, such as Independence Day celebrations, or celebration of the birthday of the Prophet Muhammad, the end of Ramadan holiday, or the month of Ramadan. *"We clean up the road…just before August 17…everything, holes get filled in and everything. Before the end of Ramadan, before the fast, y'know,"* said one respondent in Sumatra Utara. *"Before the independence day celebrations or that kind of thing, then we clean up,"* said another respondent on Java.

Only a few groups had fairly regular cleaning up activities. Some were flexible about the day as long as it was done within a certain timeframe, say once a month. Others chose a specific day, such as Friday, for cleaning up; what they called 'clean Friday'. In summary, the activities look as shown in table 9.1 below:

Table 9-1. Summary of communal activities and their regularity.

No	Type of activity	Regularity
1	Religious activities (*tahlilan, yasinan*, prayer meetings, and celebration of major religious holidays, such as *maulidan*)	Most performed regularly
2	Health activities (local health post, family welfare movement)	Most performed regularly
3	Cleaning activities (ditches, irrigation channels, rubbish, rivers)	Most incidental or needs based
4	Social activities (making contributions to families hit by misfortune, such as sickness or death)	Most incidental or needs based
5	Economic activities (cash and in-kind savings clubs, savings-loan groups)	Most performed regularly
6	Sports (badminton, volleyball, football)	Most performed regularly

Norms associated with activities

The regularity of an activity is a reflection of the extent to which a particular domain is institutionalized within a community. If the activity is performed regularly without any external enforcement, it can be concluded that the local inhabitants genuinely accept and recognize that particular domain. Usually, institutionalization of an activity is accompanied by the development of facilitating social norms.

As regards cleaning up the local environment, social norms tend to be absent. People can choose whether to participate or not. There are no social sanctions should a person decide not to participate in cleaning activities. Tolerance on this point is generally quite high. They accept it because they see that there are other things more important than cleaning up. *"(If someone doesn't turn up) no one's going to get cross with them. Sometimes it's a hassle, sometimes they have other things to do,"* said one respondent during a discussion in Java island. If a person does not participate because he or she cannot be bothered, most of the participants would not reprimand the person but leave it up to the sub-neighborhood head to deal with. In some locations, norms in this domain are more developed, and inhabitants who do not participate are expected to contribute money or food instead. Some participants perceived this as a kind of fine. As one respondent in Surabaya said, *"Even if he's a foreigner, if he doesn't turn up, he'll be fined. So, as members of the community, we have to help clean up, that's what community service is all about."* Others were more sympathetic, perceiving this not as a fine, but merely as compensation for non-attendance. In the words of one respondent in Surabaya, *"Where I live, it's not a fine. Usually if someone doesn't turn up they have to contribute food instead. They might not turn up, but the food must."*

The absence of strong social institutions in this domain was also reflected in the factors that motivated people to participate. Most saw this communal cleaning up as a good opportunity to meet up with others. *"We can all get together…so we don't get fed up being at home,"* said one person during a discussion in Java island. As a consequence, they also perceive people who do not participate as anti-social. *"If they don't join in, it means they don't need neighbors,"* said one man in Java. Here, then, we see that the main factor motivating people to participate in cleaning activities is private: the enjoyment of socializing.

The role of gender and community leaders

In general, communal activities are differentiated by sex. Some collective activities are seen as men's activities; others are seen as women's. Cleaning up the local environment, a practice commonly referred to as *gotong royong* or *kerja bhakti* tend to be in the men's domain. Thus, men dominate these activities. If they are involved, women usually only clean up the area around their houses or provide refreshments for the men who are working. There were exceptions in Sumatra, notably in Nusa (Aceh) and Kotalalang (Padang). There, women dominate these activities. In Nusa, women are more active participants in 'clean Friday' activities than men. They say that most of the men are working outside the village when these activities take place. In Koto Lalang, it is mostly women who clean up the prayer house. Again, when these activities are taking place, most of the men are in the fields or at the river or working outside the village.

Participants perceive health activities as the domain of women. With the exception of formal leaders such as sub-neighborhood or neighborhood heads, men are rarely seen participating in activities at local health posts or in PKK activities. Table 9.2 below summarizes the differentiation of activities by sex.

Table 9-2. Summary of types of activities and gender.

No	Type of activity	Gender
1	Religious activities (*tahlilan, yasinan*, prayer meetings, and celebration of major religious holidays, such as *maulidan*)	The domain of men and women. But in practice they are differentiated by sex. So women and men have separate prayer meetings.
2	Health activities (local health post, family welfare movement)	Generally women
3	Cleaning activities (ditches, irrigation channels, rubbish, rivers)	Generally men
4	Social activities (making contributions to families hit by misfortune, such as sickness or death)	Generally mixed men and women.
5	Economic activities (cash and in-kind savings clubs, savings-loan groups)	Generally women. Men may have separate activities.
6	Sports (badminton, volleyball, football)	Generally men.

Most women groups said that they have their own communal activities in the village but structurally their position in general is below that of men. Women are not much involved in strategic decision making, such as the election of formal leaders (RT/RW heads) or in making decisions on matters that require a significant amount of resources, such as development of physical infrastructure. As one man in Java said, *"The men handle the big issues…like road repairs or whatever, security, environment. Family welfare movement activities, women do those of course."* A woman in Java said, *"Women do the family welfare movement…Election of the RT head, that's the men's business."* In most cases, women are not involved in routine community meetings. In the words of one woman in Java, *"Never…RT meetings are for the representatives. That's men…never women…meetings are for men…"*

In cleaning activities, generally, participants relied on local leaders, such as the sub-neighborhood or neighborhood head, to take the lead. Most participants wait for instructions from a formal leader, such as the sub-neighborhood, neighborhood, or village head, before embarking on cleaning up activities. Local leaders adopted a variety of methods to mobilize people, including summoning them using the loudspeaker at the mosque or a bamboo gong (*kentongan*), delivering invitations to the local people, or making announcements house to house. As a consequence, some participants blamed their leaders if there were no collective activities to deal with communal problems. *"Well…sometimes the RT head doesn't pull his weight either, right?!"* said one respondent during a discussion in Java island.

10. MEDIA HABITS

Participants access television more than other media such as radio and newspapers. Women and men watch different programs and watch at different times. However, most families have times when they watch together. Some watch local television stations, especially quiz programs and regional music programs. Most radio listeners tune into programs with an entertainment content rather than to information programs like news. The exception is when radio is perceived as a medium for communicating information that participants need, such as information about farming for those who are farmers.

In almost all study locations, television was the media most accessed by participants. Almost all those living in urban areas seemed to have a TV set. Television is accessed not only at home but also at neighbor's houses, and there were TVs in public places visited at several of the study locations. Those who do not own a television generally felt that they could easily watch at a neighbor's house. The exception was in Saree (Aceh), where very few people own televisions. During discussions, participants there said that no more than 10% of the people owned televisions. In the words of one respondent, *"I've got a TV (but) what's the point without a satellite dish. You need one of those. But it makes it more expensive to use the TV."* This is the case because the television signal does not reach their area. Installing a satellite dish, on the other hand, is perceived as being too expensive for most of the people living in Saree.

Most participants in this study spent a lot of time in front of the television. Almost all participants, especially those that have their own televisions, watch TV every day. Most women who do not work outside the home watch TV more than once a day. The group discussions indicated that they watched, at the very least, in the mornings and in the evenings or at night. Most men watch TV after evening prayers (from 18.30 or 19.00). That is the time that family members in general get together to watch television.

The participants in general were not fans of any particular television station. More important for them was the program or show. In the words of one respondent in Jawa Timur, *"...as long as the show's good, I'll enjoy it, whether it's on Batu TV or Malang TV, makes no difference."* In discussions with participants, differences were identified in the programs that men watch and the programs that women watch.

Table 10-1. Summary of programs viewed by gender and age.

Men's favorite programs	Women's favorite programs	Children's favorite programs	Favorite programs to watch together
News Animal documentaries Sport / football	Celebrity info / infotainment shows Soaps / series Comedy Singing contests	Cartoons Children's films Children's music	Religious soaps Crime news

The table 10.1 above shows that there are differences in the preferred genres of men and women. Women prefer entertainment programs, such as celebrity info shows, soaps, comedies, and singing contests. Men, on the other hand, tend to prefer programs with more information content, such as news (general) and documentaries. The interpretation that can be drawn from this is that men prefer serious, factual programs, while women go for emotional fiction programs.

The far right hand column shows the kind of programs that are generally watched together as a family: religious soaps and crime news. Besides being aired at the time when families watch TV together, these programs are favorites because they are perceived to provide people valuable lessons. During many group discussions, religious soaps were perceived by many to serve as reminders that there is life after death, and that you must do good and avoid evil. This message is also put across in the crime stories they watch. They feel that that they are being reminded not to commit crimes because the consequences are only too plain to see. During group discussions, many men watched these programs with the rest of the family because they wanted their wives and children to understand the lessons being taught or message being put across on the screen. In short, for them these programs are a kind of manual for life.

In Jawa Timur, a good number of participants watch local TV programs. Participants watch two local stations, Batu TV and Malang TV, especially when quiz programs and shows featuring regional songs are on. The presence of these local stations is appreciated too because they give people the chance to view programs aired direct from the studio. As one respondent said, *"…they're the real thing, not recordings…straight from the studio, direct…"*

Unlike during the 1980s, radio today no longer enjoys a large audience. In this study, most of the radio listeners identified turned on their radios for entertainment only. Broadcasts of music and songs are the favorites. A small number of participants mentioned quiz shows and radio plays. Women listeners, tune into music on the radio while they are doing other activities. *"I like listening to music on the radio…I usually put the radio on when I'm cooking,"* said one woman in Java. Some men living in rural areas in Jawa Tengah also tune in to the radio to enjoy the sounds of songs sung in Javanese that you do not hear on the television. *"So what if it's not hot, this music is art and art can recharge your batteries. Radio Balapan is great…campursari with Dipt, Didi Kemot…It's best at night time."*

Very few listeners were identified that turn on the radio for information. They were found only in Sumatra, especially in Doulu (Sumatra Utara) and in small numbers in Saree and Nusa (Aceh). In farming areas like Doulu, farmers take their radios with them to the fields to listen to while they are there. They listen not only to songs, but also to religious programs and news, and, notably, to get information about agriculture. *"(I listen to) songs, songs and the adverts, the ads…things to do with farming. Chemicals…fertilizer. Pesticides,"* said one respondent in Doulu.

Very few newspaper readers were found in the study locations, with the exception of several locations in Sumatra, especially rural and semi-urban areas in Aceh and Sumatra Utara. Some men there regularly read local newspapers in the coffee stalls. There, newspapers are available and are read by customers. For participants on the lower economic rungs, purchasing their own newspapers would be too expensive.

11. PILE SORTING FINDINGS

As explained in the section on methodology, the final stage of the group discussions was pile sorting. The participants were shown 30 different cards and asked to sort them into three categories: *good, bad,* and *not sure.* This sorting illustrated the participants' perceptions to hygiene related practices and how they categorized them.

Through pile sorting, 5 (five) categories of cards were identified. First, **the worst**, that is, the cards that most groups categorized as bad and none categorized as good. Second, **the best**, that is the cards that all groups categorized as good and none categorized as bad. Third, **the controversial**, cards over which the groups were divided; some categorizing them as good, others as bad. Fourth, **majority good**, and fifth, **majority bad.**

In consecutive order, this is how the participants sorted the cards. For this pile sorting, a total of 160 participants were involved[1].

No	Picture	Good	Bad	Not Sure
1.		**29,6%**	**37%**	**33,3%**
2.		**96,3%**	3,7%	
3.			**88,9%**	11,1%
4.		**92,3%**	3,8%	3,8%

[1] For this analysis, we only used those transcripts that provided complete information about the whole pile-sorting process.

No	Picture	Good	Bad	Not Sure
5.		**92,3%**	3,8%	3,8%
6.			**96,6%**	3,4%
7.		4,2%	**75%**	20,8%
8.			**96,3%**	3,7%
9.		3,4%	**86,2%**	10,3%
10.		8,7%	**87,0%**	4,3%
11.		**100%**		
12.		14,8%	**74,1%**	11.1%

No	Picture	Good	Bad	Not Sure
13.		4%	**92%**	4%
14.		**100%**		
15.		**28%**	**48%**	**24%**
16.		**92%**	8%	
17.		**46,4%**	**35,7%**	17,9%
18.		**64%**	16%	**20%**
19.		14,8%	**29,6%**	**55,6%**
20.		**89,7%**	3,4%	6,9%

No	Picture	Good	Bad	Not Sure
21.		**69,6%**	**21,7%**	8,7%
22.			**96,4%**	3,6%
23.		10,7%	**75%**	14,3%
24.		**89,3%**	3,6%	7,1%
25.		**84,6%**	7,7%	7,7%
26.		16,7%	**43,3%**	**40%**
27.			**96,6%**	3,4%
28.		**85,2%**	3,7%	11,1%

No	Picture	Good	Bad	Not Sure
29.		**44%**	**24%**	**32%**
30.		**63,6%**	**13,6%**	**22,7%**

The worst

The cards in this category no groups categorized as good. In general, these cards were categorized as *bad,* although a few groups put them in the *not sure* pile. Of the 30 cards discussed during the group discussions, there were 5 that fell into this category. The five were cards # 3, 6, 8, 22 and 27, as shown below.

3 6 8 22 27

These five cards share several characteristics. First, they all depict practices dirtying the environment outdoors with *visible dirt*, particularly garbage and or human waste. Visible dirt, it should be emphasized, was a consistent factor in all of the five cards. *Visible dirt*, note, because participants had a different perception of cards depicting practices that pollute the environment with dirt that is removable or that disappears. For example, card # 26, where it was perceived that the dirt would disappear because it would be swept away by the water in the river or stream. Or cards #17 and # 7, which depict dirt being buried in a hole so it is no longer visible.

26 17 7

Cards that depicted practices polluting the environment with dirt that is removable or that disappears was more controversial. Card #26, 16.7% of groups put into the *good* pile. Card # 17, 46.4% categorized as *good*. Card # 7, around 20.8% decided they were *not sure*.

The second characteristic common to the five worst cards is that there are flies in the dirt. Flies buzzing about over scattered garbage or over children's feces were seen as carriers of germs. Besides these two common characteristics, some participants also added that they perceived these practices as offensive or revolting. Some emphasized that these practices would make you lose your appetite.

Here, it can be concluded that scattering garbage and improper disposal of children's feces are the worst practices in the participants' minds, primarily because: 1) the dirt is visible or does not immediately disappear, 2) these practices spread disease through flies, and 3) these practices are offensive.

The best

There were two cards that all groups categorized as *good* and no groups categorized as *bad* or *not sure*. These were cards # 11, which depicts covered food, and #14, which depicts covered drinks. These two were categorized as practices associated with hygiene, particularly in handling of food and processing of drinking water.

11

14

Such consensus of opinion was not found for the cards depicting other practices associated with hygiene or sanitation. For example, handwashing with soap (card # 20), which 89.7% categorized as good, or cleaning the WC (card # 16), which 92% of groups placed in the *good* pile. Therefore, the practices of covering food and covering containers of ready-to-drink water are perceived as the best compared with any other hygiene or sanitation practices.

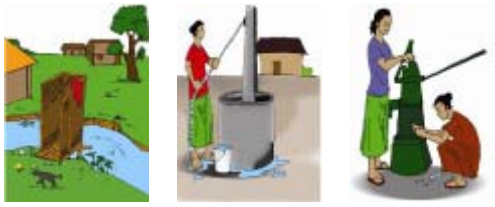
The two cards in this category in fact have a close relationship with the cards in 'the worst' category discussed above. From the cards in the worst category, it was concluded that participants perceived as the worst practices the scattering of garbage and improper disposal of children's feces, which are sources of disease. Here, flies were perceived as the carriers of germs. The cards in 'the best' category essentially depict ways of preventing the negative effects depicted by the cards in 'the worst' category. By performing the practices depicted on the cards in 'the best' category – namely covering food and drinks – flies, it was believed, would be prevented from landing on the food/drink, thus they would be safe for human consumption.

Controversial cards

A card was considered controversial if less than 70% of the groups categorized it as good, bad or not sure. Nine cards fell into this category, depicting variously personal hygiene practices (card # 1, 15, 19, 21), cleaning of cooking and eating utensils (card #18), disposal of garbage (card # 17), role of women (card # 29, 30), and defecation practices (card # 26).

1 15 17 18 19 21

26 29 30



The arguments that arose during discussions over these nine cards are summarized as follows:

1	17	18	
			Good practices, but their propriety was debated. Children bathing outside, disposing of garbage in front of the house, and washing dishes in front of the house were considered improper. Participants emphasized the importance of having a good view and things that disturbed the view needed to be done in the back of the house or hidden.

29	30	
		The debate here was over participation, which is good practice, and whether it was appropriate for women to perform these activities, in view of their capacities. So these were perceived as good practices, but the question was whether women should or were able to perform these activities.
26		Was this practice polluting or not? Those who said it was not polluting, perceived this as an acceptable practice, and believed that the water in the stream or river would wash the dirt away. Those who perceived this as a polluting practice felt that human feces should not be disposed of in rivers because it would pollute the water.
		
15	19	The debate was over whether or not these were effective ways to wash your hands. Some said they were clean. Others said they were not clean. Some were not sure.
		

21	
	There was debate over whether this was a good practice and over whether this behavior was actually practiced. Some said that handwashing with soap should be done inside the WC. Some felt that no one actually practiced this behavior.

From the pictures above it can be concluded that the controversy over these cards concerned: 1) the efficacy of the behavior (removing germs, polluting the environment, and solving problem of broken facility- water hand-pump), 2) the appropriateness or propriety of the practice, and in a few cases, 3) the reality of the practice depicted. The hygiene issues depicted by these cards (handwashing, bathing, washing dishes) were an integral part of these three themes. The cards depicting bathing and washing dishes sparked controversy over appropriateness/propriety. The cards depicting handwashing invited controversy over the impacts of the practices and their efficacy in removing germs, as well as over whether the behaviors depicted were actually practiced. The cards depicting garbage disposal promoted debate over appropriateness and propriety. The cards depicting participation of women also sparked controversy over appropriateness and propriety, as well as the impacts of the practice, in particular its efficacy in solving the problem.

Thus it can be concluded that behaviors associated with hygiene and sanitation, especially handwashing, dishwashing, bathing, disposal of garbage, and participation of women, were not necessarily perceived only rationally (impacts/efficacy) but also in relation to local social cultures and norms.

Majority good/bad

The remaining cards fell into the categories of majority good or majority bad. There were 14 cards total in these two categories. Eight (8) in the majority good, and six (6) in the majority bad. These cards were:

Majority good cards

2 4 5 16 20 24 25 28

Majority bad cards

7 9 10 12 13 23

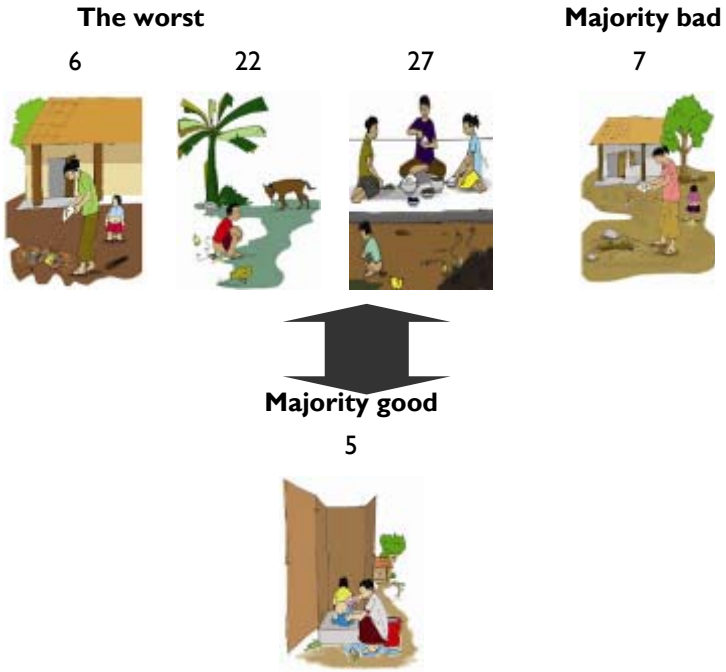
Cards in the 'majority good' category depicted: 1) women's participation: participation of women in discussions, 2) women's participation: participation of women in collection of water, 3) proper disposal of children's feces, 4) cleaning WCs, 5) (personal) hygiene: handwashing with soap, 6) (clothes) hygiene: washing and drying clothes, 7) improved sanitation facilities, 8) women's issue: passive participation of women at family mealtimes (just sitting with the men, not eating).

The cards in the 'majority bad' group depicted: 1) improper disposal of children's feces, 2) hygiene (contaminating self, water, clothes) and polluting river water, 3) hygiene (food handling): covering food, 4) hygiene (water): touching water, 5) hygiene (water): uncovered water containers, and 6) hygiene (personal): bathing.

Planned bipolar cards

Of the cards that were deliberately designed with opposite numbers (good v. bad, for example use soap v. not use soap in handwashing) it was found that the participants in fact had their own perceptions of these cards. In other words, participants had their own theories and did not always agree with the public health perspective of the "value" of a particular behavior. When mapped, it was found that the position of two issues was not clear: 1) women's participation and 2) personal hygiene (handwashing and bathing). The other issues tended to coincide with the public health perspective. The pictures were:

Disposal of children's feces: <u>Clear, good v. bad</u>



Food hygiene: <u>Clear, good v bad</u>


Majority bad

10 12 13



Personal hygiene (bathing and handwashing): <u>Not clear and depends on context (appropriateness and propriety)</u>

Majority bad

23

Majority good

20

Controversial cards

1 15 19 21




As the group of cards above shows, handwashing with soap was generally perceived as good, however handwashing without soap was not perceived as bad, but was controversial. Handwashing with soap after defecating was controversial because it was depicted as being done in a strange place: outside the WC, not inside. Bathing likewise: bathing without soap (card # 23) was perceived as bad; but bathing with soap (card # 1) was not perceived as good because some viewed the practice as depicted on the card not from a health perspective but in terms of its propriety. There was controversy there. Handwashing and bathing are not necessarily seen as good practices if the context of the behavior is perceived as improper / inappropriate.

Women's participation: <u>Not clear</u>

Majority good **Controversial cards**

2 4 28 29 30

The group of cards above is confusing and the responses to them ambiguous. Emancipatory practices – women participating in meetings and discussion (card # 2) was perceived as good. But the card theoretically depicting oppressed women (card # 28) was also perceived as good. Women drawing water (card # 4) was perceived as good, but a woman drawing water alone (card # 29) invited controversy. Here, we see that on the issue of women's participation, the participants were, generally, divided.

Gateway behavior

Handwashing with soap and *discussion or deliberation* were two cards commonly selected by the groups as gateway behaviors. There was some argument over their choices. Participants perceived the practice of handwashing with soap in three main ways, as: 1) **A preparatory or concluding practice, done before or after doing something else.** So, handwashing is closely associated with many other behaviors. In the words of one respondent in North Sumatera, *"The point is that whatever you do, you have to wash your hands, whether it's picking up food or whatever. Before doing something, wash your hands. When you've finished, wash your hands. Before and after cooking, too."* In the participants' minds, if this preparatory practice was not done or not done properly, it would have an adverse effect on the subsequent practices. **2) A common practice, especially among women and children.** One woman said, *"As housewives, our daily activities include cooking in the kitchen, and before we cook, we wash our hands. Our kids are always playing with dirt…sand…playing with all sorts of things, and when they're done they wash their hands, and if they're really dirty we should give them a bath, but usually we wash their hands. And when we've eaten, we wash our hands, when we have a drink, we wash our hands. So, you could say that handwashing with soap is a priority for us."* **3) Having a strong association with a person's health because it had to do with food and garbage (sources of germs).** *"When you're at home, after you've thrown rubbish away in the bin…after that, if possible, you wash your hands, and then when you've washed your hands you're hungry so you eat, eat food that's covered, that's healthy, and then you have a drink, a healthy one. If you eat healthy, you're healthy, outside and in,"* said one respondent in Sumatra.

Another card that was chosen by many was the one depicting discussion or deliberation. Discussion was perceived as central because **from there cooperation among people can develop**. One man said, *"Whatever the problem, if you talk it over in a familial way, everything can be sorted out. Everything can be resolved. There is no problem that cannot be resolved. If you do it in a familial way. Together. Seek a solution."* Another saw it as **a gateway to change**. "*Here, we were advised, together as a family, I think, to throw garbage in the bin…to cover rice and if you don't have a cover, never mind you can still cover it…get your husband to remind the*

children to cover it...remind them to cover it…and, what else.. not to let children go to the toilet all over the place…these problems can be sorted out through family discussion, so people understand…lots of problems, lots…I think. Mmm…explaining about garbage…I think the way to do that is through the family…go through the family first…from the home…you want things clean and healthy…the home's the place to start."

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