

HOMING IN ON HOUSEHOLD SANITATION ACCESS-USAGE GAPS

A COMPARATIVE STUDY OF SUSTAINABILITY AND EQUITABILITY
ASPECTS OF THE TOTAL SANITATION CAMPAIGN IN NORTHERN INDIA



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*'Making progress in life is like a rose bush.
You have to get past the thorns to reach the flowers.'*

-Surender, Basara



-Surender (on right) and his family in front of their home

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EXECUTIVE SUMMARY

Rural household sanitation is a public good and a human right, achievement of which will help to meet all Millennium Development Goals. Outcomes, however, after decades of efforts and billions spent on closing sanitation access and usage gaps, have been neither sustainable nor equitable.

Of all countries, India is the world's largest sanitary offender as home to one in two of the world's open defecators. Experts suggest India has the 'worst sanitation in the world,' is far from reaching the 2015 Millennium Development Goal sanitation target, and has widespread exclusion of the poorest from household sanitation. Due to the acuteness of shortcoming and severity of inequalities, the Government of India has been working to close rural sanitation gaps through the Total Sanitation Campaign. In the Campaign Guideline, the Government declares the need for demand-driven and people-centred interventions with small, pro-poor incentives. There are two main intervention strategies applied within the Total Sanitation Campaign including the alternative Community-Led Total Sanitation (CLTS) approach and the conventional approach. While both strategies fall under the same Guideline, in practice some experts believe the alternative approach is more demand-driven, focusing on awareness raising and institution building, while the conventional approach continues to be supply-led, centred on externally provided latrine subsidization and construction. Both alternative and conventional approaches intend to ensure lasting access to and usage of household sanitation for all, but based on interventions and subsidization outcomes may vary widely. Because those without sanitation are often poor, latrine subsidies are justifiable. Subsidization challenges are extensive though and have become the point of an ongoing debate in the sanitation sector. Some experts argue latrine subsidies are necessary to achieve outcomes and to ensure sanitation reaches the neediest. Others believe latrine subsidies cause more harm than good, resulting in short-lived and exclusionary outcomes. Sustainability and equitability are especially important in household sanitation because absence of latrine access or usage even for a minority of households leads to open defecation and subsequent contamination of an entire village.

This research aimed to bring light to the critical and contentious issues negatively impacting full implementation of sustainable and equitable household sanitation. The severity of sanitation gaps, the exclusion of the poorest, the purported continuation of supply-led interventions, and the divergence of views on subsidies in India all necessitated further examination. Despite the potential for improved outcomes such as an in depth analysis might foster, these issues had received minimal empirical inquiry. Questions of how interventions occur in reality, to what extent interventions and subsidies influence outcomes, and who is excluded were sparsely documented. As a result of this foundation, the central research objective sought to explore how interventions, and subsidization in particular, influence sustainability and equitability of household sanitation access and usage for the impoverished in the Total Sanitation Campaign in rural northern India. To the extent investigation of India's two main sanitation approaches could expand understanding, my goal was to draw conclusions to help make interventions more complete and inclusive and in turn to help better achieve sustainable and equitable household sanitation access and usage in rural India.

To conduct the study, Indian states of Haryana and Uttar Pradesh were selected to represent alternative and conventional approaches. Three case studies occurred in one block of each state. To meet the objective and explore household sanitation, interventions were considered in components of hardware, including subsidization and technical support, and software, including institution building and social mobilization. Meanwhile, outcomes were considered as latrine access and usage. The study methodology was operationalized in terms of reality, intervention adequacy, including completeness and inclusiveness, and outcome sust-equity, including sustainability and equitability. Latrine access sustainability was determined based on quality of substructure, superstructure, and auxiliary factors of water access and latrine hygiene. Latrine usage sustainability was determined based on sustainable access and preference for open defecation. Information collection relied on multi-level semi-structured stakeholder interviews. Village emersions helped ensure optimal examination. With this methodology, meeting the research objective would be possible.

Although alternative and conventional approaches fall under the same Guideline, in reality projects diverged from strategy. Alternative interventions were more demand-driven than conventional interventions. The inability to translate strategy to reality occurred due to institutional, political, and socio-economic barriers. In terms of hardware, all interventions relied on subsidies, which village leaders decided how to distribute. Alternative interventions included a lower subsidy amount for a larger proportion of households either as infrastructure material, direct cash, or output-based cash. Meanwhile, conventional interventions provided subsidies to fewer households at higher amounts either as infrastructure material or direct cash. Where material was provided in alternative interventions, owners could determine latrine design and investment level. In conventional interventions, leaders distributing infrastructure subsidy dictated designs and household contribution. If direct cash or output-based subsidy was given in either intervention owners determined design and investment. In conventional interventions, subsidies were expected to cover the majority of latrine costs, which resulted in lack of household investment and incomplete construction. In terms of software, alternative interventions included more motivational activities for most households, while conventional interventions had minimal software and all households were equally excluded. Facilitation was a key determinant in realizing demand-driven interventions.

The study found where subsidization and software occurred together, a supply-led paradigm was overcome. In the case of Community-Led Total Sanitation, officers were aware of shortcomings of subsidies, which led them to emphasize software. Although subsidies were still required by the Government, they became less relevant for achieving outcomes with awareness raising in focus. On the other hand, in conventional interventions a supply-led paradigm showed through strongly. Officers and leaders pushed external subsidies and designs and undervalued villager participation. The study suggests subsidies not only cause harm when associated with a supply-led approach, but they can also induce perpetuation of supply-led tendencies and cause deficient awareness raising in all interventions. In addition, whenever subsidies were utilized, both poor and non-poor were excluded based on Government poverty classification. The study concludes it is important to reduce focus on subsidization so well-facilitated software becomes more central in rural sanitation interventions.

The investigation found interventions reduced access gaps on average to between 24 and 29 percent from an 84 percent baseline in the alternative approach and to between 62 and 67 percent from a 100 percent baseline in the conventional approach. Access sustainability was improved in Community-Led Total Sanitation because owners valued sanitation more and had better latrine ownership. In projects with infrastructure subsidy in both intervention types latrines were constructed quickly with a limited budget and shortcuts were taken. Where awareness raising was provided with material subsidy and technical support in Community-Led Total Sanitation, latrine sustainability was better than in any other project. Where alternative interventions included cash subsidy, non-poor households realized few sustainability problems while poor households motivated to construct latrines sometimes could not afford complete construction. In the conventional approach where infrastructure subsidy was given, superstructures were commonly sustainable but substructures exhibited poor sustainability. In addition, access sustainability was reduced because leaders prevented willing households from participating in construction. Where conventional interventions included ex-post cash subsidy, some households did not use the funds for latrines or were not able to complete latrines because of overinvestment in substructures, though in the future these households with quality substructures could still achieve sustainable latrine access. In the end, alternative interventions produced better results than conventional interventions for access and access sustainability.

The investigation also found interventions reduced latrine usage gaps on average to between 36 and 41 percent from an 88 percent baseline in Community-Led Total Sanitation and to between 82 and 87 percent from a 100 percent baseline in conventional interventions. Usage sustainability depended on access sustainability in both approaches, but non-usage was higher in conventional projects due to open defecation preference. Usage sustainability was found improved in Community-Led Total Sanitation because owners appreciated health, convenience, and dignity benefits of latrines. In conventional interventions latrine usage remained low regardless of subsidy and households often took advantage of the security and privacy provided by latrines for what they perceived to be more practical purposes. Findings suggest awareness raising is critical for achieving sustained latrine usage.

Where exclusion occurred in interventions it was commonly due to Government poverty classification. According to the Total Sanitation Campaign Guideline only below poverty line households are eligible for subsidies, but implementation differed. Alternative approach leaders more often provided latrine subsidies to households based on socio-economic condition and not just on Government classification, while conventional intervention leaders usually followed Government recommendation and excluded above poverty line households from subsidies. For software, alternative leaders included poor and non-poor households while conventional leaders excluded all households equally. As a result of subsidy and software, alternative interventions returned nearly equivalent access and usage for above and below poverty line households, while in conventional interventions below poverty line households had better access and usage than their counterparts.

Overall, achievement of access and usage sustainability and equitability directly corresponded with extent of subsidy and level of awareness raising. Interventions focused on subsidization and hardware lacked emphasis on software and excluded households. Meanwhile, interventions emphasizing awareness, behaviour change, and household involvement, even where subsidies were given, led to better access and usage. Still, in both alternative and conventional interventions room for progress remains. With improved understanding of how subsidization guides rural sanitation access and usage, findings suggest the common conventional subsidy-focused approach should be phased out of practice in exchange for a more inclusive software-based strategy. If such a transition occurs, it is believed access and usage gaps will close more quickly and outcomes can become more sustainable and equitable in the future throughout rural India.

Keywords: Rural sanitation, Subsidization, Sustainability, Equitability, India

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

APL	Above Poverty Line
BPL	Below Poverty Line
CLTS	Community-Led Total Sanitation
DDWS	Department of Drinking Water and Sanitation
GoI	Government of India
GP	Gram Panchayat
HA	Haryana
IEC	Information, Education, Communication
MDG	Millennium Development Goal
OD	Open Defecation
ODF	Open Defecation Free
Rs	Rupees
SWOT	Strength, Weakness, Opportunity, Threat
TSC	Total Sanitation Campaign
UP	Uttar Pradesh

GLOSSARY OF TERMS

Ambedkar	Government of Uttar Pradesh village development designation
Anganwadi	Government pre-school nutrition centre, available in most villages
Crore	Ten million Rupees in Indian currency
Gram Panchayat	Elected village governing body consisting of Pradhan and Panchs
Kacha	Hindi word for ‘impermanent,’ as a latrine with sticks and mud
Nirmal Gram Puraskar	Clean village award
Paise	A coin in Indian currency worth one-hundredth of a Rupee
Panch	Gram panchayat advisory member, elected every five years
Panchayati Raj	Rural development system in India connecting government to villages
Pradhan	Gram panchayat leader, also known as a Sarpanch, elected every 5 years
Pucca	Hindi word for ‘permanent,’ as a latrine with bricks and cement
Substructure	Underground latrine component that contains human waste
Superstructure	Above ground latrine component built over squatting pan for privacy
Total Sanitation Campaign	The Government of India’s rural sanitation programme

UNITS

\$1 United States Dollar (USD) = 45 Indian Rupees (Rs)

Note: Unless cited otherwise, photographs were taken by the author during field research in 2011.

1 INTRODUCTION

Closing the great sanitation gap is neither clear-cut nor inconsequential. United Nations General Secretary Ban Ki-moon recently declared, “clearly, we must boost our efforts . . . all reports indicate that the MDG target for sanitation is far off track. The challenge is particularly great in rural areas” (United Nations, 2010, para. 4). Where governments and organizations have intended to solve the sanitation dilemma by providing household sanitation subsidies to the poor, latrine access and usage have been short-lived and exclusionary. Or where latrines are used, it is too often for something other than sanitation. So, a harsh reality remains: the way in which we have been implementing and funding rural household sanitation has not resulted in sustainable or equitable outcomes, especially for the most impoverished people. Finding a better path to achieve sanitation is central, and in doing so the world can achieve every Millennium Development Goal better and faster.

Household sanitation improvement is one of humanity’s greatest advances of the last century. Decades of hard work and billions of dollars spent combating rural insanitation for the poorest segments of society, however, have not paid off. Nearly two in five humans live without basic sanitation today; *Figure 1.1* shows most of them live in Asia and Sub-Saharan Africa. As a result, more than one billion people continue to open defecate. The consequences are significant. Dignity and well-being are lost, villages are contaminated, malnutrition, disease, and death spread, and, ultimately, people remain in poverty. The cycle of poor sanitation, environmental degradation, and socio-economic inhibition is evident and substantial (WaterAid, 2010b; WHO/UNICEF, 2010a).

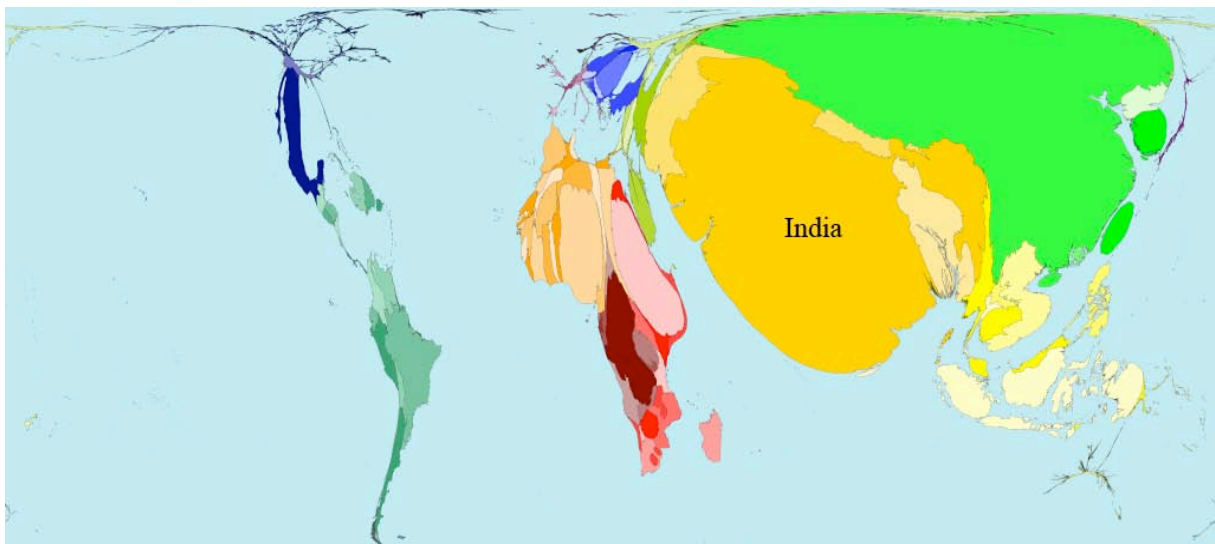


Figure 1.1: Proportion of People without Access to Basic Sanitation Worldwide (SASI, 2006)

Of all countries, India is the world’s leading sanitary offender; 56 percent of global open defecators were Indian in 2008, exhibited in *Figure 1.2* (WHO/UNICEF, 2010a). India’s first Prime Minister Jawaharlal Nehru said “the day everyone in India gets a toilet to use, I shall know that our country has reached the pinnacle of progress” (Krishna, 2009, para. 6). Even with rapid development in 61 years since Indian independence, 69 percent of Indians were without improved sanitation in 2008 (World Bank, 2008a).¹ A legacy of harmful defecation habits continues along with grave effects. Half a million Indians die yearly, 1,370 daily, from water and sanitation-related diarrhoea (Watkins, 2006). In 2006 alone Indian insanitation led to a loss of \$53.8 billion, 6.4 percent of the Gross Domestic Product (Tyagi, 2010). Lasting and just sanitation not only benefit health and economy in India, but also dignity and safety for women and girls (WaterAid, 2009a). While statistics are disheartening and implications unambiguous, there is hope universal sanitation will soon emerge in India.

¹ In 2008 545 million Indians had cell phones, but only 366 million had improved sanitation (UN, 2010).

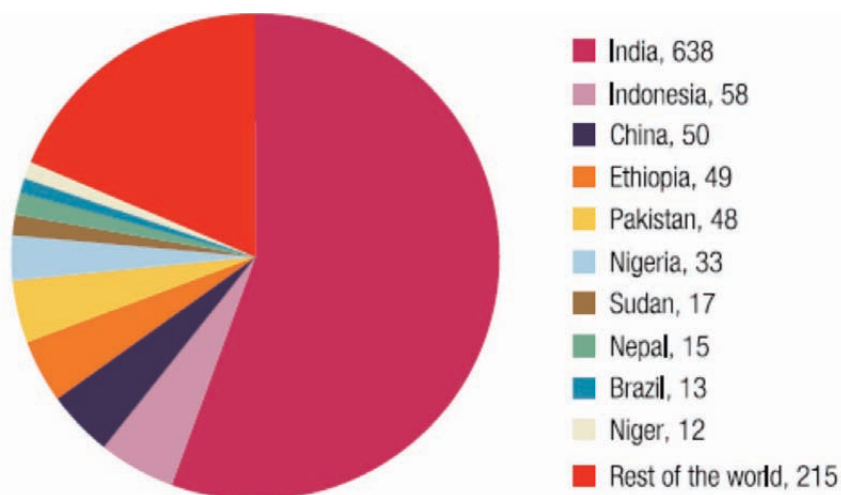


Figure 1.2: Open Defecation Worldwide (million)
(WHO/UNICEF, 2010a)

Due to India's severe household sanitation shortcoming, in 1999 the Government of India (GoI) launched the Total Sanitation Campaign (TSC) to accelerate rural latrine coverage (WaterAid, 2008; GoI, 2010). The Total Sanitation Campaign aims to be a demand-driven, people-centred programme characterized by information, education, and communication tools to guide awareness raising. Financial incentives, mainly a 2,200 Rs (\$49) hardware subsidy, are provided to motivate sanitation in below poverty line (BPL) households; subsidy is not recommended for above poverty line (APL) households (GoI, 2010). This is the conventional Total Sanitation Campaign approach. An alternative Total Sanitation Campaign approach, Community-Led Total Sanitation (CLTS), aims to avoid hardware subsidy and use triggering tools to motivate collective behaviour change (WaterAid, 2008). Rural sanitation work in India is delegated from the Government down to states, districts, blocks, and panchayats, so strategy and interventions diverge as plans transition into reality.

1.1 Research Problem

The goals of the Total Sanitation Campaign conventional and alternative approaches are sustainable and equitable outcomes. According to the Government (2011a, 33), though, major difficulties prohibit "... sustaining the habit and changed sanitary behaviours leading to realizing health and environmental benefits" and "... the poorest households' ownership and/or access to safe sanitation has not shown the expected improvements." So, sanitation access and usage gaps persist, especially for the poor (Kumar, 2008).² There is an access gap between those with and without latrine access. Where access is achieved, there is a gap between those using and not using latrines. Severity of access and usage gaps varies widely in India and even within villages, and reasons why are not fully understood. It is assumed part of the reason for continued and varied access and usage gaps is inadequate interventions. While the Total Sanitation Campaign calls for demand-driven, participatory projects, local officers and leaders facilitate interventions largely independent of higher authority, so they can disregard the Guideline.³ Institution building and awareness raising may vary greatly. In addition, households may not be given technical guidance or may receive a latrine subsidy in a variety of modalities. Latrine subsidies have been greatly criticized for their detriment to outcomes. Despite the importance of understanding barriers and opportunities for rural Indian sanitation interventions and subsidization, the area has received minimal examination and is ripe for research. Though relatively small, this study sought to begin to fill the gap by empirically unveiling the realities of interventions, subsidization, and outcomes in rural Indian sanitation.

² According to the Government, in 2001 India reached 21.9 percent sanitation coverage, at which time access and usage were assumed equal. Today it is agreed access and usage are disparate and Indian usage is unknown.

³ The Total Sanitation Campaign's demand-driven approach has yet to be realized, according to the GoI.

1.2 Research Aim and Objectives

As a result of India's persistent sanitation gaps, this study inspected Total Sanitation Campaign ground realities to determine how rural sanitation interventions influence toilet access and usage gaps. Important intervention determinants included hardware subsidization, technical guidance, social mobilization, and institution building. The most controversial and costly determinant was hardware subsidization. While some experts suggest latrine subsidies should be continued or increased to reduce gaps, others argue subsidies should be removed for the harm they cause. Therefore, the study sought to explore how interventions, and subsidization in particular, influence sustainability and equitability of household sanitation access and usage for the most impoverished in the Total Sanitation Campaign in rural northern India. To address the objective, the study asked:

1. *How do household sanitation interventions occur in reality?*
2. *To what extent does intervention influence access to household sanitation?*
3. *To what extent does intervention influence usage of household sanitation?*
4. *How can interventions ensure household sanitation access and usage for all?*

In order to conduct the study wholly, semi-structured interviews were utilized to elicit a variety of stakeholder perspectives, ranging from Government officers to villagers. For purposes of evaluation and theoretical discussion, latrine access and usage were considered the primary outcomes of rural sanitation projects and were assessed in terms of sustainability – endurance of access and usage – and of equitability – parity of access and usage. Subsidization was made central in the study in order to deepen the research and to address the most controversial aspect of sanitation interventions, though all aspects were considered. To conduct the study it was necessary to develop a basic methodology to assess sustainability and equitability. The study also identified barriers and opportunities for improving household sanitation. By accomplishing the study, it was hoped the research would contribute to the existing body of rural sanitation knowledge and would be useful for policy-makers and practitioners interested in learning the ground realities of India's Total Sanitation Campaign.

To observe comparable projects of alternative and conventional approaches, the study was conducted in three villages in one block of eastern Haryana, which used the alternative Community-Led Total Sanitation approach, and three villages in one block of western Uttar Pradesh, which used the conventional approach. Although many states could have been selected to observe each approach, Haryana and Uttar Pradesh were selected for reasons of comparability; as neighbouring states they share many exogenous characteristics that could influence project outcomes. Villages were purposively selected to be comparable and feasible for research.

1.3 Thesis Structure

In Chapter 2, I develop a thematic and theoretical framework, which addresses rural sanitation relevance, intervention theories, subsidization, sustainability, and equitability. Chapter 3 reviews the regional context to assist the reader in understanding the dynamics of India's socio-economic development, rural governance, and rural sanitation. Chapter 4 enters the research more directly, outlining the study and describing the conceptual and operational frameworks. Chapter 5 enters the results by profiling and comparing case studies. Where Chapter 6 discusses and compares interventions discovered, Chapters 7 and 8 detail and compare latrine access and usage sustainability and equitability. Chapter 9 summarizes barriers and opportunities collected throughout the research process for achieving sanitation outcomes. Chapter 10 concludes the main body of the thesis with final discussion and remarks. Chapter 11 reflects on the study including limitations of research and opportunities for further study. Lastly references and appendices are presented.

2 THEMATIC AND THEORETICAL CONTEXT

As rural sanitation has progressed, so have themes and theories applicable to its development. Themes and theories in rural sanitation are ideas and paradigms helpful to understand notional foundations of interventions and outcomes forming the centrepiece of this thesis. To establish the research foundation, several theoretical factions will be discussed. The chapter begins by exploring relevance of rural sanitation in the context of the Millennium Development Goals followed by application of human right and public good frameworks to rural sanitation. The chapter transitions to theories of sanitation interventions with focus on supply-led and demand-driven paradigms. Subsidization, a paradigmatic feature and a central focus of this thesis, is examined. Finally equitability and sustainability, characteristics for successful sanitation, and the institutions required to achieve these ideals are reviewed. *Figure 2.1* shows some of the themes, theories, and debates immediately and obliquely relevant to the research topics.

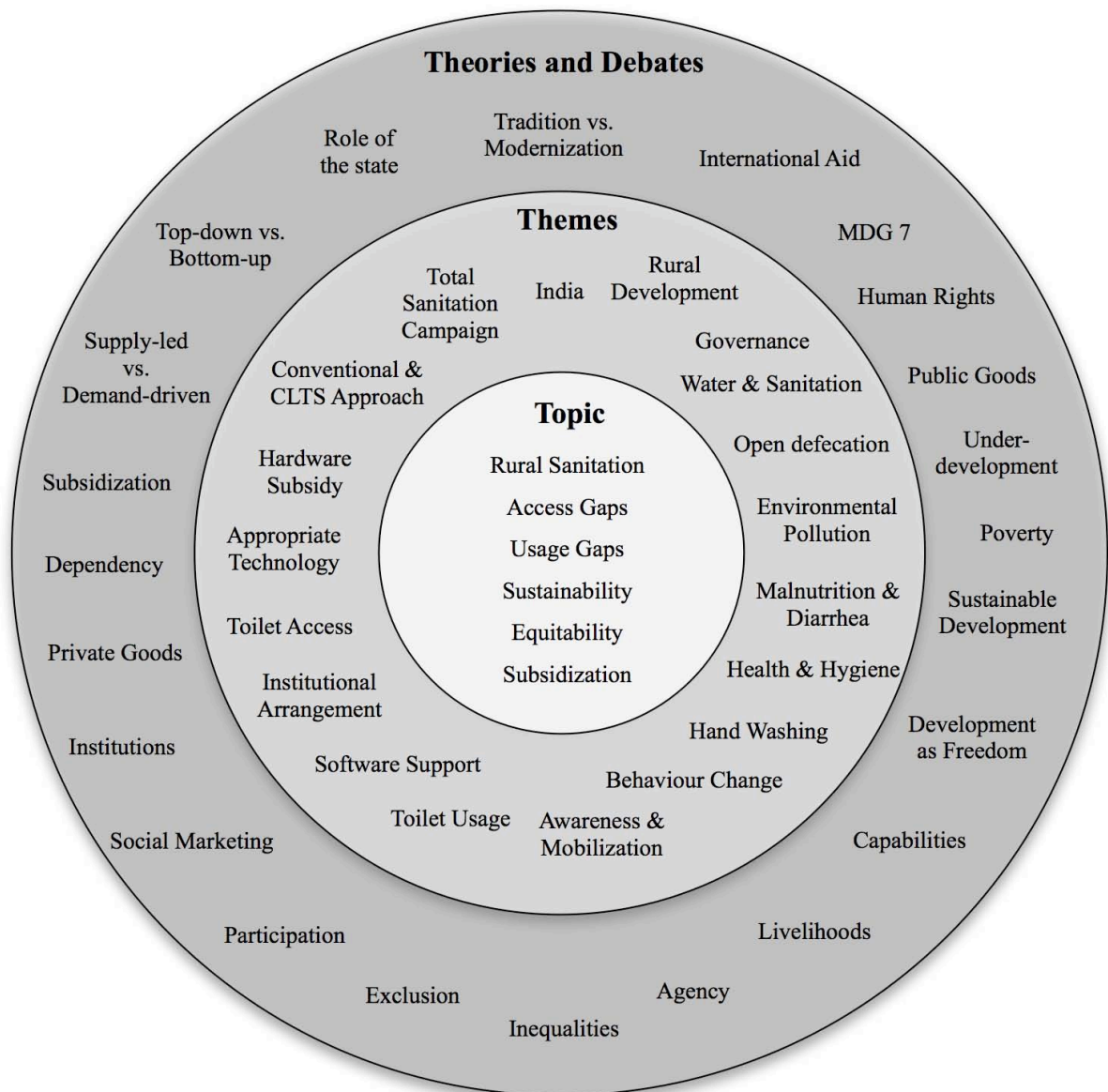


Figure 2.1: Relevant Themes, Theories, and Debates (Created by author)

2.1 Why Sanitation Matters?

“We would urge [that] providing decent sanitation be emphasized among the simple inexpensive solutions available, as it would do more to save lives than any other possible measure” (United Nations University, 2010).

Lack of adequate sanitation undermines all efforts to achieve human development. Household sanitation is key to poverty reduction, school enrolment, and women’s dignity. It is required for child and maternal health, disease reduction, and a healthy environment. Addressing it can also accelerate global partnership formation. Thus sanitation achievement is not an end in itself, but also a means to attain the Millennium Development Goals. This section will categorically depict its significance for realizing the Goals.

The first Goal seeks to *eradicate extreme poverty and hunger*. Achievement of universal sanitation will enhance economic development and reduce starvation (Mehta, 2004). Poor sanitation has economic impacts associated with death and disease, poor water access and quality, losses for education, productivity, time, and tourism (Tyagi, 2010). Not only is poor sanitation bad for economics, but also causes disease like tropical enteropathy, which leads to undernutrition and stunting by starving people of ingested nutrients (Humphrey, 2009). Thus, as sanitation spreads poverty and undernutrition will drop.

The second Goal seeks to *achieve universal primary education*. According to the United Nations University (2010), “443 million school days are lost yearly due to water and sanitation-related disease.” Sanitation at home ensures children miss less school and school sanitation ensures children, especially girls, don’t stay home to avoid ‘going’ outside while in class (Ecosan Services, 2010).

The third Goal seeks to *promote gender equality and empower women*. Sanitation is especially important for women, without which they face discomfort, humiliation, and risk as a result of having to ‘go’ openly, often in the dark (Bongartz, 2009). For girls, poor sanitation causes low education, further contributing to a lifetime of illiteracy and inequality (United Nations University, 2010). Also, a sanitation intervention may provide an opportunity for women to be leaders in their communities.

The fourth and fifth Goals seek to *reduce child mortality* and *improve maternal health*. Diarrhoea from waterborne illness and poor sanitation is the top cause of under-five malnutrition. It is the second leading cause of under-five mortality, leading to the deaths of at least two million children yearly globally (WHO, 2009; WHO/UNICEF, 2010a; Pattanayak, 2009; Chambers, 2011). Sanitation can also enhance maternal health by deterring risks before and after pregnancy, when women may be especially vulnerable (Mehta, 2004). Thus, sanitation has a substantial role in ensuring health, especially for children and women.

The sixth Goal seeks to *combat HIV/AIDS, malaria and other diseases*. An unsanitary environment is a culprit of disease transmission and reduced immune system function. Even when poor sanitation does not kill because of diarrhoea or cholera, it certainly harms in other ways. Chambers (2011) supports this claim in referencing the “. . . 1.5 billion people hosting greedy, parasitic, ascarsis worms, about 740 million with hookworm voraciously devouring their blood, 200 million with debilitating schistosomiasis or up to 70 million with liver fluke? And what about dysentery, hepatitis, giardia, tapeworms, typhoid, polio, trachoma . . . ?” As a result, people become more susceptible to malnutrition, sickness, and death (Ecosan Services, 2010). Hence, household sanitation will help reduce a variety of diseases that cause poor health.

The seventh Goal seeks to *ensure environmental sustainability*. Goal 7 aims to halve the proportion of people without improved sanitation, as well as water, by 2015 (Van der Hoek, 2010). Sanitation is a means to prevent water pollution caused by open defecation and is crucial for achieving a healthy environment necessary to eliminate consequences for human well-being (Ecosan Services, 2010).

Finally, the eighth Goal seeks to *develop a global partnership for development*. Since sanitation has been deemed a prerequisite of human development in the last 30 years, states, multi-lateral agencies, international and local non-governmental organizations have been collaborating to achieve universal sanitation. An example of such collaboration is found within the Water Supply and Sanitation Collaborative Council's newly launched Global Sanitation Fund, which connects donors and organizations with beneficiaries worldwide (Evans, 2009b).

Simply put, sanitation is an engine for human development. Its centrality is easy to appreciate, but its achievement is not straightforward. It is expected the world will fail to meet the Millennium Development Goal sanitation target significantly; 2.4 billion people will not have access to adequate sanitation by 2015 (Bracken, 2005). Not only is sanitation relevant for achievement of human development, but also because it is a human right and a public good, the foci of the next section.

2.2 Sanitation, a Human Right and a Good

Some entities are understood as an individual's responsibility to attain, such as a television or an automobile. Achieving others, such as household sanitation, calls on Government to enable because of evident value for life. But, how do we determine to what extent Government should be involved? This section justifies a state role in household sanitation by examining human rights and goods.

Sanitation as a Human Right

"The General Assembly . . . declares the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights" (UN General Assembly, 2010).

In July 2010 the UN General Assembly formally recognized sanitation as a human right, an important step toward ensuring sanitation for all (Narayanan, 2011). In turn, sanitation has become part of the international human rights framework. Household sanitation is also valuable because it will help meet human rights to food, health, life, dignity, development, and a healthy environment (GTZ, 2009).⁴

As a human right, sanitation is defined by three principles and six criteria (GTZ, 2009; Khurana, 2009). The three central principles, found in all human rights treaties, suggest sanitation access should be equitable and non-discriminatory, participatory, and transparent. Realization of the right should also meet criteria of accessibility, availability, quality, affordability, acceptability and accountability. The criteria entail facilities should be near households, open for use by all, hygienic and sustainable, reasonably priced, culturally appropriate, and implementation should have accountability via judicial bodies and human rights commissions (GTZ, 2009; COHRE, 2007). Therefore, inadequate access to rural household sanitation in any of these six ways may be considered a violation of a human right.

Defining the human right to sanitation implies it is an economic and social good that Governments, as duty bearers, should help attain. As such Governments are obligated to respect, protect, and fulfil the right. Respecting means states should not inhibit sanitation. Protecting means states should impede other inhibitors. Fulfilling requires states to provide frameworks to realize the right (COHRE, 2007). Though states are not legally obligated to fund sanitation, they are expected to enable access for all by incorporating the right into legislation and by applying a rights-based approach with pro-poor mechanisms to reduce exclusion and enhance affordability. While Governments are expected to create environments conducive to equitable sanitation, individuals are legally responsible for attaining it; they are expected to participate and to contribute financially or in-kind. Non-state actors are also expected to participate and contribute to achieving sanitation goals (GTZ, 2009; WaterAid, 2009b).

⁴ For a report on the right to sanitation by the UN Independent Expert on Human Rights Obligations, Water and Sanitation, see: <http://www2.ohchr.org/english/bodies/hrcouncil/docs/10session/A.HRC.10.6.pdf>

There are notable benefits and limitations that accompany definition of household sanitation as a human right. On the positive side, the right has cemented expectations. Now states are expected to ensure participation, good governance, availability of pro-poor mechanisms, and transparency in the process of achieving sanitation as well as meeting basic standards of sanitation quality. Recognizing sanitation as a right removes focus from technology and financing and emphasizes sanitation that is socially just and equitable (Pillai, 2009). Also, with global commitment to the right comes new international respect for sanitation. However, a rights definition of sanitation has limitations too. Just because sanitation is a right does not mean states will satisfy it. Defining sanitation as a human right will not solve lack of sanitation on its own (GTZ, 2009). Also, the right to sanitation is often misunderstood. For instance, it has been incorrectly assumed Governments should pay for sanitation because it is a human right (COHRE, 2007).

Sanitation as a Good

From an introspective view, sanitation should also be treated as a good. Goods can be public, private, or semipublic and can be classified by five attributes: excludability, rivalry, free-riding liability, provision type, action type. Applying this characterization, a public good has low excludability, low rivalry, liability to free-riding, public provision, and joint action, while a private good has high excludability, high rivalry, lack of liability to free-riding, private provision, and individual action (Deneulin, 2007).⁵ If a good is neither public nor private, Sen (1999) suggests it is semipublic. Sanitation can be defined as a good in three ways. A sanitation programme is a public or semipublic good. Household sanitation, like a house, is a private good. Community-wide sanitation, like clean air, is a public good. Goods in sanitation are exhibited in *Table 2.1* by attributes.

Table 2.1: Rural Sanitation in a Goods Framework

Goods Attributes	Village Sanitation Programme	Individual Household Sanitation	Community-wide Sanitation⁶
<i>Excludability?</i>	Low excludability (variable)	High excludability	Low excludability
<i>Rivalry?</i>	Low rivalry (variable)	High rivalry	Low rivalry
<i>Free-riding liability?</i>	Liable	Not liable	Liable
<i>Type of provision?</i>	Public	Private (variable)	Combination of public & private
<i>Type of action?</i>	Joint action (variable)	Individual action (if privately provided)	Joint action
Goods Definition?	Public or semipublic good	Private good	Public good

Achieving total household sanitation and a clean and open defecation free village environment requires a sanitation programme, which is ideally a public good. Such an intervention would have extremely low excludability, so a person could not be excluded. It would have low rivalry, so involvement of one person would not reduce involvement of another (Kahkonen, 1998; Deneulin, 2007). As a result of low excludability, a sanitation intervention is liable to free-riding, which may occur if after an inclusive intervention a villager continues open defecating while benefiting from a cleaner (though possibly not optimally clean) village environment achieved through the programme.⁷

⁵ Public goods are related to common pool resources and goods, management of which seeks to protect the commons, prevent resource depletion, and maintain economic security. Common pool resources and goods are non-excludable, highly rival, and finitely enjoyed (Deneulin, 2007).

⁶ Community-wide sanitation implies full toilet access, usage, and an open defecation free environment.

⁷ A contradiction occurs defining sanitation as a public good if all households participate (low excludability, low rivalry), but a majority continue to open defecate. Although an intervention may be inclusive and without rivalry, villagers would not be able to free ride on benefits of a cleaner environment because it would not exist. Thus, full liability to free-riding in requires low excludability, low rivalry, and a cleaner environment.

But just because a sanitation programme is liable does not mean free-riding must be present to attain a public good. If along with low excludability, low rivalry, and liability to free-riding an intervention is publicly provided and requires community action, it may be considered a public good. While sanitation programmes are ideally public goods, it is assumed that practically they incompletely have low excludability and low rivalry due to institutional limitations, making a sanitation intervention often a semipublic good in practice (Deneulin, 2007).

Household sanitation is considered a private good since it is the responsibility of a beneficiary to provide (Trémolet, 2010). Unlike public goods, household latrines are excludable and rivalrous. They can be accessed by a limited number of people and preventing use by others is not costly (Kahkonen, 1998; Trémolet, 2010; Kumar, 2008). A private good such as a household latrine is also different than a public good because free-riding is not liable, for instance an individual will not benefit from a private latrine if they do not have or use one. Finally, household toilets entail private provision, at least partially, and require individual action to attain (Deneulin, 2007).

Community-wide household sanitation results in a clean, open defecation free village environment, which is a pure public good. A clean environment has low excludability and low rivalry because an individual cannot be excluded from it without high cost and it can be jointly accessed and enjoyed (Kumar, 2008; Deneulin 2007; Eskeland, 1998). Trémolet (2010, vii) suggests sanitation may also be considered a public good because of “. . . its inherent externalities; construction and use of a family latrine protects others at least as much as it reduces disease transmission within the family.” Thus, free riding is possible; even non-contributing members continuing to ‘go’ outside benefit from a cleaner environment, as long as open defecators are few. Finally, a clean environment is a public good because it is achieved through a public programme and is accomplished only through joint action (Deneulin, 2007). It is noteworthy that once a clean environment is achieved, it will be infinitely available because the entire community can enjoy benefits it brings without worry of over-use, unless of course the way the environment is used is for open defecation (Kahkonen, 1998).

Provision of sanitation as a public good is beneficial but faces challenges. The foremost benefit of defining sanitation as a public good is that it implies Government should help realize its achievement. This means that even though household toilets may be private entities, governments should help to coordinate activities to achieve the public good. Sanitation as a public good also promotes social justice because full realization of community sanitation as a public good requires all to contribute (Zhou, 2004). The benefits of deeming sanitation as a public good are clear, but challenges are many. Existence of the free-riding problem in sanitation public goods provision occurs because everyone, even an open defecator, benefits from reduced open defecation, and contributions are voluntary. Thus, achieving a pure public good of a clean environment requires efforts of all community members. The implication of free-riding is that Government should enable an institutional environment conducive to achieving clean villages. Because a clean village requires both private and public provision, however, it is not something Government can provide alone. Another challenge for public goods is that government involvement may bring with it corruption as individuals attempt to gain socially, politically or financially, which can reduce effectiveness of public goods provision. Lastly, measuring quality of public good attainment is made difficult by implausibility of knowing which and how many people continue open defecating (Deneulin, 2007; Kahkonen, 1998).

Hence, sanitation is a human right and public good. But achieving these objectives, as well as successful sanitation outcomes, has not been easy to realize. Level of success depends on sanitation intervention strategies. Therefore, the next section will explore sanitation interventions of opposing paradigms including top-down, supply-led sanitation and bottom-up, demand-driven sanitation.

2.3 Theories of Intervention: Supply-led and Demand-driven Sanitation

At the core, this thesis explores rural sanitation intervention strategies. Behind the strategies are generally applicable theories of development. On one hand, a structural theory of top-down development guides a supply-led sanitation intervention. On the other hand, an actor-oriented theory of bottom-up development denotes a demand-driven sanitation intervention. This section will discuss the theories, connect them to sanitation, and begin to introduce them in the Indian context.

Supply-led Sanitation Interventions

A top-down paradigm suggests development could be reached through external determination on a pre-determined pathway (Bruijn, 2007; Long, 1994). In this exogenous service delivery mode development occurs bureaucratically, dictated from central ministries down to the local level (Mehrotra, 2002). A government official or non-governmental specialist with institutional capacity and financial resources identifies the problem, designs a solution, and provides poor people the object of an intervention, which makes the intervention easier to implement (Long, 1994; Elliot, 2006; Frans, 2004). Outside organizations are needed to enable development and connect stakeholders, but they struggle to overcome the shortcomings of the way in which they must function (Mehrotra, 2002). As a result “where this top-down approach is still practiced, a positive impact on the lives of local people is unexpected and the chance of the poorest benefiting is slim” (Frans, 2004, 37). Top-down development thinking was the norm until the 1990s when, at least at an academic and policy level, emphasis shifted towards participatory, bottom-up approaches (Elliot, 2006). Application of a structural paradigm in household sanitation is referred to as a supply-led intervention.

A supply-led approach suggests people will adopt sanitation if given toilets, which should be given to poor people at low or no cost. Jenkins (2006, 2) comprehensively describes supply-led sanitation:

“The supply-led model paid little if any attention to understanding and stimulating demand for sanitation improvements before building sanitation infrastructure. A hardware subsidy was often used to induce sanitation changes at the household level, but rarely worked to create willingness to pay for, maintain, and use the new sanitation facilities. When the need to motivate changes in sanitation behaviour at the household level was considered, health education programmes with messages about the public health benefits of having and using a toilet were hastily tacked on to construction projects.”

Thus, supply-led interventions focus on hardware subsidies and neglect awareness raising. In turn, interventions are target-driven and fail to engage villagers or to promote behaviour change. Evans concludes (2010, 27), “supply driven approaches to build more toilets with household subsidies often end up financing toilets where they are either not wanted or inappropriate or unused.” Overall, supply-led sanitation is externally implemented with shortcomings in ownership and toilet usage.

Demand-driven Sanitation Interventions

In the 1990s, there was a swing from structural, top-down to actor-oriented, bottom-up development, a paradigm in which communities drive change. As Elliot (2006, 143) states, theory shifted “. . . from an emphasis on technical fixes towards holistic approaches and sustainable solutions, the move from technocratic management to participatory developments and the shift from control by external organizations to local institutions in management.” The tenet of the actor-oriented theory is that people should be at the centre of development, not just recipients of imposed ‘improvement.’ (Sen, 1999; Long, 1994). The goal of this endogenous model is to decentralize projects to local stakeholders who then lead, design, and implement sanitation. In turn, an actor-oriented approach reverses power relations, gives agency to the poor, and enhances community capacities, making outcomes more inclusive and improving service delivery and sustainability (Elliot, 2006; Mansuri, 2004). By focusing on people, the actor-oriented theory signals importance of grasping complexity and heterogeneity of local situations (Long, 1994; Bruijn, 2007). Support of actor-oriented approaches is not ubiquitous. Opponents believe such a development mode produces unsustainable institutions (Mansuri, 2004). Use of an actor-oriented paradigm in sanitation is called a demand-driven intervention.

With a focus on generating demand for sanitation in communities, the demand-driven approach emphasizes awareness, social mobilization, and institution building. It supports community-led sanitation interventions that involve recipients in the process. The demand-driven approach would suggest people adopt sanitation because they realize benefits and, once they do, will pay for most of the costs of latrines on their own or with support from within the community. It also downplays or abolishes subsidy provision, which eliminates a distraction and ensures market development. Van der Hoek (2010, 12) summarizes a demand-driven strategy as focusing “. . . on creating demand for improved sanitation by changing behaviours while simultaneously strengthening the availability of supporting products and services.” Thus, a project in which demand is truly generated and households invest is one that will ensure sanitation development is the will of the people. Although there has been a policy transition to support participatory and demand-driven sanitation development, it has often been superficially so; demand-driven characteristics may not actually be implemented in sanitation due to officials’ lack of understanding of underlying principles (Sah, 2009; Elliot, 2006).

Comparing supply-led and demand-driven sanitation strategies side by side gives way to a variety of differences. The two types of interventions are summarized in *Table 2.2*.

Table 2.2: Supply-led and Demand-driven Sanitation Comparison

Supply-led Sanitation	Demand-driven Sanitation
Government-led, designed, and implemented	Community-led, designed, and implemented
Target-driven, toilet number-focused	Impact-driven, community ODF-focused
Technology-centred, infrastructure-based	People-centred, awareness-based
Hardware subsidy-oriented	Software support-oriented
Rapid implementation	Ongoing implementation
Sanitation viewed as a private good	Sanitation viewed as a public good
Exclusive, usage problems	Inclusive, access problems
Intervention rigid, difficult to modify	Intervention flexible, able to modify

In this section, theories of top-down and bottom-up development were introduced and tied to intervention strategies. Though experts support a demand-driven approach, supply-led interventions continue. A key aspect of sanitation interventions is subsidization, which is elaborated next.

2.4 Subsidization: A Route to Rural Sanitation

Regardless of paradigm, subsidization is the point of an ongoing debate in rural sanitation. Because those without sanitation are often poor and a sanitary environment is a right and a good, the proponents argue on economic and moral grounds that sanitation should be subsidized. On the other hand, some experts believe sanitation subsidies fail to bring desired results and must be eliminated if sanitation interventions are to succeed. This section discusses subsidization and the debate.

Rural Sanitation Subsidies

Governments enable sanitation through provision of hardware subsidies and software support to motivate latrine construction and to raise awareness.⁸ Evans (2009b, 6) elaborates saying “. . . any financing for sanitation which does not flow directly from the immediately-benefiting household to the service provider can be defined as a subsidy.” While software support is promoted in both supply-led and demand-driven strategies, hardware subsidy level and type may differ (Trémolet, 2010).

Trémolet (2010, 20) says “hardware subsidies are defined as public funds provided to alter the price or costs of a particular good or service to encourage the output, supply, or use of these items.” There are four types of hardware subsidy in rural sanitation. First, *direct cash subsidies* are ex-ante cash transfers from Government to households or communities, which can empower households and stimulate the market, but are costly and difficult to manage. Second, *infrastructure subsidies* occur when Governments provide construction materials or labour to households or communities at low or no cost ex-ante, which support the poorest but are costly, can result in inappropriate designs, and may reduce household investment and market benefit. Third, *cross subsidies* describe intra-village funding from a wealthier to a poorer segment of a community ex-ante, which can be well targeted but may still be poorly distributed due to community dynamics. Finally, *output-based subsidies* are funds delivered as reimbursement to households or communities ex-post, which support programmes that are efficient and accountable but may be difficult to administer and may exclude the poorest that cannot cover upfront expenses. Output-based subsidies to households would be given based on toilet construction completion while to communities would be based on community-wide sanitation achievement (Evans, 2009a and 2010b). While hardware subsidy is criticized, software support is seen as a positive investment.

Software support is another form of subsidy referring to Government-funded non-hardware costs in interventions including expenses for awareness activities, such as sanitation and hygiene promotion, and for programme costs, such as monitoring, staff wages, and overhead costs (Trémolet, 2010). Software support is considered a positive use of public funds because it does not inhibit household investment or market development. However, it is more difficult to account for effectiveness of software support than hardware subsidies because its results can be indistinct (Evans, 2009b).

There are several socio-economic justifications for public sanitation expenditure. Funding is defensible because universal sanitation is a human right and a public good (Evans, 2009b; Jenkins, 2006). Government subsidy is justified by the collective health and livelihood benefits that result from reduction in open defecation. For instance, it has been estimated that globally every \$1 invested in sanitation yields a benefit of between \$3 and \$34 due to diminished poverty and medical expenses and enhanced productivity, making sanitation investment sensible (UNU, 2010). Another socio-economic justification for subsidy provision is that sanitation is costly and therefore unaffordable to the poor. Evans (2009a) clarifies, “poor rural households . . . are likely to face a disproportionate challenge in accessing technical support, goods and services at an affordable price.” Thus, it is argued poor households would be excluded from benefits of sanitation without subsidies, which would help to achieve more complete and equitable results (Evans, 2009b and 2010a). These are explicit reasons for subsidy, but there are implicit objectives too. Political, institutional, and financial incentives may be reasons administrators continue to advocate distribution of subsidies (Evans, 2009b; Sanan, 2009).

⁸ From Trémolet (2010), practitioners commonly refer to ‘software subsidies’ as ‘software support’ and refer to ‘hardware subsidies’ as ‘subsidies.’ These terminologies are also applied interchangeably herein.

Though there are valuable reasons justifying sanitation subsidization, there are also many challenges, especially for publicly provided pro-poor hardware subsidies (Evans, 2009a). Key challenges follow.

- *Insufficient public funds* are available to achieve sanitation at scale, so toilet subsidization is not feasible for achieving sanitation for all (Evans, 2009a and 2009b; Trémolet, 2010).
- *Loss of innovation and inappropriate designs* may occur when subsidy is provided; beneficiaries may not be able to modify designs as they desire (Evans, 2009a and 2009b).
- *Crowding out* may occur if subsidies are provided to households that would have invested in latrines on their own otherwise (Evans, 2009a).
- *Corruption* is possible if programmes are not well monitored (Sen, 1999).
- *Inequality enhancement* occurs when subsidies are distributed only to one group of people, ideally to the poorest, which can further divide communities and exclude (Kumar, 2008).
- *Targeting problems* occur if the needy do not receive support due to adverse power relations, politics, discrimination, or poorly planned wealth assessments. In turn, subsidies may reach less needy households (Jenkins, 2006; Evans, 2009b; Trémolet, 2010).
- *Delivery problems* occur when latrines given to poor are too costly to maintain, inappropriate, or incompatible with local conditions. Under-utilized latrines may result (Trémolet, 2010).
- *Demand distortion problems* can occur if people take a latrine subsidy even though they do not really want a toilet (Jenkins, 2006).
- *Dependency* occurs if households are unwilling to invest in sanitation in the future after receiving a subsidy. If households believe Government should provide toilets, they may be unwilling to invest in one in the first place beyond what they are given, resulting in poor construction quality. They may also be unwilling to expend on other entities. Non-poor households may also exhibit premature dependency if they refuse to construct toilets until given a subsidy, as the more needy received (Evans, 2009b; Jenkins, 2006).
- *Poverty incentivization* can cause families fearing loss of welfare support to reduce economic activities in order to continue receiving government subsidies (Sen, 1999).

To solve these problems, there are a number of suggestions to improve hardware subsidies. First, public financing needs to be spent more effectively by investing more in non-financial aspects of sanitation interventions and less in hardware (Jenkins, 2006). Second, appropriate toilet designs need to be promoted to the poorest segments of society (Evans, 2010a). Third, subsidies should be economically sustainable; they should be given only after considering all costs required to achieve total and lasting sanitation (Evans, 2009b). Fourth, subsidy provision should be linked to particular policy objectives that can be evaluated. Fifth, if hardware subsidies are given they must be well targeted and well distributed so they reach the needy. Sixth, as a public provision, subsidy distribution should be transparent and well-monitored (Evans, 2010a).

Sanitation Subsidies: Helping or Hindering?

Because of their many consequences, there is an ongoing subsidy debate in the sanitation sector with three theoretical outlooks: subsidy-based, intermediate, and non-subsidy, represented in *Figure 2.2*. While all sides back software support, they differ on hardware subsidy allocation.

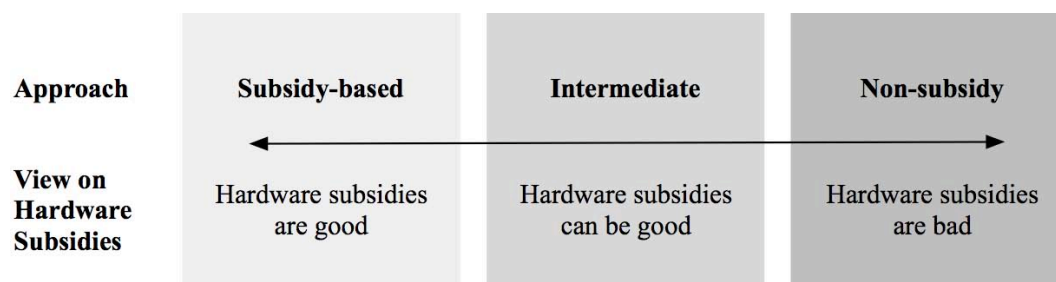


Figure 2.2: Sanitation Subsidy Perspectives
(Created by author)

A subsidy-based outlook sees hardware subsidies as useful to achieve sanitation. Subsidies are justified because people are poor, sanitation is costly,⁹ and sanitation is a human right and good. Thus government may subsidize to ensure access for all and to guard public health (Trémolet, 2010). Proponents suggest benefits of subsidy justify provision. This perspective aligns historically with a supply-led strategy, though subsidies may be provided in demand-driven approaches too. Because of shortcomings of the subsidy-based strategy, some practitioners support a non-subsidy approach.

The non-subsidy outlook believes consequences of hardware subsidies outweigh benefits. Non-subsidy proponents suggest hardware subsidies are inefficient, inhibit sustainable sanitation achievement, and do not reach the poorest. Evans (2009b) clarifies subsidies do not always fail, but do when part of a supply-led approach aimed at ‘achieving high coverage’ rather than ‘motivating their use and maintenance.’ On the up side, in a non-subsidy approach people will not build a toilet they do not want and public funding will not be wasted. However, a non-subsidy approach may exclude the poorest demanding a toilet that cannot afford one. It is important to note the non-subsidy perspective is fully against direct and infrastructure subsidies, but may not always ardently oppose cross and output-based hardware subsidies (WaterAid, 2008; Gupta, 2008).

If the first side dogmatically supports hardware subsidies and the second fervently opposes them, then there is also a third intermediate outlook. The intermediate view supports hardware subsidies if judiciously targeted with a demand-driven approach. This view emphasizes software support like non-subsidy proponents, but supports well-targeted and distributed hardware subsidies as part of a sanitation intervention like the subsidy-based view. The intermediate group would use cross and output-based subsidies over direct and infrastructure subsidies.

Overall, subsidies are an important component of sanitation interventions. The human right and public good aspects of sanitation justify them, but hardware subsidies face many challenges and have become the point of an ongoing debate. Some argue hardware subsidies are necessary to ensure sanitation reaches the poorest, while others believe they do more harm than good. Because this research seeks to empirically explore this debate by determining how application of subsidies impacts results, it is important to inspect concepts useful for evaluating interventions and outcomes. Equitability and sustainability are two such concepts, which are outlined in the next section.

2.5 Moving Towards Equitable and Sustainable Sanitation

“Human development is the expansion of people’s freedoms to live long, healthy and creative lives; to advance other goals they have reason to value; and to engage actively in shaping development equitably and sustainably on a shared planet. People are both the beneficiaries and the drivers of human development, as individuals and in groups” (Klugman, 2010, 22).

Equitable and sustainable sanitation outcomes require all humans have access to lasting sanitation. However, in rural sanitation marginalized people are often *excluded* from interventions and benefits. In turn access and usage of sanitation may be unsustainable. Equitability and sustainability are especially important in household sanitation because the lack of them for any part of the community leads to a risk of contamination and consequences for all. In this section, equitability and sustainability will be defined and tied to sanitation. The role of institutions and institutional challenges to achieve these goals is discussed, and a proposal for ensuring equitable and sustainable sanitation will be formulated.

⁹ Trémolet’s (2010) six-country study found rural household hardware subsidy ranged from \$17 to \$568.

Equitability in Rural Sanitation

Equitability qualifies a sanitation process or outcome based on level of exclusion from participation and benefits. In the 2010 Human Development Report, Klugman (2010, 2) states, “human development is also about addressing structural disparities – it must be equitable.” Thus equitability is about inclusive development that reduces disparity. In equitable development, all people should be empowered to participate and needs of the socially and economically marginalized should be understood, valued, and incorporated. The commonly excluded socially marginalized may include lower castes, women, people with disabilities, elderly, or children. The economically marginalized are usually the poorest, but the wealthiest may also be excluded because they are not poor. Overall, an equitable sanitation development should result in inclusive and fair latrine access and usage.

Inequalities exist in all societies, and villages seeking sanitation are no exception. A focus on equitability is valuable in sanitation because achieving total sanitation requires an entire community to construct, maintain, and use latrines. If any household does not have and use a toilet, the human right to sanitation and public good of a clean environment are not possible. In terms of human rights, all people should be able to participate in interventions and should have access to sanitation, as outlined by the Sub-Commission Guidelines on the human right to water and sanitation, which says:

“Each policy, programme or strategy concerning water and sanitation is to include, as an integral element, the right of all people to participate in decision-making processes that may affect their rights. Special efforts are made by governments to ensure the equitable representation in decision-making of marginalized groups, in particular women. Communities have the right to determine what type of water and sanitation services they require and how to manage those services. All people will have full and equal access to information concerning water, sanitation and the environment” (COHRE, 2007, 13).

Thus, equitable sanitation incorporates the needs of every community member and should not exclude anyone from participating or benefiting. As a result of an inclusive sanitation intervention, institutions should more equally represent the needs of and be followed by the entire community (COHRE, 2007). Then potentially adverse impacts such as poor health and discrimination should be reduced, especially for the most vulnerable groups (Menon, 2007). Equitability is also important because when a sanitation intervention is not equitable, not only are marginalized groups excluded, but also they often suffer the consequences most severely (Elliot, 2006; Kurian, 2003; Evans, 2009b).

Narayanan (2011, 7) identifies important attitudinal, environmental, and institutional barriers to equitable sanitation. Attitudinal barriers lead to “. . . isolation, prejudice, stigma, misinformation and lack of self-confidence of those who are marginalized.” Although sanitation interventions should involve all households in a village, exclusion of some can occur, especially on caste, religious, and gender lines (Betancourt, 2000). For instance, because India is a gender divided society, women’s needs may be ignored (Pillai, 2009). Narayanan (2011) also discusses environmental barriers, which include physical accessibility obstacles, such as inadequate designs to meet needs of young or elderly, or communication obstacles such as illiteracy. Meanwhile, institutional barriers include ‘acts of omission,’ ‘acts of commission,’ and ‘poor accountability mechanisms’ (Narayanan, 2011, 7). Acts of omission lead to inadequate policies to support the marginalized. Acts of commission include corruption. Finally, poor accountability mechanisms cause weak governing systems in which officials are unaware of difficulties of the excluded (Narayanan, 2011). Because exclusion is a significant dilemma in achieving rural sanitation, a focus on equitability is necessary.

Sustainability in Rural Sanitation

Where equitability is needed for community-wide results, sustainability is required for results to last. The widely accepted starting point to discuss sustainability, the Brundtland Report (1987, 24), says sustainable development is a process that “. . . meets the needs of the present without compromising the ability of future generations to meet their own needs.” Reflecting on the report, Sneddon (2006) cites sustainable development’s aims: improving human well-being, equitably distributing resource benefits, and ensuring a healthy environment. Sneddon concludes sustainable development is fundamentally about socio-economic development, equitability, and environmental protection.

Traditionally sustainable development has been applied to address environmental dilemmas caused by modern human activities such as transportation, agriculture, or industry, which produce benefits for society and economy (Sengupta, 2001). But there are also less obvious human activities that pollute the environment not for development but because of poverty. Open defecation is one such example with serious consequences. The practice results in contaminated food and water, malnutrition, disease and death, loss of time in school and work, loss of livelihood, well-being, dignity, and quality of life. The perpetual cycle of poverty, poor sanitation, environmental consequences and continuing socio-economic underdevelopment, displayed in *Figure 2.3*, is evident and substantial (Radhakrishna, 1986). Breaking this cycle requires intentionality and definitive intervention.

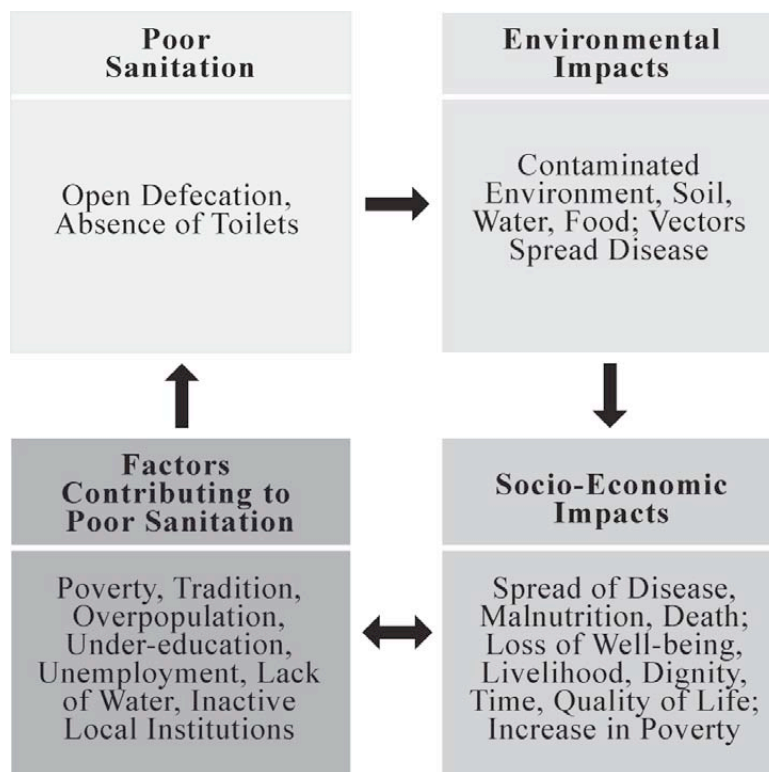


Figure 2.3: Cycle of Poor Sanitation
(Created by author)

Therefore, sustainable development and sustainability are prerequisites to achieve social advance, economic progress, and a healthy environment in sanitation (Elliot, 2006). Sustainability is especially salient for defining sanitation outcomes and impacts because of the connection between the quality of the environment and health, livelihood and well-being of people, which an end to open defecation can harness. According to Bracken’s (2005, 2) Brundtland inspired definition, “a sanitation system that is sustainable protects and promotes human health, does not contribute to environmental degradation or depletion of the resource base, is technically and institutionally appropriate, economically viable and socially acceptable.” Therefore, sanitation sustainability is a complex and comprehensive concept with many benefits. Some outcomes and impacts of sustainable sanitation are depicted in *Table 2.3*.

Table 2.3: Sustainable Sanitation Outcomes and Impacts

Outcomes	Impacts
<ul style="list-style-type: none"> • Formation of sanitation committee, tacit, and explicit institutions • Enhanced awareness • Toilets constructed • Behaviour changed • Sustainable and equitable toilet access • Sustainable and equitable toilet usage • A clean environment with no risks to health or of environmental degradation 	<ul style="list-style-type: none"> • Decreased soil and water contamination • Improved health, reduced malnutrition, diarrhoea, escapable morbidity, mortality • Saved time for school and work, improved livelihoods • Enhanced privacy, convenience, safety, dignity, especially for women • Enhanced development, well-being, and quality of life and reduced poverty

In the case of unsustainable sanitation, insufficient access and usage prevent delivery of benefits over time. An access gap occurs due to unavailability of a functional toilet. A usage gap occurs due to lack of access to a sustainable latrine or preference for open defecation (Carter, 1999). Even if access and usage are initially achieved, they may not last. If people cannot maintain access, they may return to open defecation. Even if toilet access is achieved, if individuals do not value the benefits of sanitation, behaviour changes may be temporary and open defecation can resume. Sanitation may not become sustainable if projects are implemented in a supply-led mode where focus is on construction and funding.¹⁰ As a result, impacts can be short-lived (Bracken, 2005).

The Role of Institutions in Rural Sanitation

Achieving equitable and sustainable sanitation requires three institutions: tacit, explicit, and organizational (Kurian, 2003; Hodgson, 2006). Tacit institutions are informal self-imposed behaviours, values, and practices (Hodgson, 2006; North, 1989). In rural sanitation, open defecation is a tacit cultural institution (Paul, 1958). Prohibitive tacit institutions are required to end open defecation, which occurs when collaborating individuals harness social capital, enable awareness promotion and toilet construction, and establish open defecation inhibitors (North, 1989; Kahkonen, 1999; Kurian, 2003). Along with tacit institutions, explicit institutions are found in rural sanitation. For instance, a codified Government law may prohibit open defecation or require hardware subsidy (Hodgson, 2006). The final type of institution is an organizational arrangement, which in sanitation could be a market, government, non-governmental organization, or village committee organized to supply or facilitate sanitation interventions (Kahkonen, 1998; Betancourt, 2000).

Equitable and sustainable sanitation may be prevented by numerous institutional problems such as poor problem recognition, path dependency, Prisoner's Dilemma, collective action problem, and lack of blueprints. Poor problem recognition suggests people in an existing system are unmotivated to change due to inability to recognize source of failure. In rural sanitation poor problem recognition prevents transition from supply-led to demand-driven interventions in practice. Next, path dependency refers to difficulty adopting new institutions because of comfort with existing ones.

As an example, habituation to open defecation continues even after toilets are in place (Kahkonen, 1999). The Prisoner's Dilemma and collective action problems posit that humans cannot achieve a clean environment because when working in a group people become irrational and selfish. For instance, in rural sanitation people may continue using open defecation for their own enjoyment in hopes their action will be of minimal consequence relative to the whole assuming others do not do the same (Kurian, 2003). Finally, institutions may be challenged by 'blueprint thinking,' by which administrators create uniform policies to solve complex problems (Kahkonen, 1999). The result is that solutions provided by administrators may not be appropriate to meet the needs presented by diverse and dynamic community circumstances.

¹⁰ Governments tend to focus on sanitation targets such as toilets constructed and funds spent rather than awareness, behaviour change, and achievement of clean villages. The MDGs are also guilty of focus on targets.

Another related institutional challenge is Hardin’s Tragedy of the Commons. Though the Tragedy is about common pool resources, the underlying theory also applies to sanitation. The Tragedy of the Commons is a social dilemma in which individual preferences produce consequences for the entire community (Hardin, 1968). The theory applies to rural sanitation as well because if all individuals do not adopt latrines, the environment continues to be contaminated and health benefits are lost for all at the hand of a minority (Evans, 2009b). In this case, equitable and sustainable sanitation outcomes are not achieved and the public good of a clean environment is not fully realized.

Reconciling an Equitable and Sustainable Sanitation Intervention

While concepts of equitability, sustainability, and sanitation are fairly simple to reconcile, less clear is how to practically achieve equitable and sustainable sanitation. To realize sustainable development, experts embrace economic and political environmental theories, such as ecological economics and political ecology (Sneddon, 2006). Sen (1999) lays out another equitability-focused pathway through ‘development as freedom,’ which suggests that expanding freedoms and removing unfreedoms should be the means and ends of development. This idea implies development should be actor-oriented, equitable, and aimed at human development to meet basic needs (Sneddon, 2006). Sen’s proposal offers useful concepts to define what equitable and sustainable sanitation development should be.

Applying Sen’s conception of development as freedom, sanitation development would follow an approach in which all people have the opportunity to learn about sanitation and then to access and use appropriately designed and affordable latrines so they can optimally expand capabilities and avoid unfreedoms of avertable malnutrition, death, and poverty. Development as freedom would suggest people are agents of their own sanitation development, not just beneficiaries of state programmes (Sen, 1999). As such, “putting people at the centre of development means making progress equitable, enabling people to be active participants in change and ensuring that current achievements are not attained at the expense of future generations” (Klugman, 2010, 118). Consequently, sustainable sanitation development would be a decentralized process that reduces social inequalities by ensuring all community members participate in sanitation planning, decision making, institution building, and implementation (Sen, 1999; Sneddon, 2006). Those commonly excluded should be allowed the opportunity to participate in all facets. A sustainable sanitation development would also recognize the rights people have to maintain the traditional practice of open defecation and deny sanitation if they desire, once they are fully aware of the implications (Sen, 1999).

Achieving equitable and sustainable rural sanitation requires a multi-step equity-focused approach; one potential example of which is exhibited in *Figure 2.4*.

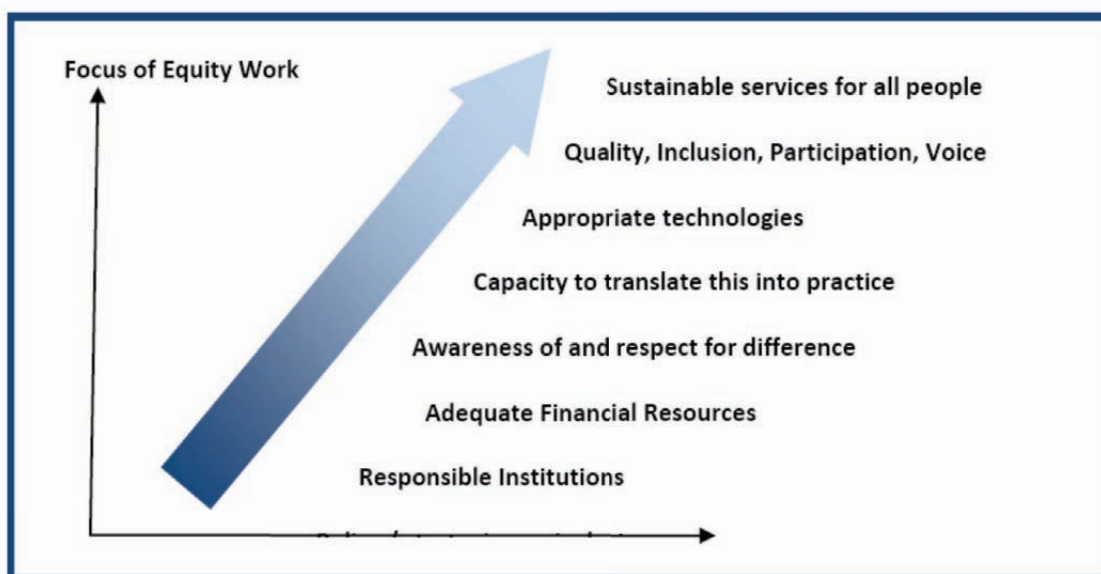


Figure 2.4: Route to Equitable and Sustainable Sanitation (Narayanan, 2011)

Such an equity-focused approach would require steps at multiple levels. At the administrative level, institutions and politicians would need to direct adequate resources to the neediest households, to use inclusive approaches that recognize differences among community groups, and to spend more on software activities and sanitation promotion and less on hardware subsidies (Narayanan, 2011; Mehta, 2004). Institutions may require capacity development, policies may need reforming, and better monitoring may be needed (Narayanan, 2011). For facilitators, all groups should be consulted before implementation to ensure facilitators understand which disadvantaged groups may be excluded, what barriers cause exclusion, and how needs of the disadvantaged may be met (Menon, 2007). In communities, all, including poor and rich, men and women, religious factions and castes, need to have the opportunity to participate and learn so the value of sanitation is recognized and demand is generated, if willed (Jenkins, 2006). During implementation commonly excluded groups should be proactively motivated to participate and have a voice. Different, appropriate, and maintainable technology and price options should be available to meet needs of all groups; supply chains need to be available to provide affordable sanitation materials. If household hardware subsidies are given they must be well-targeted and distributed so they reach the poorest. With these steps all households should be able to understand, access, and use sanitation over the long-term, leading to more equitable and sustainable sanitation outcomes (Menon, 2007).

Thematic and Theoretical Context Conclusion

As a whole, this chapter sought to discuss themes and theories relevant for rural sanitation to help construct an understanding of what interventions and outcomes in rural sanitation should aim to be, how they may be realized, and what barriers they may face. After discussing the theories it becomes clear they exhibit the commonality of being ontological reflections of reality that often originate at an academic and policy level. Hence, there is a risk sanitation theories may only be valuable for academic and political institutions and may not be practically useful for people working in the sanitation sector. Still, theories make valuable contributions for realizing improved sanitation pathways and results. Reflecting on the themes and theories discussed in the chapter, the significance of rural sanitation is justified because it is necessary to achieve all development goals and it is a human right and public good. Adopting these frameworks can be useful for establishing proper institutional environments for rural sanitation interventions. By meeting the criteria and principles set out in sanitation frameworks, interventions can better achieve the ends they seek. All interventions, however, are not equal. The sanitation paradigms of the past, supply-led interventions, have been recognized to return less than desirable results, and so a shift occurred to a demand-driven paradigm. With the shift came potential for improved outcomes, but challenges remain for adopting the new paradigm and thus for achieving successful outcomes. Successful outcomes can be defined as those that are sustainable and equitable. Achieving sanitation outcomes that exude sustainability and equitability requires a conducive institutional environment as well as interventions that are complete and inclusive. The sanitation theories discussed are not just notionally relevant. They set the stage for what is to come and will reappear in the backdrop of discussions and reflections throughout the thesis implicitly and explicitly. To begin to translate theory into reality, the next chapter enters the Indian context.

3 REGIONAL CONTEXT

“[India is a] country which has produced innumerable number of saints and seers, which has been the spiritual leader of the world, where focus has been given on both internal and external purity, but still millions defecate in the roadside, along the railway track, in the paddy fields, unmindful of not only the harmful effects on their health but also of their dignity and privacy.” (Alok, 2010, 1)

India, a diverse and immense nation, has progressed remarkably since independence in 1947. Despite a growing economy, stark disparities persist on regional, class, caste, and gender lines and a vast number of Indians are poor. In turn, poverty-related environmental problems are widespread, especially in rural areas. A decentralized rural governance and development system is in place to bring development, such as household sanitation, to rural areas. The field of rural sanitation is not new in India. Over the last 30 years there have been substantial efforts to address India’s open defecation puzzle; however, progress has remained slow. Since the Government began rural sanitation work, the importance of truly bottom-up, demand-driven interventions has become clear. But still, projects are commonly supply-led. In transition from theories useful in conceptualizing rural sanitation to the field research, this chapter reviews Indian development and sanitation. We begin with the Indian national context including socio-economic development and rural governance. Next, the chapter reviews India’s rural sanitation background and Total Sanitation Campaign. The chapter then discusses state and local development and sanitation conditions relevant to the research.

3.1 Development in India

To describe the context in which the research occurred, this section discusses socio-economic development as well as governance and welfare in rural India.

Socio-economic Development

India is a large developing country in South Asia, mostly contained within the natural boundaries of the Arabian Sea to the west, the Indian Ocean to the south and east, and the Himalayas to the north. India’s neighbours are Nepal, Tibet, and China to the north, Pakistan to the west, Bangladesh and Myanmar to the east, and Sri Lanka to the south. In India, rich and poor, Hindus, Muslims, Buddhists and Christians, lower and upper castes live and work side by side (Kublin, 1973). Along with diversity come social asymmetry and the caste system, the nation’s customary societal structure (Sen, 2005; Kurian, 2003). India is the world’s most populous democracy and second most populous nation with 1.2 billion people and a 1.4 percent average growth rate (2002 to 2008). In 2008, 29 percent of Indians lived in cities and 71 percent lived in villages (World Bank, 2008b). India’s economy has performed well since 1990s liberalization, resulting in increased corporate activity, enhanced presence in the world economy, and burgeoning incomes (Klugman, 2010). Where diversity, human capital, and economic development are India’s strengths, overpopulation, poverty and environmental problems are its downfalls.

At Indian independence in 1947, Jawaharlal Nehru announced India’s future challenges as ‘the ending of poverty and ignorance and disease and inequality of opportunity’ (Sen, 2005, 193). But in 2011, Nehru’s hopes have yet to be realized. Overpopulation pressures resources and curbs development. The Government struggles to ensure adequate infrastructure and social programmes for the population (Nilekani, 2009). Poverty is widespread, perhaps best indicated by India’s 2010 Human Development Index at 119 of 163 nations (Klugman, 2010).¹¹ One determinant of poor Index is India’s health. Malnourishment afflicts 40 to 60 percent of children under five and half of children and women suffer from anaemia (Sen, 1999 and 2005).¹² As a result of poor health and as a bi-directional factor, education is low in India. The population was 34 percent illiterate in 2008 (World Bank, 2008b).

¹¹ The Index measures development using metrics of health, education, and purchasing power (Klugman, 2010).

¹² In Africa, 20 to 40 percent of children under 5 are malnourished (Sen, 1999 and 2005).

Basic health and education are necessary for productivity, so it is no surprise 26 percent of Indians are in poverty (Sen, 2005; WaterAid, 2009a). Together, overpopulation and poverty degrade the environment, by which India's poor are most significantly afflicted (Radhakrishna, 1986). Unfortunately, because pollution is produced faster than nature's intake capacity, environmental quality needed to maintain human health has been lost (Sengupta, 2001). As a result of continuing underdevelopment, India's MDG achievement is expected to take years past 2015 (BBC News, 2011).

Rural Governance and Welfare

To improve India's development pathway, in 1993 the Government initiated the Panchayati Raj system of local rural self-governance. The system decentralizes governance from the central Government to states to districts and to gram panchayats (GPs) (Besley, 2007). In the system, States are largely responsible for decision making and allocation of financial resources. State governments are threefold including governors and a council of ministers, the secretariat and the departments. Where Government programmes are largely state responsibilities, basic administration of programmes is a district responsibility, which district officers control (Betancourt, 2000). Programme implementation ultimately ends up as the responsibility of gram panchayats, the locally elected self-governing bodies typically representing a village or a cluster of villages, for implementation. Members of a Gram Panchayat include a head leader, called a Pradhan or Sarpanch, and an advisory group of five or more Panchs. The Panchs help the Pradhan in village administration and the Pradhan holds ultimate decision-making powers. In the Panchayati Raj system, gram panchayats are responsible for village administration including selecting beneficiaries for government programmes, constructing and maintaining public goods, and distributing welfare. Above gram panchayats, samiti (block) panchayats and zilla (district) parishads govern (Besley, 2007; Betancourt, 2000).

To raise rural living standards, the Ministry of Rural Development works through gram panchayats (Mehrotra, 2010). The total budget for the Ministry in 2009-2010 was 74,270 Rs crore (\$16.5 billion), 31 percent of the Government budget (GoI, 2009). To support India's disadvantaged population, the Ministry uses targeted welfare programmes. The Ministry's main tool is subsidization, through direct cash transfer or provision of food and fuel at below market rates (Besley, 2007). To determine who receives subsidies, panchayat leaders and officers conduct surveys. Then panchayat leaders determine which households will be below poverty line. Below poverty line households receive a wide variety of welfare benefits (Besley, 2007; Mehrotra, 2010). Subsidies are provided for below poverty line household expenses such as healthcare, education, food, water, sanitation, fuel, electricity, housing, and other areas. The amount of funding provided to disadvantaged Indians from the Ministry and other programmes is significant and village leaders hold significant power in distributing welfare support. Because of the scope and scale of Indian welfare, those receiving support become dependent on aid and elections are largely determined by subsidy promises (Nilekani, 2009).

Unfortunately welfare programmes function neither effectively nor precisely. There are often delays in delivery of benefits due to an unreliable public distribution system. Funds passing through the Panchayati Raj 'leak' as they move from top to bottom. There is little local direct decision-making or accountability in turn (Betancourt, 2000). With the Government still working largely on paper, monitoring fund movement and expenditure is difficult. Nilekani (2009, 372) notes the severity of leaking subsidy funds, amazingly suggesting:

“Across our creaky subsidy distribution systems, leakages average 50 percent and more. The inefficiency of these state schemes has gotten even worse over the last two decades; in the 1980s Rajiv Gandhi had remarked that for every rupee spent on the poor, only 15 paise finally reaches them; in 2007 his son, Rahul, offered his own estimate, saying that now a mere five paise of every rupee spent reaches the poor in some districts.”

Thus, benefits supposed to reach the poorest too often do not. Even when public support does reach villages it often is distributed to non-poor rather than the poorest and so means intended to achieve equity can further divide communities, which Sen (2005, 214) refers to as ‘friendly fire’ (Betancourt, 2000). For instance, in some cases ration cards have been found to go to less needy villagers while missing the most marginalized (Nilekani, 2009). Also, if one’s caste party is in power, they are much more likely to see a new development programme installed or to receive welfare intended for them. So, politics is defined on caste lines, based on which Indians often vote and receive welfare support. To counter exclusion of lower castes, the government allocates population-proportionate percentages of village leader seats to disadvantaged lower castes, such as Scheduled Castes and Scheduled Tribes. Additionally, women are allotted 30 percent of Pradhan seats (Nilekani, 2009; Besley, 2007).

3.2 Rural Sanitation in India

This section describes Indian rural sanitation background, the Total Sanitation Campaign, and recent sanitation progress. The Total Sanitation Campaign described in this section is a normative generalization based on the Guideline and what the programme and approaches should be.

Rural Sanitation Background

Rural sanitation has improved greatly in India, exhibited in *Figure 3.1*. Great gaps remain though. Even with 166 million Indians gaining access to sanitation from 1995 to 2008, by absolutes more Indians lacked sanitation by the end of that period than at the start (WHO/UNICEF, 2010a and 2011).

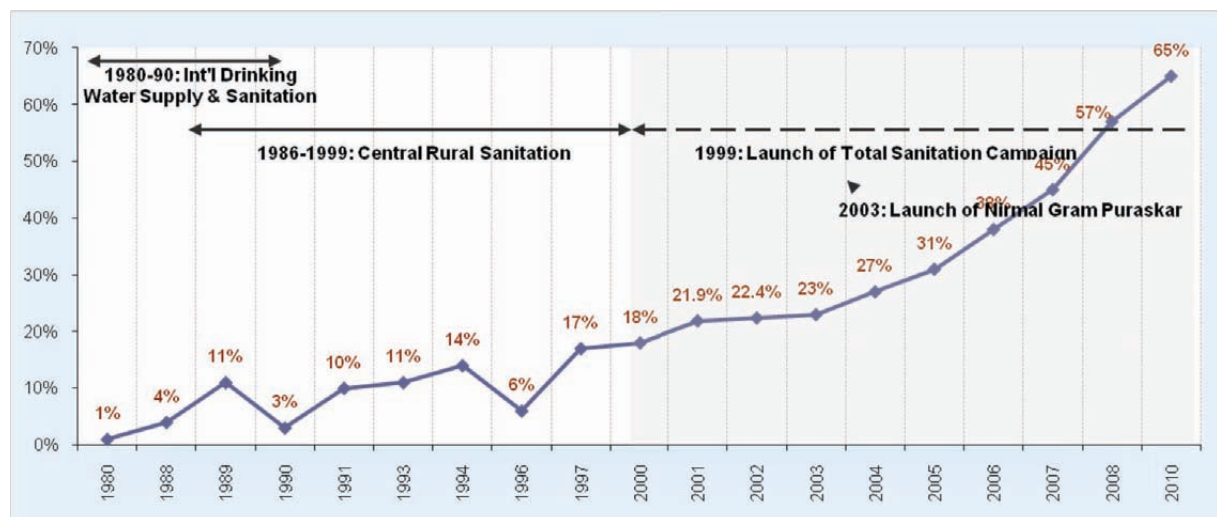


Figure 3.1: Indian Rural Sanitation Trend (GoI, 2011b [DDWS, 2010])

Although open defecation is not as observable a form of environmental contamination as the smog in the air, it is a ubiquitous source of pollution in India. In rural areas men, women, and children continue ‘going’ outside. Unfortunately, environmental quality needed to maintain human health has been lost to open defecation (Sengupta, 2001). With poor sanitation come unsafe water, preventable disease, and negative impacts on health, education, livelihood, and well-being, further exacerbating poverty (UN-HABITAT, 2007). For example, diarrhoea due to poor water and sanitation kills 450,000 Indians yearly, 88 percent of which are children (GoI, 2011b). In economic terms, inadequate sanitation reduced India’s Gross Domestic Product by 6.4 percent in 2006, equating to \$53.8 billion or \$48 per capita.^{13,14} Not shown is \$26 billion was lost due to diarrhoea and 79 percent of mortality-related economic losses were due to deaths and diseases in children under five (Tyagi, 2010).

¹³ Inadequate sanitation costs \$38.5 billion (71.7%) from health losses, \$4.2 billion (7.8%) due to water losses, \$10.7 billion (20.0%) due to opportunity from time losses and \$0.26 billion (0.5%) due to tourism losses.

¹⁴ While India lost \$48 per capita due to poor sanitation, per capita losses in other countries were \$9.3 in Vietnam, \$16.8 in the Philippines, \$28.6 in Indonesia, and \$32.4 in Cambodia in 2006 (Tyagi, 2010).

Poor households suffer most from inadequate sanitation (Tyagi, 2010). From 1995 to 2008 the poorest 60 percent of the population saw little benefit from sanitation gains, which mainly went to the wealthier segments of the population, as seen in *Figure 3.2*. In 2008, the poorest quintile was 47 times more likely to rely on open defecation than the richest quintile (WHO/UNICEF, 2010b). Thus, sanitation improvements have been highly inequitable and the impoverished form the majority of Indians without adequate sanitation. The excluded often suffer for economic or social reasons (Narayanan, 2011). Government efforts to motivate the poorest have not succeeded. Despite consequences, where projects have been implemented people are still largely unaware of implications of open defecation and see little reason to use toilets for defecation (UN-HABITAT, 2007).

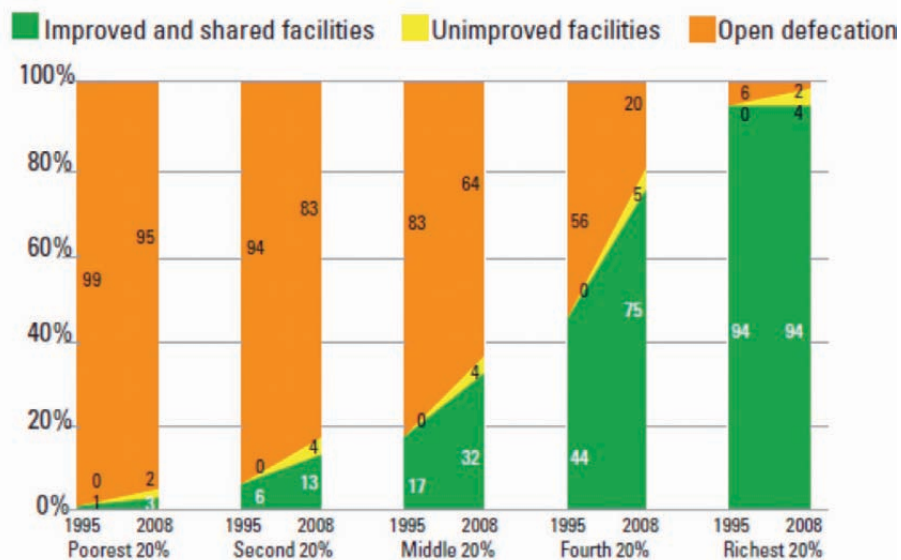


Figure 3.2: Indian Sanitation by Economic Quintile (UNICEF, 2010a)

The Total Sanitation Campaign

To address India’s open defecation problem, the Government has included sanitation on their agenda since adopting the first five-year development plan in 1951. However, it was not until 1985 the Government established the Rajiv Gandhi National Drinking Water Mission to reduce water and sanitation gaps. In 1986, the Government began to target rural sanitation through the Central Rural Sanitation Programme (WaterAid, 2008).¹⁵ While Central Rural Sanitation Programme adoption marked an important milestone toward improving rural sanitation, slow progress resulted. The Government realized their supply-led, subsidy-based approach was failing (GoI, 2007; Kumar, 2008).

In 1999 the Government introduced the Total Sanitation Campaign (TSC) (WaterAid, 2008). The TSC was designed to be an incentive-based, ‘community led,’ and ‘people centred’ programme (GoI, 2010). The Total Sanitation Campaign, objectives of which are in *Table 3.1*, emphasizes sanitation awareness and demand generation through information, education, communication (IEC), supply of materials through local supply chains, and provision of subsidies to motivate latrine construction (GoI, 2010; Pattanayak, 2009).¹⁶

¹⁵ ‘Sanitation’ is not in the Mission’s title. The Government historically neglected sanitation, but recent improvements have occurred. The Government changed the title of the department responsible for sanitation from ‘Department of Drinking Water Supply’ to ‘Department of Drinking Water and Sanitation.’ By 2011, the DDWS annual budget reached \$2.44 billion. In July 2011, the Government elevated DDWS to the ‘Ministry of Drinking Water and Sanitation.’ (IANS, 2011). Still, experts worry status quo interventions may continue.

¹⁶ In 2007, the Government began to refer to subsidies as incentives. The TSC Guideline suggests incentives should be given to poor households after toilet construction, but funding is still provided pre-construction to poor and non-poor households throughout India in practice (GoI, 2011b; WaterAid, 2008).

Table 3.1: Objectives of the Total Sanitation Campaign

Total Sanitation Campaign Central Objectives
(1) To improve quality of life in rural areas
(2) To reach full sanitation by 2012
(3) To use awareness to lead communities to sanitation coverage
(4) To reach full sanitation in all schools and anganwadis by March 2012
(5) To promote sanitation that is cost effective and appropriate
(6) To result in community sanitation including solid and liquid waste management

(GoI, 2010)

The Government's Department of Drinking Water and Sanitation then hierarchically implements the TSC through a decentralized organizational structure, exhibited with responsibilities in *Figure 3.3*. The Government provides the TSC Guideline, a central share of subsidy funding, and technical designs, and monitors states. States are then responsible for enacting the Total Sanitation Campaign by developing state guidelines or programmes, contributing a state share for subsidization, distributing technical designs, and monitoring districts and blocks. States may hire non-governmental organizations and consultants to train district and block officers, village leaders, masons, or villagers. District and block officers are responsible for facilitating interventions by providing subsidies and technical designs to panchayats, establishing supply, facilitating software, and monitoring. In panchayats, leaders and workers facilitate implementation by ensuring subsidies are distributed, toilets are constructed, software is implemented, and results are reported (WaterAid, 2008).

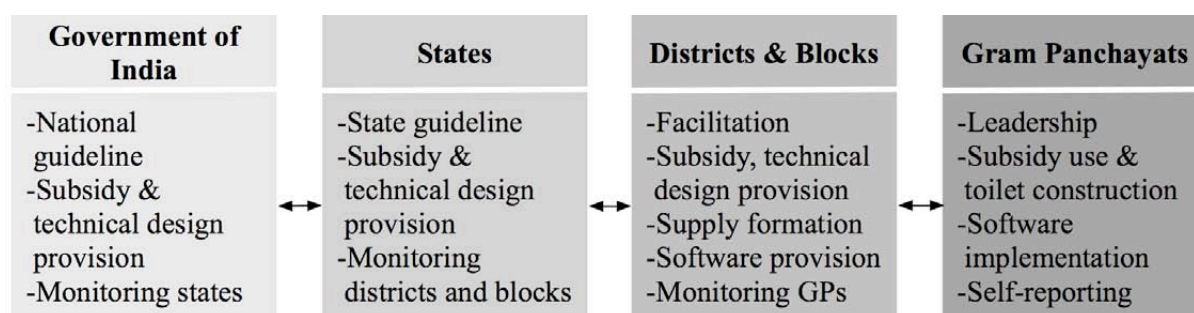


Figure 3.3: TSC Organizational Structure and Responsibilities
(Created by author)

By 2001, 15 years after the Central Rural Sanitation Programme began, \$370 million had been spent on 9.45 million subsidized household toilets, but coverage remained 21.9 percent. To further enhance the Total Sanitation Campaign, the Government initiated the Nirmal Gram Puraskar award programme in 2003 to incentivize sanitation achievement. By 2008 the Total Sanitation Campaign had reached 600 of 611 Indian districts (WaterAid, 2008; Ganguly, 2008).

Subsidy has formed an integral component of the Total Sanitation Campaign. From 1986 to 1999, subsidy was 2,250 Rs (\$50) for above poverty line households, 2,275 Rs (\$51) for below poverty line households, and 4,000 Rs (\$89) for Scheduled Caste and Scheduled Tribe. In 1999 there was a shift to a low-subsidy approach upon Total Sanitation Campaign initiation. From 1999 to 2011 the subsidy increased from 500 Rs (\$11) to 1,500 Rs (\$33) to 2,200 Rs (\$49) for below poverty line households with an expected increase to 3,200 Rs (\$71) for plains areas and 3,700 Rs (\$82) for hilly and difficult regions in 2011. Above poverty line households normally have not received subsidies for sanitation since 1999, though states may provide them if they desire. The Government continues to give and raise subsidies because it is under pressure to achieve targets.

There are two main approaches used in practice to implement India's Total Sanitation Campaign, the conventional approach and the alternative Community-Led Total Sanitation (CLTS) approach. While both approaches are part of the Total Sanitation Campaign, the conventional approach tends to be more supply-led and hardware-focused while the alternative approach tends to be more demand-driven and software-focused (Pattanayak, 2009).¹⁷

The conventional approach has been used in rural India since the 1980s (Ganguly, 2008). It is characterized by provision of software through signboards and newspapers to raise awareness, subsidies to support and motivate low-cost toilet construction for the poor, and a single or double-pit design (Ganguly, 2008; Bongartz, 2009).¹⁸ Subsidy provision to promote toilet construction in below poverty line households is perhaps the most significant aspect of the conventional approach, while above poverty line households do not usually receive aid (WaterAid, 2008). The conventional approach uses a service delivery mode to achieve household toilet coverage (Narayanan, 2011). The conventional approach has been or is used in all Indian states. Although the Guideline normatively describes a Total Sanitation Campaign that is community-led and participatory, the conventional approach tends to be top-down and non-participatory in reality (WaterAid, 2008).

The Community-Led Total Sanitation approach was introduced to India in 2002 in Maharashtra and spread to Haryana and Himachal Pradesh by 2006 (Kumar, 2008). At present, it has been used beyond piloting in at least nine of 28 Indian states. Dr. Kamal Kar, a development consultant, created CLTS in Bangladesh in 1999 because he found failing subsidy-based sanitation approaches; people were building toilets due to subsidies, not because they valued sanitation or understood risks of open defecation. In theory, Community-Led Total Sanitation is an unsubsidized participatory approach centred on participatory triggering to achieve open defecation free communities (Ahmed, 2008). Dr. Robert Chambers (2011, para. 6) describes principles of the alternative approach well:

“CLTS turns these failed approaches on their heads. There is no standard design, no hardware subsidy, no teaching, no special measures for people unable to help themselves, and no use of polite words – "shit" is "shit" . . . communities are mobilised into analysing their own sanitation and waste behaviour, making their own participatory social and shit maps, inspecting the shit in the areas of open defecation (OD), and analysing pathways from shit to mouth.”

In practice the alternative approach usually downplays hardware subsidies and applies triggering to empower communities to analyze risks of open defecation practices so they construct and use latrines (Sah, 2009; Bongartz, 2009; Pattanayak, 2009; Kumar, 2008). In reflecting on CLTS implementation, Sanan (2009, 3) recalls, “once a mindset change was ignited through disgust, shame or fear, a collective behaviour change ensured collective action to end the practice of open defecation and secure safe disposal of excreta.” Following triggering Sanan notes “issues of external financial assistance and subsidy became irrelevant for a community motivated to improve its own condition” (Sanan, 2009, 3). Where applied in India, Community-Led Total Sanitation is implemented under the Total Sanitation Campaign. As a result subsidy is still often provided even where Community-Led Total Sanitation occurs. Also, as in the conventional approach, the alternative approach is implemented variably from place to place based on institutions and facilitation (Kumar, 2008).

¹⁷ Hardware-based interventions tend to focus on technical and financial aspects opposed to software-based interventions, which tend to focus on social mobilization, knowledge, attitudes and practices.

¹⁸ In 2004, the TSC Guideline saw replacement of the term ‘subsidy’ with the term ‘incentive’ following wide recognition that subsidy does not lead to desired sanitation outcomes (WaterAid, 2008).

The TSC faces substantial challenges. People resist adoption of toilet use because of lasting open defecation habits. Without sufficient awareness raising and participation, old practices continue while behaviour changes and toilet usage lag. Although the Guideline discusses a community-led, demand-driven programme, the principles have not been realized. Implementations are often government-led and demand may never be generated for many. The districts and states focus on funding and construction. High subsidies continue widely regardless of approach, despite evidence of their failure (Kapur, n.d.; WaterAid, 2008).¹⁹ Even when subsidies are distributed well, toilets are not always used, or at least not as toilets (Bongartz, 2009). So, WaterAid (2008) believes supply-led, subsidy-based interventions have not worked in India. The economically and socially marginalized have suffered as a result, even though they have the greatest potential for gains (Narayanan, 2011).

Neither the conventional nor alternative approaches are totally problematic, nor are either silver bullets. In terms of scalability the conventional approach is stronger since it is top-down and therefore the Government can implement it more easily through its Panchayati Raj system, but scaling the alternative CLTS approach is more difficult because it relies on software and skilled facilitation to lead triggerings. Also, CLTS has seen difficulties spreading because it is relatively new and has faced institutional resistance. In both approaches subsidies are often poorly targeted when provided, leave potential for corruption to occur, and may not always reach the neediest (WHO/UNICEF, 2010a). However, CLTS where no subsidy is provided may exclude the poorest from sustainable sanitation.

Indian Sanitation Today

Recent Government reporting puts rural sanitation coverage at 57 percent in 2008 and 65 percent in 2010, and the Government suggests India is on track to meet the Millennium Development Goal sanitation target (GoI, 2011b). However, the claim is debated. The 2010 Human Development Report suggests rural Indians with improved sanitation at home were just 31 percent, based on 2008 numbers, and experts say the sanitation target is far off track (WHO/UNICEF, 2010a; Klugman, 2010; Chambers, 2011; Trémolet, 2010). And even if India did reach the sanitation target by 2015, still over 500 million Indians would be without improved sanitation (Kapur, n.d.). The origin of discrepancy in reporting is that Department of Drinking Water and Sanitation figures are calculated from release of funds and panchayat self-reporting depending on state, while other organizations calculate using externally verified latrine construction and usage. Having a latrine does not entail sustainability or usage of it, and several studies have proven this in India. For example, in a 2004 visit to Andhra Pradesh sanitation consultant Knowledge Links found 100 percent toilet coverage and zero percent usage (Kumar, 2008).²⁰ In 2012, the Government is expected to adopt a new 10-year sanitation Guideline to close remaining sanitation gaps (WaterAid, 2008). 2011 sanitation coverage in India is shown in *Figure 3.4* based on long-term trends calculated from non-DDWS rural household surveys.

¹⁹ WaterAid (2008) reported that while 55 percent of private toilets were self motivated, only two percent of these were due to subsidy, 30 percent for convenience and 21 percent for privacy, so subsidies were ineffective.

²⁰ 100 percent latrine coverage and zero percent usage occurred following a state incentive programme by which every household received rice and monetary subsidies for toilets before elections in 2004 (Kumar, 2008).

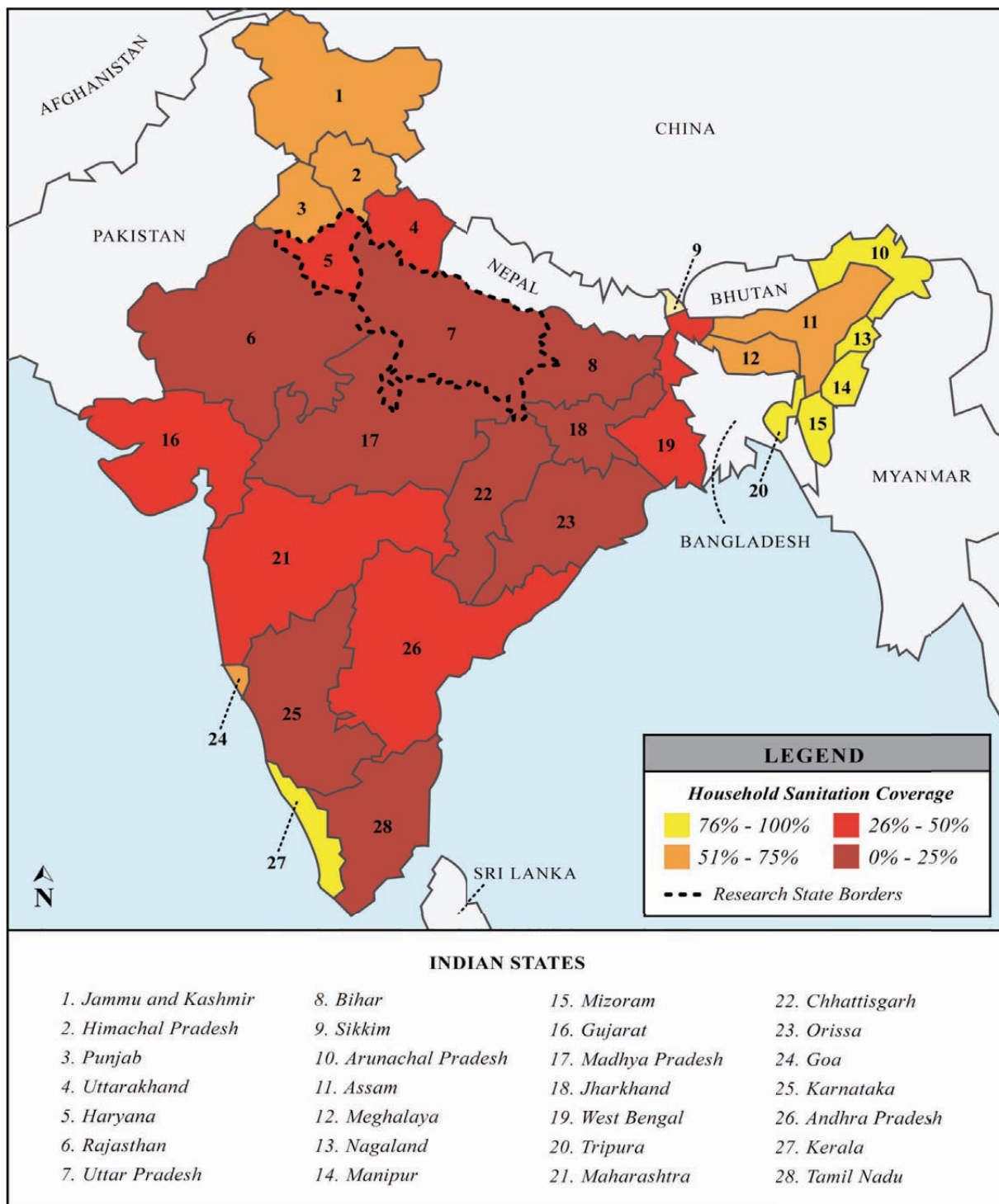


Figure 3.4: India 2011 Sanitation Coverage Map
 (Created by author, based on trends from UNICEF 2010b, DLHS-3 2008, NFHS-3 2006)

Overall, to address India's underdevelopment the Government has installed numerous programmes, one of which is the Total Sanitation Campaign. Though sanitation improvements have been made, a great number of Indians have not benefited, especially the poor. There is still much work to be done.

3.3 Indian State and Local Research Contexts

With development, governance, and sanitation reviewed, the state, district, and block contexts will be examined. Research was conducted in Haryana's Panipat District and in Uttar Pradesh's Bareilly District, shown in *Figure 3.5*. This section focuses on development and sanitation in these localities.



Figure 3.5: Haryana and Uttar Pradesh Map
(Created by author, based on maps from *Probharat.com, n.d, Maps.newkerala.com, n.d.*)

The Haryana Development Context

Haryana was created in 1966 when Punjab was divided on lingual lines (Kurian, 2003). Haryana has four political divisions, 21 districts, 119 blocks, 106 towns, and 6,955 villages (Department of Economic and Statistical Analysis Haryana, 2010). Haryana's neighbours are Himachal Pradesh and Uttarakhand to the north, Punjab to the northwest, Uttar Pradesh and Delhi to the southeast and east, and Rajasthan to the southwest (Kurian, 2003; Bhardwaj, n.d.). Chandigarh is Haryana's capital and the Development and Panchayats Department leads the state's rural development (DESAH, 2010).

Haryana is known for agricultural production and ‘social backwardness.’²¹ Haryana’s economy has progressed since the 1970s, especially in vehicle manufacturing and wheat and paddy production. The state, in which 70 percent of the population engages in agriculture, uses modern farming practices (WaterAid, 2010a; Kurian, 2003). Although Haryana is one of India’s wealthier states, there are many poor people (Agrawal, 2009). In addition, Haryana is known for gender inequality with anti-female bias, low female employment, and low female-to-male sex ratios (Sen, 2005; Kurian, 2003).

In 2008, Haryana’s population was 23,800,000 (Bhardwaj, n.d.). The population density was 477 people per square km (WaterAid, 2010a). Population growth for 1991 to 2001 was 28 percent (GoUP, 2006). Approximately 71 percent of the population lives in rural areas while 29 percent lives in cities. The majority of Haryana is Hindu with minority Sikh and Muslim populations. The Jats are members of the peasant caste forming the majority of the state’s agricultural class (Bhardwaj, n.d.; DESAH, 2010). In 2001, literacy was 68 percent, infant mortality was 55 per thousand births, and life expectancy was 78 years. Per capita annual income was 41,896 Rs (\$910) in 2008 (DESAH, 2010). Despite high incomes, Haryana also has high health expenditure due to poor sanitation (Gupta, 2008). As of 2002, 87 percent of Haryana’s rural households had electricity, drinking water facilities were in 72 percent of villages, and 89 percent of villages had irrigation (GoH, 2007; Goel, 2006).

Sanitation in Haryana

Historically, Haryana’s rural sanitation has been neglected due to lack of political will, village awareness, and poverty (Agrawal, 2009; Gupta, 2008). Since Haryana’s TSC began in 2000 rural sanitation has improved, but coverage estimates vary. According to the Department of Drinking Water and Sanitation, Haryana’s rural sanitation coverage in 2001 was 29 percent, by 2008 it was 79 percent, and by 2010 it reportedly reached 100 percent.²² Meanwhile, non-DDWS surveys show actual household toilet access in 2001 was 23 percent, by 2008 was 45 percent, and trends suggest coverage is 44 percent in 2010. Reporting and trends are exhibited in *Figure 3.6*. The state reported 80 percent school toilet construction in 2010. The state Millennium Development Goal target is 53 percent and current trends suggest the state will achieve 56 percent household sanitation coverage by 2015, so Haryana is on track to meet sanitation goals despite over-reporting (UNICEF, 2010b).

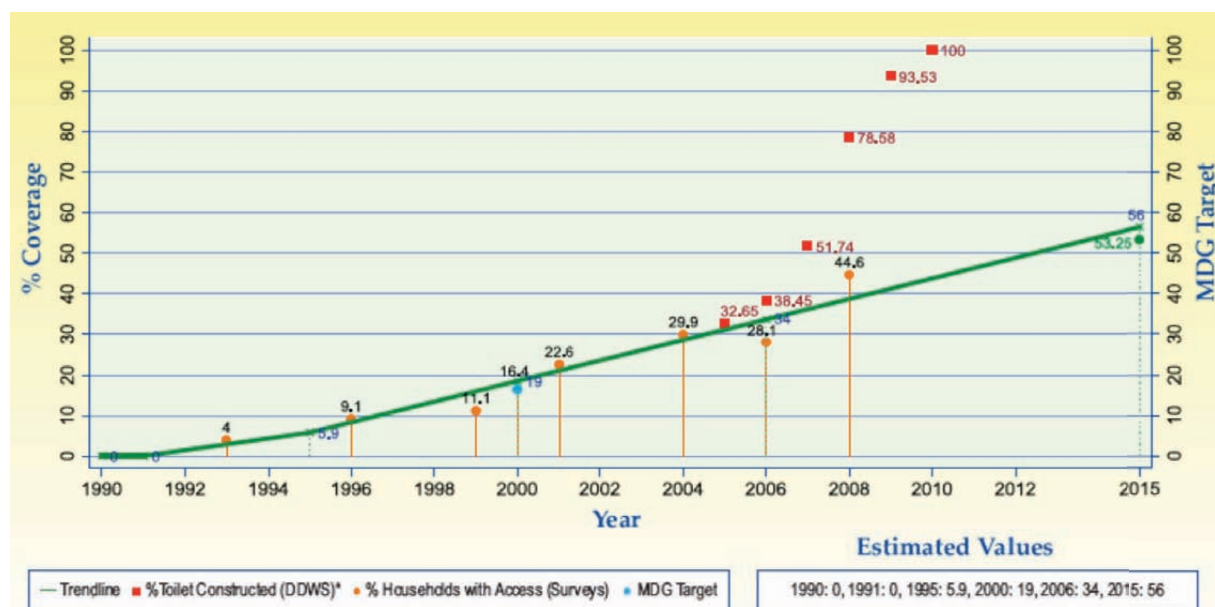


Figure 3.6: Haryana Rural Sanitation Trend (UNICEF, 2010b)

²¹ Social backwardness is a term the Government uses to describe areas or groups facing underdevelopment.

²² It can be assumed actual coverage is less than reported and usage may be significantly less because coverage is calculated based on GP self-reporting without physical verification of construction or usage.

The District Rural Development Agency, a government organization responsible for the Total Sanitation Campaign, has applied conventional and alternative approaches (Gupta, 2008). In the earlier years of TSC a conventional approach was used with subsidy and media-based IEC. Until 2006, below poverty line households received 1,500 Rs (\$33) each for latrine construction. In 2006, with slow sanitation progress, Haryana's Panchayati Raj Principal Secretary allowed experiments to begin with Community-Led Total Sanitation. The Water and Sanitation Programme organized CLTS trainings in Bhiwani and Panipat in 2006; in 2007, Haryana received its first Nirmal Gram Puraskar awards. Community-Led Total Sanitation was most widely used in Bhiwani, Panipat, and Sirsa Districts (Sanan, 2009; WaterAid, 2008). However, Community-Led Total Sanitation was not officially adopted in Haryana and districts independently determined how to disburse subsidies, so both alternative and conventional approaches continued in the state. In some areas, subsidy was downplayed, but distributions continued in all districts; in 2010 below poverty line households received 2200 Rs (\$49) each and a few districts provided the funding post intervention, as CLTS practitioners would advise. As a result of Haryana's Community-Led Total Sanitation, the State's Total Sanitation Campaign has become more focused on behaviour change with less emphasis on subsidy (WaterAid, 2008; Gupta, 2008; Sanan, 2009). The Total Sanitation Campaign State Coordinator confirms the role of Community-Led Total Sanitation in Haryana's sanitation progress: "Whatever has happened in Haryana in sanitation is due to CLTS. This is the only approach to do real sanitation, though we have also done wall writing and made radio jingles in case Government asks what we have done in IEC" (Kumar, 2008, 11). Haryana, along with Himachal Pradesh, is one of the states to use Community-Led Total Sanitation most effectively. However, solid and liquid waste management, hand washing, and hygiene have been neglected (WaterAid, 2008).

Panipat District and Samalkha Block Contexts

Panipat District is in east central Haryana with five blocks and three tehsils. The district development headquarter is Panipat Town. Panipat District has 170 gram panchayats with 192 villages (Gupta, 2007). Panipat's population was 1,202,811; population growth rate from 2001 to 2011 was 24.3 percent. Literacy in Panipat was 78 percent in 2011 (Population Census, 2011). The district was highly agricultural with 71 percent of land used for agriculture (Gupta, 2007). As will be further explained in *Chapter 4: Research Outline*, Panipat was selected for its extensive use of the CLTS approach. According to the Department of Drinking Water and Sanitation (2011a), Panipat sanitation coverage is 99 percent in 2011.

When TSC began in Panipat in 2005, the sanitation strategy was focused on subsidization and latrine construction with little emphasis on social mobilization. Where toilets were constructed they were not used or not used as toilets (WaterAid, 2010a). The Assistant District Coordinator at the time, Dr. Agrawal (2009, 1) said the Total Sanitation Campaign ". . . was never owned by the people and it became just one of those programs to dole out subsidies to the poor so that their over-dependence on the government grew day by day." After attending a Community-Led Total Sanitation training in Bhiwani in 2006, Agrawal introduced CLTS in Panipat in a pilot including 24 panchayats. By 2009, Community-Led Total Sanitation had been introduced to 70 Panipat panchayats, 30 of which had reportedly achieved full coverage (Agrawal, 2009).

Samalkha Block in Panipat has 31 gram panchayats. The block headquarter is Samalkha Town. The Block reports 90 percent below poverty line latrine coverage, 100 percent above poverty line latrine coverage, and 96 percent overall coverage. To date the block has seven Nirmal Gram Puraskar awards (DDWS, 2011b). The block has a sanitation strategy following that of Panipat District. Panipat District and Samalkha Block are identified in *Figure 3.7*.

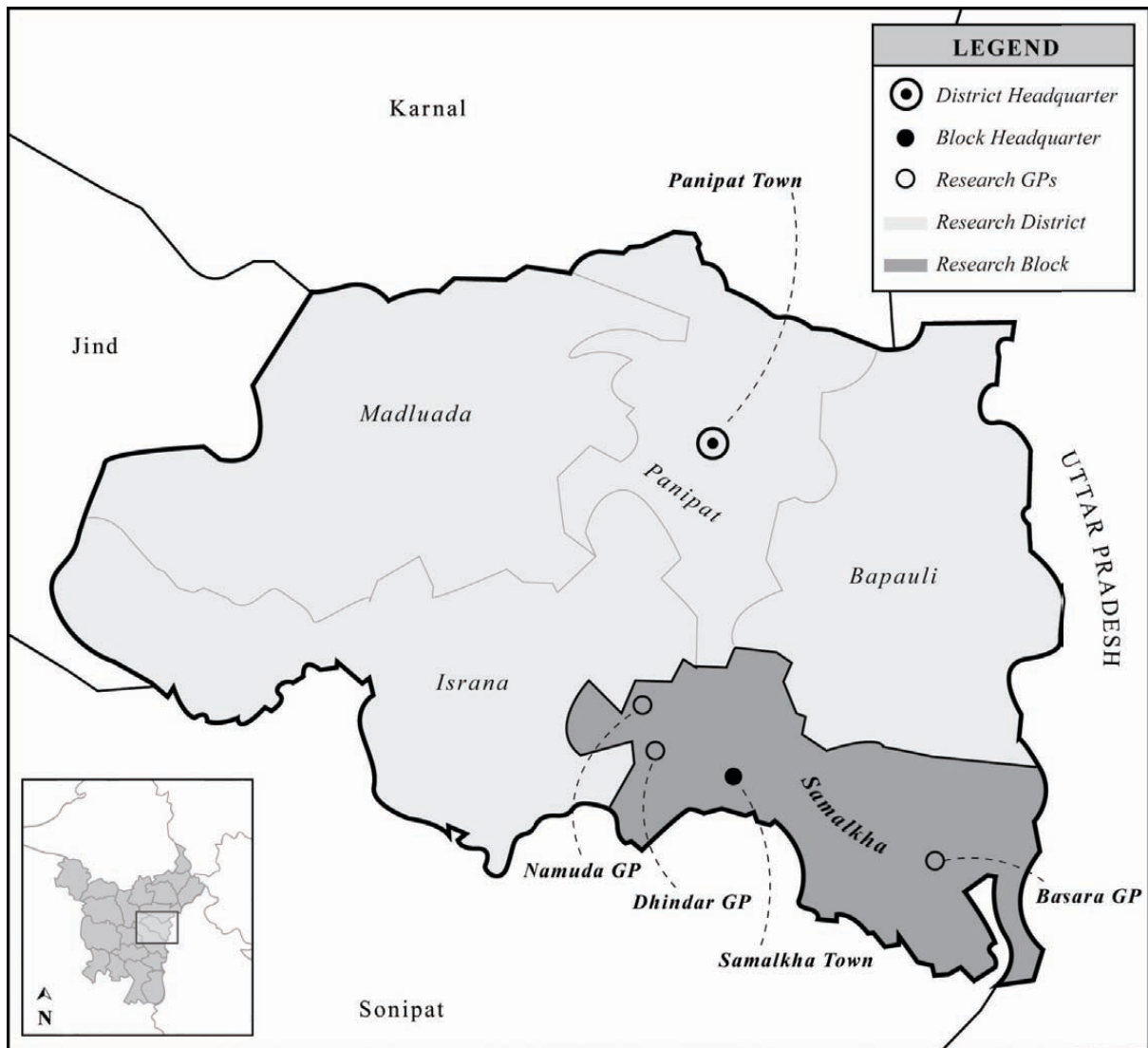


Figure 3.7: Panipat District Map
(Created by author, based on maps from Dahiya, 2007 and nagarnigampanipat.com, n.d.)

The Uttar Pradesh Development Context

Uttar Pradesh has four regions, 71 districts, 820 blocks, and 97,942 villages. Uttar Pradesh's neighbours are Uttarakhand and Himachal Pradesh to the northwest, Nepal to the north, Haryana and Rajasthan to the west, Madhya Pradesh and Chhattisgarh to the south, Bihar and Jharkhand to the east. Western Uttar Pradesh is more developed eastern Uttar Pradesh, the capital is Lucknow, and the Panchayati Raj runs rural development.

Uttar Pradesh is known for a large population, low economic and human development, and 'social backwardness.' The 2001 population was 166,100,000, 16.2 percent of India. Population growth from 1991 to 2001 was 26 percent. In Uttar Pradesh, 80 percent of the population lived in rural villages while 20 percent lived in cities. The state was 81 percent Hindu and 19 percent Muslim in 2001. Also, the state population was 21 and 0.1 percent Scheduled Caste and Tribes, respectively (GoUP, 2006). Uttar Pradesh has high poverty, low health, and low education (Nilekani, 2009). In 2001, literacy was 56 percent, infant mortality was 71 per thousand births and life expectancy was 60 years. Per capita annual income was 10,637 Rs (\$236) in 2006. Uttar Pradesh's employment, most of which is agricultural, was 32.5 percent in 2001 with 16.5 percent female and 46.8 percent male employment. Uttar Pradesh households have smaller land holdings than other states (GoUP, 2006).

Sanitation in Uttar Pradesh

Uttar Pradesh has lagged in rural sanitation. According to the Government, Uttar Pradesh’s rural sanitation coverage in 2001 was 28 percent, by 2008 was 57 percent, and by 2010 reached 82 percent. Meanwhile, other sources show toilet access in 2001 was 10 percent, by 2008 was 15 percent, and trends suggest coverage is 15 percent in 2010 (UNICEF, 2010b).²³ Reporting and trends are exhibited in *Figure 3.8*. Although coverage has increased, if surveys are correct the majority of people continue to open defecate. Even Uttar Pradesh’s TSC director confirmed people may only use latrines 50 percent of the time when they do have them, which would mean between 10 and 41 percent use improved sanitation regularly. The Government reports school toilet coverage of 87 percent. The state Millennium Development Goal target is 53 percent, but trends suggest the state will achieve just 19 percent coverage by 2015, so Uttar Pradesh appears to be far off track (UNICEF, 2010b).

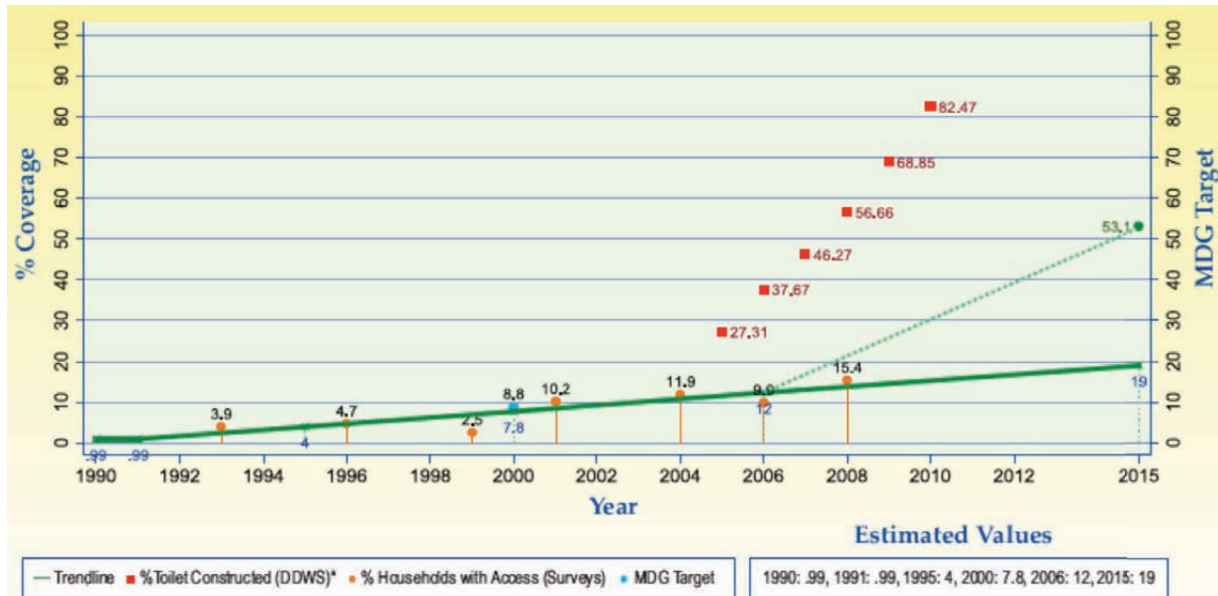


Figure 3.8: Uttar Pradesh Rural Sanitation Trend (UNICEF, 2010b)

Conventional IEC tools and subsidies characterize Uttar Pradesh’s Total Sanitation Campaign. In Uttar Pradesh, subsidy is provided pre-construction and Pradhans decide how to distribute. Following a state development initiative, 5 percent of panchayats are Ambedkar each year, which means they receive enhanced funds for development. During the Total Sanitation Campaign, Ambedkar above poverty line households receive 1,500 Rs (\$33) and below poverty line households receive 4,540 Rs (\$101), general APL households receive 1,500 Rs (\$33) and BPL households receive 2,200 Rs (\$49) per latrine. To be below poverty line, a household must earn less than 19,000 Rs (\$422) per annum.

Bareilly District and Bhuta Block Context

Bareilly District is in north-central Uttar Pradesh with 15 blocks and six tehsils (Uttar Pradesh Online, n.d.; Poorest Areas Civil Society, n.d.). Bareilly District has 1007 panchayats and 1,865 villages (Rajput, 2007). Bareilly’s population was 4,465,344 with a decadal growth rate of 23.4 percent from 2001 to 2011. Literacy in Bareilly is 61 percent in 2011 (Population Census, 2011). As will be further explained in *Chapter 4: Research Outline*, Bareilly was selected for its use of the conventional TSC approach. According to the Department of Drinking Water and Sanitation (2011a), Bareilly sanitation is 86 percent in 2011, including 94 percent BPL and 82 percent APL achievement.

Bhuta Block in Bareilly District has 77 panchayats and 208 villages. The block headquarter is Bhuta Town but the block office is in Paungala. In 2011, Bhuta Block reported 40 percent BPL, 13 percent APL, and 22 percent overall latrine coverage. The block has not received any Nirmal Gram Puraskar awards to date (DDWS, 2011b). Bareilly District and Bhuta Block are identified in *Figure 3.9*.

²³ Coverage is calculated based on release of funds, not on verified latrine construction or usage.

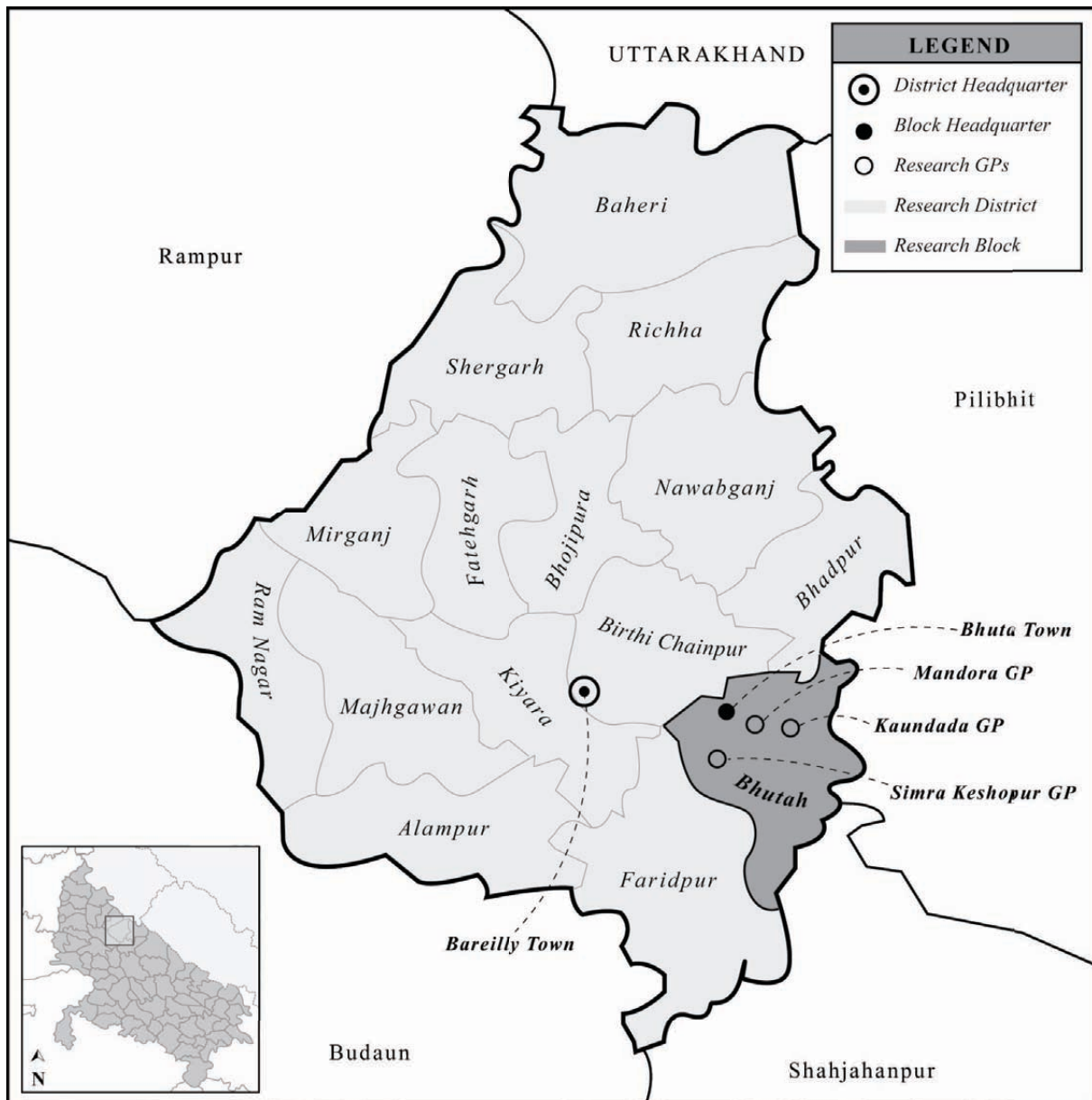


Figure 3.9: Bareilly District Map
 (Created by author, based on maps from Uttar Pradesh Online, n.d. and Rajput, 2007)

Regional Context Conclusion

Overall, this chapter briefly introduced the Indian national and local contexts in which rural sanitation research took place. In a challenging socio-economic situation of overpopulation and poverty, the Government is working through a decentralized governing system, the Panchayati Raj, to achieve development. This institutional body, which leads rural development work, also facilitates sanitation. Sanitation improvements have certainly occurred in recent years, but exact extent of progress is uncertain. Although the Government reported 65 percent sanitation achievement in 2010, other sources reported gaps greatly outweigh coverage. Thus, serious over-reporting may be occurring. Introduction of the local research contexts in Samalkha Block of Panipat District in Haryana and Bhuta Block of Bareilly District in Uttar Pradesh brought forward some key differences between research areas. Most importantly, Panipat is more developed than Bareilly in terms of human development and access to facilities. More specific details on the gram panchayats researched in these locations will be presented in *Chapter 5: Case Study Profiles*. With the regional context covered, it is now time to move further into the inner workings of the field study with the research outline.

4 RESEARCH OUTLINE

With theoretical and regional contexts reviewed, the research outline shapes the field study. The chapter begins by rationalizing the research. Then come research objectives, questions, conceptual model, and operational framework that form the heart of the study. A detailed methodological overview can be referenced in *Appendix C*.

4.1 Rationalizing the Research

Nobody denies the value of household sanitation. To achieve equitable and sustainable rural sanitation access and usage in India, the Government has been working diligently. It has declared need for demand-driven and people-centred interventions. It suggests public funds spent on hardware subsidies are vital. It declares significant progress as a result of Total Sanitation Campaign strategy and subsidization. But experts profess Government claims are unfounded. Dissenters believe interventions remain supply-led. A fiery debate has cropped up between those supporting subsidies for their benefit and those opposing subsidies due to the harm they cause. Experts suggest India still has the ‘worst sanitation in the world,’ that the country is far from universal sanitation, let alone the 2015 sanitation target, and that the poorest are often excluded. This research seeks to get to the bottom of these critical and contentious issues. Despite presumed utility, the area has received minimal empirical examination. Issues of how interventions occur, how subsidies influence outcomes, and who is excluded are sparsely documented. Therefore, empirical research on the Total Sanitation Campaign will enhance understanding that may help to ensure interventions become more complete and inclusive and in turn achieve sustainable and equitable outcomes.

4.2 Objectives of the Research

The study’s central objective is *to explore how interventions, and subsidization in particular, influence sustainability and equitability of household sanitation access and usage for the impoverished in the Total Sanitation Campaign in rural northern India*. Subsequent objectives result.

The methodological objectives are:

- *To be human-centred*. I will elicit and communicate stakeholder perspectives at all levels;
- *To be poverty-oriented*. I will focus on the most impoverished because they are often excluded from interventions and disproportionately suffer consequences of insanitation;
- *To operationalize interventions and outcomes*. I will operationalize rural sanitation using elements of reality, adequacy, and sust-equity.

The intervention-related objectives are:

- *To examine subsidization*. I will examine subsidization in sanitation interventions;
- *To consider non-financial components*. I will consider, less centrally, roles of technical support, institution building, and social mobilization in sanitation interventions.

The outcome-related objectives are:

- *To examine toilet access*. I will examine influence of interventions on toilet access;
- *To examine toilet usage*. I will examine influence of interventions on toilet usage.

The concluding objectives are:

- *To analyze barriers*. I will analyze barriers to improve household sanitation;
- *To identify opportunities*. I will identify opportunities for improving household sanitation;
- *To reflect on and contribute to theory*. I will determine how intervention theories apply in the Indian context and will make contributions to theory based on findings.

From a wider angle, addressing the research objectives will contribute to an existing body of rural sanitation knowledge. It is expected results, and especially reflection on the concluding objectives, will be useful for policy-makers, practitioners, and academics to learn about ground realities in India’s Total Sanitation Campaign.

Before defining research questions it is helpful to reduce the objectives into components for clarification. An *intervention* is the implementation to realize household sanitation. An intervention includes several key components: subsidization, technical support, institution building, and social mobilization. Without any one intervention component complete household sanitation may not be realized. *Subsidization* is of central interest in this research study in order to go deeper into one area and to address the most controversial aspect of interventions, though all components will be considered. Also important, in order to learn about sanitation interventions and outcomes, a basic methodology applies framing elements of reality, adequacy, and sust-equity. For understanding interventions and outcomes, the first operational element is *reality* – actuality of interventions and outcomes on the ground. The intervention operational element will be *adequacy* – completeness and inclusiveness of interventions. The outcome operational element will be *sust-equity* – sustainability and equitability of access and usage. Latrine *access* and *usage* are deemed primary physical and social outcomes of rural sanitation, respectively. Access and usage are also useful to consider because they are identifiable but are neither overly simple nor too complex. With methodological concepts of inclusiveness and equitability comes research that focuses on *the impoverished* because the most needy are most often excluded for benefits. Finally, the objective closes referring to the *Total Sanitation Campaign in rural northern India*, establishing the research context.

4.3 Questions of the Research

To address research objectives, the central question is: *To what extent does intervention, and subsidization in particular, influence sustainability and equitability of household sanitation access and usage for the impoverished in the Total Sanitation Campaign in rural northern India?* Subsequent questions will help answer the central question as follows.

1. *What household sanitation interventions occur in reality?*
 - a. What technical support and subsidization occur?
 - b. What institution building and awareness raising occur?
2. *To what extent does intervention influence access to household sanitation?*
 - a. What access resulted?
 - b. To what extent is access sustainable and equitable?
 - c. To what extent were interventions adequate to result in sustainable and equitable access?
3. *To what extent does intervention influence usage of household sanitation?*
 - a. What usage resulted?
 - b. To what extent is usage sustainable and equitable?
 - c. To what extent were interventions adequate to result in sustainable and equitable usage?
4. *How can interventions ensure household sanitation access and usage for all?*
 - a. What are barriers that prevent household sanitation access and usage for all?
 - b. What are opportunities to improve household sanitation access and usage for all?

4.4 Conceptual Framework

The conceptual framework visually simplifies the system of rural sanitation and exhibits important concepts for research. The framework connects institutional setting, intervention components, exogenous factors, outcomes, and impacts. The frame also exhibits the contexts in which sanitation interventions and the research area occurred. Arrows show relations between components. Note concepts are simplified, positive, and not exclusive. The conceptual framework is in *Figure 4.1*, followed by explanation.

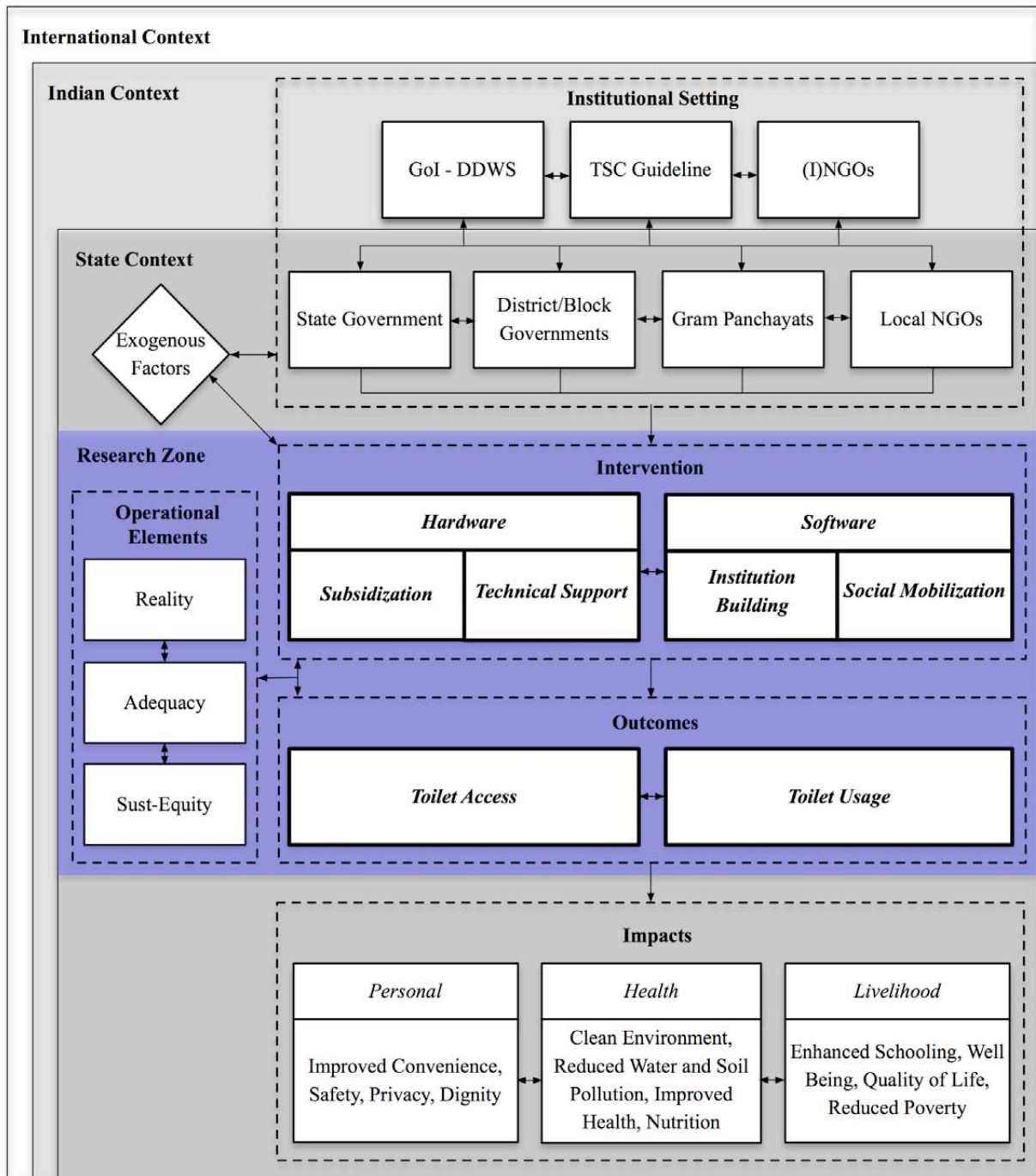


Figure 4.1: Conceptual Framework

Because the framework is only a simplified model of reality, not all concepts are shown. The concepts are contextualized on levels from international to local with many facets such as political, cultural, historical, and economic. The institutional setting consists of actors and a guideline that influence each other and interventions. Intervention components may influence each other and depending on implementation there may be variation in outcomes, which are also interacting because without access usage is not possible, but without usage access is not maintained. Personal, health, and livelihood impacts may result from outcomes.

Together, interventions and outcomes fall into the research area. In the research, operational elements of reality, adequacy, and sust-equity frame interventions and outcomes. The operational elements are elaborated in *4.5 Operational Framework*. There are also exogenous factors influencing institutional setting and interventions. Exogenous social factors may include gender equality or community homogeneity, economic factors may relate to supply chains, and institutional factors could be government stability or lack of trust.

To abridge the system and meet research objectives and questions, the concepts exhibited in the framework were prioritized, depicted by what the conceptual model shows and highlights.

4.5 Operational Framework

In developing an operational framework, I found inspiration from Finsterbusch (1990, 8), who stated, “projects are complex systems of action (resources mobilized to achieve goals) that are interventions into existing natural and human systems in the locality or region. A project system typically includes interacting technical, economic, environmental, social and managerial components.” Where Finsterbusch defines an intervention in terms of project components and goals, I define sanitation in terms of intervention components and outcomes. Intervention components are operationalized in terms of reality and adequacy. Meanwhile, outcomes were operationalized in terms of reality and sust-equity. This section introduces intervention and outcome components and operational elements.

Intervention Operational Frame

The first part of the operational framework defines intervention components of hardware and software and operational elements of reality and adequacy.

Intervention Components

To understand interventions it is necessary to define hardware and software components. **Hardware** includes subsidization and technical support, two related intervention components that result in toilet construction. **Subsidization** refers to hardware subsidy provision and use. **Technical support** refers to provision of technical assistance in latrine construction. Successful subsidization and toilet support would adequately reach and motivate toilet construction by all households. **Software** includes institution building and social mobilization, which together determine decisions to construct and use toilets. **Institution building** refers to formation of institutions in interventions. Tacit, explicit, and organizational institutions could include new norms, enforceable rules, or a committee to lead the intervention. **Social mobilization**, needed to build institutions, refers to factors that motivate toilet access and usage, such as awareness raising activities. Social mobilization requires social capital and may involve organizations, such as schools, community groups, and non-governmental organizations. Successful institution building and social mobilization require adequate levels to bring about toilet construction and behaviour change and require engagement of all community members.

Intervention Operational Elements

Understanding interventions entailed operational elements of reality and adequacy. **Reality** refers to the ‘what’ of intervention components. Understanding reality is guided by the question of *what did each component include?* **Adequacy** summarizes intervention completeness and inclusiveness. **Completeness** refers to the ‘how’ for each intervention component. Understanding completion is guided by the question of *how complete was each component?* **Inclusiveness** refers to the ‘who’ for each component. Understanding inclusiveness is guided by the question of *who was included?* Intervention components and operational elements are summarized in Table 4.1.

Table 4.1: Sanitation Intervention Components and Operational Elements

Intervention Components		Operational Elements		
Component		Reality	Adequacy	
			Completeness	Inclusiveness
Hardware	Subsidization: Subsidy provision and use	What subsidy occurred?	How sufficient was subsidy provision?	Who received subsidy and who did not?
	Technical Support: Toilet design and construction	What was constructed?	How complete was technical support?	Who built toilets and who did not?
Software	Institution Building: Norms, rules, committee formation	What institutions formed?	How complete was institutional formation?	Who supported community institutions and who did not?
	Software Mobilization: Awareness raising	What awareness raising occurred?	How complete was awareness creation?	Who participated and who did not?

Outcome Operational Frame

To conduct research, it was important to understand outcome realities, and how sustainable and equitable they were. With operational elements of reality, sustainability, and equitability, where the latter two are referred to as sust-equity for purposes of simplification, it is possible to reflect on outcomes and connect them to interventions. To elucidate, intervention outcomes and operational elements are defined.

Outcome Components

To understand outcomes it was first necessary to define toilet access and usage. **Toilet access** refers to presence of an accessible latrine. Successful toilet access would occur when a toilet is fully constructed, with water nearby, and hygienic. Lack of toilet access may be due to shortcoming in one or more intervention components. Toilet access most immediately may be influenced by hardware components of subsidization and technical support, though institution building and social mobilization also influence toilet access too. **Toilet usage** refers to decisions and behaviours to use a toilet. Successful toilet usage would occur when awareness has been raised about dignity and health and when institutions have been formed to prevent open defecation. Lack of toilet usage may be due to shortcoming in one or more intervention components. Toilet usage most immediately may be influenced by software components of institution building and social mobilization, though subsidization and technical support are also important for usage.

Outcome Operational Elements

Understanding outcomes entailed operational elements of reality and sust-equity. **Reality** refers to the ‘what’ of outcomes and is guided by the question of *what outcomes occurred?* **Sust-Equity** summarizes outcome sustainability and equitability. **Sustainability** refers to the ‘how’ of outcomes and is guided by the question of *how sustainable was each outcome?* **Equitability** refers to the ‘who’ of outcomes and is guided by the question of *who was excluded from outcomes?* Outcome components and operational elements are summarized in *Table 4.2*.

Table 4.2: Sanitation Outcomes and Operational Elements

Outcomes		Operational Elements		
	Component	Reality	Sust-Equity	
			Sustainability	Equitability
Hardware	<i>Access: Access to household latrine</i>	What latrine access resulted?	How sustainable is latrine access?	Who owns and does not own latrines?
Software	<i>Usage: Use of household latrine</i>	What latrine usage resulted?	How sustainable is latrine usage?	Who uses and does not use latrines?

A step beyond identification of basic operational elements is defining how sustainability and equitability will be applied to understand latrine access and usage. Latrine access sustainability refers to the functional sustainability of hardware installed during Total Sanitation Campaign implementations. Ultimately, if the construction of a latrine does not impede usage, it may be considered functionally sustainable. There are three components that will be considered in evaluating latrine access sustainability including substructure, superstructure, and auxiliary access determinants. A sustainable substructure would need to be of an adequate depth to allow prolonged usage, while not causing harm to the ground water. A sustainable superstructure would be structurally lasting and would provide privacy. For privacy, presence of a door, walls, and roof were initially considered prerequisites for sustainable access. But, during research it was found people may prefer a toilet without a roof to allow entry of light and fresh air, making latrine use more appealing. It was also found that often people installed a curtain rather than a hinged door to save money, which was not seen to be a problem as long as it provided privacy. Therefore, a superstructure without a roof or with a curtain instead of a door was not considered to make latrine access unsustainable. Other auxiliary issues may impact latrine access sustainability as well, such as availability of water and latrine hygiene. Also, all households must have latrines if a community is to achieve a public good. Therefore, latrine access equitability will be considered in terms of which households achieved access and which did not. For households with latrines, equitability of latrine access sustainability will be considered by comparing community groups. Perspectives of households without latrine access, will also be considered. For purposes of analysis, the main access equitability division occurs on poverty lines despite shortcomings of this classification.

Sustainability of latrine usage refers to lasting and complete usage of a latrine. It requires sustainable latrine access not impeding usage and preference against open defecation. If a household had sustainable access but was not using, it was assumed there was a preference for open defecation. Usage is considered either as full or a gap, where a gap means no or partial latrine usage. Equitable usage refers to level to which households use latrines relative to other groups in the community.

Based on the methodology, the operational framework in *Figure 4.2* wholly exhibits the research framing that will be used to understand sanitation interventions and outcomes

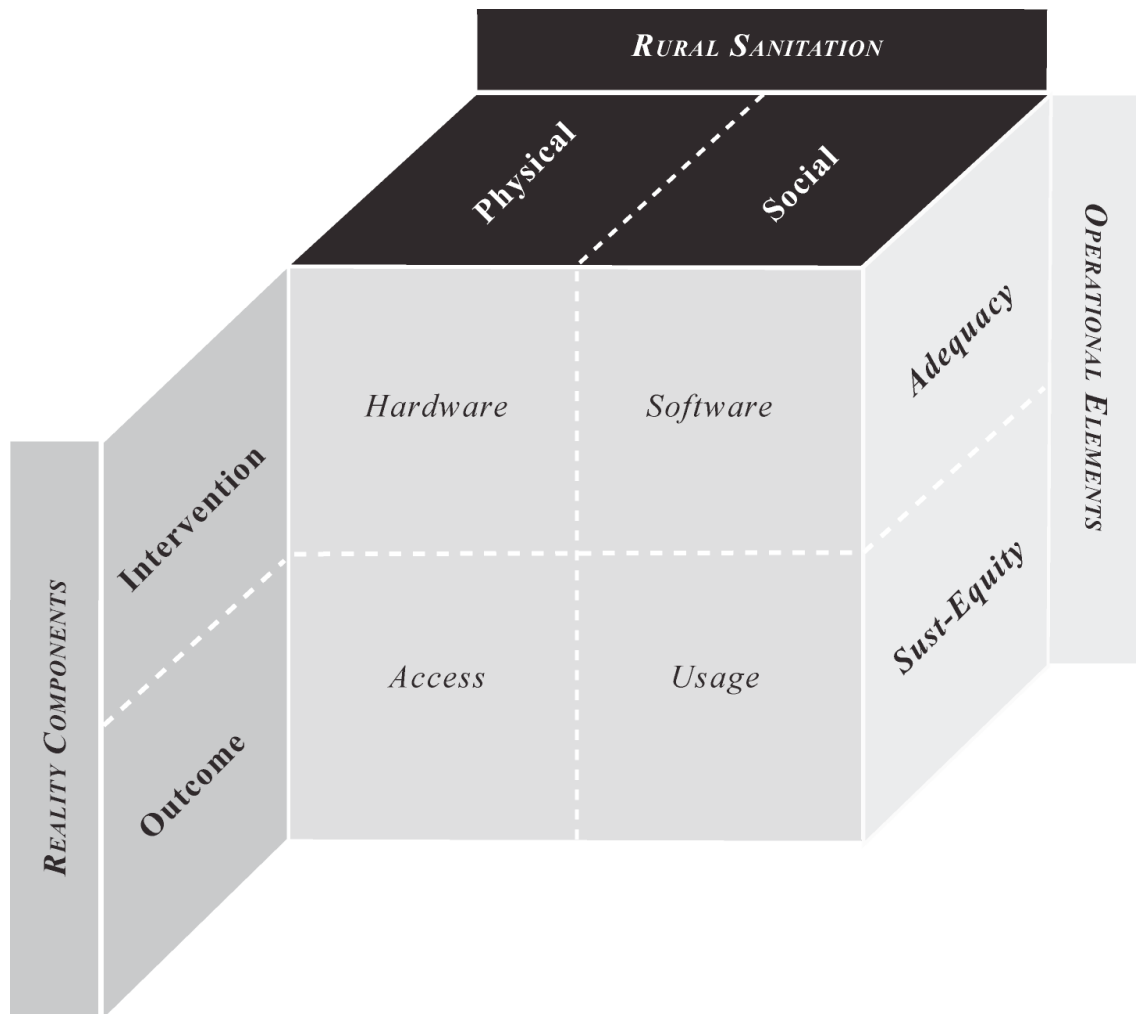


Figure 4.2: Operational Framework

Research Outline Conclusion

Overall, this chapter served to outline the foundations of the study. Because of the continuation of supply-led interventions, a contentious debate on subsidization, and great sanitation disparities in India, this research study was developed. With rational established the research sought to explore influence of sanitation interventions, and especially subsidization, on toilet access and usage for the poorest households. But it was recognized meeting the objectives and questions would not be simple. In reality, sanitation interventions are complex and multidimensional, as seen in the conceptual framework. To conduct the study, the operational framework was defined by reality, adequacy, and sust-equity. As a result of the operational framework, it was hoped nuanced understanding of and insightful reflection on sustainability and equitability of rural sanitation access and usage gaps in rural northern India would be possible.

5 CASE STUDY PROFILES

This chapter presents case study profiles including information collected from state, district, and block sanitation officers in the Government as well as from Pradhans, ex-Pradhans, school and anganwadi staff, vigils, doctors, health workers, sweepers, community groups, and villagers in gram panchayats. The Haryana case study is first introduced including sub-cases in Basara, Dhindar, and Namuda. Then the Uttar Pradesh case study is introduced with sub-cases in Mandora, Kaundada, and Simra Keshopur. A brief comparison of sub-cases ends the chapter.

5.1 Haryana Case Study

The first case study representing the alternative Community-Led Total Sanitation approach was conducted in Samalkha Block, Panipat District, Haryana including Basara, Dhindar, and Namuda Gram Panchayats. This section profiles Samalkha Block and the three villages.

Samalkha Block Profile

Samalkha is a rural block bordering Uttar Pradesh. The block headquarter is Samalkha Town. Most of Samalkha's 31 gram panchayats are single villages. Villages in Samalkha are composed of a variety of castes. General Castes in Samalkha include Brahmin, Muslim, Christian and other non-Hindu religions. Scheduled Caste factions include Jhimar, Balmiki, and Oadh. Backward Caste factions include Riysikh, Jeemerh, Mali, and Sanuni, as per government classification. For six to eight weeks during agricultural seasons the population of panchayats temporarily increases with migrant labourers from Uttar Pradesh and Bihar. The labourers live in pump houses in fields when not working.

The district and block offices overseeing Samalkha use a tiered development strategy. They begin projects in smaller, more homogeneous panchayats and then work later in larger, more heterogeneous panchayats. As a result, many of the larger panchayats in Samalkha have yet to be fully included in development programmes. Officers consider a small panchayat less than 300 households and a large panchayat more than 300 households. Each gram panchayat in Samalkha has one Pradhan and an advisory group of five to seven Panchs, last elected in October 2010. In 2011 Samalkha has eight female and 23 male Pradhans. Government secretaries work with Pradhans to manage panchayats, but Pradhans are not official Government employees and do not receive wages for leading communities. The main responsibilities of Pradhans are to distribute welfare and lead development in panchayats. While below poverty line classification defines welfare support provision based on poverty, there are also support mechanisms based on caste. General Caste households receive no support if above poverty line, but all Scheduled and Backward Caste households receive support regardless of poverty.

There are 45 government schools and 110 anganwadis in Samalkha Block, all of which have latrines. There are several types of community workers in villages including vigils, health workers, women's group leaders, sweepers, doctors, school staff and anganwadi workers. The vigil is responsible for communicating messages from the Pradhan to households and for security. The health worker is responsible for health programmes and birth and death registration. Women's groups may provide education or may run micro-finance activities. Each village has a sweeper for cleaning streets and drains daily. The anganwadi staff provides vaccinations for children including diphtheria, tetanus, and measles shots. Doctors, school staff, and anganwadi workers may or may not live in panchayats where they work. The nearest health facility is in Panipat Town 25 to 30 km from the sub-cases.

Gram panchayats in Samalkha are dense settlements surrounded by agricultural land. There is often a ring road around a panchayat and several small interior roads. Many communities are settled in caste or religious groups. Panchayats in Samalkha receive 12 hours of electricity per day. Some villages in the block have central community water systems with 100,000 litre elevated water tank and untreated house-to-house distribution. Other villages in Samalkha rely on public and private hand pumps. Many gram panchayats in the area have recently received concrete roads. A common feature of most villages in Samalkha is a pond to which street drains empty.

Haryana Village 1 Basara Profile

Basara, exhibited in *Figure 5.1* and *5.2*, is in eastern Samalkha 30 km from Panipat Town and 10 km from Samalkha Town. In 2011, Basara has one village, 183 households, and 1,200 residents. There are 87 above poverty line (48%) and 96 below poverty line (52%) households. In 2007, during the sanitation project, there were 160 households including 75 above poverty line (47%) and 85 below poverty line (53%). Poor households are usually landless. The community is 10 percent General Caste including Brahmin, Christian, Muslim, 70 percent Scheduled Caste including Oadh, and 20 percent Backward Caste including Riysikh, Jeemerh, Mali, and Sanuni. Religions include Sikh, Hindu, Christian, and Muslim. The panchayat has a primary school with seven teachers and 140 students and an anganwadi with three teachers and 20 children. Community workers include a vigil, health worker, women's group leader, and sweeper. Basara is unique as one of only six Scheduled Caste majority gram panchayats in Panipat. It is small and diverse lacking political rivalry. The panchayat is young, established by Panjabi immigrants in the 1960s.

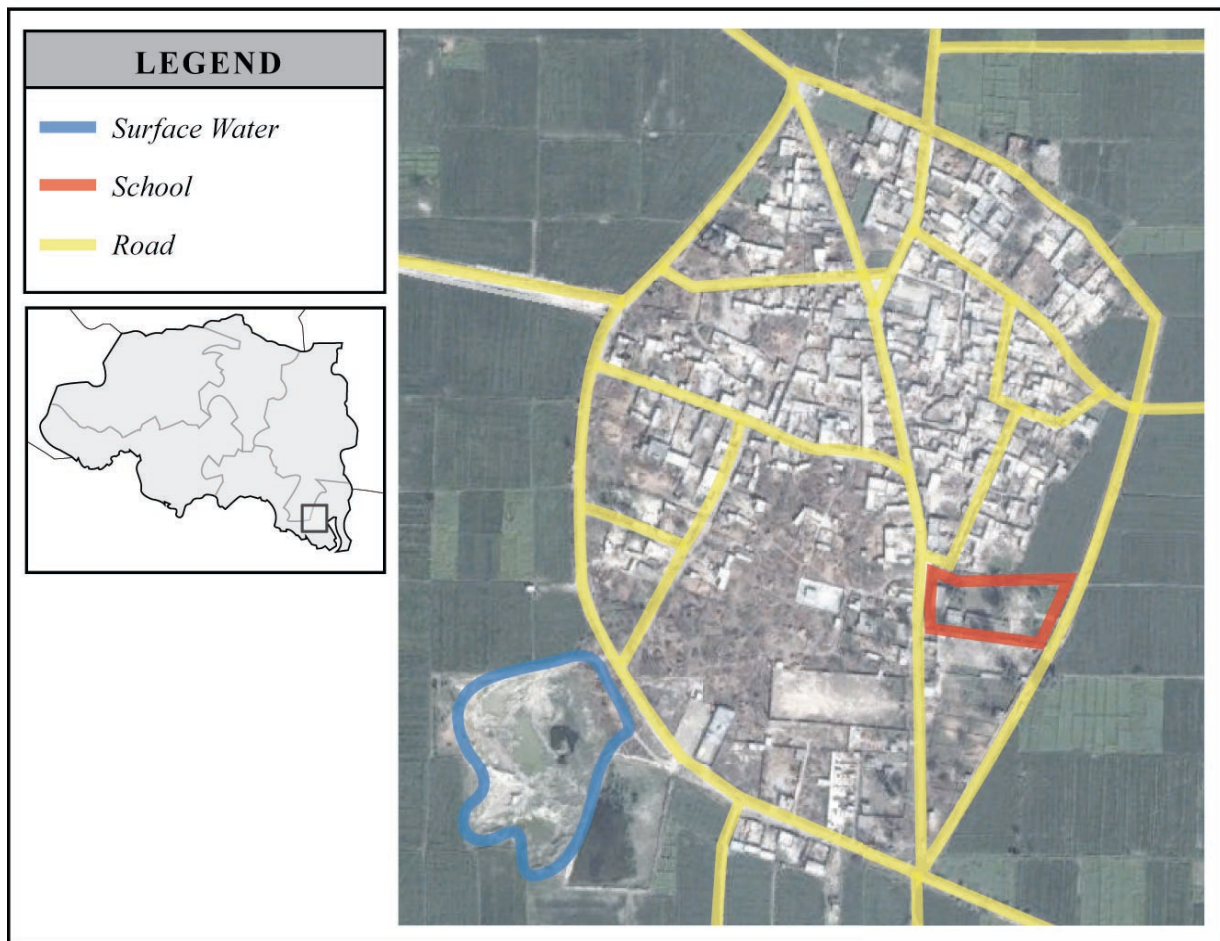


Figure 5.1: Basara Map
(Created by author, based on satellite images from Google Maps, 2011)



Figure 5.2: Basara Main Road and Children

The block implemented sanitation in Basara in 2007 with the alternative Community-Led Total Sanitation approach. Before 2007, 45 households (28%) had toilets and 115 households (72%) did not. At that time only 30 percent of residents fully used toilets that had them, putting overall usage at 8 percent. In 2011, the Pradhan estimated that 100 percent of households have and 95 percent of residents use latrines. In 2008, the village received a Nirmal Gram Puraskar award worth 100,000 Rs (\$2,200). Both the school and anganwadi have functioning latrines, including three urinals, a boy's stall, and a girl's stall at the school and one stall at the anganwadi. The panchayat has a central water system, which distributes groundwater to most households. While the school has running water, the anganwadi does not. The village has a pond for drainage, around which is the open defecation area.

Haryana Village 2 Dhindar Profile

About 16 km from Basara is Dhindar, in *Figure 5.3* and *5.4*, a village in eastern Samalkha 25 km from Panipat Town and six km from Samalkha Town. In 2011, Dhindar is larger than Basara with 250 households and 1,500 residents. There are 215 above poverty line (86%) and 35 below poverty line (14%) households. During the project in 2007 there were 230 households including 98 above poverty line (43%) and 132 below poverty line (57 %) households. Dhindar has seen a large Government removal of below poverty line cards from the village in the past few years and many non-BPL households in Dhindar are actually poor. Landless are estimated at 80 percent. The village is densely populated with many buffaloes living in the interior leading to a problem with flies in the panchayat. Dhindar is more poor and crowded than Basara. The community is approximately 15 percent General Caste, 50 percent Scheduled Caste, and 35 percent Backward Caste. Religious groups include Hindus and Muslims. The panchayat has one primary school with six teachers and 230 students and one anganwadi with two teachers and 40 children. There is a vigil, health worker, women's group leader, and sweeper in Dhindar. The women's group is more active than Basara's; in Dhindar the women's group runs milk-collection and selling, detergent making, broom making, pickle making, and an anti-alcohol campaign. There are two doctors living and working in the village. Dhindar exhibits more political rivalry than Basara, which may hamper community cooperation and development efforts. There are marginalized Scheduled Caste households by the pond, including a colony of the poorest, and there is a section of poor nomadic households too.

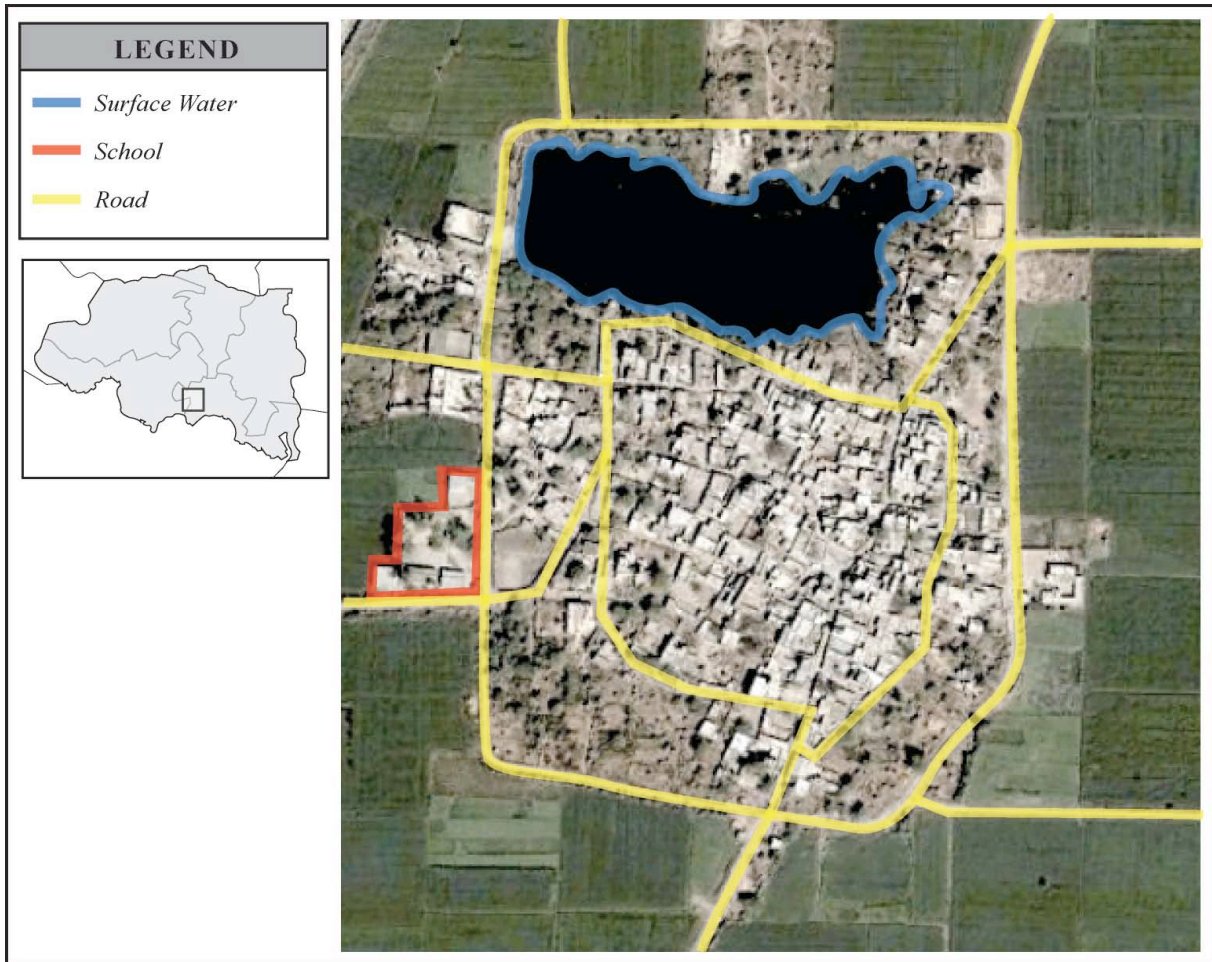


Figure 5.3: Dhindar Map
(Created by author, using satellite images from Google Maps, 2011)

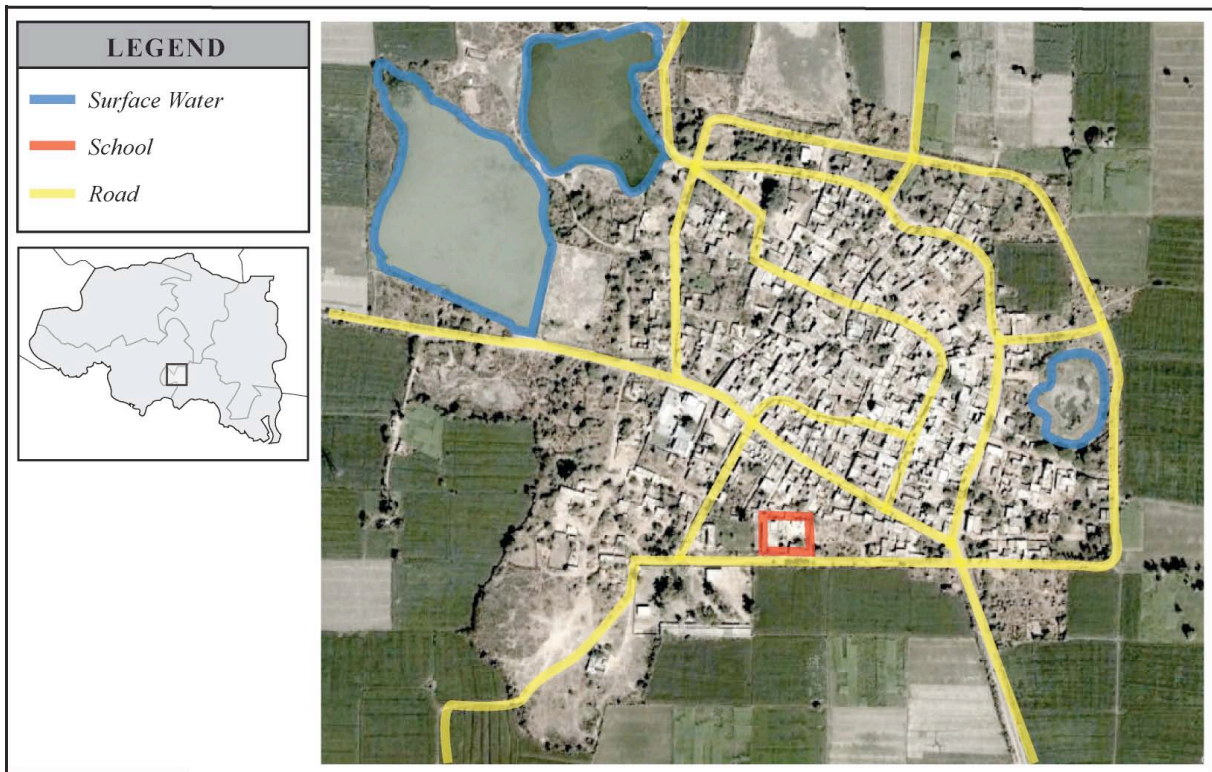


Figure 5.4: Dhindar Pond Area and Women's Group Meeting

The block implemented sanitation in Dhindar in 2007 using the CLTS approach. Before 2007, 30 households (13%) had toilets and 10 percent of residents used toilets. The panchayat has applied for a Nirmal Gram Puraskar sanitation award but has not received it. In 2011 the Pradhan estimates 246 households (98%) have latrines and two percent of residents 'go' openly. The school and anganwadi have hand pumps and working toilets with two stalls for boys, three for girls, and two for teachers at the school and two stalls at the anganwadi. About 60 households have water taps and 150 have private hand pumps. Others rely on public taps and hand pumps.

Haryana Village 3 Namuda Profile

Namuda, in *Figure 5.5* and *5.6*, is in eastern Samalkha, 23 km from Panipat Town and five km from Samalkha Town. In 2011, Namuda had one village, 380 households, and 2,500 residents. There were 270 above poverty line (71%) and 110 below poverty line (29%) households. In the 2009 sanitation project there were 340 households including 240 above poverty line (71%) and 100 below poverty line (29%). Namuda has many poor. The community is 40 percent General Caste, 40 percent Scheduled Caste, and 20 percent Backward Caste. The village is 80 percent Hindu and 20 percent Muslim. The village has a school with 10 teachers and 240 students and an anganwadi. The panchayat has a vigil, doctor, health worker, and sweeper. Namuda has several areas of marginalized households



*Figure 5.5: Namuda Map
(Created by author, using satellite images from Google Maps, 2011)*



Figure 5.6: Namuda Main Road and Anganwadi Centre

The block implemented sanitation in Namuda in 2009 with the alternative approach. Before 2009, 25 households (7%) had toilets and five percent of residents used toilets. The village never applied for a Nirmal Gram Puraskar award. In 2011 according to the Pradhan, 280 households (74%) have toilets and 30 percent of residents ‘go’ outside. The school toilet has two stalls for boys, two for girls, and two for teachers, but all are full and unused. The anganwadi does not have a toilet. About 50 percent of homes have water taps. The school and anganwadi use hand pumps. The village has three ponds.

Haryana Gram Panchayat Comparison

Despite proximity, there were definitive differences between villages. In Samalkha, Basara was the smallest in population, had a majority Scheduled Caste population, had mostly accurate poverty card distribution, and lacked political rivalry. Meanwhile, Dhindar and Namuda were larger and more balanced in community composition, had issues with poverty distribution, and had more political rivalry. While Dhindar and Namuda had majorities of above poverty line households in 2011, Basara did not. All three villages had ponds, central water distribution systems, and alternative Community-Led Total Sanitation interventions. Before sanitation interventions, Basara had the highest latrine access while Dhindar and Namuda's were slightly less. Following interventions, Pradhan estimates put Basara and Dhindar at nearly complete sanitation access and usage while Namuda was considered to be lagging. A summary of the panchayats is in *Table 5.1*.

*Table 5.1: Haryana Household and Sanitation Comparison*²⁴

	Households			Sanitation	
	APL	BPL	Total	Access	Usage
Basara					
<i>Pre-TSC</i>	75	85	160	28%	8%
<i>2011</i>	87	96	183	100%	95%
Dhindar					
<i>Pre-TSC</i>	98	132	230	13%	10%
<i>2011</i>	215	35	250	98%	98%
Namuda					
<i>Pre-TSC</i>	240	100	340	7%	5%
<i>2011</i>	270	110	380	74%	70%

Leaders and workers identified a variety of problems in the panchayats. All faced problems with distribution of welfare support. Basara's principal believed welfare support is not fair or adequate in villages. He said non-poor Scheduled Caste families often receive more support than poor non-Scheduled Caste families. He believed the Government should do more to help the poor, but not based on caste or religion. Similarly, Dhindar's women's group suggested poor households do not receive welfare support they deserve. Other common problems among panchayats in Haryana were illiteracy, low education, poverty, and poor health. In Dhindar and Namuda, health problems were mainly due to malaria and waterborne illness. Basara faced fewer health problems according to leaders and workers. For Dhindar and Namuda, a main problem was lack of transport to the main town, but this wasn't found in Basara. Households also contributed perspectives on community problems. In all panchayats, top household problems related to infrastructure, exclusion from welfare, and poverty. For Basara education deficiency was identified as more serious than exclusion from welfare, while education was not recognized as a problem in Dhindar or Namuda. While sanitation was a problem in Basara and Namuda, it was not considered critical in Dhindar. In Dhindar and Namuda, there were also problems with health, access to a health facility, and corruption. A comparison of common problems faced by households in Haryana is found in *Table 5.2*.

Table 5.2: Haryana Household Problem Comparison

Basara	Dhindar	Namuda
1. Infrastructure	1. Infrastructure	1. Exclusion from welfare
2. Education	2. Exclusion from welfare	2. Infrastructure
3. Sanitation	3. Poverty	3. Sanitation
4. Exclusion from welfare	4. Health/health facility	4. Poverty
5. Poverty	5. Corruption	5. Health/health facility

²⁴ Values in *Table 5.1* are based on Pradhan estimates.

5.2 Uttar Pradesh Case Study

The second case study representing conventional sanitation approach was conducted in Bhuta Block, Bareilly District, Uttar Pradesh within three sub-cases including Mandora, Kaundada, and Simra Keshopur. This section will introduce Bhuta Block and its gram panchayats.

Bhuta Block Profile

Bhuta is a block in northern Uttar Pradesh with 77 gram panchayats and 150 populated villages. The block headquarter is Bhuta Town, but the block development office is in Paungala. The majority of people in Bhuta are Scheduled Caste or Backward Caste Hindus, while General Caste Muslims are present in minorities. Compared to Samalkha Bhuta is farther from Delhi, which decreases access to facilities. While in Samalkha panchayats all households have electricity, many panchayats have central water systems, and Samalkha's fields are scattered with irrigation pumps, in Bhuta some households are without electricity, there are no centralized water systems, and only a few landowners have irrigation pumps. Bhuta faces more problems with flooding, health, malaria, and poverty than Samalkha.

In Samalkha the block office uses a tiered development methodology; Bhuta uses the Ambedkar scheme in which five percent of gram panchayats are selected each year to receive extra development support. Bhuta has five Ambedkar gram panchayats in 2011. In an Ambedkar panchayat, the block provides extra support to ensure all roads are concrete, schools and anganwadis have toilets and water, and there are sufficient hand pumps. Like in Samalkha, each gram panchayat in Bhuta has one Pradhan and a group of Panchs. Government secretaries working with Pradhans in panchayats are more active in Bhuta, while Pradhans are expected to do less than in Samalkha. The main responsibilities of Bhuta Pradhans are to help block secretaries select beneficiaries, distribute welfare, and guide panchayat development. Secretaries and Pradhans in Bhuta jointly hold the panchayat bank account. One secretary serves three to six gram panchayats. Unlike Samalkha, there is less support for Scheduled Caste and Backward Caste households in Bhuta. General Caste households also do not receive support in Bhuta, but compared to Samalkha below poverty line households in Bhuta receive less. Households in Uttar Pradesh may receive three levels of below poverty line support including high if one has a red ('antody') card, medium if one has a white card, and low if one has a yellow card. As in Samalkha, villages in Bhuta have strong political rivalries that can disrupt progress.

In terms of sanitation, all gram panchayats supposedly had sanitation projects, but progress is less in Bhuta and many panchayats are only partially covered. The majority of those still not using toilets are men resistant to change, above poverty line households may be excluded from the TSC due to being non-poor, or below poverty line households may be excluded due to discrimination. No Bhuta gram panchayats have received a Nirmal Gram Puraskar award. Sweeper core groups of 12 members clean villages together every few weeks, but work alone in gram panchayats usually.

As in Samalkha, villages in Bhuta are dense settlements surrounded by farm fields. Communities are settled in caste or religious groups. Panchayats in Bhuta receive 6 hours electricity daily and rely on a mix of public and private hand pumps. Ponds are not as common in Bhuta. There are 281 schools and 137 anganwadis in Bhuta. The block reports 316 school and 120 anganwadi toilets in Bhuta. Similar to Samalkha, panchayats in Bhuta may have vigils, health workers, sweepers, doctors, or school and anganwadi staff. However, not all villages in Bhuta have health workers. Rather, some villages rely on block health workers that only visit gram panchayats once per month. In Bhuta there were fewer doctors in panchayats. The nearest health centre is in Paungala, one to four km from sub-case villages.

Uttar Pradesh Village 1 Mandora Profile

Mandora, in *Figure 5.7*, is in central Bareilly 30 km from Bareilly Town and two km from the block development office. In 2011, Mandora has one village, 300 households, and 2,500 residents. There are 129 above poverty line (43%) and 171 below poverty line (57%) households. The panchayat has not been Ambedkar recently. During the 2008 sanitation project there were 280 households including 120 above poverty line (43%) and 160 below poverty line (57%). About 70 percent of households are landless. It is estimated that 50 percent of the gram panchayat is lower caste Kashyup. The gram panchayat has a primary school with two teachers and 84 students, a middle school with one teacher and 56 students, and an anganwadi with three workers and 47 children. There is a middle school with one teacher and 56 students. The only community worker is a sweeper. There is no vigil, health worker, women's group or any other community groups. Neither the primary nor middle schools have principals, though teachers have requested principals from the block. The gram panchayat is unique in the size of its Kashyup community and in that the Government recently closed Mandora's ration depot. Now needy residents are unable to get rations; the only depot is 17 km away. Unfortunately no useful satellite image of Mandora could be located.

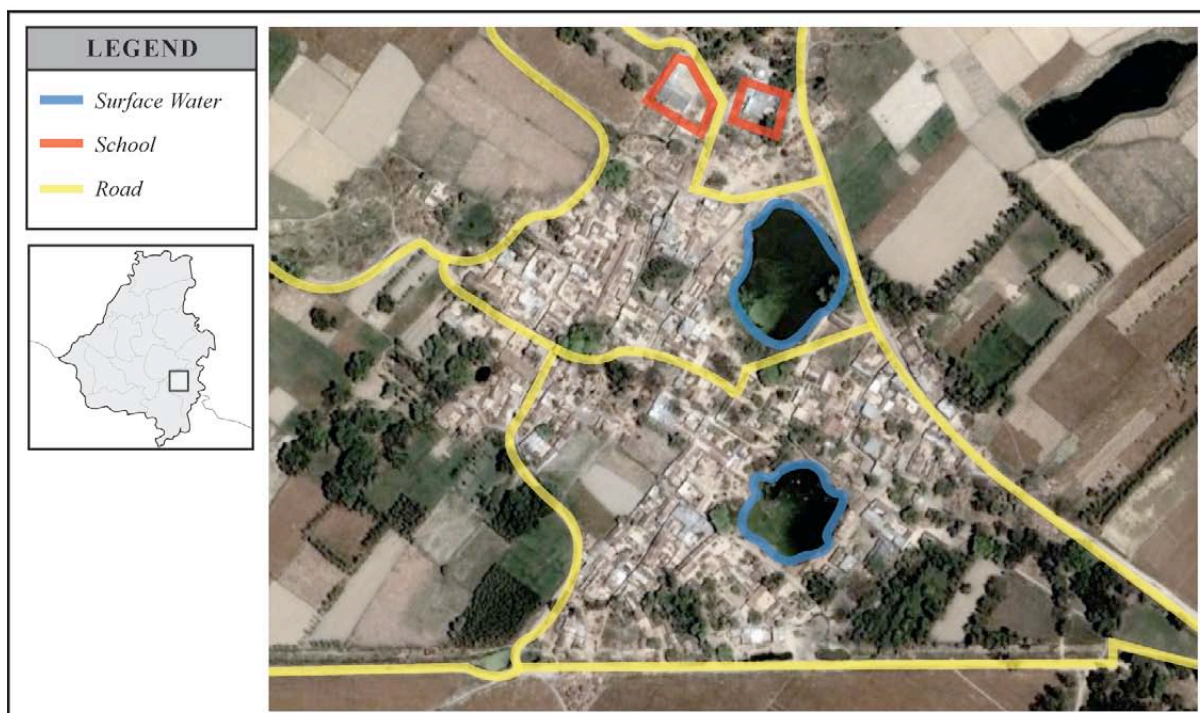


Figure 5.7: Mandora Main Road and Kashyup Women

The block Government implemented the sanitation project in Mandora in 2008 with the conventional approach. Before 2008, no households had toilets. In 2011, 70 households (23%) have toilets and 77 percent of residents do not use toilets, according to the Pradhan. The primary school and anganwadi share one toilet with two stalls, but it is full and out of use. The middle school has one toilet with two stalls, but is also full and out of use. Teachers at both schools requested new toilets from the Pradhan. The Pradhan obtained 20,000 Rs (\$444) from the block for a new school toilet, but he only constructed a urinal instead of a full latrine. If children need to 'go' while at school they use the area around a nearby stream, which is also the main open defecation area in the panchayat. The majority of households rely on public hand pumps for water. The primary school and anganwadi have water from a hand pump. There is no water point at the middle school.

Uttar Pradesh Village 2 Kaundada Profile

Kaundada, in *Figure 5.8* and *5.9*, is two km from Mandora, 31 km from Bareilly Town, and less than one km from the block office. In 2011, Kaundada has one village, 320 households, and 2,000 residents. There are 150 above poverty line (47%) and 170 below poverty line (53%) households. During the sanitation intervention there were 300 households, including 140 above poverty line (47%) and 160 below poverty line (53%) households. About 70 percent of households are landless. The community is 25 percent General Caste, 25 percent Pandit, 25 percent Thakkar, and 25 percent Kashyup. Religious breakdown is 75 percent Hindu and 25 percent Muslim. The village has a primary school with four teachers and 172 students, a middle school with three teachers and 291 students, and an anganwadi with three workers. Workers include a health worker, sweeper, and vigil. The village is unique in that it was an Ambedkar gram panchayat in 2009 to 2010.



*Figure 5.8: Kaundada Map
(Created by author, using satellite images from Google Maps, 2011)*



Figure 5.9: Kaundada Main Road and Group Discussion

The block implemented the conventional approach in Kaundada in 2009, until which time all residents open defecated. In 2011, according to the ex-Pradhan, 170 households (53%) have and use toilets. The primary and middle schools and anganwadi each have a two-stall toilet, but all are full and unused. The Pradhan constructed the school toilets out of pocket since the block would not help. If students ‘go’ during school they use the pond area. Most houses use public hand pumps for water. The primary school, middle school, and anganwadi centre have hand pumps.

Uttar Pradesh Village 3 Simra Keshopur Profile

Simra Keshopur, in *Figure 5.10* and *5.11*, is three km from Mandora, 28 km from Bareilly Town, and four km from the block office. The panchayat is located on a large river, which overflows during monsoon. In 2011, Simra has three villages, 250 households, and 2000 residents. There are 127 above poverty line (51%) and 123 below poverty line (49%) households. At the time of the project in 2009 there were 230 households with 120 above poverty line (52%) and 110 below poverty line (48%). 80 percent of households are landless, most of the Kurmi caste. The panchayat has two primary schools with six teachers and two principals, a middle school with two teachers, and an anganwadi with one worker. The panchayat has two health workers, two sweepers, and a vigil. The panchayat has not been Ambedkar. With three villages the panchayat is more widespread, quiet, and segregated than other panchayats. The secondary villages are small and home to many poor.

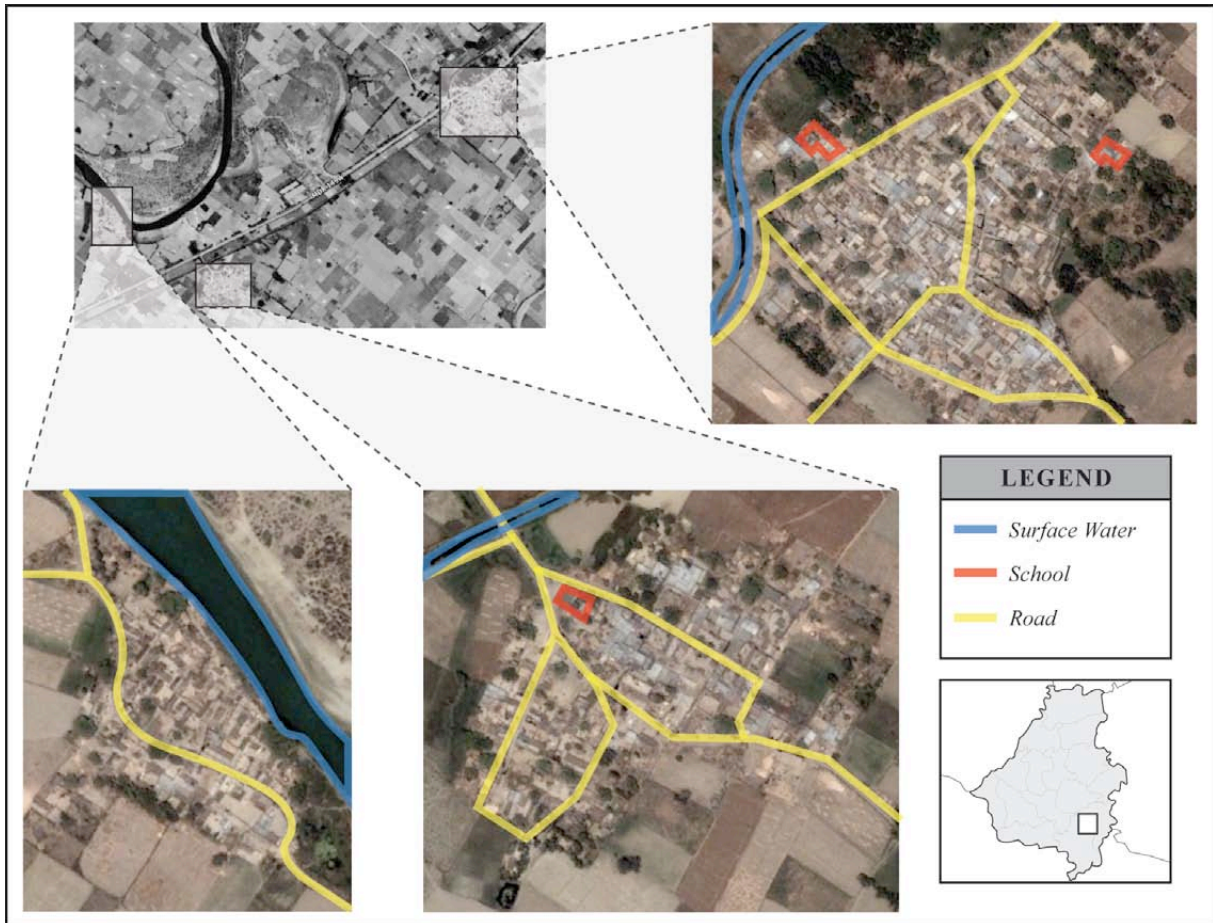


Figure 5.10: Simra Keshopur Map
(Created by author, using satellite images from Google Maps, 2011)



Figure 5.11: Simra Keshopur River and Sweeper

The block implemented the sanitation intervention in 2009 using the conventional approach. Before 2009, no households had toilets. At that time 100 percent of households open defecated. In 2011, according to the ex-Pradhan, 70 households (28%) had toilets and 72 percent of residents defecate openly. The primary and middle schools each have one toilet with two stalls, but all are full and out of use. The anganwadi does not have a latrine. If children need to ‘go’ while in school they use the field. Most households, as well as the school and anganwadi, rely on shallow hand pumps for water.

Uttar Pradesh Gram Panchayat Comparison

As in Haryana, Uttar Pradesh gram panchayats were each unique. Mandora and Simra Keshopur had more caste exclusion than Kaundada. However, both Kaundada and Simra had more political rivalry than Mandora. While Kaundada was an Ambedkar village, Mandora and Simra only received standard support. Simra was different in that it was spread between three villages, while the other two panchayats each had one village only. In all cases, lower caste and excluded people lived farther from the homes of village leaders. All villages relied on a mix of private and public hand pumps. Mandora and Kaundada were poorer than Simra Keshopur, which was the only of the three to have more above poverty line than below poverty line households. The three panchayats share the commonality of having no latrine coverage before their sanitation interventions a few years ago. In terms of sanitation access Kaundada has progressed most, but this is not necessarily reflective of sanitation achievement, which will be discussed in coming chapters. A summary of the three Uttar Pradesh gram panchayats population and sanitation information is identified in *Table 5.3*.

*Table 5.3: Uttar Pradesh Household and Sanitation Comparison*²⁵

Time	Households			Sanitation	
	APL	BPL	Total	Access	Usage
Mandora					
Pre	120	160	280	0%	0%
2011	129	171	300	23%	23%
Kaundada					
Pre	140	160	300	0%	0%
2011	150	170	320	53%	53%
Simra Keshopur					
Pre	120	110	230	0%	0%
2011	127	123	250	28%	28%

Problems in the three Uttar Pradesh panchayats varied, but common themes were discovered. According to village leaders, common problems relate to poverty. The ways in which poverty problems afflict communities vary though. In Mandora, the government closed the ration depot and people were struggling to obtain food and supplies. In Kaundada and Simra, unemployment and low education were mentioned by village leaders. In addition, other main problems identified by village leaders and workers included poor sanitation and overpopulation in Mandora, poor school attendance and malaria in Kaundada, and lack of hand pumps and diarrhoea in Simra Keshopur. Households in the three panchayats were most concerned with infrastructure, flooding, sanitation and health. Flooding was a great concern for all villages during monsoon because the area is low-lying and near a river. In Mandora, people identified exclusion from welfare as the foremost problem, while it was a lesser problem in Kaundada, and not mentioned in Simra. Other key problems included health in Kaundada and unemployment in Mandora and Simra Keshopur. A summary of common problems faced by households in Uttar Pradesh is found in *Table 5.4*.

Table 5.4: Uttar Pradesh Household Problem Comparison

Mandora	Kaundada	Simra Keshopur
1. Exclusion from welfare	1. Infrastructure	1. Infrastructure
2. Sanitation	2. Flooding	2. Health
3. Infrastructure	3. Sanitation	3. Sanitation
4. Flooding	4. Health	4. Flooding
5. Unemployment	5. Exclusion from welfare	5. Unemployment

²⁵ Values in *Table 5.3* are based on Pradhan estimates.

5.3 Haryana and Uttar Pradesh Case Study Comparison

This section compares panchayat case study profiles from Haryana and Uttar Pradesh, first reviewing demographics followed by sanitation access and usage comparison.

Demographics from Haryana and Uttar Pradesh panchayats are summarized in *Table 5.5*. Villages in Uttar Pradesh tend to have more people per household and households in Haryana tend to own land more often. In Haryana, below poverty line households make up 30 percent of villages in 2011 while below poverty line households make of 53 percent of panchayats in Uttar Pradesh. During interventions Haryana panchayats in the study had 43 percent below poverty line households while Uttar Pradesh panchayats had 53 percent below poverty line households. The reason for the change in below poverty line households in Haryana is there was a poverty card reduction, especially found in Dhindar but to a lesser extent in Basara and Namuda.

*Table 5.5: Haryana and Uttar Pradesh Household Comparison*²⁶

		Haryana			Uttar Pradesh			Averages		
GP		Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP	
Population		1,200	1,500	2,500	2,500	2,000	2,000	1,733	2,167	
% Landless		50%	80%	64%	70%	70%	80%	65%	73%	
Households	APL	Pre	75	98	240	120	140	120	138	127
		2011	87	215	270	129	150	127	191	135
	BPL	Pre	85	132	100	160	160	110	106	143
		2011	96	35	110	171	170	123	80	155
	Total	Pre	160	230	340	280	300	230	243	270
		2011	183	250	380	300	320	250	271	290

Note: Pre = Pre-TSC

In terms of sanitation, before the sanitation intervention latrine access was 13 percent in Haryana panchayats but zero percent in Uttar Pradesh panchayats, based on Pradhan estimates. By 2011, Haryana panchayats achieved 87 percent latrine access and 85 percent usage, while Uttar Pradesh panchayats achieved 35 percent access and 35 percent usage, according to Pradhans. The 2011 gaps in Haryana and Uttar Pradesh were thus sizeable, but worse in Uttar Pradesh. To look into sources of the gaps and variation, the next chapter covers interventions. *Table 5.6* summarizes access and usage.

*Table 5.6: Haryana and Uttar Pradesh Sanitation Comparison*²⁷

		Haryana			Uttar Pradesh			Averages	
GP		Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Toilets	Pre	45	30	25	0	0	0	33	0
	2011	183	246	280	70	170	70	233	103
	Gap	0	4	100	230	150	180	35	187
Access	Pre	28%	13%	7%	0%	0%	0%	13%	0%
	2011	100%	98%	74%	23%	53%	28%	87%	35%
Usage	Pre	8%	10%	5%	0%	0%	0%	7%	0%
	2011	95%	98%	70%	23%	53%	28%	85%	35%

Note: Pre = Pre-TSC

²⁶ Values in *Table 5.5* are based on Pradhan estimates.

²⁷ Values in *Table 5.6* are based on Pradhan estimates.

Case Study Profiles Conclusion

This chapter presented profiles of the block localities and gram panchayats in which research was conducted. In each of the two research localities, panchayats were within just a few kilometres of each other, but sizeable differences were found. Differences occurred between villages because of variable histories, community compositions, political dynamics, access to a main road, poverty situations, and local leadership. State, district, and block institutional setting and capacity also made a large difference for village development. Samalkha with 31 gram panchayats was a much smaller block than Bhuta with 77 gram panchayats, which makes Samalkha more conducive for governing and development than Bhuta. Each block had a unique development strategy. In Samalkha the district office aimed to develop smaller, more homogeneous villages first because they are easier to work in than larger, more heterogeneous panchayats. Meanwhile, in Bhuta the state used a targeted Ambedkar development scheme to provide extra support to a small number of disadvantaged villages on a rotating basis. Basara and Dhindar in Samalkha and Kaundada in Bhuta had benefited from these development strategies, while the other panchayats had not. The results of development strategies show through in sanitation access and usage in both Samalkha and Bhuta, according to Pradhan estimates presented in this section. The next chapter on sanitation access will determine how true Pradhan access estimates were in reality.

6 RURAL HOUSEHOLD SANITATION INTERVENTIONS

In this study, two states with varying sanitation intervention strategies were selected to explore influence of strategy on outcomes with focus on the role of subsidization. This chapter reviews intervention strategies applied in Haryana and Uttar Pradesh based on information collected from sanitation officers at state, district, and block levels and from Pradhans in gram panchayats. Panchayat sub-case realities are presented for each state based on interviews with leaders, workers, and households. It is important to note estimates for aspects of household sanitation provided by Pradhans often vary from collected and observed realities in gram panchayats.

6.1 Haryana Alternative Interventions

This section reviews the alternative Community-Led Total Sanitation strategy applied in Samalkha Block in Panipat, Haryana based on interviews with mid-level sanitation officers and village leaders. Details on interventions in Basara, Dhindar, and Namuda Gram Panchayats then follow.

Alternative Community-Led Total Sanitation Strategy in Samalkha, Haryana

A sanitation coordinator facilitates the Total Sanitation Campaign in Samalkha's 31 gram panchayats using a Community-Led Total Sanitation approach. On the hardware side, Haryana's Panchayati Raj sends subsidies to district development offices, which then distribute funds to blocks or panchayats. Once funds are sent, officers or Pradhans use the support. As a result of independent decision-making at each level, intent and reality diverge as funds move from state to villages. Once Samalkha receives funds, the block distributes 1,200 Rs (\$27) to Pradhans who then pass cash or materials to households. Subsidy modalities differ in every panchayat because each Pradhan decides which households will receive funds and when. In Samalkha, three types of hardware subsidies were used including ex-ante direct cash, ex-ante infrastructure, and ex-post output-based, sometimes used in combination. When direct or output-based cash subsidy was used, it was the household owners' responsibility to purchase materials and construct latrines. When infrastructure subsidy was used, typically Pradhans organized toilet construction by purchasing all materials and hiring a mason, though households may have installed materials or hired a mason independently. Pradhans provided subsidy to both poor and non-poor households in reality. Despite Haryana's Government calling their sanitation strategy Community-Led Total Sanitation, interventions usually provide subsidy and even upfront, against a core CLTS principle and against what government officers claimed occurred.

Haryana's sanitation officers recommend a double pit latrine design, though single pits were common. The block sanitation coordinator runs a Rural Sanitary Mart and sanitation park in Samalkha Town for distribution of sanitary materials and for exhibiting toilet designs, seen in *Figure 6.1*. By 2011, sanitation had been implemented in most villages, but sanitation coverage remained at 73 percent overall according to the block coordinator; his estimate conflicts with the 96 percent Government reported coverage for Samalkha block household sanitation. Sanitation efforts have slowed in Samalkha between 2008 and 2011 due to a change in leadership.



Figure 6.1: Samalkha Rural Sanitation Mart

For software, districts and blocks organize information, education, communication tools. Sanitation officers suggested common tools used in their alternative approach included wall paintings, as seen in *Figure 6.2*, radio jingles, ads, and rallies as well as triggerings focused on health and dignity. The former district coordinator led trainings and triggerings throughout Panipat using motivational activities including faeces calculation and community mapping. The district coordinator also organized volunteer coordinators to spread sanitation to villages using triggering. Normally, after coordinators met village leaders the panchayat would form a sanitation committee or the Pradhan would coordinate with community workers to manage an intervention. Village workers such as vigils, anganwadi workers, or women's groups helped lead projects. Once panchayats established sanitation committees, a sanitation bank account would be established with 5,000 Rs (\$111).



*Figure 6.2: Samalkha Sanitation Sign*²⁸

Reflecting on Samalkha's sanitation approach, a key realization is that even in the same state, district, and block methods of intervention differ greatly in each gram panchayat because Pradhans and community workers are responsible for leading interventions. The state sanitation strategies and local government officers establish the strategies which guide interventions, but ultimately Pradhans and community workers decide how to distribute funding, what technical support to provide, what software activities to apply, and who to include. They decide who will be involved and who will be excluded. Hence, there remains a great deal of flexibility for village leaders due to a disconnect between government sanitation officials and non-official village sanitation facilitators. On the positive side, since village leaders can adapt sanitation interventions from government strategies they can account for local village dynamics for which a general state strategy may not be able to account. On the negative side, flexibility and lack of oversight can also make space for village leaders to neglect important sanitation strategy components necessary to ensure successful outcomes.

Haryana Village 1 Basara Alternative Intervention

Basara's 2007 intervention used output-based subsidies. Going against the Government guideline, which suggests ex-post subsidy for below poverty line households, all 115 households (72% of all households) including 78 below poverty line (92% of all BPL) and 37 above poverty line (49% of all APL) without toilets pre-2007 received hardware subsidy. The subsidy amount provided to households depended on socio-economic condition determined by the Pradhan. He went house-to-house before implementation and met with families to agree upon how much they would contribute. Though the Government only provided 1,200 Rs for each of the 78 below poverty line households, the Pradhan used funds from the block, his own pocket, and households to cover costs of materials for all 115 households lacking latrines. The Pradhan hired the mason to construct most of the latrines.

²⁸ The sign in Samalkha's sanitation park says: "Sorry for this time, I'll never go open defecation in the future."

While the less poor households were responsible for paying the mason directly, the poorest were provided mason's labour from the Pradhan's sanitation funds. Some households laboured alongside the mason to save money. The mason would charge 150 to 300 Rs (\$3.5 to \$7) per day depending on quality of construction desired. Each toilet was approximately 1,500 Rs (\$33). In the end the average amount per latrine provided by the Government was 835 Rs (\$19), by the Pradhan was 365 Rs (\$8), and by households was 300 Rs (\$7). In providing subsidies to all households, the Pradhan hoped to achieve 100 percent GP latrine coverage and receive a 100,000 Rs (\$2,220) Nirmal Gram Puraskar award to reimburse himself for funds invested out of pocket. Basara received Nirmal Gram Puraskar in 2008, but the Pradhan had not recouped around 40,000 Rs (\$890) by 2011.

When Basara's sanitation intervention began in 2007, the district coordinator and former Pradhan led three Community-Led Total Sanitation triggerings in the gram panchayat, one of which is seen in *Figure 6.3*. After triggering, the ex-Pradhan and vigil went house-to-house to inform residents that all households would need to build and use latrines, and that he was going to help them if necessary so the panchayat could become open defecation free. He taught people about the benefits of household sanitation for health and women's dignity. During the intervention, the ex-Pradhan would prevent villagers from open defecating each morning. Basara's intervention was so intense because the ex-Pradhan was highly motivated. He made it his responsibility and goal to leave a legacy of a sanitized village. He worked tirelessly to achieve total sanitation for Basara. In 2011, the new Pradhan fears open defecation may grow as toilets fill and as new households move into the village.



*Figure 6.3: Basara CLTS Triggering*²⁹

²⁹ The photo was taken by Basara's former Pradhan during sanitation triggering in the village school in 2007.

Haryana Village 2 Dhindar Alternative Intervention

Dhindar's 2007 intervention had a subsidy strategy including infrastructure material and output-based cash. The Pradhan provided the two types of subsidy to willing below poverty line households. Of 132 below poverty line households in Dhindar at the time of the project, the Pradhan said 92 (70% of all BPL) received subsidy. He also said 16 of the poorest households were given materials of 1,200 Rs (\$27) each before the intervention and the remaining 76 below poverty line households were provided 1,200 Rs cash after construction. All households had to construct the latrines or hire masons on their own at the cost of 200 Rs (\$4) per toilet. Below poverty line households not receiving subsidy either were not interested in constructing toilets or not asked. Above poverty line households did not receive subsidies and, according to the Pradhan, complained that subsidy was not available to them. The women's group said many households receiving subsidy could still not afford toilets for 1,200 Rs, so households paid more than that out of pocket if they were to complete permanent toilets. To save money, poor households often constructed impermanent kacha leach pits and superstructures. Non-poor households spent up to 15,000 Rs (\$333) on pucca latrines with septic and street drain overflow instead of a kacha soak pit. While most households constructing toilets built them within a few months of the sanitation intervention, households in the Scheduled Caste colony were last to construct toilets and some are still constructing them. In 2011, a few kacha toilets are starting to fill.

As in Basara, in Dhindar the district coordinator provided Community-Led Total Sanitation triggering for the Pradhan and villagers. After triggerings the Pradhan and women's group organized the intervention. Together they formed a sanitation committee of eight members to organize meetings and go house-to-house to motivate people to understand the importance of sanitation and how to construct latrines. The motivators would tell people open defecation causes disease, is unsafe, and inconvenient. They showed movies and held meetings and school rallies about sanitation. The committee constructed a model latrine in the community centre so people would know an appropriate design. Unlike Basara, Dhindar's vigil was not involved and no measures were taken to restrict open defecation. In Dhindar, the challenge for full sanitation was lack of space for toilets. The Pradhan struggled to motivate the poor without upfront subsidy because they were not able to afford latrines.

Haryana Village 3 Namuda Alternative Intervention

In Namuda's 2009 intervention, the panchayat gave direct cash subsidies to motivate latrine building. The Pradhan provided upfront direct checks of 1,200 Rs for latrines to 80 below poverty line households. The vigil responsible for distributing checks, however, said the 80 households (24% of all households) included 30 above poverty line (13% of APL) and 50 below poverty line (50% of BPL). The vigil was not aware of why some households received checks and others did not. The Pradhan believed most households did not use funds for latrines and that households using the checks for sanitation only built latrines partially because the subsidy amount provided was not enough to build full toilets. The Pradhan justified misuse of funds because permanent toilets cost much more to construct than the provided amount.

Namuda did not have a sanitation committee to facilitate their intervention. There were no sanitation meetings or activities in the village between 2009 and 2011, and the intervention faded in that period without complete results. Now the anganwadi worker is restarting efforts. She recently attended block sanitation training, organized a rally, and has been visiting households to tell them benefits of sanitation for women's pride and children's convenience. The anganwadi worker also tells households they will receive 1,200 to 1,400 Rs (\$27 to \$31) to motivate them to construct toilets, but she is uncertain if funding will come. Similar to Dhindar, Namuda had taken no measures to prevent open defecation. Unlike Basara and Dhindar, Namuda had no triggering during the 2009 intervention. The main challenge for sanitation in Namuda is poverty. The panchayat leaders attempted to provide upfront cash to overcome the poverty barrier, but villagers spent the funds in other ways. Even if people wanted a toilet and received and used the subsidy, the amount provided was insufficient to result in complete latrines, according to the Pradhan. The anganwadi worker is the only person devoted to sanitation in the village and is working voluntarily, so software was limited in Namuda.

6.2 Uttar Pradesh Conventional Interventions

Uttar Pradesh was selected to represent the conventional sanitation approach. This chapter reviews the strategy applied in Bareilly's Bhuta Block based on interviews with mid-level sanitation officers and village Pradhans. Details on Mandora, Kaundada, and Simra Keshopur interventions then follow.

Conventional Sanitation Strategy in Bareilly, Uttar Pradesh

A district coordinator oversees sanitation in Bareilly's 15 blocks. The district coordinator is responsible for working with a block officer and a block sanitation motivator to implement interventions. Bhuta Block's sanitation motivator is responsible for facilitating interventions, though he is not a Government employee and is paid on commission as toilets are constructed. Bhuta's Government considers sanitation in terms of 'toilets sent' and 'toilets received.' To motivate latrine adoption the block motivator and Pradhans go house-to-house to ask people if they are willing to contribute 400 Rs (\$9) to receive a latrine. This is the extent of motivational activities in most projects in Bhuta, so software is minimal. Sanitation committees are not normally formed.

Hardware subsidy provision varies in line with the Ambedkar programme. Ambedkar panchayats receive 4,540 Rs (\$101) per below poverty line household and 1,500 Rs (\$33) per above poverty line household for latrines. Non-Ambedkar panchayats receive 2,200 Rs (\$49) per below poverty line household and 0 Rs per above poverty line household. Households are expected to contribute 400 Rs for latrines, meaning latrines will be constructed at 4,940 Rs (\$110) and 1,900 Rs (\$42) for below and above poverty line households, respectively, in Ambedkar panchayats and for 2,600 Rs (\$58) for below poverty line households in non-Ambedkar panchayats. Above poverty line households in non-Ambedkar panchayats are excluded because they do not receive funding so facilitators have no need to ask if they want a toilet. In 2010, the district hired Sulabh International to provide technical sanitation training to leaders and masons from 35 gram panchayats in Bareilly. The district officers view the main reasons for sanitation disparity in Bareilly as technical. The district promotes construction of a single pit latrine design, though if more money was available they would promote Sulabh's double pit design. In the block, 45 Rs (\$1) is given to facilitators for each toilet constructed. The block motivator receives 10 Rs (\$0.20) per toilet and Pradhans receive 35 Rs (\$0.80) per toilet. The state officials said 50 Rs (\$1.10) is sent to districts for facilitation, but district and block officers said only 45 Rs were provided per toilet in 2011. In Bareilly District, the Government has reportedly funded 102,777 latrines for below poverty line households to date. No gram panchayats have a Nirmal Gram Puraskar award in the block. All schools in the block reportedly have toilets, but it was found all school and anganwadi latrines were full and out of use. In Uttar Pradesh, sanitation coverage is calculated on release of funds. Once subsidies are released, latrines are assumed in place.

Uttar Pradesh Village 1 Mandora Conventional Intervention

Mandora's 2008 intervention was based on distribution of infrastructure subsidies. The Pradhan went house-to-house to determine who should receive support. To receive subsidies, households were required to contribute 400 Rs (\$9). The Pradhan sent a list of 70 below poverty line (44% of BPL) names to the block and the block gave 2,200 Rs (\$49) per household to the Pradhan. The Pradhan then purchased latrine materials and hired masons to install kacha pits and pucca superstructures. Thus, 2,600 Rs (\$58) was spent per toilet. However, the Pradhan said higher quality latrines would require 5,000 Rs (\$111) each. To construct latrines for 2,600 Rs each the Pradhan omitted doors. Villagers claimed some latrines were also constructed without pits, though it was not possible to determine the reality because lids were usually buried. The Pradhan claimed he provided toilets only to poor households, but during interviews below poverty line households accused the Pradhan of providing latrines to non-poor households as well, which was confirmed. The Pradhan said he would like to bring more latrines to his village but is waiting for funds. While touring Mandora with the district coordinator, it was learned funds for 35 latrines had been sent to the village in 2010. However, no toilets were constructed in 2010 and the Pradhan said he had no knowledge of the funds. The district coordinator was unsure what happened to the funds.

During the intervention, the anganwadi worker attended block sanitation training. She then went to some households to share information about sanitation. She attempted to motivate the Pradhan to lead the intervention, but said he was uninterested. The anganwadi worker also said even though people express interest in latrines, she believes they do not have interest in using them. No committee was formed and no organized software activities occurred in the panchayat. The block motivator visits the village periodically. The panchayat had taken no measures to prevent open defecation. The Pradhan cited that two main challenges faced in the panchayats intervention were that Government did not provide enough money to construct full permanent toilets and that even after he told people to use toilets, they do not listen. The school teachers said that after the Total Sanitation Campaign, people do not value sanitation and the numbers of toilets constructed in the panchayat are insufficient.

Uttar Pradesh Village 2 Kaundada Conventional Intervention

Kaundada's sanitation intervention began after government officers visited the village and told the Pradhan to construct latrines. The Pradhan attended district sanitation training and distributed subsidies to households. Kaundada is an Ambedkar panchayat and so receives extra support from the Government. In total, the Pradhan said all 160 below poverty line households (100% of BPL) and 10 above poverty line households (7% of APL) received toilets. However, field research found nearly as many above poverty line received latrines as below poverty line households. As in Mandora, all households receiving toilets were required to provide 400 Rs (\$9) to the Pradhan to indicate their demand. However, a difference came in distribution of support. Along with managing construction of latrines for 150 households, the Pradhan provided direct cash subsidies to 20 households that were requesting funds instead of latrines. These households said they requested checks because they hoped to save money constructing latrines themselves. The Pradhan photographed check distribution, seen in *Figure 6.4*, so households could not claim they were excluded from receiving support. The Pradhan said check recipients often only partially constructed latrines upon running out of their subsidy fund.



*Figure 6.4: TSC Latrine Check Distribution*³⁰

Along with providing hardware, the Pradhan took responsibility for motivating households by telling people they could have a latrine for 400 Rs (\$9), but he said many households were uninterested. To convince people to accept toilets from the Government and contribute 400 Rs, the Pradhan and motivator told people they would no longer have to use the same jug for ablution and drinking water once they have a latrine, which the Pradhan said worked effectively. No other software activities occurred. When asked about the intervention, households in Kaundada always talked about their toilets as being the Pradhan's latrines indicating lack of ownership.

³⁰ Kaundada's Pradhan photographed check distribution so recipients could not claim exclusion.

Uttar Pradesh Village 3 Simra Keshopur Conventional Intervention

In Simra Keshopur, the Pradhan distributed 1,950 Rs (\$43) checks and rural pans to poor households lacking toilets. Though the Pradhan said 50 poor below poverty line households (45% of BPL) received the checks, it was found during household interviews that some above poverty line households received checks and that some below poverty line households receiving checks were actually non-poor. The Pradhan said some people receiving checks had not constructed latrines. According to block records, in 2010 funds for 21 additional toilets were sent to the panchayat, but the Pradhan was unaware of this release. Simra's project had no awareness raising and no committee.

6.3 Alternative and Conventional Intervention Comparison

This section serves to compare intervention findings from Haryana and Uttar Pradesh including hardware and software aspects and then followed by reflection on the interventions. Further information on latrine access and usage will come in *Chapter 7* and *Chapter 8*, respectively.

Intervention Hardware Comparison

Even though the Government says only below poverty line households are supposed to receive subsidies and only after construction, the reality differs. In Haryana panchayats, latrine subsidies were provided as ex-ante infrastructure material, ex-ante direct cash, and ex-post cash to above and below poverty line households. In Uttar Pradesh each panchayat used a different subsidy approach including ex-ante cash, infrastructure material, or a combination. No output subsidies were seen in Uttar Pradesh. The amounts given always followed state recommendations. In Haryana larger percentages of households received smaller subsidy amounts than in Uttar Pradesh. It would seem problematic panchayats distribute subsidies differently than the Government recommends, but it can also be positive. For instance, in Basara all households without latrines received subsidies. The Pradhan's strategy to spend subsidies in combination with personal and household funds ensured all households had latrines after the intervention. A summary of interventions and subsidies is in *Table 6.1*.

*Table 6.1: Intervention Subsidy Comparison*³¹

		Haryana			Uttar Pradesh			Average	
GP		Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Type		I (115)	I (16), O (76)	D (80)	D (20), I (50)	I (150), D (20)	D + I (50)	-	-
When		Ex-ante	Ex-ante & Ex-post	Ex-ante	Ex-ante	Ex-ante	Ex-ante	-	-
Amount	APL	1200 Rs (\$27)	0 Rs	1200 Rs (\$27)	0 Rs	1500 Rs (\$33)	0 Rs	-	-
	BPL	1200 Rs (\$27)	1200 Rs (\$27)	1200 Rs (\$27)	2200 Rs (\$49)	4540 Rs (\$101)	2200 Rs (\$49)	-	-
# Subsidies ³²	APL	37 (49%)	0 (0%)	30 (13%)	0 (0%)	10 (7%)	0 (0%)	22 (16%)	3 (3%)
	BPL	78 (92%)	92 (70%)	50 (50%)	70 (44%)	160 (100%)	50 (45%)	73 (69%)	93 (65%)
	Total	115 (72%)	92 (40%)	80 (24%)	70 (25%)	170 (57%)	50 (22%)	95 (39%)	96 (36%)

Note: I = Infrastructure subsidy, O = Output-based subsidy, D = Direct cash subsidy

³¹ Values in *Table 6.1* are based on Pradhan estimates.

³² Percentages in *Table 6.1* indicate households receiving subsidies of households in their poverty category.

Table 6.1 was based on information collected in Pradhan interviews. Pradhans usually said they provided latrine subsidies only to below poverty line households, but household interviews returned different realities for subsidy distribution, seen in *Table 6.2*. Though figures in the table are not representative of village situations, they show that in all interventions above poverty line households received subsidies. In Basara most households interviewed received subsidies during the sanitation intervention, which confirmed the Pradhan's strategy. In Dhindar many above poverty line households had received subsidies for latrines ex-post, but because many households recently were transferred from below to above poverty line it is possible households receiving subsidies did have poverty status at the time of Total Sanitation Campaign in 2007. In Namuda the Pradhan said 80 below poverty line households received upfront cash, but later the vigil explained 50 below and 30 above poverty line households had received ex-ante checks. During interviews only three households could be identified that received latrine checks, two of which were above poverty line and one of which was below poverty line. The Pradhan believed most households receiving subsidies had not used them for latrines in Namuda. In Uttar Pradesh's Mandora and Simra, Pradhans said subsidies went only to below poverty line households, but a mix of above and below poverty line households received subsidies in reality. As in Basara this could have been because Pradhan's were targeting poor households of each category, but it also could have been because of social and political dynamics of villages. Because Kaundada was an Ambedkar village, the Pradhan did receive latrine subsidies for 10 above poverty line households, but it is likely many more non-poor households actually received subsidies in Kaundada based on interview figures. It is interesting to note that while in Haryana the Government determines poverty status in Uttar Pradesh Pradhans decide. Therefore, in Haryana it would be more reasonable for Pradhans to distribute subsidies to poor households without poverty status, while in Uttar Pradesh Pradhans providing subsidies to above poverty line households indicates their own unfair distribution either of poverty status or of latrine subsidies.

Table 6.2: Intervention Household Subsidy Reception Comparison

GP	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
APL SE	40%	33%	10%	36%	67%	67%	26%	55%
BPL SE	95%	27%	5%	58%	79%	36%	45%	57%
APL N=	15	21	21	11	9	9	-	-
BPL N=	22	11	22	19	24	25	-	-
N=	37	32	43	30	33	34	-	-

Note: SE = Subsidy Extent

A key hardware aspect indicative of ownership is the amount households spent on latrines, seen in *Table 6.3*. In Haryana, Basara and Dhindar above poverty line households highly outspent below poverty line households of those receiving subsidies in the gram panchayats. In Namuda above and below poverty line households receiving subsidies spent more equal amounts on latrines. Basara and Dhindar's below poverty line households were likely to invest in low-cost kacha latrines while their above poverty line counterparts preferred to invest in more costly permanent latrines. In Uttar Pradesh, above and below poverty line households receiving subsidies spent lower and more similar amounts on average. All households in Mandora and Kaundada spent around 400 Rs (\$9), as required by the government for households receiving subsidies. Meanwhile in Simra Keshopur households spent more because the Pradhan did not limit household amount. Surprisingly Simra Keshopur's below poverty line households receiving subsidies outspent above poverty line households. When looking at high spending below poverty line households in terms of other poverty indicators they had livelihood characteristics similar to those of non-poor households, and so though they received subsidy and had below poverty line cards they may not have been as poor as other households in the communities. Overall, Haryana's households outspent Uttar Pradesh's households from both poverty categories, but because below poverty line households receiving subsidies in Uttar Pradesh were sometimes non-poor the average amount spent by below poverty line households on latrines in Uttar Pradesh was greater than that of above poverty line households for those receiving subsidies. Part of the reason for larger investment in Haryana's gram panchayats is that people have more money there.

The other side is that the Government subsidization approach in Haryana was more likely to encourage households to invest their own funds in latrines if they were to have one, while in Uttar Pradesh it was more common for households to spend only what was required by the Government. An obvious challenge for latrine subsidization is that although households may be determined as below or above poverty line by Government criteria, it may not reflect actual poverty. Therefore, Pradhans distributing funds to the poorest based on actual poverty rather than on Government classification may have targeted the poorest more precisely. Along with purposive poverty targeting comes potential for Pradhans to provide latrines to households that are relatively non-poor or not providing subsidies to those that truly need them. For instance, even though in Uttar Pradesh Pradhans had to submit lists of below poverty line households to receive latrine funds, the Pradhans could still give the subsidies to whomever they desired when household distribution took place in villages.

Table 6.3: Intervention Latrine Expenditure Comparison of Subsidy Recipients³³

GP	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
APL LE (Rs)	5,320 (\$118)	6,410 (\$142)	10,000 (\$222)	450 (\$10)	400 (\$9)	710 (\$16)	6,450 (\$143)	528 (\$12)
BPL LE (Rs)	805 (\$18)	1,330 (\$30)	8,500 (\$189)	390 (\$9)	420 (\$9)	2,260 (\$50)	1,240 (\$28)	910 (\$20)
APL N=	6	7	2	4	6	6	-	-
BPL N=	20	3	1	11	19	11	-	-
N=	26	10	3	15	25	17	-	-

Note: LE = Latrine Expenditure

Of all households with latrines, masons constructed most. Pradhans in Basara, Mandora, and Kaundada purchased materials and hired masons while in Dhindar, Namuda, and Simra owners usually organized construction. In Haryana, Basara's leader organized materials and labour for most households without toilets, but households were encouraged to participate by paying the mason directly or by working with the mason. In Uttar Pradesh's Mandora and Kaundada the situation was similar to Basara, but the household owners in Uttar Pradesh paid Pradhans up front 400 Rs (\$9), and the Pradhan then purchased materials and hired masons without further involvement of households. In Simra Keshopur, if households wanted latrines they normally hired masons to construct and were not involved with the physical construction.

Intervention Software Comparison

There is also variation in software in interventions. In all cases Pradhans led, but in Haryana other community workers were involved as well. In Basara the vigil spread sanitation messages, in Dhindar the women's group motivated, and in Namuda the anganwadi worker and vigil helped. In Uttar Pradesh, it was more common for Pradhans to lead interventions independently, though the anganwadi worker helped in Mandora. In Kaundada and Simra only the Pradhans were involved. In all cases, Pradhans claimed to have generated demand. In Haryana the main messages given to motivate household demand were about health, convenience, and dignity. Two Haryana panchayats even used participatory training methods. In Uttar Pradesh, though, demand generation was limited to Pradhans convincing people to pay 400 Rs (\$9) to receive a latrine. Thus, software support in Haryana awareness raising occurred in all cases while in Uttar Pradesh software was basically absent.

³³ A minority of households received subsidies but did not use them for the purpose of latrine construction.

Interventions Conclusion

Findings from Haryana and Uttar Pradesh show interventions and subsidization occur in a variety of ways in the Total Sanitation Campaign, in many villages going against the Government guideline. Intervention differences occur because village leaders implement hardware and software largely on their own accord. Pradhan and community worker decisions regarding type and amount of awareness provided, level of resident involvement, and funding distribution may not be based on commitment to the goal of community-wide sanitation, but may relate to personal interests or institutional limitations. Decisions may occur to enhance implementation or because of expectation. While in alternative interventions smaller subsidies were provided to a larger portion of households and some ex-post distribution occurred, in conventional interventions larger subsidies were given to fewer households and ex-ante subsidy was the only type. In both interventions above and below poverty line households received latrine subsidies and most household owners were not involved in construction. Substantial software differences also occur between interventions. In alternative interventions village leaders provided more awareness raising to households, while demand-generation was weak in conventional interventions. In Community-Led Total Sanitation interventions larger portions of above poverty line households were included in awareness raising activities, while in the conventional approach all households not receiving subsidies were excluded from involvement in the intervention entirely. Thus, demand-driven, people-centred, incentive-based interventions have not yet become universal and supply-led interventions continue in India, especially when a conventional approach is applied.

7 RURAL HOUSEHOLD SANITATION ACCESS

All Total Sanitation Campaign interventions seek to achieve lasting community-wide household latrine access. But as a result of approach, access may vary. This chapter presents latrine access findings from case study areas in terms of reality, sustainability, and equitability. The access realities will be reported. To further explore access, a sustainability perspective is utilized to assess substructures, superstructures, and auxiliary access determinants. Sustainable access means a substructure should be sufficiently deep to avoid rapid filling, a superstructure should provide full privacy, water should be located near the latrine, and the latrine should be hygienic. Access equitability is also discussed to develop an understanding of exclusion from access. Equitable latrine access refers to level to which households have achieved latrine access and access sustainability based on community lines. To close the chapter, findings and influence of intervention strategies on access will be compared and discussed.

7.1 Haryana Alternative Sanitation Access

Alternative intervention access reality, sustainability, and equitability are reviewed in this section.

Haryana Village 1 Basara Access

Before Basara's intervention, 115 households (72%) did not have latrines. During the project all 45 households (28%) without latrines received hardware subsidies putting coverage at 160 households (100%) after the intervention in 2007. The Pradhan estimated that 23 new households built latrines without subsidy since the Total Sanitation Campaign. In 2011, 183 households (100%) have latrines resulting in a zero percent access gap, according to the Pradhan. Based on all panchayat interviews and discussions it is estimated Basara's real access gap is between two and seven percent in 2011. During interviews, one above and one below poverty line household were found without latrine access. These households, both of which were poor, moved to Basara within the last two years, so were not there in the project. Common latrines from Basara's intervention are exhibited in *Figure 7.1*



Figure 7.1: Common TSC Latrines in Basara³⁴

³⁴ The left latrine is at an APL household and the right latrine is at a BPL household.

In Basara, the Pradhan organized construction and attempted to cover most latrine costs with the subsidy, personal, and household funds. Some shortcuts were taken. Leach pits may have been too shallow due to lack of money and due to the rush to achieve latrine access. Even for above poverty line households constructing or reconstructing latrines on their own, a kacha leach pit was common and so were substructure problems. In Basara, 21 percent of above poverty line households and 24 percent of below poverty line households interviewed were found to have problems with latrine pit filling. The Pradhan estimated substructures were 5 feet deep, while households estimated pit depths of seven to 7.5 feet on average. Because household owners could participate in latrine construction with masons and labourers, substructure sustainability and overall ownership were improved. In terms of superstructure, the gram panchayat did not provide doors, so it was up to households to achieve privacy. Problems with lack of doors, curtains, or walls were found in 24 percent of below poverty line and 14 percent of above poverty line households interviewed, which may have reduced accessibility. Poor households especially faced construction difficulties due to lack of funds to afford more bricks or to pay the mason for more than a rudimentary structure. Along with superstructure and substructure issues, one below poverty line household indicated lack of water access as impeding usage. No latrines were unhygienic. Because of strong software support in the intervention, a number of Basara's households reconstructed latrines without outside support once facing access problems with intervention latrines, which indicates quality of intervention. Meanwhile, a few poor households facing problems with latrine pit filling had not reconstructed and were open defecating again. Overall, 69 percent of households interviewed had sustainable latrine access.

Basara had an inclusive intervention leading to equitable access. Because all households were involved in hardware and software activities regardless of poverty classification, no households were excluded. Basara's sanitation access improved drastically from 8 to 100 percent for below poverty line households and from 51 to 100 percent for above poverty line households, according to the Pradhan. While access may have improved significantly for all in Basara, there still remain households without access in 2011. Whether access was not achieved or was achieved unsustainably, the main reasons for shortcoming were financial limitation and dependency. As a result, below poverty line households were more likely to have unsustainable access due to pit filling, privacy, or water access problems. Households with latrine problems were either waiting for the leader to provide new latrines or were satisfied using open defecation. In Basara all households faced nearly equivalent unsustainable access totalling 31 percent for households interviewed with latrines. Above poverty line households though were found more able to maintain and upgrade sanitation if facing problems with access sustainability, as was the case with the household in *Figure 7.2* that was taking initiative to overcome latrine filling by constructing a deep pucca pit.



Figure 7.2: Basara Resident Replacing TSC Pit

Haryana Village 2 Dhindar Access

Before the intervention, 200 of Dhindar's households (87%) were toilet-less. In the project, 92 below poverty line (75% of BPL) and zero above poverty line households received subsidies, putting access at 122 households (57%) post-intervention. The Pradhan estimated 124 households built latrines without subsidy since the intervention. In 2011, the Pradhan says 246 households (98%) have latrines, resulting in a two percent access gap. Based on village interviews and discussions, it is estimated Dhindar's real access gap is between 13 and 18 percent in 2011. In interviews, six above and five below poverty line households did not have latrines. Households without toilets, including above and below poverty line, were poor. They could not afford latrines, let alone a pucca house or food. The majority of these households faced difficulty without a latrine because landowners prevent them from defecating in their fields. Women in households without latrines were especially troubled by discomfort, privacy, and safety problems. Some women requested toilets, but their husbands believed them to be too costly. Common latrines from Dhindar's intervention are shown in *Figure 7.3*.



*Figure 7.3: Common TSC Latrines in Dhindar*³⁵

For households with latrines in Dhindar, pit filling was a major issue. Filling problems were found in 20 percent of above poverty line households and 50 percent of below poverty line households interviewed. Average pit depths were six to seven feet. Poor households commonly had kacha pits lined with bricks. For wealthier households, pucca pits enclosed in brick and concrete were common. These pucca pits, which people call septic, however, do not percolate wastewater into a drainage field but pipe overflow into street drains. It is no surprise Dhindar's doctor calls the drainage pond a 'factory of disease' because it is where pucca pit latrine wastewater flows. Another problem with Dhindar's substructures was immanency of latrine pits to shallow hand pumps. It was common for latrine pits to be 8 feet deep while wells for drinking water were only 20 feet deep. Whether a latrine pit is pucca or kacha it still may leak wastewater into the ground, and so it is possible latrines in Dhindar are contaminating drinking water sources, especially during monsoon when groundwater rises. For superstructure sustainability, 47 percent of above and 17 percent of below poverty line households interviewed faced privacy problems, the majority of which were in latrines without doors. Though Dhindar has centralized water distribution, the majority of households do not have taps and so water access was also found to be a limiting factor. Some households farther from the water tank had water taps but lacked sufficient water pressure at their homes and so may have faced an access sustainability problem. Overall, 38 percent of all households interviewed were found to have sustainable latrine access.

³⁵ The left latrine was at an APL household and right latrine was at a poor BPL household in the colony.

Latrine access was not a problem for non-poor in Dhindar, but some poor were excluded. Although the Pradhan and women's group motivated many households, still the poorest households could not afford latrines. In addition, some above poverty line households in Dhindar were found to be very poor. As a result of intervention exclusion and inequitable livelihoods, overall latrine access remains less for below poverty line households at 68 to 73 percent compared to above poverty line households at 84 to 89 percent, based on overall estimates. Dhindar, unlike Basara, is not a majority Scheduled Caste village, has political rivalry, has several marginalized groups, and has many poor households without poverty status, all leading to reduced sustainability and equitability for sanitation.

Three groups in Dhindar were most marginalized. One included 14 nomadic households, of which four received hardware subsidy. The second excluded group was a Scheduled Caste colony inhabited by 11 of Dhindar's poorest households. Of six colony households interviewed, three constructed latrines and then received subsidy. The other three households interviewed had not completed latrines or received funds. One of the three without latrine access started construction but needed money to complete the superstructure. The final marginalized group included other poor Scheduled Caste households. Of five households interviewed from the group, not one had a latrine or received subsidies; only one had a poverty card. One of these Scheduled Caste households had begun a latrine, seen in *Figure 7.4*, but it was incomplete. A final issue for colony households and the other Scheduled Caste group was that all live near the pond. The pond is overgrown with weeds and infested with snakes and mosquitoes. It is the collection point for all village wastewater including overflow from pucca latrine pits. Thus the pond is likely a source of disease for the poorest that live nearby it.



*Figure 7.4: Dhindar Scheduled Caste Household with Unused Latrine*³⁶

Haryana Village 3 Namuda Access

In Namuda, 315 households (93%) did not have toilets before the Total Sanitation Campaign intervention. During the project, 50 below poverty line households (50% of BPL) and 30 above poverty line households (13% of APL) received subsidies, putting coverage at 105 households (31%) following the sanitation intervention. The Pradhan estimated 175 households built latrines without subsidy since the project. In 2011, the Pradhan's estimate indicates 280 households (74%) have latrines, resulting in a 26 percent access gap. Based on interviews and discussions, however, it is estimated Namuda's real access gap is between 40 and 45 percent. During household interviews, 12 above and 12 below poverty line households did not have latrines, for which they had several reasons. The majority of households cited money as the limiting factor. One above poverty line household did not construct after receiving 1,200 Rs (\$27) from the village because they had to use the funds for other purposes. Common latrines from Namuda's sanitation intervention are exhibited in *Figure 7.5*.

³⁶ The latrine is likely constructed too close to the hand pump.



Figure 7.5: Common TSC Latrines in Namuda

All above poverty line households interviewed had impressive access with fully constructed and private latrines, often with water nearby. However, 50 percent of below poverty line households interviewed faced pit filling and privacy problems. Overall, pit depths averaged seven to eight feet for households interviewed. Water and hygiene problems were found 40 and 30 percent of the time, respectively, in below poverty line cases, but were never present in above poverty line households. Overall, 63 percent of households interviewed had sustainable latrine access.

In terms of equitability, it is estimated Namuda's latrine access is equal between groups, within 54 to 61 percent for above and below poverty line households up from nine percent and four percent before intervention, respectively. But discussion of outcomes in terms of poverty status is challenging in Namuda. On both sides of the poverty classification many households had been asked to construct latrines but were too poor to invest in sanitation. As indicated by comparable latrine access, households without latrines were just as likely to be above and below poverty line. If a household had poverty status they were often very poor. Non-poor households did not face financial constraints in investing in latrines, while the poor were often unable to construct latrines when they wanted them. A troubling situation occurred for one of Namuda's poor households, which wanted but was unable to construct a latrine and was fully open defecating even though the house was next to the unused fully accessible latrine of a non-poor neighbouring household. The situation is pictured in *Figure 7.6*, with the neighbour's latrine door on the left and latrine-less family in the doorway to the right.



Figure 7.6: Namuda Household without Latrine Access

There remains a drastic contrast between households that have achieved latrine access too. Some households have full permanent latrines with deep pucca pits and privacy, while others may just have a rural pan fixed into the ground, as shown in *Figure 7.7*. The non-poor above poverty line household on the left was nearing completion of a pucca pit, while a poor below poverty line household owning the latrine on the right had begun constructing a kacha pit, but ran out of money part way.



Figure 7.7: Inequality in Namuda's Latrine Access

Below poverty line households with latrines faced significantly greater unsustainable access, in seven of 10 cases in fact. Thus, non-poor were much more likely to have sustainable latrine access than poor. There was a marginalized area with many poor households and few latrines on Namuda's outskirts. There was also a colony of field labouring families in Namuda with just a handful of latrines indicating the settlement was highly excluded from the sanitation intervention.

7.2 Uttar Pradesh Conventional Sanitation Access

Conventional intervention access realities, sustainability, and equitability are presented in this section.

Uttar Pradesh Village 1 Mandora Access

Before the intervention, no households in Mandora had toilets. According to the Pradhan, 70 below poverty line (41% of BPL) and zero above poverty line households received latrine subsidies in Mandora, putting overall latrine coverage at 25 percent immediately following the intervention. The Pradhan was not aware of other households having constructed latrines since the intervention. In 2011, the Pradhan's estimates indicate a village latrine access gap of 77 percent and that no above poverty line households had latrines. Based on interviews and discussions, however, it is estimated Mandora's 2011 real access gap is between 72 and 77 percent. In household interviews, seven above and eight below poverty line households did not have latrines. Of above poverty line households with latrines, four indicated the Pradhan provided them with hardware subsidy. Thus, it seems likely more above and less below poverty line households received latrines from the Pradhan than he disclosed. Households in Mandora had several reasons for not having toilets. The majority interviewed without access had requested a latrine, but believed the Pradhan did not have enough money to support them. Both above and below poverty line households are now awaiting latrines from the Pradhan. Common latrines from Namuda's sanitation intervention are exhibited in *Figure 7.8*.



Figure 7.8: Common TSC Latrines in Mandora

Mandora households interviewed had no privacy problems. All latrines had permanent superstructures. Filling problems were faced by 60 percent of households, the result of the Pradhan ordering three to four feet pits to meet Government regulation. Substructures were kacha pits with honeycomb walls, open bottom, and concrete cover. Water and hygiene problems were not present in Mandora. Overall, 40 percent of all households interviewed had sustainable latrine access.

Mandora has inequitable access with divisions on poverty and caste lines. The intervention excluded all above poverty line households and most below poverty line households resulting in zero percent and 41 percent latrine access, respectively, according to Mandora's Pradhan. Households without poverty status were excluded because they were ineligible for subsidies. As in other gram panchayats, the poorest were also excluded. The most marginalized community group was the lower caste Kashyups. One Kashyup area of 70 households contained the poorest families in the village, had no latrines, only one public hand pump, and rundown kacha streets. In the Kashyup community, shown in *Figure 7.9*, not one of the 12 households interviewed had a latrine, though seven had poverty status. General Caste households in Mandora living near the Pradhan were more likely to receive a latrine in the intervention. Even with a majority of households excluded some had multiple latrines.

Overall access in Mandora is estimated at five to 10 percent for above poverty line and 39 to 44 percent for below poverty line households. Where access was achieved, unsustainability was uniform.



Figure 7.9: Kashyup Area in Mandora Excluded from TSC

Uttar Pradesh Village 2 Kaundada Access

Before the sanitation intervention, Kaundada had no latrines. In the project, 160 below poverty line households (100% of BPL) and 10 above poverty line households (7% of APL) received latrines, putting overall coverage at 57 percent in 2009. The Pradhan was not aware of households constructing latrines since the intervention. In 2011, the Pradhan's estimates indicate an access gap of 47 percent. Based on all interviews and discussions, Kaundada's 2011 real latrine access gap was between 43 and 48 percent. In interviews, three above and five below poverty line households did not have latrines due to lack of space or because the Pradhan had refused subsidy provision due to political animosity. Several households did not have latrines out of disinterest. Common latrines from Kaundada's sanitation intervention are exhibited in *Figure 7.10*.



Figure 7.10: Common TSC Latrines in Kaundada³⁷

³⁷ Figure 7.10 shows some of the 150 latrines the Pradhan constructed in the TSC intervention. Latrine superstructures were well-built and labelled for transparency. Latrine (mis)use will be discussed in *Chapter 8*.

In Kaundada, the Pradhan’s masons uniformly constructed all latrines. Of households with latrines, the majority had problems with filling. A serious substructure sustainability issue in Kaundada was proximity of hand pumps to latrines. No households were found to have problems with privacy. As in Mandora, access findings result from a supply-led intervention in which the Pradhan constructed latrines according to Government designs. There were also 20 households that received checks instead of latrines; their access was less sustainable. Water and hygiene problems were found only in a few cases in Kaundada. Part of the reason for unsustainable latrines in Kaundada has to do with the rate and scale of implementation. Within a few weeks, the Pradhan oversaw construction of 150 latrines. As a result of rash implementation, latrine construction reduced sustainability. *Figure 7.11* shows some latrines with unsustainable access. The latrine on the left exhibits an unsustainable substructure. The latrine on the upper right has a foundation problem. The latrine on the lower right is incomplete. Overall, 36 percent of households interviewed had sustainable latrine access.



*Figure 7.11: Latrine Access Sustainability Problems in Kaundada*³⁸

In terms of sanitation equitability, Kaundada’s latrine access improved from zero to 94 percent for below poverty line households, but only zero to seven percent for above poverty line households, according to the Pradhan. Based on overall estimates below poverty line latrine access was 79 to 84 percent and above poverty line latrine access was 14 to 19 percent. Kaundada’s intervention excluded most above poverty line households but included 100 percent of below poverty line households.

³⁸ The left and upper right photos show latrines Pradhan constructed; the lower right photo shows the ex-Pradhan’s latrine constructed with cash subsidy. The ex-Pradhan’s latrine is unused.

During the sanitation intervention caste exclusion was untraceable, but politics did guide subsidy distribution. Three of eight households interviewed without latrines asked the Pradhan for a subsidy but were denied. While some were excluded, others received multiple latrines. In one case, a son and father living together each received latrines. In another case, a household had one toilet but the women were not allowed to use it. Where latrine access was achieved, sustainability problems were equitable due to uniform construction, but beneficiaries were excluded from participating. Several households wanted to dig deeper pits, but the Pradhan did not permit modification because it would have broken Government regulation. Some household owners then internalized negative feelings toward the Pradhan and sanitation and returned to open defecation even with toilets at home. In another case a household was very interested in using their Government-provided latrine, but their three-foot kacha pit filled. The owner constructed a 10-foot-deep enclosed pucca pit, displayed in *Figure 7.12*. The block motivator happened to be attending the interview with this household and he reprimanded the owner for modifying a Government latrine.



Figure 7.12: Newly Constructed Pucca Substructure in Kaundada

Uttar Pradesh Village 3 Simra Keshopur Access

Simra Keshopur's Pradhan said no households had toilets before the intervention. During the project, 50 households received subsidies in Simra putting overall coverage at 22 percent following the intervention. After check distribution to 50 households, 14 above poverty line and 6 below poverty line households had constructed latrines on their own. In 2011, the Pradhan's latrine estimate indicates an access gap of 72 percent. Based on all gram panchayat interviews and discussions, the real access gap was found to be between 70 and 75 percent. During household interviews, three above and 16 below poverty line households did not have latrines; none of these 19 households had been approached during the intervention. The excluded households believed they were not approached either because of political animosity or because there were insufficient funds available in the project. Common latrines from Simra Keshopur's sanitation intervention are exhibited in *Figure 7.13*.



Figure 7.13: Common TSC Latrines in Simra Keshopur

All households receiving cash subsidies constructed latrines independently so there was substantial variation in access sustainability. Of interviewed households with latrines, none had latrine-filling problems. Households willing to accept latrine subsidy and construct latrines installed pits of five to eight feet. Simra's main access sustainability issue was lack of privacy. Households facing privacy issues often began constructing latrines but then stopped midway when funds ran out. Although households with complete substructures could still potentially achieve privacy and sustainable access in the future, the fact they had not since the project was implemented two years ago and were continuing to open defecate indicates sustainable access may not be achieved. If households were interested in having and using the latrines, they could even install a temporary superstructure of wood and plastic sheets, which was observed in some households. The results of access sustainability differ greatly between Simra and other villages in Uttar Pradesh since Simra put construction into hands of the households. Those interested in having a latrine constructed one, while others did not. Water and hygiene problems were few. Problems with proximity of latrines and hand pumps were present in Simra. Overall, 67 percent of households interviewed had sustainable latrine access. A few unsustainable latrines are pictured in *Figure 7.14*.

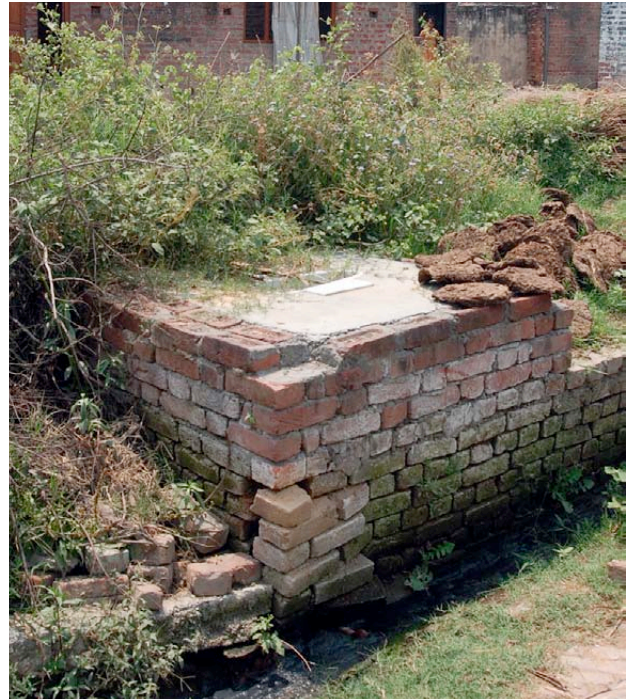


Figure 7.14: Access Sustainability Problems in Simra Keshopur

Simra's latrine access has improved from zero to 46 percent for below poverty line households, but only zero to 11 percent for above poverty line households according to the Pradhan's estimates. Simra's intervention was supposed to exclude all above poverty line households, though some above poverty line households interviewed had received subsidies. With no software activities in Simra's intervention, households were equally excluded from awareness raising. A mix of castes were included and excluded from the intervention. Numerous households that asked the Pradhan for funding did not receive it. The central difference between Simra Keshopur and all other panchayats in the study is that it has three villages instead of just one. The main village where the Pradhan lives is the largest with 60 percent of households. It is most developed of the three villages and benefits most from government support. In the other two villages, exhibited in *Figure 7.15*, latrines were difficult to locate because so few had been included in the sanitation intervention. Those that were provided sanitation subsidies were included because of political ties with the Pradhan. One of the secondary villages of 40 households received just four hardware subsidies. Where access was achieved, latrine sustainability was balanced. Because Simra's Pradhan did not oversee construction, households could construct whatever latrine they desired, unlike in Mandora and Kaundada.



Figure 7.15: Simra Keshopur Excluded Secondary Villages

7.3 Alternative and Conventional Access Comparison

Gram panchayats in Haryana and Uttar Pradesh were found to have a wide range of access. Each project had a unique combination of institutional setting, leadership, technical support, awareness raising, subsidization, and other exogenous factors such as caste composition and political discrimination. As a result of differences, outcomes varied. This section will review latrine access outcomes from alternative and conventional interventions.

Access Reality Comparison

Based on Pradhan estimates, household latrine access gaps have significantly dropped following interventions in Haryana and Uttar Pradesh. Overall estimates for latrine access gaps were between 24 and 29 percent in Haryana sub-cases and between 62 and 67 percent in Uttar Pradesh sub-cases. Given pre-Total Sanitation Campaign access gaps estimated by Pradhans, overall latrine access gap reduction since the sanitation interventions was 55 to 60 percent in Haryana and 33 to 38 percent in Uttar Pradesh. Latrine access gaps are summarized in *Figure 7.16* and *Table 7.1*.

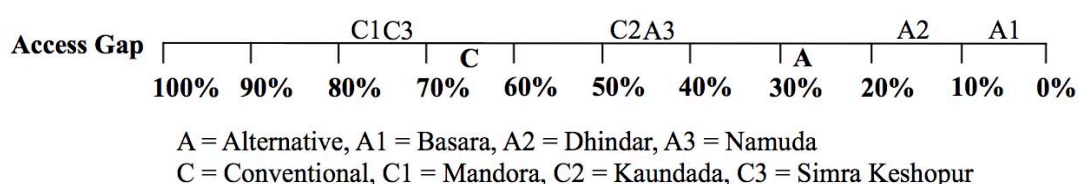


Figure 7.16: Alternative and Conventional Access Gaps

Table 7.1: Access Gap Comparison

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Pradhan Access Gap Estimates								
<i>Pre-TSC</i>	72%	87%	93%	100%	100%	100%	84%	100%
<i>2011</i>	0%	2%	26%	77%	47%	72%	8%	64%
Household Interview Access Gap								
<i>2011</i>	5%	34%	56%	50%	24%	56%	38%	42%
N=	37	32	43	30	33	34	-	-
Overall Access Gap Estimates								
<i>2011</i>	2-7%	13-18%	40-45%	72-77%	43-48%	70-75%	24-29%	62-67%

Subsidy and awareness raising, a summary of which is exhibited in *Table 7.2*, account for differences in access gap closure resulting from interventions.

Table 7.2: Intervention and Access Comparison³⁹

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Subsidy Extent	72%	40%	24%	25%	57%	22%	39%	36%
Main Subsidy Modality	Ex-ante material	Ex-post cash	Ex-ante cash	Ex-ante material	Ex-ante material	Ex-ante cash	Mix	Mix
Software Level	Very high	High	Medium	Low	Low	Low	High	Low
Access	93-98%	82-87%	55-60%	23-28%	52-57%	25-30%	71-76%	33-38%

³⁹ Values in *Table 7.2* for subsidy extent are based on Pradhan estimates and for access are meta-values determined from GP Pradhan, worker, and household interviews.

Findings show where a larger percentage of a community received subsidies access was higher. If software support accompanied subsidy, interventions were more adequate and results improved. Because there are clear differences in access by state, access findings are discussed state-wise.

In Haryana, Namuda’s subsidy extent and software was less than in Basara and Dhindar. In Basara and Dhindar households were triggered and visited but in Namuda Community-Led Total Sanitation triggering was missing. As a result of reduced extent of subsidies and software Namuda’s access was less. Between Basara and Dhindar, both had strong software, but varying subsidy modality. In Basara all without latrines received infrastructure subsidy while in Dhindar the majority of households receiving subsidy got ex-post cash and most households receiving were below poverty line in Dhindar. Poor above and below poverty line households that did not receive upfront subsidy were often excluded from household sanitation achievement in Dhindar, while poverty classification did not determine outcomes in Basara. It should also be recalled Basara’s Pradhan actively prevented open defecation, a practice not found elsewhere.

In Uttar Pradesh gram panchayats the only households achieving latrine access were those receiving subsidy because awareness raising was negligible. Therefore, access reflects subsidy provision in a supply-led intervention. While in Mandora and Kaundada households received infrastructure material subsidies, in Simra Keshopur households received cash ex-ante. Most households receiving subsidies in Uttar Pradesh were below poverty line, though some above poverty line households also received. Comparing Mandora and Simra there appears to be little difference in effect of subsidy type on access even where equal subsidy amounts and awareness raising were provided.

The aim of sanitation interventions was also important. Alternative interventions were more impact-driven and reached improved access because they focused more on community-wide awareness and latrine achievement, while conventional interventions were target-driven and only involved households receiving subsidies. Thus, where the goal of the sanitation intervention was viewed as community-wide sanitation, access was enhanced. Where the goal was constructing latrines, software was neglected, demand was not generated, and people did not value sanitation. State and district sanitation officers were largely responsible for defining goals. Ultimately, where interventions focused on subsidies, access improved for recipients. Where more software support occurred, access improved for all households regardless of if they received a hardware subsidy.

Access Sustainability Comparison

As a result of intervention adequacy, access sustainability varied for households with latrines. Based on household interviews, Haryana’s access was 41 percent unsustainable compared to Uttar Pradesh’s 54 percent unsustainable access, exhibited in *Table 7.3*, which also shares intervention details.

*Table 7.3: Intervention and Access Unsustainability Comparison*⁴⁰

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Subsidy Extent	73%	31%	7%	50%	76%	44%	36%	57%
Main Subsidy Modality	Ex-ante material (BPL/APL)	Ex-post cash (BPL)	Ex-ante cash (BPL)	Ex-ante material (BPL)	Ex-ante material (BPL/APL)	Ex-ante cash (BPL)	Mix	Mix
Software Level	Very high	High	Medium	Low	Low	Low	High	Low
Unsustainable Access	31%	62%	37%	60%	64%	33%	41%	54%
N=	35	21	19	15	25	15	-	-

⁴⁰ Usage values in *Table 7.3* originate from household interviews.

The findings show unsustainable access was less severe in Haryana than Uttar Pradesh. Much variation occurred among panchayats though. Access sustainability depended on construction completion and ownership, which were determined by subsidy and software. Subsidy modality was important in determining Pradhans' roles in construction. Subsidy amount was less central for access sustainability because construction completion mattered more than permanence. Completion could occur with any amount while more permanent latrines required more investment and could cause incompleteness. Software also mattered for access sustainability because without motivation people were less involved. Since subsidy was a determinant, access sustainability is discussed subsidy-wise.

Infrastructure subsidy-based implementations occurred in Basara, Mandora, and Kaundada. In these interventions construction usually entailed Pradhans purchasing materials, hiring masons, and dictating designs. In Basara access sustainability was high because the Pradhan ensured complete construction of latrines with kacha pits and pucca superstructures as well as beneficiary involvement. Access sustainability achievement was made possible also because Basara's Pradhan spread subsidy and personal funds across all households without latrines. Low-cost designs used in Basara did result in some pit filling and privacy problems, though to a lesser extent than elsewhere. Mandora and Kaundada had much lower sustainability than Basara even with similar subsidy policy because Pradhans constructed very shallow pits, which led to unsustainable substructures. Privacy was never a source of unsustainable access for households in Mandora or Kaundada though.

In projects with infrastructure subsidy, construction completion was better where owners were more motivated to help implement latrines, as occurred in Basara. In Uttar Pradesh Pradhans using infrastructure subsidies often did not provide awareness and even actively limited involvement of willing beneficiaries in construction, which significantly reduced beneficiary ownership. If Mandora and Kaundada's Pradhans had allowed more beneficiaries to be involved results would have likely improved. An issue for access sustainability and construction completion in all households receiving infrastructure subsidy was that Pradhans in Basara, Mandora, and Kaundada constructed large numbers of latrines in short periods. Additionally, it was found sustainable access was possible without full permanence, especially where owners were involved in construction. A roofless latrine with a five foot kacha pit for 1,500 Rs (\$33) where the beneficiary helped in construction, like many Basara latrines, was often more sustainable than a 2,600 Rs (\$58) or 4,940 Rs (\$110) latrine with pit and fully permanent superstructure outsourced to masons, as was found in Mandora and Kaundada.

While sustainability problems in projects with infrastructure subsidies were at the hands of Pradhans, in cash subsidy projects in Dhindar, Namuda, and Simra Keshopur households were in the seat of responsibility since they had to construct latrines independently. The problems that resulted were similar but extent varied. In these cases substructure was more often incomplete for the poor while superstructure became problematic for non-poor who over-invested in sustainable substructures. Decisions on latrine construction seemed guided by community perception of what a latrine should be. Overall, Namuda and Simra Keshopur's average access sustainability closely followed Basara's. In both cases where access was unsustainable for the non-poor it was due to inappropriate pit permanence and corresponding lack of funds. For instance, in Simra there was high investment in substructures, but it wore through households' financial resources and so most of the households without sustainable access in Simra had deep pucca substructures but had not completed superstructures, so privacy was lacking. Likely Namuda and Simra's problems could have been reduced further if households had led their own construction while receiving technical support, as Basara received. Dhindar's access sustainability was much worse than Namuda and Simra's overall, but Dhindar and Namuda's access sustainability for the poor was similarly low due to high motivation for latrines among the poor combined with lack of technical support, lack of funding and, at times, presence of inappropriate substructure investment.

In cash subsidy projects awareness raising resulted in increased access, but it was found unsustainability resulted among some poor. Namuda and Dhindar's poor had more unsustainable latrines than Simra's poor because there was more awareness raising in Haryana that enhanced motivation of poor households to build latrines even with limited funding to reach sustainable results.

As a result of awareness raising in Haryana’s cash subsidy projects the poor were more likely to construct low-quality latrines while in Simra the poor wouldn’t have constructed latrines at all. Also, Dhindar’s above poverty line household low sustainability reflects that many of the above poverty line households interviewed are poor. Dhindar’s above poverty line sustainability would have been similar to Namuda or Simra if it had accurate poverty classification. Dhindar also faces water problems for households far from the main tank, which reduced latrine access sustainability.

In all panchayats software support, owner involvement, and technical support were central to achieve sustainable access. Where software support, owner involvement, and technical support were not adequate, unsustainable latrines were common regardless of subsidy modality. When subsidy was given without adequate awareness raising, interventions became focused on fund distribution or individual latrine construction and not on achievement of community-wide sanitation. Awareness is important because latrine sustainability requires users to value latrines enough to invest their own time or money for construction and maintenance. The fact that poor households were managing or participating in latrine construction in Haryana, sometimes without subsidy or technical assistance, indicates effectiveness of awareness raising for instilling sanitation values. Value of sanitation arose from sense of ownership achieved through software support and while participating in or organizing latrine construction. If one is unfamiliar with benefits of sanitation, not involved in organizing construction, and unwilling to invest in a latrine, they probably will not achieve sustainable access. To gift latrines that are undesired is to supplement true demand and real understanding in exchange for achieving the goal of latrine construction for the purpose of expenditure and construction alone, as was the case in Uttar Pradesh. To support a community and put people into the seat of responsibility is to will them to take action, invest in, and use latrines, if it is what they desire.

Access results could be sustainable in infrastructure projects due to enhanced technical support, as was seen in Haryana, but often Pradhans in Uttar Pradesh underachieved on oversized latrine projects and beneficiary involvement was reduced with low awareness raising. In cash subsidy projects, households were responsible for organizing construction. Interestingly, where owner involvement and software support occurred without technical support or subsidies, access may have been high while access sustainability was low due to haphazard construction. The degree to which access sustainability due to self-construction influences non-usage will be discussed in *Chapter 8*. In a case of cash subsidy without awareness raising, only non-poor with latent motivation would construct latrines but would also face access sustainability problems because of inappropriate investment in substructures. Therefore, in all cases subsidy modality drove technical support, but software and technical support were together driving factors for access sustainability. Regardless of subsidy type, adequate motivation to construct latrines was the first step towards sustainable access. When subsidy was given to people wanting latrines based on internalized value of sanitation then access had the opportunity to be more sustainable.

Access Equitability Comparison

Interesting differences were found in latrine access equitability in Haryana and Uttar Pradesh. Access gaps are recapped in *Table 7.4* on poverty classification lines. When comparing states, Haryana’s households had much lower and more similar access gaps with a 1 percent difference in access gap while Uttar Pradesh’s above and below poverty line households saw great variation in access with a 39 percent difference. Overall, access gaps were less in Haryana compared to Uttar Pradesh.

*Table 7.4: Access Gap Equitability Comparison*⁴¹

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
APL	1-6%	11-16%	39-44%	90-95%	81-86%	77-82%	24-29%	83-88%
BPL	2-7%	27-32%	41-46%	56-61%	16-21%	64-69%	23-28%	44-49%
Total	2-7%	13-18%	40-45%	72-77%	43-48%	70-75%	24-29%	62-67%

⁴¹ Values in *Table 7.4* are meta-values determined from Pradhan, GP worker, and household interviews

The source of inequitable access gaps comes down to inclusiveness of interventions and ability of households to invest in and sustain access. Of all cases, Basara was the only fully inclusive intervention providing hardware and software equally to all households at the time of the intervention. In Dhindar and Namuda, Pradhans and workers included most households in intervention software, and in reality some of both in subsidy though to a lesser extent in Dhindar. Meanwhile, in Uttar Pradesh it was always true only households receiving subsidies were involved in projects and thus a majority of households in Uttar Pradesh were excluded from both hardware and software, especially above poverty line households which were usually non-poor but still lacking sanitation. Because community-wide sanitation requires all households to have sustainable latrine access, the findings from Uttar Pradesh are concerning. Achieving improved sanitation must ensure all segments of a population have and understand sanitation. Unfortunately, marginalized groups were commonly excluded in both Haryana and Uttar Pradesh. In Haryana, marginalized lower caste sections of Dhindar and Namuda were excluded. In Uttar Pradesh, Mandora's Kashyup community were excluded fully despite being the poorest section of the village. In all Uttar Pradesh gram panchayats above poverty line households were intentionally excluded, except for 10 of them in Kaundada that received subsidy due to the village's Ambedkar status.

Not only is full inclusion necessary to reach equitable access, but also to ensure new community divisions are not created. It was commonly found following interventions the excluded became opposed to Pradhans. They believed they were discriminated against, especially if they did not receive subsidy and other households did. People may have been excluded because they were lower caste, political opponents, or above poverty line. Sometimes it was the decision of the Pradhan that led to inequitable distribution of support, but Government subsidy policy is also to blame. The Government policy allows only below poverty line households to receive latrine subsidies normally. Those denied support, sometimes the most needy that are called above poverty line but are actually very poor, are excluded by Government policy. Community-wide sanitation is difficult to achieve after a subsidy policy polarizes communities. Also, once subsidies are distributed, it is common for people to become unwilling to invest in sanitation because the institutional environment suggests the Government should provide latrines. Thus the subsidy policy can create new dependencies and reduce self-help.

To achieve sustainable and equitable sanitation access, sanitation interventions need to include all sections of communities, including poor and non-poor, all religions, castes, political groups, and genders. All people need to be included in software and hardware support if sustainable and equitable access is to be achieved. Fair hardware support might mean only the very poorest receive it, but more likely it would entail all households regardless of caste and class receive the same support, whether it is full funding or no funding. Not surprisingly, the most sustainable and equitable latrine access resulted in Basara with its fully inclusive hardware and software components. Basara also showed clearly that with strong facilitation and awareness raising, interventions can achieve nearly complete sanitation access and usage, even if not 100 percent.

Access Conclusion

All in all, Haryana's alternative approach returned better results in terms of closing access gaps and achieving sustainable and equitable latrine access. Part of the reason is that alternative interventions included larger portions of communities in more adequate software support regardless of inclusion in subsidization. Subsidies were more commonly accompanied by software activities in Community-Led Total Sanitation, unlike in the conventional approach where latrine construction and hardware subsidies were more central. Thus subsidization, when well-targeted to those valuing and demanding sanitation and when accompanied by adequate software for all, can help achieve access, access sustainability, and access equitability.

8 RURAL HOUSEHOLD SANITATION USAGE

Along with access, achieving a clean environment requires sustainable and equitable latrine usage. Sustainable usage is guided by sustainable access and preference against open defecation. This means even when a household has a latrine, unsustainable access and preference for open defecation may inhibit lasting usage. If a household has sustainable access and a usage gap, preference for open defecation can be assumed. Unsustainable usage means open defecation is occurring. Equitable usage is level to which usage is fair. Based on this conception, the chapter presents usage reality, sustainability, and equitability in gram panchayats. Then findings are compared and linked to intervention strategies. Note there may be a difference between overall unsustainable access outlined in *Chapter 7* and unsustainable access causing non-usage discussed in this chapter because some households that do have unsustainable access still use their latrines. Also, in reality a household can have full, partial, or no usage, but here household usage is considered either as full, when all household members use a latrine, or as a gap, when not all household members use a latrine.

8.1 Haryana Alternative Sanitation Usage

Usage reality, sustainability, and equitability in Haryana will first be reviewed in this section.

Alternative Village 1 Basara Usage

Since the intervention, Basara's Pradhan estimated latrine usage increased from 8 to 95 percent. Basara's Pradhan believed the majority of current non-users preferred open defecation even though they had latrines at home. Of households interviewed 16 percent were not using latrines at all. Based on village interviews and discussions it is estimated Basara's real usage gap is between 10 and 15 percent in 2011. Men resistant to adopting latrine usage were witnessed open defecating at sunrise in Basara. A main open defecation area is near the pond, though it also occurs in the fields when people are working. Remnants of open defecation, however, were not obvious in the panchayat. Basara's open defecation area is seen in *Figure 8.1*.



Figure 8.1: Open Defecation Area in Basara

In Basara, only two households were found not using latrines because of non-access. These households faced no difficulties open defecating and planned to continue. Meanwhile, 11 percent of households interviewed with latrines had discontinued usage as a result of unsustainable access mainly for reasons of pit filling and lack of privacy. No households with latrines in Basara were found to be using open defecation as a result of preference opposed to unsustainable access. Overall, 84 percent of households interviewed in Basara were found to have sustainable latrine usage.

In terms of equitability, both some above and below poverty line households use open defecation. For the interviewed non-using above poverty line household, which was very poor, the reason for non-use was no access whereas this was only true for one of the five below poverty line households facing unsustainable usage. No above poverty line households admitted to open defecation but four below poverty line households faced unsustainable usage due to unsustainable access leading to open defecation. No above poverty line households were found to have unsustainable access causing non-usage as a result of substructure, superstructure or auxiliary problems. Preference for open defecation was found to be uniform among all households interviewed, though it is known from observation and village discussions some men do prefer open defecation even when having a latrine. Men were found to prefer open defecation more often than women. Children were not observed open defecating in the village. Besides residents in Basara, another important group to consider is the temporary migrant workers who open defecate while living in pump houses during peak agricultural times for six to eight weeks of the year. Other than new families, there were no marginalized groups excluded.

Alternative Village 2 Dhindar Usage

Since Dhindar's sanitation intervention began, the Pradhan estimated latrine usage increased from 10 to 98 percent. Of households interviewed 56 percent were not using latrines fully. Dhindar's Pradhan believed the majority of non-users preferred open defecation due to old habits or because they believed defecating near the homes would increase disease. Based on village interviews and discussions it is estimated Dhindar's actual usage gap is between 27 and 32 percent in 2011. As in Basara, men continue to open defecate in the morning due to habit in Dhindar. Families open defecating had mixed responses on if it caused them difficulty. Those that faced difficulty said it was because land owners try to prevent open defecation on their property and because women face privacy and safety issues while 'going' in the fields and face discomfort while waiting for nightfall. The main open defecation area in Dhindar was near the pond in the bushes or on the road. The remnants of open defecation were evident on the village's outlying roads near the pond, as seen in *Figure 8.2*



Figure 8.2: Open Defecation Area in Dhindar

In Dhindar, 34 percent of households interviewed were not using latrines because of non-access. Most of these households were too poor to afford a latrine. Other households without latrines believed there was sufficient space near the village to open defecate. Meanwhile, 22 percent of households interviewed with latrines discontinued usage as a result of unsustainable access due to filling, privacy, or water problems. Even if households had access to a toilet, when water was not close some preferred open defecation. Dhindar's households were not found to open defecate as a result of preference opposed to unsustainable access if they had a latrine. Overall, 44 percent of households interviewed had sustainable usage.

Dhindar's households interviewed faced nearly equal unsustainable usage and open defecation as a result of being poor. Above poverty line households that were less poor may have had latrines that were unsustainable. More below poverty line households interviewed used open defecation due to no access and neither above nor below poverty line households interviewed used open defecation due to preference despite having a latrine. As in Basara, men in Dhindar prefer open defecation more than women. Children were not observed defecating in the gram panchayat.

Alternative Village 3 Namuda Usage

Since Namuda's sanitation intervention began, the Pradhan estimated latrine usage rose from five to 70 percent. Of households interviewed 67 percent were not using latrines fully. Namuda's anganwadi worker believed non-users used open defecation due to poverty. Based on village interviews and discussions it is estimated Namuda's real usage gap is between 55 and 60 percent in 2011. As in other panchayats, both poor and non-poor men continue to open defecate due to habit. Even panchayat members and members of the Pradhan's family were found to be open defecating. For households facing difficulty open defecating it was due to lack of privacy. The main open defecation areas in Namuda are the canal and the fields near the gram panchayat. Remnants of open defecation were not evident in the village. One of the village's fields where open defecation occurs is seen in *Figure 8.3*.



Figure 8.3: Open Defecation Area in Namuda

In Namuda, 56 percent of households interviewed were not using latrines because of no access. Meanwhile, seven percent of households interviewed with latrines had discontinued usage as a result of unsustainable access due to a mix of filling, privacy, and water access problems. Of households interviewed five percent were using open defecation as a result of preference opposed to unsustainable access if they had a latrine. Overall, 33 percent of households interviewed had sustainable latrine usage.

Both poor above and below poverty line households in Namuda face unsustainable usage and turn to open defecation equally, mostly as a result of not having a latrine. Preference only determined non-usage for 10 percent of above poverty line households and no below poverty line households, and most of those above poverty line households preferring open defecation and not having access were poor. As in Dhindar, the poor sections of the community were largely excluded from the sanitation intervention as they are from most welfare benefits, either as a result of not having poverty status or of problems with distribution of support if they do have below poverty line cards. Overall, usage was balanced among households interviewed in Namuda because they were mostly poor. As in other gram panchayats in Haryana, children were not observed defecating in the village in the day.

8.2 Uttar Pradesh Conventional Sanitation Usage

This section shares Uttar Pradesh's latrine usage reality, sustainability, and equitability.

Conventional Village 1 Mandora Usage

Since Mandora's intervention began, the Pradhan estimated latrine usage increased from zero to 23 percent. In households interviewed, 80 percent were not using latrines fully. The Pradhan believed lack of usage occurred because people were unaware. He suggested somebody go to households to provide education because they were not interested in using toilets. Mandora's teachers also believed people are not aware. Based on village interviews and discussions it is estimated Mandora's real usage gap is between 85 and 90 percent in 2011.

Mandora's teachers suggested 95 percent of men and 80 percent of women open defecate in 2011. They said the only men using latrines are leaders. Latrine usage is not constant during the year in Mandora. In monsoon Mandora floods leading people to use latrines due to the inconvenience of walking through flooded fields in the rain to 'go.' The school teachers also said people are more likely to use latrines during monsoon because they face increased risks of snake and mosquito bites. Households noted a variety of problems faced open defecating, the largest of which was inconvenience of 'going' far from the village. Elderly, disabled, and women are prone to face more difficulties without a latrine. Women face difficulty during the daytime because they cannot find privacy near the panchayat. Some people fear monkey attacks during open defecation. Villagers also said open defecation is shameful and they get in fights with landowners. As a result of reliance on hand pumps in Mandora it is likely health problems result from open defecation, especially during monsoon when defecation continues in water within the flooded village. The main open defecation area in Mandora is near the small creek and area near the primary and middle schools. Remnants of open defecation were evident by sight and smell upon entering the village. Mandora's main open defecation area near the schools is exhibited in *Figure 8.4*.



Figure 8.4: Open Defecation Area in Mandora

In Mandora, 50 percent of households interviewed were not using latrines because of lack of access. Meanwhile, 17 percent interviewed with latrines had discontinued usage as a result of unsustainable access due to filling. Of households interviewed 13 percent were using open defecation as a result of preference opposed to unsustainable access. Either because of unsustainable access or open defecation preference, some households in Mandora were using latrines for purposes other than defecation such as for wood storage. Overall, 20 percent of households interviewed had sustainable usage in Mandora.

Mandora's latrine usage is not starkly inequitable. A majority of households have unsustainable usage and rely on open defecation. Above poverty line households were more likely to face problems because of no access as a result of being excluded from the intervention. Both a majority of men and women open defecate in Mandora. For households with latrines, preference against toilet use was only a small factor. If households preferred open defecation overall they were more likely not to have a toilet in the first place because they would have had to contribute funds for it. Overall, usage was largely balanced among households interviewed in Mandora. Both men and women widely open defecate in the village. For men open defecation is out of habit while for women it is more commonly out of necessity because there is no latrine at their home. While conducting research in Mandora, children were defecating in the village streets during the day, as seen in *Figure 8.5*.



Figure 8.5: A Little Open Defecator in Mandora

Conventional Village 2 Kaundada Usage

Since the intervention began, Kaundada's Pradhan estimated latrine usage increased from zero to 53 percent. Of households interviewed 85 percent were not using latrines fully. The district coordinator noted wide scale open defecation continued in the panchayat because 'they don't have the knowledge. There is a problem with the IEC.' Therefore, as in Mandora open defecation is continuing in Kaundada due to lack of awareness and problems with software. Based on village interviews and discussions it is estimated Kaundada's real usage gap is between 80 and 85 percent in 2011.

Similar to Mandora, people in Kaundada face problems with open defecation due to flooding during monsoon. The majority of households using open defecation also faced problems with privacy and getting into fights with landowners. Ironically, even households with toilets that continued to open defecate out of habit still noted problems faced in open defecating. Remnants of open defecation were evident in the village both by sight and smell. Kaundada's main open defecation area, seen in *Figure 8.6*, is an outlying road near the pond. The drainage ditch was observed to be a convenient open defecation spot since people could squat over it and use the water in the channel for cleaning.



Figure 8.6: Open Defecation Area in Kaundada

In Kaundada, 24 percent of all households interviewed were not using latrines due to lack of sanitation access. Meanwhile, 39 percent of households interviewed with latrines had discontinued usage as a result of unsustainable access to a latrine, mostly due to filling. Several households interviewed facing risk of pit filling returned to open defecation prematurely to extend partial latrine usage. Some of these households had tried to dig deeper pits during the project but were prevented by the Pradhan and were encouraging villagers to return to open defecation. They believe bringing human waste into the village will increase disease among villagers and are against the Pradhan along with his sanitation project. Of households interviewed 21 percent were found to use open defecation as a result of preference opposed to unsustainable access. Either because of unsustainable access or open defecation preference many households in Kaundada were using latrines for purposes other than defecation preventing latrine use and serving as a key indication of an overly technical and minimally software-oriented sanitation intervention. The most common alternative uses for latrines were dung cake fuel and tool storage. Other households used latrines for chicken coops, cooking, or bathing. Some households facing problems with access sustainability locked latrines to prevent usage. It is possible some households submitted 400 Rs (\$9) to the Pradhan for a latrine so they could obtain a low-cost housing addition, which they knew could provide security and privacy for purposes other than sanitation. During interviews, the Pradhan directed households to clear latrines of signs of alternative uses. Overall, just 15 percent of households interviewed were found to have sustainable latrine usage. If latrine misuse had been left in place, findings may have been more troublesome. Kaundada's latrine misuse, for fuel storage left and a bathing room right, is shown in *Figure 8.7*.



Figure 8.7: Latrine (Mis)use in Kaundada

Kaundada's latrine usage is balanced between households; majorities of poor and non-poor continue to open defecate. While in Kaundada, children were open defecating in the village in the day.

Conventional Village 3 Simra Keshopur Usage

Since the sanitation intervention began, Simra's Pradhan estimated latrine usage increased zero to 28 percent. During interviews, 76 percent of households were not using latrines fully. Based on village interviews and discussions it is estimated Simra's real usage gap is between 76 and 81 percent in 2011. To solve Simra's open defecation problem the teachers believed the gram panchayat needs a sanitation and hygiene education programme to bring awareness to people.

Similar to other panchayats in Bhuta, Simra's households face problems with open defecation due to flooding and privacy. Open defecation was also found a problem for elderly, disabled, and women, especially at night. Remnants of open defecation were not evident in the gram panchayat. An example of open defecation in Simra is shown in *Figure 8.8*.



Figure 8.8: Open Defecation in Simra Keshopur

In Simra Keshopur, 56 percent of households interviewed were not using latrines because of lack of access. Meanwhile, 12 percent of households interviewed with latrines discontinued usage as a result of unsustainable access, mostly due to privacy problem, and nine percent were using open defecation as a result of preference opposed to unsustainable access. No households in Simra were using latrines for other purposes. Overall, 24 percent of households interviewed had sustainable latrine usage.

Simra's latrine usage is more unsustainable for below poverty line households than above poverty line households, but a majority of both had unsustainable usage and relied on open defecation in households interviewed. For households with latrines, preference against toilet use was a small factor. If households preferred open defecation they were more likely not to have a toilet because they would have had to organize construction. Overall, usage was largely balanced in Simra Keshopur.

8.3 Alternative and Conventional Usage Comparison

This section compares usage in Haryana and Uttar Pradesh and reflects on role of interventions

Usage Reality Comparison

Overall latrine usage gaps were estimated to be between 36 and 41 percent in Haryana sub-cases and between 82 and 87 percent in Uttar Pradesh sub-cases. Given pre-intervention usage gaps estimated by Pradhans, overall latrine usage gap reduction since the intervention was between 47 and 52 percent in Haryana and between 13 and 18 percent in Uttar Pradesh. Note there is a difference between interview usage gaps and overall estimates for usage gaps in Haryana because above poverty line households interviewed were sometimes poor, though some non-poor above poverty line households were included as well. Poor above poverty line households were especially common in Dhindar and Namuda, and to a lesser extent in Basara where poverty classification was more accurate. Thus, interviews do not represent all above poverty line households but do represent the situation of the poor. Overall usage estimates account for poverty classification and methodological bias to represent overall above poverty line usage, which is assumed better than usage for poor above poverty line households. Latrine usage gaps are found in *Figure 8.9* and *Table 8.1*.

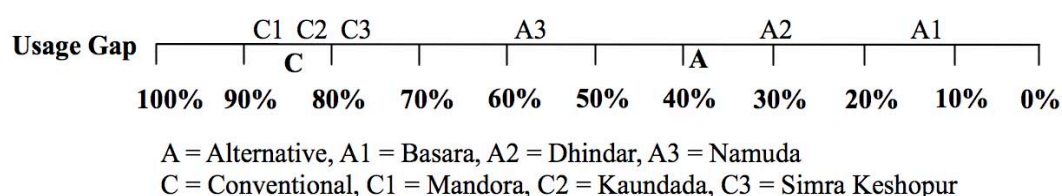


Figure 8.9: Alternative and Conventional Usage Gaps

Table 8.1: Usage Gap Comparison

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Pradhan Usage Gap Estimates								
<i>Pre-TSC</i>	92%	90%	95%	100%	100%	100%	88%	100%
<i>2011</i>	5%	2%	30%	77%	43%	72%	13%	65%
Household Interview Usage Gap								
<i>2011</i>	16%	56%	67%	80%	85%	76%	47%	80%
N=	37	32	43	30	33	34	-	-
Overall Usage Gap Estimates								
<i>2011</i>	10-15%	27-32%	55-60%	85-90%	80-85%	76-81%	36-41%	82-87%

The question then arises regarding relation of usage gaps to intervention strategies. To further investigate sources of usage gaps, *Table 8.2* summarizes interventions and usage.

*Table 8.2: Intervention and Usage Comparison*⁴²

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Subsidy Extent	72%	40%	24%	25%	57%	22%	39%	36%
Main Subsidy Modality	Ex-ante material	Ex-post cash	Ex-ante cash	Ex-ante material	Ex-ante material	Ex-ante cash	Mix	Mix
Software Level	Very high	High	Medium	Low	Low	Low	High	Low
Usage	85-90%	68-73%	40-45%	10-15%	15-20%	19-24%	59-64%	13-18%

⁴² Values in *Table 8.2* for subsidy extent are based on Pradhan estimates and for usage are meta-values determined from GP Pradhan, worker, and household interviews.

From interventions it is clear awareness raising brought improved usage. Subsidy could come as infrastructure material or cash and still usage was higher as long as awareness raising occurred. Basara's usage is highest because awareness raising was extensive and the Pradhan actively prevented open defecation. Dhindar and Namuda's usage are less mainly due to lack of access or access sustainability, though software support occurred. Awareness raising was low or non-existent in Uttar Pradesh panchayats. Compared to Mandora and Kaundada, Simra had higher usage as a result of improved access sustainability. Also, most households that received subsidy and achieved access in Simra had latent demand before the intervention. It is interesting that while latrine access was higher in Kaundada than in Simra, still usage is higher in Simra. Between Haryana and Uttar Pradesh the results of a software-oriented intervention clearly indicate benefits of an alternative approach compared to a conventional approach.

Usage Sustainability Comparison

Ultimately usage sustainability is linked to access sustainability and open defecation preference, both of which cause non-usage. *Table 8.3* summarizes interventions and unsustainable usage.

*Table 8.3: Intervention and Usage Unsustainability Comparison*⁴³

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
Subsidy Extent	73%	31%	7%	50%	76%	44%	36%	57%
Main Subsidy Modality	Ex-ante material (BPL/APL)	Ex-post cash (BPL)	Ex-ante cash (BPL)	Ex-ante material (BPL)	Ex-ante material (BPL/APL)	Ex-ante cash (BPL)	Mix	Mix
Software Level	Very high	High	Medium	Low	Low	Low	High	Low
Unsustainable Usage	16%	56%	67%	80%	85%	76%	47%	80%
N=	37	32	43	30	33	34	-	-

Usage sustainability improved where technical support and owner involvement in construction led to functioning latrines and where software adequately motivated latrine use for personal and community benefits. Where technical support, owner involvement, or software was lacking in interventions, usage was less sustainable.

As with usage, usage sustainability was better in Haryana than Uttar Pradesh as a result of more adequate software in Haryana. Basara exhibited the highest usage and thus usage sustainability. The present unsustainable usage in Basara resulted from a few cases of unsustainable access. Dhindar's usage sustainability problems were due to a mix of no access and unsustainable access while Namuda's greater unsustainable usage was due mostly to non-access, which was found equally among all households. Usage sustainability was low in Mandora and Kaundada. Both villages had unsustainable usage due to a mix of determinants. Mandora, however, had more unsustainable usage because of no access while Kaundada had more unsustainable usage because of unsustainable access.

Findings from the study indicate exclusion from interventions in Mandora caused the majority of continuing open defecation and in Kaundada open defecation occurred most widely due to problems with construction completion and due to lack of owner involvement. Lack of software was also a significant contributor to usage sustainability deficiency in all Uttar Pradesh panchayats. Simra Keshapur exhibited low usage sustainability as well, but better than the other villages in Uttar Pradesh. Simra's usage sustainability problems also resulted from a mix of sources, but mostly due to no access, which resulted from the limited extent of subsidy distribution and low awareness raising.

⁴³ Usage values in *Table 8.3* originate from household interviews.

Thus, differences in unsustainable usage indicate interventions brought about behaviour change more effectively in Haryana where a more demand-driven, software-focused approach was applied. Overall, where software was insufficient, latrines became unused monuments of inadequate interventions due to lack of awareness raising and lack of institutional building good or long enough. Even with better results in Haryana, both approaches left room for improvement of usage sustainability with villages continuing to open defecate in both intervention types.

For households without access or without sustainable access, open defecation was common. Thus every gram panchayat had particular open defecation areas. Often people would ‘go’ near water sources for cleaning purposes, so pond and creek areas were common for defecation. In gram panchayats in both states where many people were open defecating, they indicated difficulties not having a latrine. This was especially true in Uttar Pradesh during monsoon. Even where access was achieved in Uttar Pradesh, some households intentionally impeded toilet usage by using latrines for other more valued purposes such as for dung storage or bathing. Alternative latrine uses were not found in Haryana. Even if household owners in Haryana were not using latrines because of filling or due to preference for open defecation, their lack of alternative latrine use indicates sufficient value of sanitation to allow latrines to remain operational. Part of the reason for differences in misuse between Uttar Pradesh and Haryana may be that in Uttar Pradesh people are poorer. Another factor driving latrine misuse is that fewer households in Uttar Pradesh have water access at their homes.

Usage Equitability Comparison

In Haryana gram panchayats, below poverty line households faced greater usage gaps while in Uttar Pradesh above poverty line households had greater usage gaps. In comparison, Uttar Pradesh exhibited a slightly greater difference between groups than was seen in Haryana. Overall usage gaps were not highly inequitable, but the situation could vary greatly by village. A summary of usage gaps from household interviews is found in *Table 8.4*.

*Table 8.4: Usage Gap Equitability Comparison*⁴⁴

	Haryana			Uttar Pradesh			Average	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
APL	6-11%	24-29%	53-58%	93-98%	82-87%	77-82%	35-40%	84-89%
BPL	14-19%	43-48%	59-64%	80-85%	79-84%	76-81%	39-44%	76-81%
Total	10-15%	27-32%	55-60%	85-90%	80-85%	76-81%	36-41%	82-87%

In Haryana, all households had more equitable latrine usage than Uttar Pradesh because both above and below poverty line households were included in awareness raising. Below poverty line households had a higher usage gap in Haryana panchayats, and especially in Dhindar, because poor households could not afford to construct or to maintain their latrines and so were more likely to continue or return to open defecation. Looking to Uttar Pradesh, inadequate awareness raising accounts for high usage gaps in all villages. Above poverty line households were more likely to open defecate because they were commonly excluded. In Uttar Pradesh even above poverty line households that constructed latrines, for example in Simra, faced problems with construction completion due to lack of funds and so they too continued open defecation. Comparison of usage gaps between genders is also relevant. Men more readily use open defecation than women in all panchayats following interventions due to habit and cultural acceptance, even where latrines were constructed. Women prefer using latrines more because they face difficulties open defecating due to cultural angst and problems without a latrine nearby. In Haryana children were accustomed to latrine usage while in Uttar Pradesh children were commonly permitted to defecate in the streets. Additionally, in all cases where marginalized groups were excluded from interventions their usage gaps were more significant. For instance, the Scheduled Caste households near the pond in Dhindar, the poor Scheduled Caste households in Namuda, the Kashyup community in Mandora, political opponents in Kaundada and Simra, and lower caste households in secondary villages of Simra all faced reduced involvement in the sanitation intervention, reduced latrine access, and so their usage gaps were also more severe.

⁴⁴ Values in *Table 8.4* are usage meta-values determined from GP Pradhan, worker, and household interviews.

Usage Conclusion

Haryana's alternative Community-Led Total Sanitation approach returned better results in terms of closing usage gaps and achieving sustainable and equitable latrine usage. A driving factor in determining usage was simply having access to sustainable latrines. Additionally, as with access, adequate and inclusive software support provision is an important determinant of latrine usage and usage sustainability. Software support could be improved in both intervention types, but lack of software was almost entirely absent in conventional interventions leaving significant need for enhancement. In Uttar Pradesh sanitation and road projects are the two main responsibilities of the District Panchayati Raj Office, so it is no surprise sanitation interventions were strictly technical with minimal involvement of beneficiaries, as would occur during highway construction. Bringing about adoption of latrine access and usage, though, has significant social marketing requirements. People will not use latrines because they are constructed. Software support should become a central component of all Total Sanitation Campaign interventions if open defecation is to end in India. To improve usage, interventions should ensure latrines are constructed for all, that they are constructed well, and that all community members sufficiently value sanitation to maintain and use latrines once constructed.

9 BARRIERS AND OPPORTUNITIES

The study discovered much about sanitation sustainability and equitability, including barriers and opportunities for achieving household sanitation access and usage. The barriers and opportunities outlined were determined from stakeholder interviews and discussions as well as independent reflection throughout the research process. The chapter is organized topically by institutional, financial, physical, and social aspects. After describing barriers and opportunities, a Strength, Weakness, Opportunity, Threat (SWOT) analysis summarizes the content of this chapter.

9.1 Key Barriers for Rural Sanitation

With hundreds of interviews completed during the research period, many barriers were identified for rural sanitation achievement, which are presented in no particular order.

Institutional Barriers

Inequitable provision of support: There is a problem with equitability in many Total Sanitation Campaign interventions. Pradhans are able to determine which households are included, which occurs based on poverty, social, and political lines. As a result of Government policy and discrimination, the Total Sanitation Campaign can further divide communities.

Lack of emphasis on sanitation in India: Although sanitation has become a priority in India, from central to panchayat levels there remains insufficient focus on sanitation. At the administrative levels those working on sanitation are spread thin. In blocks there were no official sanitation employees. In villages, unpaid Pradhans have little incentive to work for an open defecation free environment.

Problems transferring strategy to practice: Both alternative and conventional approaches intend to be demand-driven, participatory, and community-led with low-subsidy, but these concepts fail to occur in many projects. Clearly there has been a challenge to realize planned strategies.

Resistant Indian sanitation sector: Community-Led Total Sanitation is criticized by many administrators. They suggest it is no different than conventional interventions and that true Community-Led Total Sanitation without subsidy cannot work because people are poor. Due to the novelty, to competition, and to disinterest in subsidies, CLTS has faced resistance in India.

Needs prioritization for the poor: A major reason for failure of sanitation is that it may not be people's priority. While addressing sanitation is important and software must be in place so people understand the benefits, it is also necessary to ensure livelihood opportunities are improved.

Lack of accountability and transparency: There was a general lack of accountability and transparency in gram panchayats. Pradhans may not keep records of expenditure in sanitation interventions. They receive funds in a village bank account and then distribute with little oversight.

Politics and bureaucracy: Politics and bureaucracy tend to work against sanitation. At the central and state levels they immobilize officers and keep organizations from functioning optimally. At block and panchayat levels political rivalries inhibit development.

Financial Barriers

Inattention to the impact of subsidization: When subsidy is given it can put projects into a hardware mode, reduce emphasis on software, create dependency, and exclude. If no subsidy were given then achieving sanitation would have to occur through great software. Some officers said people who are aware of sanitation have no need for subsidies as they will find a way to construct a latrine on their own. Officers also said subsidies are often expected to fund complete latrines, but the amount provided is not sufficient to result in lasting access.

Leaking funds: In Uttar Pradesh it was found there were problems with leakage of funds, especially when Pradhans were purchasing materials for toilet construction or hiring masons. They can easily keep funds for themselves and reduce amount of materials purchased or amount paid for labour.

Subsidies persist for the wrong reasons: Subsidies continue to grow in sanitation despite their failure to bring about improvements due to career, financial, and political reasons. First, officials have career incentives to enhance subsidies and thus their career. Second, officers have financial incentives to maintain subsidies because they gain monetarily. Third, subsidies are political tools used to gain support of constituents.

Total Sanitation Campaign investment problems: With the scale of the problem of open defecation comes sizeable financial requirement. Already the state invests a substantial amount in hardware, software, and administration. The problem is that this investment goes 75 percent to hardware subsidization and only 25 percent to software and administrative costs. With such emphasis on hardware comes lack of funding for software.

Physical Barriers

Incomplete latrines cause unsustainable access and usage: Where access and usage were not achieved, it was often because households could not complete construction. Sometimes unsustainable access was the result of leaders preventing household involvement. Even when latrines were fully constructed, poor construction quality could lead households to discontinue use.

Poor substructure installation: It was common to find kacha and pucca substructures that were likely to contaminate drinking water. If latrines were built too close to hand pumps or with pucca pits overflowing to street drains water could be contaminated.

Social Barriers

Undervalued, poorly facilitated software: A main problem for sanitation is undervalued and poorly facilitated software. Part of the reason for software shortcoming is lack of investment in software support compared to hardware. Another part of the problem is that officers and Pradhans are unable to adequately provide sanitation software to villagers due to inexperience and to technical focus.

The habit, ignorance, and joy of open defecation: A block officer said even when people have latrines, they continue to open defecate if unaware of its hazards. Even once aware, habit drives continued open defecation. Going for an early morning or after dusk walk to the fields or forest can be refreshing with a breeze, nature, and open sky, good exercise, a chance to spend a few minutes alone away from the family, or a chance to gossip with friends.

Presence of new and migrant households: Households that move to a village after sanitation interventions are excluded from hardware and software provided to other residents. Once new households move in they are likely to continue old habits.

9.2 Key Opportunities for Rural Sanitation

This section brings together learning from the study to identify opportunities for improving rural household sanitation, in no particular order.

Institutional Opportunities

Inclusion of all: Providing subsidies or awareness raising to only part of a community is unavoidably unfair. Exclusion of any group ensures inability of communities to achieve total sanitation and public health benefits, so inclusive interventions will go a long way to enhance sanitation in India. Therefore, there is an opportunity for overcoming caste, class, gender, and political discrimination, community division, dependency, and inequitable latrine access and usage by making inclusiveness a defining principle of all interventions. To achieve this principle, all households could receive the same or no subsidy and all households could be involved in high quality, participatory awareness raising. Women, children, the marginalized, and new households should all be included.

Strengthening human resources: Sanitation experts suggest there is an opportunity for more full-time sanitation employees at all levels. In addition, there is an opportunity for Government to employ trained sanitation workers in each panchayat. The sanitation workers would be fully responsible and paid for ongoing facilitation in villages. More community workers and groups should help lead interventions. One opportunity to ensure maintenance of public latrines is to use the National Rural Employment Guarantee Act to pay villagers for maintaining latrines.

Enhancing transparency: Officials suggested leakage problems make transparency necessary at all levels. Without transparency funds may disappear and be misused. Part of the challenge for transparency is that so much of Government work still occurs on paper. An opportunity to overcome transparency and leakage would be to establish a transparent monitoring and reporting system.

Making open defecation free environments the goal: Officers suggested that if the Total Sanitation Campaign is to eliminate open defecation, interventions could aim to achieve and be measured based upon achievement of open defecation free environments. Establishing ODF as the goal of sanitation interventions would help to reduce inequitable interventions and outcomes. Open defecation free could become a guiding light of the Total Sanitation Campaign.

Enhancing barriers: Ending open defecation requires barrier enhancement in the forms of reduced privacy and increased peer pressure and enforcement. Where privacy is limited open defecation is uncomfortable. Basara's Pradhan recommended visiting defecation areas at sunrise and sunset to reduce open defecation. Enhancing peer pressure to stop open defecation will make it more embarrassing. Children can create peer pressure against open defecation by whistling or banging pots at residents found open defecating. Finally, enforcement mechanisms could be in place for panchayats and households. It could be a punishable offence for a Pradhan to not maintain latrines at their schools and anganwadi centres or for households to not have a toilet at home.

Financial Opportunities

Realizing true incentives: Though the word 'subsidy' was replaced by 'incentive' in the Total Sanitation Campaign Guideline, more than a word change is necessary to bring modification to funding distribution. If hardware subsidies must be spent, one option would be to provide pans to households and no more. During interviews household owners without latrines were asked if they would be able to construct if given a pan; the vast majority concurred. The cost of a rural pan is 130 Rs (\$2.90). Funds saved on hardware could go towards software support.

Avoiding and improving hardware subsidies: In reality hardware subsidies will continue. District officers promoting a non-subsidy approach believe if the Government insists on hardware subsidy provision, districts should be allowed to return funds without consequences. If subsidy funds must be used, then officers suggest they should be allowed to spend funds on software instead of hardware. They also recommended any cash given directly to a community for household sanitation should only occur as a community-wide post-achievement award.

Physical Opportunities

Providing technical support to the motivated poor: Where awareness raising was adequate in cash-based interventions it was found high motivation combined with poverty resulted in unsustainable latrines for the poor. When cash subsidy and awareness raising are given, there is an opportunity to improve technical support to ensure people know how to construct and locate latrines.

Organizing materials, demonstrating designs: One Pradhan suggested panchayats should arrange materials for households to save time. If leaders are to arrange hardware, materials should not be given to households. Once materials arrive, households could purchase them from the leader. To ensure materials sold by the leaders are well used the Pradhan should construct a model low-cost latrine in a public place so people can see the design.

Promoting ownership, accepting diversity: Household members should be involved with organizing or constructing their own latrines because people better adopt and own household sanitation if they have invested time and funds. Household member involvement in latrine construction would reduce construction costs too. Also, latrine structures must be complete, but it doesn't so much matter if it is made of gold as long as it does not fill too quickly and provides privacy. If people build and maintain houses made of sticks, mud, and dung, why shouldn't they be promoted to build latrines of the same? Latrine construction materials need not be more advanced than that of the house it serves.

Encouraging alternatives to latrines to prevent contamination: A Pradhan suggested latrines be constructed inside homes to ensure maintenance and usage. A district officer said even if a household is unable to afford sanitation, they should be encouraged to take other measures to prevent oral-faecal transmission such as digging holes and covering human waste with soil.

Pushing biogasification: One Government officer suggested subsidy funds would be better spent on biogas latrines than pit latrines. Biogas could provide an added incentive and benefit for households to use and maintain toilets. A small biogas system could easily be installed instead of a pit and would allow inputs of human and livestock waste. Rural households already collect animal waste for use as fuel. Inputting animal and human waste directly to the biogas system would provide a clean burning methane gas which would save people money, promote collection of animal and human waste, and save women from breathing smoke. The downside of biogas is added capital cost.

Social Opportunities

Capable and motivated facilitators: Skilled and motivated facilitators would bring better results. Regardless of hardware or awareness raising strategies, capable and motivated facilitators ensure more sustainable and equitable outcomes for all. Total Sanitation Campaign facilitators could be required to have training certification prior to leading interventions.

Planned and lasting interventions: Facilitators could guide interventions according to a strategic action plan, which could be fully implemented over an extended period. Implementations could be phased and have step-by-step milestones to mark progress.

Enhancing software investment and quality: To close gaps, proportion of investment could be modified from the current 75 percent of funds for hardware and 25 percent for software and administration to more for software. Facilitation and software would be greatly enhanced if they were more adequate, and more adequately funded. Haryana's sanitation director suggested additional software funds could also be spent on massive education and advertising campaigns and trainings in villages. If investment in, level of, and quality of software improve people will value sanitation more and they will find innovative ways to construct latrines without reliance on hardware subsidy.

9.3 Rural Sanitation SWOT Analysis

To summarize, a Strength, Weakness, Opportunity, Threat analysis summarizes the contents of this chapter in *Table 10.1*.

Table 10.1: SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Adoption of a Community-Led Total Sanitation approach in some locations (I) • Awareness raising occurs in CLTS (I) • Community workers involved (I) • Block motivators in place (I) • Many stakeholders diligently working to achieve sanitation goals in India (I) • Financially supporting households (F) • Organizing materials for households (P) • Installing model latrine in a public place at times (P) • Promoting latrine ownership in CLTS (P) 	<ul style="list-style-type: none"> • Lack of GoI emphasis on sanitation (I) • Inequitable software and hardware (I) • Problems taking plan to practice (I) • Sanitation sector resistant to changes (I) • Equating access and usage in reporting (I) • Reliance on inexact poverty classification (I) • Inappropriate latrine expenditure (F) • Subsidies harming outcomes, enhancing dependency, dividing villages, leaking (F) • Subsidies insufficient to finish latrines (F) • Subsidies persisting due to financial, political, and career interests (F) • Subsidization is forced from above (F) • Inappropriate expenditure (F) • Incomplete latrine construction (P) • Emphasis on hardware, not software (P) • Undervalued, poorly facilitated software (S)
Opportunities	Threats
<ul style="list-style-type: none"> • Inclusion of all households (I) • Strengthening human resources (I) • Enhancing transparency (I) • Making ODF the goal (I) • Making incentives into real incentives (F) • Avoiding, improving hardware subsidy (F) • Encouraging alternatives to latrines (P) • Pushing biogasification (P) • Planned and lasting interventions (S) • Enhancing software funding, quality (S) 	<ul style="list-style-type: none"> • Caste, class, and political discrimination (I) • Priorities are elsewhere (I) • Lack of accountability and transparency (I) • Politics, bureaucracy harm development (I) • Inattention to role of subsidization (F) • Poor substructure installation (P) • Latrine filling (P) • The habit, ignorance, and joy of OD (S) • Presence of new and migrant households (S) • Reversion to OD (S)

Note: I=Institutional, F=Financial, P=Physical, S=Social

10 CONCLUSION

“People are the real wealth of a nation. The basic objective of development is to create an enabling environment for people to live long, healthy and creative lives. This may appear to be a simple truth. But it is often forgotten in the immediate concern with the accumulation of commodities and financial wealth” (Klugman, 2010, 12).

This study arose from the notion rural sanitation outcomes vary widely based on intervention strategy and that subsidy matters for achieving outcomes. As a result of this establishment, the central research objective sought to determine how household sanitation interventions, and subsidization in particular, influence toilet access and usage for the impoverished in the Total Sanitation Campaign in rural northern India. Subsidization was of particular interest in the study because it was known to be one of the most critical, costly, and contested elements of interventions in India. The concluding chapter seeks to reflect on the content of the thesis by connecting results to theory. The conclusion will first analyze India’s two sanitation approaches, alternative Community-Led Total Sanitation and conventional, in relation to demand-driven and supply-led theories. Software and subsidization will be analyzed. The chapter will then discuss latrine access and usage in the context of sustainability and equitability. Throughout the conclusion, it is important to keep in mind the opening lines of the first Human Development Report, which for the rural sanitation sector may imply development should be truly human-centred and not just about construction and expenditure.

10.1 Rural Sanitation Interventions

To determine influence of interventions on outcomes, the study discovered how India’s rural sanitation implementations occur in reality. Even though both approach types fall under the same Guideline, which calls for demand-driven sanitation, in practice interventions diverged from strategy and supply-led interventions were found to continue. Literature had hinted interventions might be less demand-driven than the Government suggested. For instance, discussing the Government’s demand-driven intentions, WaterAid (2008, 33) suggested “unfortunately, this doesn’t really show through in actual practice on the ground.” During stakeholder interviews, the TSC Director concurred demand-driven sanitation interventions had not been realizable in practice in India. Degree to which interventions failed to be demand-driven, though, was unknown. The study found Community-Led Total Sanitation interventions were more demand-driven than conventional interventions. This section will elaborate by discussing what makes alternative interventions more community-determined, subsidy-intermediate, and awareness-oriented, and what makes conventional interventions externally-determined, subsidy-based, and hardware-oriented.

Determination in Interventions

It was assumed from the literature a more community-led, actor-oriented development strategy would better adapt to local situations while externally-determined, structural strategies would allow little room for modification (Long, 1994; Bruijn, 2007). Theory translated clearly to practice. Depending on intervention, household involvement and investment varied significantly. Where infrastructure subsidy was provided in alternative interventions, external designs were recommended but not dictated. Village leaders encouraged household involvement in latrine construction and investment appropriate for residents in line with socio-economic conditions. On the other hand, leaders facilitating conventional infrastructure-based projects often did not allow deviation from Government construction and investment recommendations, even preventing willing households from participating and investing in construction. Where direct cash or output-based cash subsidies were provided in both alternative and conventional interventions, technical support was limited but households were fully able to determine latrine construction and investment.

Relating Software to Theory

Software differed widely between approaches. Alternative interventions were awareness-oriented and provided more motivational activities for all households reflecting a more impact-based, demand-driven project, while conventional interventions had minimal software from which all households were equally excluded reflecting a target-based, supply-led project. Van der Hoek (2010) described a demand-driven approach as emphasizing demand-generation to realize behaviour changes. In interventions using Community-Led Total Sanitation, facilitators focused on encouraging an end to open defecation for the convenience, health, and dignity latrines would bring. As residents became familiar with the advantages of latrine use, many adopted sanitation, indicating effective awareness raising. Other authors noted the challenges faced for actually realizing demand-driven software because of the fact officials may not understand underlying principles (Sah, 2009; Elliot, 2006). The challenges of realizing awareness-raising certainly were found where hardware-focused interventions largely void of awareness raising occurred. Jenkins (2006, 2) described in supply-led interventions “when the need to motivate changes in sanitation behaviour at the household level was considered, health education programmes with messages about the public health benefits of having and using a toilet were hastily tacked on to construction projects.” Even conventional interventions have not achieved ‘tacked on’ messages, let alone an awareness focused methodology. Conventional intervention officers claimed to have used media-based IEC to motivate behaviour change, but they also acknowledged there are problems with the IEC and that villagers were not acquiring knowledge about sanitation through the current approach. In reality conventional software activities were not organized and both poor and non-poor households without poverty status were excluded from any interaction since they were ineligible to receive subsidies. Based on awareness-raising, the alternative approach realized more demand-driven software activities than the conventional approach.

Facilitation is a key determinant for realizing adequate and inclusive sanitation software. If officers and village leaders are not skilled or motivated, then intervention process and outcomes suffer. During the research, I realized challenges faced for facilitating interventions and behaviour change in both alternative and conventional approaches at administrative and village levels. At state and district levels officers were over-worked and widely spread in their responsibilities, making achievement of demand-driven interventions more difficult. In blocks, sanitation coordinators and motivators were non-official and even in the conventional approach the sanitation motivator relied on latrine commissions and had not received payment since 2009. In villages, quality of awareness raising and behaviour change aligned with quality of facilitation. Pradhans were expected to guide their villages to collective behaviour change, but normally they were untrained in leading social development and inexperienced in sanitation interventions. As a result of poor software and facilitation, more successful advancement of access and usage were prevented.

Relating Subsidization to Theory

To become demand-driven, experts noted sanitation interventions need to avoid or reduce subsidization. The Government has also recognized the need for a shift away from supply-led, subsidy-based interventions and has called for demand-driven, incentive-based projects suggesting “subsidy for individual household latrine units has been replaced by incentive to the poorest of the poor households” (GoI, 2010, 4). In practice, however, literature suggested sanitation hardware subsidies continued in India. In 2008, Kumar said that in India “. . . direct hardware subsidy for individual households or indirect subsidy disguised as incentive is an integral part of the sanitation program” (2008, 5). From meetings with Total Sanitation Campaign officers, Kumar’s claim was confirmed; the Government highly prioritizes hardware subsidies including a 75 percent outlay for hardware, 15 percent for software, and 10 percent for administrative expenses, even though sanitation is at least as much about behaviour change as latrine construction. Relabeling subsidies as incentives has not changed the fact they are hardware subsidies. The result is that hardware subsidies continue in most rural sanitation interventions in India.

In interventions, hardware subsidies took forms Trémolet (2010) had described, including direct cash, infrastructure material, and output-based cash. Decisions on how to distribute latrine subsidies were at the village leaders' discretion. More demand-driven Community-Led Total Sanitation interventions included a lower subsidy amount to a larger proportion of households either as infrastructure material, direct cash, or output-based cash. Meanwhile, more supply-led conventional interventions provided subsidies to fewer households at higher amounts either as material or direct cash usually for below poverty line households only. Those receiving subsidies normally expected them to cover the majority of latrine costs, which resulted in lack of household investment.

There were three perspectives on subsidization identified in the literature. First, there were those who justify hardware subsidization because people are poor (Evans, 2009a). Second, there were those who believe hardware subsidies are not a central factor in determining outcomes. They believe subsidies should be given if well-targeted. Third, there was the group that steadfastly opposes sanitation hardware subsidies for the harm they cause by leading to inappropriate designs, crowding out household investment, creating dependency, and dividing communities. This group believes subsidies cannot lead to optimal sanitation outcomes, especially when associated with a supply-led approach (Evans, 2009b). Therefore, intended Government strategies suggest conventional Total Sanitation Campaign interventions should fall into the intermediate range, but they are more accurately described as supply-led, subsidy-based interventions. Strategies also suggest Community-Led Total Sanitation interventions should fall into the demand-driven, non-subsidy range, though in reality they are more intermediate. Still, it can be concluded the conventional approach is more supply-led and the Community-Led Total Sanitation approach is more demand-driven based on subsidization.

This study found where subsidization and software occur together, the supply-led paradigm has been overcome. In the case of Community-Led Total Sanitation, officers exhibited more demand-driven mentalities. Awareness of shortcomings of subsidies, which was obtained through personal experience or exposure to training, led them not only to downplay subsidies but also to emphasize intervention software to ensure sanitation value and behaviour change were achieved. In the situation where interventions reflected the more demand-driven mentality of officers, projects occurred with better software and subsidies became less relevant. Still, interventions may have resulted in sub-optimal outcomes if software was neglected by village leaders even where the Government promoted a more demand-driven approach. Also, this study did not find 100 percent sanitation access or usage in any case, and so it could be that as long as subsidization occurs complete latrine access and usage may not be achievable. On the other hand, in conventional interventions the supply-led paradigm showed through strongly. Officers largely unaware of the meaning and value of a demand-driven approach pushed subsidy-based interventions. As a result facilitators made efforts only for hardware components and awareness raising was undeniably neglected.

The study suggests subsidies do cause harm when associated with a supply-led approach. The study also suggests subsidies induce perpetuation of supply-led tendencies in all approaches and cause neglect of awareness raising required for people to value and adopt sanitation. Therefore, when subsidies are central in interventions, software is neglected and ultimately sustainable access and usage are reduced. In addition, whenever subsidies are distributed, both poor and non-poor are excluded based on Government classification. The study concludes it is important to downplay or remove subsidies so well-facilitated software necessary to achieve outcomes becomes more central. A shift from current conventional and supply-led mentalities and practices will especially rely on officers' recognition that projects are ineffective without an advanced level of software and that subsidies lead projects to neglect awareness raising.

Obstacles to Demand-driven Interventions

Unfortunately, improving rural sanitation and making a true shift towards demand-driven interventions founded on facilitation and software faces great barriers. Even though sanitation strategies call for demand-driven and participatory interventions by those in central and state offices, in reality interventions vary drastically from intent and this divergence widens as interventions move down from the Government to gram panchayats. The inability of paradigms to translate to interventions in reality occurs for institutional, political, and socio-economic reasons. First, maintenance of the supply-led paradigm occurs because of lack of awareness among those in charge; sanitation officers in India continue to perceive sanitation as a problem that can be solved with technical and financial solutions. Realizing demand-driven interventions requires not only a central policy in support, but also corresponding mentalities at all levels. Second, as a Government programme the Total Sanitation Campaign is part of a bureaucratic system in which motivated officers are largely powerless to guide improvements in subsequent governing levels. Ultimately, the district and block officers and village leaders decide how projects are implemented. In Haryana, this meant Community-Led Total Sanitation interventions included varied hardware subsidy modalities and may not have included triggering, though some form of awareness raising was always provided. In Uttar Pradesh, the conventional approach always provided subsidy before latrine construction and awareness raising activities were extremely limited. The difference between states was driven by officers' paradigmatic inclination. Third, software and facilitation are neglected in favour of implementations reliant on subsidy and hardware because institutionally it is easier to send hardware subsidies to village leaders to distribute than to rely on a network of skilled sanitation facilitators. Fourth, officers may favour subsidization because impacts of software expenditure are more difficult to evaluate than release of funds for construction. Fifth, sending support to the poor in the form of hardware or cash is appealing to politicians interested in achieving a wider voting base. Sixth, it is true very poor people are struggling to survive and so sanitation cannot become their prerogative. Seventh, it is also true that interventions with more subsidization provide financial and career benefits to officers in charge. As a result of these institutional, political, and socio-economic barriers there is much progress to be made in rural sanitation interventions in India.

10.2 Rural Sanitation Access, Usage, and Sust-Equity

This study explored latrine access and usage to determine influence of sanitation intervention on outcomes. The investigation found alternative Community-Led Total Sanitation interventions reduced access gaps to between 24 and 29 percent from an 84 percent baseline in Haryana and conventional interventions reduced access gaps to between 62 and 67 from a 100 percent baseline in Uttar Pradesh. The investigation also found alternative interventions reduced usage gaps to between 36 and 41 percent from an 88 percent baseline in Haryana and conventional interventions reduced usage gaps to between 82 and 87 percent from a 100 percent baseline in Uttar Pradesh. To further qualify outcomes, results were evaluated in terms of sust-equity to consider sustainability and equitability aspects of sanitation outcomes. *Figure 10.1* represents overall access and usage gap findings for alternative and conventional interventions in Haryana and Uttar Pradesh, respectively.

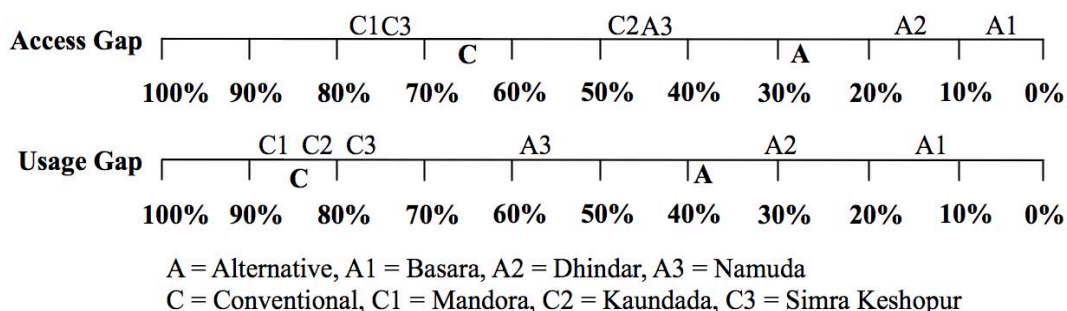


Figure 10.1: Alternative and Conventional Access and Usage Gaps

Access and Usage Sustainability

Theory suggested sustainability is required if sanitation outcomes are to last. Bracken (2005, 2) defined “a sanitation system that is sustainable protects and promotes human health, does not contribute to environmental degradation or depletion of the resource base, is technically and institutionally appropriate, economically viable and socially acceptable.” The study applied a simplified view of sanitation sustainability for evaluation. For access, sustainability required complete latrine construction including a sufficiently deep pit and a superstructure providing privacy to users. Additionally, water access and hygiene were necessary for a latrine to be sustainable. Usage sustainability required access to a sustainable latrine and preference for latrine usage over open defecation. With this sustainability conception results were identified, which are discussed below.

Access sustainability was found improved in Community-Led Total Sanitation because household owners valued sanitation more, had better latrine ownership, and were willing to maintain latrines they helped organize or construct. Where infrastructure subsidy was provided with awareness raising and technical support in Community-Led Total Sanitation, latrine sustainability was better than in any other intervention. Where Community-Led Total Sanitation included ex-post or ex-ante cash subsidy, poor households were motivated to construct latrines but results were sometimes unsustainable due to incomplete or poor quality implementation. In the conventional approach, latrine sustainability was problematic. Household owners were not involved in construction when material subsidy was given. In such projects many latrines were constructed quickly and household contribution was constrained. To quickly construct full latrines for many households with insufficient funds, village leaders took shortcuts. Poor quality or shallow substructures were common, while superstructures were often very sustainable. In addition, in the conventional approach access sustainability was reduced because village leaders prevented willing households from participating. Where conventional interventions included ex-post cash subsidy, some households did not use the funds for latrines or were not able to complete construction because of inappropriate investment in substructures, which left insufficient funds for superstructure completion, though in the future people could still achieve sustainable latrine access if they invest more. Water access was outside the realm of sanitation interventions and hygiene was not found to be a large problem for access sustainability. In the end, despite ubiquitous hardware subsidization, approaches were still more demand-driven in the alternative approach than in the conventional approach where supply-led interventions focused on coverage and expenditure.

Alternative interventions produced better results than conventional interventions for access and access sustainability. The outcomes directly reflect differences in upper-level sanitation strategies and. Haryana's CLTS-advocating officers believed in downplaying subsidy and enhancing awareness raising. Uttar Pradesh's conventional-advocating officers focused on financial and technical aspects.

The study found usage sustainability in both intervention types depended on latrine access sustainability, but non-usage was higher in Uttar Pradesh due to preference for open defecation. Where subsidization was less central, leaders spent more time on software, which enhanced villager understanding of benefits of latrine usage and enhanced their motivation to maintain and use latrines. Following conventional interventions, usage was low regardless of subsidy extent. Where people did not value latrines, they found what they perceived to be more practical purposes for latrines and continued to open defecate. Findings suggest awareness raising is critical for sustaining latrine usage.

Overall, achievement of access, usage, and their sustainability directly corresponded with extent of subsidy and level of awareness raising. It was found latrines that are paid for or constructed by beneficiaries result in better ownership, maintenance, and usage. In addition, it was found that a household that funded and constructed their toilet even if of lower construction quality would be more sustainable than an externally funded and installed toilet. Still, in both intervention types room for improved access, usage, and sustainability remains. To address sustainability shortcomings requires looking beyond interventions. Even when the poorest households were included in awareness raising, received hardware subsidy, and technical support and ended open defecation, without capability to maintain a latrine, lasting outcomes are at risk. Therefore, sustainable sanitation depends on adequate and inclusive demand-driven interventions as well as livelihoods of the poor.

Access and Usage Equitability

Equitable sanitation achievement is about reaching fair sanitation. The Sub-Commission Guidelines on the human right to water and sanitation suggested equitable sanitation should not exclude any community member from an intervention, especially the marginalized (COHRE, 2007). As part of the Total Sanitation Campaign, interventions took account of common marginalization by aiming to be pro-poor. Below poverty line households were eligible for subsidies while above poverty line households were ineligible, according to the Government. In Haryana, however, leaders commonly provided subsidies to above and below poverty line households based on actual socio-economic condition, while in Uttar Pradesh the above poverty line households were more often excluded. In terms of software, in Community-Led Total Sanitation most households were involved in awareness raising, while in Uttar Pradesh all households were excluded from software. As a result of subsidy and software modalities, in Haryana access and usage were nearly equivalent between above and below poverty line households, while in the conventional approach above poverty line households' access and usage was lower than that of below poverty line households. In alternative interventions, access sustainability was worse for the poor than non-poor compared to the conventional interventions because the poor in Haryana were more likely to have awareness and construct latrines with insufficient funds and assistance, while in the conventional approach if a household had not received financial support they would not have a latrine. Narayanan (2011) described sources of exclusion as being attitudinal, environmental, and institutional. In the study, attitudinal and institutional barriers were realized in both alternative and conventional intervention types. Attitudinally, groups were excluded either because they were from a different caste or a different political party than the village leader. Institutionally, exclusion occurred because subsidy distribution was based on Government poverty classification.

Final Conclusion

Despite the Total Sanitation Campaign promoting a demand-driven and minimally subsidized strategy, this study found supply-led and subsidy-based sanitation interventions continue in rural India. A shift towards fully demand-driven interventions founded on software has not been realizable due to institutional, political, and financial barriers. The study concludes latrine subsidies not only cause harm when associated with a supply-led government strategy, but they also induce perpetuation of supply-led tendencies in all interventions, excluding poor and non-poor households based on Government poverty classification, guiding projects to be technically-oriented, and causing neglect of awareness raising necessary for people to value and adopt sanitation. In alternative interventions, awareness raising led hardware subsidies to become less relevant as more households became involved in hardware and software activities regardless of subsidy reception. In alternative interventions the majority of poor and non-poor achieved access, access was more sustainable than in conventional interventions, and usage was equal among poor and non-poor households. In conventional interventions, deficient awareness raising and rigid subsidy-orientation led only households receiving subsidies to achieve access. As a result of conventional interventions, access achieved was often unsustainable and latrine usage was equally weak among all households, at least for the purpose of sanitation. Therefore, when software became a more central component of interventions, potential for subsidy-induced supply-led tendencies dropped. Still, this study did not find 100 percent sanitation access or usage resulting from any intervention, so it remains unknown if complete achievement can ever occur when hardware subsidies are distributed. Ultimately, sanitation interventions of India's past have relied on subsidization, resulting in unfortunate outcomes and exclusion. If skilled facilitation and adequate software provision become distinguishing components of sanitation interventions in India, realizing a demand-driven strategy, overcoming shortcomings of subsidization, and achieving more sustainable and equitable sanitation access and usage may one day be possible in India. Now the question remains, *how can more software-oriented rural sanitation interventions be achieved in reality in India?*

11 RESEARCH REFLECTION

Along with providing the opportunity to develop understanding of rural sanitation in northern India, this study was a pathway of discovery in other ways as well. This chapter seeks to reflect on some limitations and further research opportunities not previously discussed.

11.1 Research Limitations

Conducting field research in India occurred in spite of numerous limitations. The study was made especially difficult by its focus on subsidization and in that it aimed to explore a Government programme, which is naturally accompanied by exposure to politics and bureaucracy. As a result of limitations, research methods required adaptability and reflexivity to overcome sometimes difficult circumstances during field study. A summary of several key limitations follows in no particular order.

- **Lack of time, funding, and scale:** Time and funding were limited since the study was small. As a result, only six gram panchayats could be included and each immersion could only last a few days. Findings do not represent all of India, but provide exposure to Total Sanitation Campaign realities in a few villages, which is believed to be valuable nonetheless.
- **Language barrier:** Because I only speak ‘torra torra’ (‘something something’) Hindi, assistants translated interviews and discussions throughout the field research. Most interviews in villages underwent translation, which naturally provides potential for error.
- **Research inhibitors:** At times officers inhibited research. For instance, during gram panchayat touring block officers who served as guides would commonly respond to questions asked to Pradhans, which made collection of information difficult. Information collection was also challenging at times because officers attempted to use the study to enhance personal standing. For instance, those guiding tours sometimes incorrectly introduced the research team and the purpose of research saying foreign or domestic agencies sent us to evaluate sanitation and to distribute award funds. At times the research team was even requested to propagate fabrications. The assistants exhibited humility and patience in managing inhibitors.
- **Lack of information and transparency:** Pradhans and mid-level officers often had minimal documentation on sanitation interventions and outcomes. Part of the problem was lack of documentation storage and part was lack of transparency. How funds were spent is nearly impossible to know. Poor transparency leaves room for low monitoring and high immorality.
- **Hidden sanitation realities:** During the study, officers and village leaders were highly helpful. Some, though, were unwilling to facilitate research, presumably because of what may have been learned about realities of interventions, outcomes, or previous over reporting.
- **Immorality and poverty:** Those with power sometimes expressed unwillingness to share accurate information, possibly because of past immoralities. On the other hand, the poor sometimes feared the Government sent us to remove welfare benefits, despite always introducing ourselves as students.
- **Imprecise poverty classification:** The study faced difficulty due to imprecise poverty classification. Some of the poorest were classified as above poverty line; they were excluded from welfare support due to caste or class. Because subsidies are given based on poverty classification, it was necessary to track interventions on these lines despite shortcomings

11.2 Opportunities for Further Research

Based on this study, numerous opportunities were realized for further research. A brief summary of some of the opportunities identified for further research follows.

- **The potential of non-subsidy interventions:** This study originally sought to compare non-subsidy and subsidy-based interventions, though it was not feasible in the end. A study could be conducted comparing Community-Led Total Sanitation interventions with and without subsidies to determine how subsidization variation guides outcomes. Such a study could ask: *What are the results of fully CLTS interventions with and without subsidization?*
- **Reaching optimal outcomes:** Even the most demand-driven, software-based interventions included in this study returned less than 100 percent access and usage. These interventions included subsidies. Therefore, a study could ask: *Can 100 percent sanitation access and usage ever be achieved with subsidization?* A secondary question of such a study could ask: *What combination of subsidization and software should occur to achieve optimal outcomes?*
- **Achieving demand-driven, software-oriented interventions:** The continuation of supply-led, software-deficient interventions despite a demand-driven Guideline indicates challenges for achieving transition of strategy to intervention in reality. A follow up study could ask: *How can more software-oriented strategies and interventions be achieved in reality?*
- **Influence of awareness raising on latrine access sustainability:** Intuition would suggest interventions with more awareness raising should have better outcomes. However, this study found when awareness raising was given without adequate technical support latrine access could be unsustainable for the poor. A further study could explore: *To what extent do awareness-oriented interventions without technical support lead to unsustainable access and how can more sustainable outcomes be achieved?*
- **Long-term impacts of interventions:** Impacts of Community-Led Total Sanitation and conventional interventions were not explored in this study. To understand impacts, it would be necessary to conduct a long-term study from a time years before to years after interventions to correlate interventions, outcomes, and impacts of the Total Sanitation Campaign. A follow up study could ask: *What are the differences in impacts between supply-led and demand-driven interventions?*
- **Sources of inequity:** The study made clear many poor and non-poor households had been excluded from interventions and outcomes. Therefore it would be interesting to see a study on sources of exclusion of the poor and non-poor in rural sanitation in India. Such a study could ask: *What are sources of exclusion in sanitation interventions in rural India?*
- **Perceptions of beneficiaries during interventions:** What makes the difference for villagers investing in, maintaining, and using latrines has to do with their understanding of the benefits of sanitation. What motivated households to value sanitation was not clear following this study. Another study could ask: *What led villagers to value of sanitation?*
- **Financial leakage:** When meeting an Uttar Pradesh state officer, he posited 40 to 50 percent of funds sent to villages for development never reaches beneficiaries. This is certainly an area that requires further exploration, though one would face many institutional barriers. Such a study could ask: *Why does leakage occur, to what degree, and how does it impact outcomes of rural development in India?*

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APPENDIX A: INDIA DEVELOPMENT PROFILE

Table A.1: India Development Profile from the 2010 Human Development Report

Category	Measure	
Human Development Index [2010]	Value: 0.519	Rank: 119/169
Population [2010]	1,214,500,000	
Median Age [2010]	25.0 years	
Annual Growth Rate [2010-25]	1.3%	
Gross National Income per Capita (PPP \$) [2008]	\$3,337	
Population Below Poverty Line (PPP \$1.25/day) [2000-08]	41.6%	
Infant and Under-5 Mortality (per 1,000 live births) [2010]	Infant: 52 deaths	Under-5: 69 deaths
Adult Mortality (per 1,000 people) [2010]	Female: 173 deaths	Male: 250 deaths
Mean and Expected Years Schooling [2010]	Mean: 4.4 years	Expected: 10.3 years
Life Expectancy at Birth [2010]	64.4 years	
Adult Literacy Rate [2005-08]	62.8%	
Total Fertility Rate (births per woman) [2010-15]	2.5 births	
Population Without Access to Improved Services [2008]	Water: 12%	Sanitation: 69%
Indoor Air and Water Pollution Deaths (per 1×10^6) [2004]	954 deaths	
Life Satisfaction (0=least 10=most) [2006-09]	Female: 5.4	Total: 5.5

(Klugman, 2010)

APPENDIX B: RESEARCH PHILOSOPHY

Because sanitation is a complex reality, the study follows the notion that discerning nuances of interventions and outcomes and returning useful insights requires appropriate research methods. Appropriate methods should be well prepared, reflexive, and adaptable, simple and thorough, human-centred and respectful, and self-aware.

Research must be well prepared. An ill-considered study can waste researchers' time, can waste time of hundreds of people on the research path, and can even cause harm. Being prepared is important, but not all aspects of research can be forecasted. Reflexivity is important because research is about learning. Every person a researcher interviews and every method applied may contribute new learning. The researcher must be able to recognize meaningful information and must also continually redevelop methods of inquiry based on what is learned on the path. In this research, objectives and questions were developed and redeveloped following semi-structured interviews with experts. The methods were created and then recreated during research to return most useful and complete results. Related to reflexivity is adaptability. It was assumed all the most important and especially complex questions could not be known before initiating field research, so adaptability in the methodology was key to ensure the methodology was suited to local research contexts.

The study also sought to use simple but thorough methods. Simplicity was sought to ensure pertinence and clarity in research. Thoroughness was sought to bring about balanced and full results. To achieve these goals, a straightforward methodology was used with in-depth interviews and discussions collected from all stakeholder levels (top-level experts, mid-level state, district, block officers, village level leaders, village workers, villagers). At the top and mid levels, all stakeholder groups (governmental, non-governmental, academic) were represented. At the local level, village emersions were used to learn about sanitation and the many other aspects of village life. Both quantitative and qualitative methods were used.

Next, researchers must be human-centred and respectful. We must recognize that people we interview are not just research subjects; they are gracious hosts and contributors. The information they share is part of their lives, and it is not to be taken without recognizing the value of their contributions. As such, stakeholders should be viewed as equals regardless of education, class, health, and capabilities. Their perceptions and opinions should be considered, not pushed aside to attain the quantitative. This research tried to consider perceptions of all stakeholders, beneficiaries, and the excluded and to do so with a balance of quantitative and qualitative methods. In depth, open-ended interviews and discussions were used at all levels so information could be collected flexibly and so people could respond as they desired.

Lastly, researchers must be self-aware. We must recognize who, what, and why we are and what that means to stakeholders. We need to limit our biases and subjective notions. We need to be empathetic of whose opinions we solicit. We need to understand there is usually a good reason behind everything, and it is our job to examine the who, what, where, when, how, and, most importantly, why of what we discover.

APPENDIX C: METHODOLOGICAL OVERVIEW

This appendix outlines the route by which objectives and questions were addressed. To efficiently depict the methods, a brief methodological synopsis is in *Table C.1* followed by a comprehensive overview of all research methods that occurred during the study.

Table C.1: Research Methodology Synopsis

Period	Research Methods	Description
Phase 1	Research Preparation	
<i>9/10-1/11</i>	Literature review	Available information consulted to design the study
	Expert scoping meetings	<i>Six</i> experts met in Holland and India to design study
Phase 2	Top-level Interviews & State Selection	
<i>1/11-2/11</i>	Top-level interviews	<i>24</i> experts interviewed with semi-structured format
	State selection	Experts helped select Haryana and Uttar Pradesh
Phase 3	Mid-level Interviews & Gram Panchayat Selection	
<i>2/11-4/11</i>	Mid-level interviews	<i>11</i> mid-level state, district, and block sanitation officers interviewed with semi-structured format
	GP tours and selection	<i>19</i> GP tours and <i>28</i> brief Pradhan interviews, followed by selection of <i>six</i> GPs using six criteria
Phase 4	Gram Panchayat Emersion	
<i>3/11-4/11</i>	Pradhan meetings and interviews	<i>Six</i> introductory meetings and detailed semi-structured interviews with Pradhans in selected GPs
	Transect walks	Transect walks to become familiar and observe GPs
	GP worker interviews	<i>37</i> GP workers interviewed in semi-structured format
	Household interviews and observation	<i>210</i> household interviews and observation to collect the ground sanitation realities
	Focus group discussions	<i>Nine</i> FGDs to collect information on village sanitation
Phase 5	Research Closing	
<i>5/11-8/11</i>	Analysis and composition	Quantitative and qualitative analysis and thesis writing

The five phases of research are outlined comprehensively here forward. Summaries of each phase include descriptions and tables presenting the workings of the study.

Phase 1: Research Preparation

The first research phase included literature review and expert scoping meetings from September 2010 to January 2011 in the Netherlands and India. The main purpose of Phase 1 was establishing research foundations including objectives, questions, and methodology for the study.

Literature review: To determine research objectives, questions, and methods, an in-depth literature review occurred in Holland and India. Based on literature a research proposal was developed.

Expert scoping meetings: Six expert scoping meetings were conducted in Holland and India to develop the study and identify facilitators. Following an initial scoping meeting with Dr. Robert Chambers in September 2010, I went to India in October 2010 as a resource person for a Government sanitation workshop, at which time I identified a facilitator. A snowball method was used, so every expert recommended others to meet. It was the aim to meet experts from a variety of stakeholder groups. A summary of scoping meetings is found in *Table C.2*.

Table C.2: Summary of Expert Scoping Meetings

Type	Stakeholder Group	Affiliation	No. Interviewees	Date
Scoping Meetings	Academia	Institute of Development Studies	1	2/9/10
	Government	Uttarakhand Academy of Administration	1	29/9/10
	Academic	Kumaun University	1	29/9/10
	Non-government	Knowledge Links	2	1/10/10
	Non-government	International Water and Sanitation Centre (IRC)	1	4/1/11

Phase 2: Top-level Interviews and State Selection

The purpose of the second phase, from January to February 2011, was to learn about rural Indian sanitation from experts, to redevelop research design, and to select research states.

Expert semi-structured interviews: In Phase 2, 24 top-level experts and administrators were interviewed with a semi-structured approach in Delhi, India. It was then possible to finalize research design and select states. It was also the aim during expert interviews to include a variety of stakeholder groups. A summary of top-level interviews is in *Table C.3*.

Table C.3: Summary of Top-level Expert Interviews

Type	Stakeholder Group	Affiliation	No. Interviewees	Date
Semi-structured Interviews	Governmental	Uttarakhand Academy of Administration	1	15/1/11, 17/2/11
	Non-government	Knowledge Links	1	18/1/11, 22/1/11
	Non-government	Water and Sanitation Programme	3	19/1/11
	Government	Total Sanitation Campaign	1	21/1/11, 28/1/11
	Academia	TERI University	4	24/1/11
	Non-government	IL & FS Consulting	1	24/1/11
	Non-government	Institute of Applied Manpower and Research	1	29/1/11
	Non-government	Consultant	1	2/2/11
	Non-government	CLTS Foundation	1	2/2/11
	Government	Government of Himachal Pradesh	1	2/2/11
	Non-government	India WASH Forum	1	3/2/11
	Non-government	UNICEF	2	3/2/11, 14/2/11
	Academia	Jawaharlal Nehru Univ.	1	4/2/11
	Non-government	WaterAid	1	8/2/11
	Non-government	Sulabh International	1	9/2/11
	Non-government	Plan International	1	10/2/11
	Government	Government of Madhya Pradesh	1	11/2/11
Non-government	Feedback Ventures	1	7/4/11	

Case state selection: With relevant information in hand, it was possible to select states. Haryana was selected to represent the alternative approach and Uttar Pradesh to represent the conventional approach. These states were selected for two reasons: feasibility and comparability. First, because Total Sanitation Campaign interventions are defined by the state, research required inclusion of two states, one using a fully alternative and one a fully conventional approach. Second, in selecting, I sought to include neighbouring states to maintain comparability and reduce variability of exogenous factors. Including adjacent states also enhanced efficiency.

I first sought to determine an alternative state. Of alternative states, Haryana and Himachal Pradesh had used CLTS most extensively so it was decided one of them would be included. Because Haryana is a plains state while Himachal Pradesh is a hilly state, it was decided research in Haryana would be more feasible due to constraints posed for research in hilly areas where villages are spread out and transportation facilities are weak. Therefore Haryana was selected as the alternative state. The second state then had to use the conventional approach extensively and had to be adjacent to Haryana for comparability. Since Rajasthan had used CLTS, though to a lesser extent, the two remaining state options were Punjab or Uttar Pradesh. Uttar Pradesh was chosen because of facilitation connections there. Thus, Haryana and Uttar Pradesh were selected to represent the alternative and conventional intervention strategies, respectively.

Phase 3: Mid-level Interviews and Village Selection

The third research phase occurred from February to April 2011. Phase 3 activities included mid-level officer semi-structured interviews at state, district, and block levels along with district, block, and, ultimately, Gram Panchayat selection for case study research.

Mid-level officer interviews: After selecting Haryana and Uttar Pradesh, semi-structured interviews were held with state, district, and block officers. In the interviews, officers answered questions about interventions, outcomes, and challenges. In state interviews it was confirmed Haryana and Uttar Pradesh would exhibit the two sanitation approaches. Then state, district, and block officers helped select districts, blocks, and gram panchayats, respectively. Panipat District was selected of 21 districts in Haryana and Bareilly District was selected of 71 districts in Uttar Pradesh. Then, Samalkha Block was selected of five Panipat blocks and Bhuta Block was selected of 15 Bareilly blocks as the block case locations. These districts and blocks were selected because they were determined to represent alternative and conventional interventions well. Block officials then guided gram panchayat selection. While mid-level interviews were occurring, two research assistants were hired. The assistants, PhD students at Panjab University-Chandigarh studying ecological impacts of agriculture, arranged logistics, provided feedback on research, navigated barriers, built rapport with stakeholders, translated interviews, and led focus group discussions. A summary of mid-level interviews is in *Table C.4*.

Table C.4: Summary of Mid-level Officer Interviews

State	Level	Location	No. Interviewees	Position	Date
Haryana	State	Haryana	1	TSC Director	3/3/11
	District	Panipat	1	Assistant Coordinator (former)	4/3/11
	Block	Samalkha	1	Sanitation Coordinator	14/3/11
Uttar Pradesh	State	Uttar Pradesh	3	Panchayati Raj Principal Secretary, TSC Director, TSC Deputy Director	15/2/11, 16/2/11
	District	Bareilly	2	Panchayati Raj Officer, TSC Programme Officer	15/4/11, 16/4/11
	Block	Bhuta	3	Development Officer, Assistant Development Officer, Sanitation Motivator	16/4/11

Gram panchayat tours and sub-case selection: After selecting blocks, the final step was panchayat touring and sub-case selection including three villages per block. To select sub-cases, block officials led tours of 19 panchayats in their areas. During the panchayat tours, 28 Pradhans and informed villagers were interviewed using a brief semi-structured interview format to collect basic village and sanitation information. Three sub-cases were identified in Samalkha, including Basara, Dhindar, and Namuda Gram Panchayats. Three sub-cases were identified in Bhuta Block, including Mandora, Kaundada, and Simra Keshopur Gram Panchayats. A summary of panchayats toured is in *Table C.5*. Sub-cases selected for research are highlighted and in bold.

Table C.5: Summary of Gram Panchayat Tours

State	Location	No. Interviewees	Position	Date
Samalkha, Haryana	Chaddia	1	Pradhan's Husband	14/3/11
	Basara	1	Pradhan	15/3/11
	Budhanpur	1	Ex-Pradhan's Son	15/3/11
	Karkoli	1	Ex-Pradhan	15/3/11
	Bilaspur	2	Pradhan, ex-Pradhan	15/3/11
	Pawti	1	Pradhan	16/3/11
	Saher Malpur	1	Pradhan	16/3/11
	Jhorasi Khasi	2	Pradhan, Sanitation Chair	17/3/11
	Simblegarh	Group	Villagers (no Pradhan)	27/3/11
	Dhindar	1	Pradhan	30/3/11
	Dhodpur	2	Pradhan's Sons	2/4/11
	Namuda	1	Pradhan	2/4/11
Bhuta, Uttar Pradesh	Gogal Nagari	2	Pradhan, Secretary	15/4/11
	Paungala	1	Pradhan	15/4/11
	Khardahji Gajnera	2	Pradhan, Secretary	18/4/11
	Atthana	2	Pradhan, Secretary	18/4/11
	Mandora	2	Pradhan, ex-Pradhan	18/4/11
	Kaundada	2	Pradhan, ex-Pradhan	18/4/11
	Simra Keshopur	3	Pradhan, Pradhan's Sons	28/4/11

After collecting information from panchayats it was possible to select sub-cases using six criteria, seen in *Table C.6*. Villages had to have two to four year old projects to ensure time for sanitation adoption, met in all villages. Villages had to have only one village for ease of research conduct, which was met in all but one panchayat. Panchayats had to have 100 and 300 households at intervention time, a criterion all but one village met. Villages could not be located on a main highway in order to avoid peri-urban panchayats, met by all villages. Selected gram panchayats had to consist of at least 50 percent impoverished households, determined by number of below poverty line and landless households, met by all panchayats. Finally, as a whole gram panchayats selected had to represent the hardware subsidy modalities used in each block.

Table C.6: Gram Panchayat Selection Criteria

Criteria	Description	GPs Meeting
1.	Sanitation intervention two to four years ago	6
2.	One village per gram panchayat	5
3.	100 to 300 households per gram panchayat at project time	5
4.	Gram panchayats located off main highway	6
5.	50 percent or more poor (BPL + landless) households at project time	6
6.	Representative of block hardware subsidy modalities	6

Also, note methods in Phases 3 and 4 overlapped. After moving from state to village level in Haryana, then the methodology was repeated in Uttar Pradesh. Uttar Pradesh state officials, however, were met first in the sequence before meeting Haryana officials to ensure appropriate overall state selections prior to village emersion. A description of selected villages came in *Chapter 5: Case Study Profiles*.

Phase 4: Gram Panchayat Emersion

The fourth phase occurred from March to April 2011. All research activities in this phase occurred during village emersions of three to 11 days in length. The aim of living in panchayats during field research was to acquire full understanding of rural sanitation as well as the many other aspects of village life. Activities during emersions included Pradhan introductory meetings and semi-structured interviews, transect walks, gram panchayat worker semi-structured interviews, household interviews and observations, and focus group discussions. All research activities occurred while living in the research gram panchayats or neighbouring villages. A summary of emersion activities is in *Table C.7*.

Table C.7: Gram Panchayat Emersions Summary

State	GP	GP Worker Interviews	Household Interviews	FGDs	Period (days)
Haryana	Basara	7	37	2	20-31/3/11 (11)
	Dhindar	8	32	1	31/3/11-3/4/11 (4)
	Namuda	4	43	0	2-4/4/11 (3)
Uttar Pradesh	Mandora	8	31	2	19-22/4/11 (4)
	Kaundada	5	33	2	23-25/4/11 (3)
	Simra Keshopur	5	34	2	25-27/4/11 (3)
Total	-	37	210	9	28 days

Pradhan introductory meetings and interviews: The first village activity was an introductory meeting with the Pradhan. The introduction served to build rapport and explain in detail purpose of the research, what activities we would like to conduct, what we would require from them, and how much time activities would take. The meeting also served to build understanding of community socio-economic and sanitation conditions in order to ensure the community fit with the intended selection criteria and to adjust research methodology as necessary based on newly discovered information. Following introduction, we held a Pradhan semi-structured interview as a continuation to the brief interview conducted during the tour to collect additional information on interventions, outcomes, and challenges. Interviews with village leaders were always semi-structured and open-ended.

Transect walks: After the Pradhan interview we then asked the Pradhan to take a transect walk around the community to allow identification of past and current open defecation locations, to become acquainted with local surroundings, to allow villagers to become familiar with us, and to learn about village life in order to later navigate the village. Transect walks were again taken throughout emersions with villagers and independently to observe village activities and sanitation practices, and to be able to informally interact with and gain trust of villagers in research locations to ensure collection of accurate information. An important transect walk, when possible, was conducted at sunrise and sunset because these are the times when many people open defecate.

GP worker interviews: Along with Pradhans, community workers were interviewed. All available workers including masons, doctors, health workers, women's group leaders, sweepers, school principals, teachers, and anganwadi workers were interviewed with a semi-structured format. When conducting interviews with school and anganwadi staff, school and anganwadi toilets were observed. The purpose of worker interviews was to collect information from others knowledgeable about villages and sanitation interventions in order to triangulate information.

Household interviews and observation: At the household level research methods included interviews and sanitation observation. Simple and informal semi-structured, open-ended household interviews were conducted with at least 10 percent of households or at least 30 households per village to collect information on interventions, outcomes, and demographic and village information.

Purposive non-probability sampling was used to allow understanding of sustainability and equitability issues for the most commonly excluded, least capable households while also learning about the situations of the included, more capable households. To meet the research objective, poor and non-poor with and without latrines were included. Because household poverty and latrine access could not be known accurately beforehand, random or stratified sampling could not be used. Above and below poverty line classifications would suggest poverty could be known ahead of time, but it was known poor households could be called above poverty line and non-poor households could be called below poverty line. The inaccuracy of poverty classification was confirmed during village emersions, though more for poor than non-poor. Additionally, Pradhans may have known who received subsidies, but documentation of this was never available and Pradhans did not always know which households had constructed latrines. Under the assumption economic standing and latrine access was more uniform among non-poor households, it was determined more poor households would be included in the sample. To ensure understanding of situations for different groups in communities and since households tend to settle near others of similar caste and class, the sample was geographically spread to include groups throughout villages. Households were often selected with the help of a local village guide or after learning about community composition and settlement. We confirmed which households were poor and non-poor by recording a number of poverty indicators: house condition, water access, electricity availability, land ownership, monthly expenditure, amount spent on latrine. To summarize, the purposive non-probability sampling method sought to include a greater number of poor than non-poor households, to include poor and non-poor households with and without latrines, and to include households spread throughout communities to allow understanding of sanitation situation for all community groups. The upside of purposive non-probability sampling was ability to ensure understanding and inclusion of households of varying poverty levels, latrine access, and community groups where these characteristics were previously unknown. The downside of the method was lack of certainty of how well sampled households represented the situation of the entire village.

Table C.8 summarizes household interviews. The table shows there was more accurate poverty classification in Uttar Pradesh and three- to four-fifths of households interviewed were poor. It was more common for households to be above poverty line and poor than below poverty line and non-poor. I hoped to report results using actual poverty, but results were presented on poverty lines since interventions occur on these lines and Pradhans only knew sanitation interventions in these terms.

Table C.8: Household Survey Summary

GP	Haryana			Uttar Pradesh			Averages	
	Basara	Dhindar	Namuda	Mandora	Kaundada	Simra	HA	UP
APL	41%	66%	49%	37%	27%	26%	51%	30%
BPL	59%	34%	51%	63%	73%	74%	49%	70%
Non-poor APL	60%	43%	71%	73%	67%	67%	58%	69%
Poor APL	40%	57%	29%	27%	33%	33%	42%	31%
Non-poor BPL	5%	0%	14%	5%	8%	4%	7%	6%
Poor BPL	95%	100%	86%	95%	92%	96%	93%	94%
Non-poor	27%	28%	35%	30%	24%	21%	30%	25%
Poor	73%	72%	65%	70%	76%	79%	70%	75%
N=	37	32	43	30	33	34	-	-

For household information collection, semi-structured interviews were used rather than a typical structured household survey for three reasons: informality, adaptability, complexity. First, I sought to be informal in the research. To reach this end, interviews made information collection more comfortable; households could provide as little or as much information as they liked, and villagers would not feel intimidated. Also, with an informal format it was possible to adapt household interviews into informal focus group discussions if a group of villagers was around, which occurred regularly. Thus, with an informal interview it was possible to elicit perceptions from selected households as well as from other villagers. Thirdly, interviews were seen as more appropriate than traditional surveys to enhance understanding of the complex and sensitive issue that is village sanitation; interviews were seen as useful to better answer the 'why' questions and to be able to ask new questions as conversations unfolded. In parallel with household interviews, observation and photography were used to assess and document household latrine access. The household interview schedule was designed using elements of the operational framework and can be found in *Appendix E*.

Focus group discussions: Along with household interviews focus group discussions were used to collect information. Focus group discussions were held either in an organized or unorganized mode. An organized focus group discussion would occur when a Pradhan was willing to organize one, which usually meant the Pradhan was watching over if not attempting to lead the discussion. Therefore, I preferred to use informal focus group discussions either while conducting household interviews or while spending free time walking around the village. Normally a focus group discussion would include five to 15 community members. The purpose of focus group discussions was to allow triangulation of information collected and to explore more complex topics such as intra-village caste and political dynamics, which are important in understanding sanitation interventions and outcomes but are often not brought out fully in household interviews. It was surprising how openly villagers discussed presumably sensitive topics during unorganized focus group discussions.

Phase 5: Research Closing

Following field study from May to August 2011, research closing included analysis of quantitative and qualitative information. Thesis composition began in June 2011. A final presentation was made in August 2011 as the final step towards graduation.

Research Assumptions

Along with outlining methodology, it is important to list assumptions of research. Because the study sought to explore Government sanitation interventions, the most important assumptions are about the Total Sanitation Campaign. The following assumptions guided the research.

- The study was based on an assumption that subsidization influences sustainability and equitability of latrine access and usage. It was assumed other intervention aspects, such as social mobilization, institution building, and technical support, also influence outcomes.
- Based on expert interviews and literature review, it was assumed that although the Total Sanitation Campaign Guideline describes a demand-driven, people-centred, low-subsidy programme in practice rural sanitation interventions continue to be largely supply-led and subsidy-based in India. It was assumed the Department of Drinking Water and Sanitation is committed to the goals of the Guideline, but that due to inevitable limitations it has not been possible to bring into practice what is on paper. Similarly, it was assumed principles sought by Community-Led Total Sanitation implementers, such as non-subsidization, are not possible in practice because all implementations are part of the Total Sanitation Campaign in which subsidy is an integral component. Therefore, it is assumed conventional interventions aim to be demand-driven and intermediate in subsidy approach, but that in reality they are often supply-led and subsidy-based. Meanwhile, it is assumed Community-Led Total Sanitation interventions aim to be demand-driven without subsidy, but in reality they are less demand-driven than intended and use an intermediate subsidy approach.
- The research assumed Total Sanitation Campaign empirical study would make possible reflection on sanitation realities and identification of barriers and opportunities.

APPENDIX D: LIST OF MEETINGS AND INTERVIEWS

Table D.1: List of Expert, Administrator, and Officer Meetings and Interviews

	Name	Position	Affiliation	Date
1.	Dr. R. Chambers	Development Scholar	Institute of Development Studies - Sussex	2/9/10
2.	V. Mishra	Deputy Director	Uttarakhand Academy of Administration	29/9/10, 15/1/11, 17/2/11
3.	Dr. M. Kumar	Professor, Political Science	Kumaun University	29/9/10
4.	A. Mehta, N. Kumar	Programme Manager, Director	Knowledge Links	1/10/10
5.	J. Verhagen	Sanitation Specialist	International Water and Sanitation Centre	4/1/11
6.	J. P. Shukla	Director of Programmes	Knowledge Links	18/1/11, 22/1/11
7.	C. J. Costain	Regional Manager	Water and Sanitation Programme	19/1/11
8.	C. Prevost	Water Programme Officer	Water and Sanitation Programme	19/1/11
9.	S. Samuel	Sanitation Programme Officer	Water and Sanitation Programme	19/1/11
10.	V. Mittal	Director	Total Sanitation Campaign	21/1/11, 28/1/11
11.	R. Saikia, D. Joon, L. Kahlon	Director and Officers, Environmental Education	TERI University	24/1/11
12.	N. B. Mazumdar	Sanitation Consultant	IL & FS Consulting	24/1/11
13.	S. Mehrotra	Director General	Institute of Applied Manpower and Research	29/1/11
14.	S. Noia	Sanitation Consultant	Independent Consultant	2/2/11
15.	K. Kar	Founder/Director/Consultant	CLTS Foundation	2/2/11
16.	D. Sanan	Principal Secretary	Govt. of Himachal Pradesh	2/2/11
17.	D. Kapur	Director	India WASH Forum	3/2/11
18.	M. Thakkar	Sanitation Programme Officer	UNICEF	3/2/11
19.	Dr. K. R. Nayar	Professor, Community Health	Jawaharlal Nehru University	4/2/11
20.	I. Khurana	Programme Manager	WaterAid	8/2/11
21.	Dr. B. Pathak	Founder, Director	Sulabh International	9/2/11
22.	R. K. Srinivasan	Sanitation Coordinator	Plan International	10/2/11
23.	S. Das	Sanitation Officer	Govt. of Madhya Pradesh	11/2/11
24.	S. Menon	Sanitation Officer	UNICEF, Uttar Pradesh	14/2/11
25.	A. Kumar	Principal Secretary	Panchayati Raj, Uttar Pradesh	15/2/11
26.	D. S. Srivasatava	Director, TSC	Panchayati Raj, Uttar Pradesh	15/2/11
27.	G.C Rajak	Deputy Director, TSC	Panchayati Raj, Uttar Pradesh	16/2/11
28.	P. Yadav	Director, TSC	Panchayati Raj, Haryana	3/3/11
29.	A. Agrawal	Assistant District Coordinator (former)	District Rural Devt. Agency, Panipat	4/3/11
30.	D. Singh	Block Coordinator	Block Devt. Office, Samalkha	14/3/11
31.	A. Singha	Sanitation Programme Manager	Feedback Ventures	7/4/11
32.	A. Sashi	District Officer	Panchayati Raj, Bareilly	15/4/11
33.	J. Pant	District Coordinator, TSC	Panchayati Raj, Bareilly	16/4/11
33.	M. Kumar, R. Murti	Block Officer, Assistant Officer, Motivator	Block Devt. Office, Bhuta	16/4/11

APPENDIX E: HOUSEHOLD INTERVIEW SCHEDULE

1. Demographic

1.	Main source of income ?	
2.	BPL or APL / poor or non-poor ?	
3.	Amount land owned?	
4.	Water source?	
5.	Toilet owned?	

2. If household has toilet

6.	When constructed?	
7.	Is construction complete ?	
8.	Why constructed? Who told?	
9.	Who constructed?	
10.	Depth of pit?	
11.	Any problem with toilet now?	
12.	Any materials or cash provided?	
13.	Support used?	
14.	HH expenditure on own?	
15.	If not all members use, why not ?	

3. If household does not have toilet

16.	Any difficulty in not having toilet?	
17.	Why didn't household construct?	
18.	Did anyone ask to construct ?	
19.	Any materials or cash provided?	
20.	Toilet wanted ?	
21.	What further support needed?	

<i>Members</i>	<i># Total</i>	<i># Using Toilet</i>	<i># Not Using Toilet</i>
<i>Males</i>			
<i>Females</i>			

4. Closing

22.	What percent of HHs open defecate in village?	
23.	Any family health problems ?	
24.	Biggest problem in village?	
25.	What welfare support HH receives?	
26.	HH monthly expenditure ?	
27.	HH reservation ?	

5. Observation

28.	Is substructure complete?	
29.	Is superstructure complete?	
30.	Describe walls ?	
31.	Describe door ?	
32.	Is it hygienic ?	
33.	Is there any filling problem?	
34.	Does toilet look used ?	
35.	Latrine description ?	

6. Other

Photos:	
Notes:	

Note: HH = Household

APPENDIX F: ACCESS AND USAGE DATA

Access Gap Data

Below is household access data from Pradhan estimates, household interviews, and overall estimates. Overall estimates were determined from Pradhan, community worker, and household interviews.

Table F.1: Basara, Haryana Alternative Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
Access (Pre-TSC)	51% (38/75)	8% (7/85)	28% (45/160)
Gap (Pre-TSC)	49% (37/75)	92% (78/85)	72% (115/160)
Access (2011)	100% (87/87)	100% (96/96)	100% (183/183)
Gap (2011)	0% (0/87)	0% (0/96)	0% (0/183)
Household Interviews			
Access (2011)	93% (14/15)	95% (21/22)	95% (35/37)
Gap (2011)	7% (1/15)	5% (1/22)	5% (2/37)
Overall Estimates			
Access (2011)	94-99%	93-98%	93-98%
Gap (2011)	1-6%	2-7%	2-7%

Table F.2: Dhindar, Haryana Alternative Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
Access (Pre-TSC)	21% (21/98)	7% (9/132)	13% (30/230)
Gap (Pre-TSC)	79% (77/98)	93% (123/132)	87% (200/230)
Access (2011)	100% (215/215)	89% (31/35)	98% (246/250)
Gap (2011)	0% (0/215)	11% (4/35)	2% (4/250)
Household Interviews			
Access (2011)	71% (15/21)	55% (6/11)	66% (21/32)
Gap (2011)	29% (6/21)	45% (5/11)	34% (11/32)
Overall Estimates			
Access (2011)	84-89%	68-73%	82-87%
Gap (2011)	11-16%	27-32%	13-18%

Table F.3: Namuda, Haryana Alternative Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
Access (Pre-TSC)	9% (21/240)	4% (4/100)	7% (25/340)
Gap (Pre-TSC)	91% (219/240)	96% (96/100)	93% (315/340)
Access (2011)	70% (190/270)	82% (90/110)	74% (280/380)
Gap (2011)	30% (80/270)	18% (20/110)	26% (100/380)
Household Interviews			
Access (2011)	43% (9/21)	45% (10/22)	44% (19/43)
Gap (2011)	57% (12/21)	55% (12/22)	56% (24/43)
Overall Estimates			
Access (2011)	56-61%	54-59%	55-60%
Gap (2011)	39-44%	41-46%	40-45%

Table F.4: Mandora, Uttar Pradesh Conventional Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
<i>Access (Pre-TSC)</i>	0% (0/120)	0% (0/160)	0% (0/280)
<i>Gap (Pre-TSC)</i>	100% (120/120)	100% (160/160)	100% (280/280)
<i>Access (2011)</i>	0% (0/129)	41% (70/171)	23% (70/300)
<i>Gap (2011)</i>	100% (129/129)	59% (101/171)	77% (230/300)
Household Interviews			
<i>Access (2011)</i>	36% (4/11)	57% (11/19)	50% (15/30)
<i>Gap (2011)</i>	64% (7/11)	43% (8/19)	50% (15/30)
Overall Estimates			
<i>Access (2011)</i>	5-10%	39-44%	23-28%
<i>Gap (2011)</i>	90-95%	56-61%	72-77%

Table F.5: Kaundada, Uttar Pradesh Conventional Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
<i>Access (Pre-TSC)</i>	0% (0/140)	0% (0/160)	0% (0/300)
<i>Gap (Pre-TSC)</i>	100% (140/140)	100% (160/160)	100% (300/300)
<i>Access (2011)</i>	7% (10/150)	94% (160/170)	53% (170/320)
<i>Gap (2011)</i>	93% (140/150)	6% (10/170)	47% (150/320)
Household Interviews			
<i>Access (2011)</i>	67% (6/9)	79% (19/24)	76% (25/33)
<i>Gap (2011)</i>	33% (3/9)	21% (5/24)	24% (8/33)
Overall Estimates			
<i>Access (2011)</i>	14-19%	79-84%	52-57%
<i>Gap (2011)</i>	81-86%	16-21%	43-48%

Table F.6: Simra Keshopur, Uttar Pradesh Conventional Household Sanitation Access

	APL Households	BPL Households	All Households
Pradhan Estimates			
<i>Access (Pre-TSC)</i>	0% (0/120)	0% (0/110)	0% (0/230)
<i>Gap (Pre-TSC)</i>	100% (120/120)	100% (110/110)	100% (230/230)
<i>Access (2011)</i>	11% (14/127)	46% (56/123)	28% (70/250)
<i>Gap (2011)</i>	89% (113/127)	54% (67/123)	72% (180/250)
Household Interviews			
<i>Access (2011)</i>	67% (6/9)	36% (9/25)	44% (15/34)
<i>Gap (2011)</i>	33% (3/9)	64% (16/25)	56% (19/34)
Overall Estimates			
<i>Access (2011)</i>	18-23%	31-36%	25-30%
<i>Gap (2011)</i>	77-82%	64-69%	70-75%

Access Sustainability Data

Below is access sustainability data from households. A filling problem can occur due to a shallow substructure, a privacy problem can occur due to an incomplete superstructure, a water problem can occur when water is not accessible near the home, and a hygiene problem can occur due to a latrine that is unclean. Substructure, superstructure, and auxiliary problems could be fully or partially present in any individual household latrine. Overall access reflects how many latrines exhibited at least one of the traits of unsustainable access of households interviewed.

Table F.7: Basara, Haryana Alternative Access Sustainability Problems

	APL Households	BPL Households	All Households
Substructure Problems			
<i>Filling Problem</i>	21% (3/14)	24% (5/21)	23% (8/35)
Superstructure Problems			
<i>Privacy Problem</i>	14% (2/14)	24% (5/21)	20% (7/35)
Auxiliary Problems			
<i>Water Problem</i>	0% (0/14)	5% (1/21)	3% (1/35)
<i>Hygiene Problem</i>	0% (0/14)	0% (0/21)	0% (0/35)
Overall Access			
<i>Unsustainable Access</i>	29% (4/14)	33% (7/21)	31% (11/35)
<i>Sustainable Access</i>	71% (10/14)	67% (14/21)	69% (24/35)

Table F.8: Dhindar, Haryana Alternative Access Sustainability Problems

	APL Households	BPL Households	All Households
Substructure Problems			
<i>Filling Problem</i>	20% (3/15)	50% (3/6)	29% (6/21)
Superstructure Problems			
<i>Privacy Problem</i>	47% (7/15)	17% (1/6)	38% (8/21)
Auxiliary Problems			
<i>Water Problem</i>	27% (4/15)	33% (2/6)	29% (6/21)
<i>Hygiene Problem</i>	7% (1/15)	0% (0/6)	5% (1/21)
Overall Access			
<i>Unsustainable Access</i>	60% (9/15)	67% (4/6)	62% (13/21)
<i>Sustainable Access</i>	40% (6/15)	33% (2/6)	38% (8/21)

Table F.9: Namuda, Haryana Alternative Access Sustainability Problems

	APL Households	BPL Households	All Households
Substructure Problems			
<i>Filling Problem</i>	0% (0/9)	50% (5/10)	26% (5/19)
Superstructure Problems			
<i>Privacy Problem</i>	0% (0/9)	50% (5/10)	26% (5/19)
Auxiliary Problems			
<i>Water Problem</i>	0% (0/9)	40% (4/10)	21% (4/19)
<i>Hygiene Problem</i>	0% (0/9)	30% (3/10)	16% (3/19)
Overall Access			
<i>Unsustainable Access</i>	0% (0/9)	70% (7/10)	37% (7/19)
<i>Sustainable Access</i>	100% (9/9)	30% (3/10)	63% (12/19)

Table F.10: Mandora, Uttar Pradesh Conventional Access Sustainability Problems

	APL Households	BPL Households	All Households
Substructure Problems			
<i>Filling Problem</i>	75% (3/4)	55% (6/11)	60% (9/15)
Superstructure Problems			
<i>Privacy Problem</i>	0% (0/4)	0% (0/11)	0% (0/15)
Auxiliary Problems			
<i>Water Problem</i>	0% (0/4)	0% (0/11)	0% (0/15)
<i>Hygiene Problem</i>	0% (0/4)	0% (0/11)	0% (0/15)
Overall Access			
<i>Unsustainable Access</i>	75% (3/4)	55% (6/11)	60% (9/15)
<i>Sustainable Access</i>	25% (1/4)	45% (5/11)	40% (6/15)

Table F.11: Kaundada, Uttar Pradesh Conventional Access Sustainability Problems

	APL	BPL	Total
Substructure Problems			
<i>Filling Problem</i>	50% (3/6)	63% (12/19)	64% (16/25)
Superstructure Problems			
<i>Privacy Problem</i>	0% (0/6)	0% (0/19)	0% (0/25)
Auxiliary Problems			
<i>Water Problem</i>	0% (0/6)	5% (1/19)	4% (1/25)
<i>Hygiene Problem</i>	17% (1/6)	5% (1/19)	8% (2/25)
Overall Access			
<i>Unsustainable Access</i>	67% (4/6)	63% (12/19)	64% (16/25)
<i>Sustainable Access</i>	33% (2/6)	37% (7/19)	36% (9/25)

Table F.12: Simra Keshopur, Uttar Pradesh Conventional Access Sustainability Problems

	APL Households	BPL Households	All Households
Substructure Problems			
<i>Filling Problem</i>	0% (0/6)	0% (0/9)	0% (0/15)
Superstructure Problems			
<i>Privacy Problem</i>	50% (3/6)	22% (2/9)	33% (5/15)
Auxiliary Problems			
<i>Water Problem</i>	0% (0/6)	11% (1/9)	7% (1/15)
<i>Hygiene Problem</i>	0% (0/6)	0% (0/9)	0% (0/15)
Overall Access			
<i>Unsustainable Access</i>	50% (3/6)	22% (2/9)	33% (5/15)
<i>Sustainable Access</i>	50% (3/6)	78% (7/9)	67% (10/15)

Usage Gap Data

Below is household usage data from Pradhan estimates, household interviews, and overall estimates. Overall estimates were determined from Pradhan, community worker, and household interviews.

Table F.13: Basara, Haryana Alternative Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	8% (13/160)		
Gap (Pre-TSC)	92% (147/160)		
Usage (2011)	95% (174/183)		
Gap (2011)	5% (9/183)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	93% (14/15)	77% (17/22)	84% (31/37)
Gap (2011)	7% (1/15)	23% (5/22)	16% (6/37)
Overall Estimates	APL Households	BPL Households	All Households
Usage (2011)	89-94%	81-86%	85-90%
Gap (2011)	6-11%	14-19%	10-15%

Table F.14: Dhindar, Haryana Alternative Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	10% (23/230)		
Gap (Pre-TSC)	90% (207/230)		
Usage (2011)	98% (246/250)		
Gap (2011)	2% (4/250)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	43% (9/21)	45% (5/11)	44% (14/32)
Gap (2011)	57% (12/21)	54% (6/11)	56% (18/32)
Overall Estimates			
Full Usage (2011)	71-76%	52-57%	68-73%
Gap (2011)	24-29%	43-48%	27-32%

Table F.15: Namuda, Haryana Alternative Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	5% (17/340)		
Gap (Pre-TSC)	95% (323/340)		
Usage (2011)	70% (266/380)		
Gap (2011)	30% (114/380)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	33% (7/21)	32% (7/22)	33% (14/43)
Gap (2011)	67% (14/21)	68% (15/22)	67% (29/43)
Overall Estimates			
Full Usage (2011)	45-50%	36-41%	40-45%
Gap (2011)	50-55%	59-64%	55-60%

Table F.16: Mandora, Uttar Pradesh Conventional Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	0% (0/280)		
Gap (Pre-TSC)	100% (280/280)		
Usage (2011)	23% (69/300)		
Gap (2011)	77% (231/300)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	9% (1/11)	26% (5/19)	20% (6/30)
Gap (2011)	91% (10/11)	74% (14/19)	80% (24/30)
Overall Estimates			
Full Usage (2011)	2-7%	15-20%	10-15%
Gap (2011)	93-98%	80-85%	85-90%

Table F.17: Kaundada, Uttar Pradesh Conventional Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	0% (0/300)		
Gap (Pre-TSC)	100% (300/300)		
Usage (2011)	53% (170/320)		
Gap (2011)	47% (150/320)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	22% (2/9)	13% (3/24)	15% (5/33)
Gap (2011)	78% (7/9)	88% (21/24)	85% (28/33)
Overall Estimates			
Full Usage (2011)	13-18%	16-21%	15-20%
Gap (2011)	82-87%	79-84%	80-85%

Table F.18: Simra Keshopur, Uttar Pradesh Conventional Household Sanitation Usage

Description	Usage Values		
Pradhan Estimates	All Households		
Usage (Pre-TSC)	0% (0/230)		
Gap (Pre-TSC)	100% (230/230)		
Usage (2011)	28% (70/250)		
Gap (2011)	72% (180/250)		
Household Interviews	APL Households	BPL Households	All Households
Full Usage (2011)	33% (3/9)	20% (5/25)	24% (8/34)
Gap (2011)	67% (6/9)	80% (20/25)	76% (26/34)
Overall Estimates			
Full Usage (2011)	18-23%	19-24%	19-24%
Gap (2011)	77-82%	76-81%	76-81%

Usage Sustainability Data

Below is usage sustainability data from households. No access, unsustainable access, and open defecation (OD) preference indicate situations of unsustainable usage.

Table F.19: Basara, Haryana Alternative Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	7% (1/15)	5% (1/22)	5% (2/37)
Unsustainable Access	0% (0/15)	18% (4/22)	11% (4/37)
OD Preference	0% (0/15)	0% (0/22)	0% (0/37)
Unsustainable Usage	7% (1/15)	23% (5/22)	16% (6/37)
Sustainable Usage	93% (14/15)	77% (17/22)	84% (31/37)

Table F.20: Dhindar, Haryana Alternative Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	29% (6/21)	45% (5/11)	34% (11/32)
Unsustainable Access	29% (6/21)	9% (1/11)	22% (7/32)
OD Preference	0% (0/21)	0% (0/11)	0% (0/32)
Unsustainable Usage	57% (12/21)	55% (6/11)	56% (18/32)
Sustainable Usage	43% (9/21)	45% (5/11)	44% (14/32)

Table F.21: Namuda, Haryana Alternative Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	57% (12/21)	55% (12/22)	56% (24/43)
Unsustainable Access	0% (0/21)	14% (3/22)	7% (3/43)
OD Preference	10% (2/21)	0% (0/22)	5% (2/43)
Unsustainable Usage	67% (14/21)	68% (15/22)	67% (29/43)
Sustainable Usage	33% (7/21)	32% (7/22)	33% (14/43)

Table F.22: Mandora, Uttar Pradesh Conventional Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	64% (7/11)	42% (8/19)	50% (15/30)
Unsustainable Access	18% (2/11)	16% (3/19)	17% (5/30)
OD Preference	9% (1/11)	16% (3/19)	13% (4/30)
Unsustainable Usage	91% (10/11)	74% (14/19)	80% (24/30)
Sustainable Usage	9% (1/11)	26% (5/19)	20% (6/30)

Table F.23: Kaundada, Uttar Pradesh Conventional Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	33% (3/9)	21% (5/24)	24% (8/33)
Unsustainable Access	33% (3/9)	42% (10/24)	39% (13/33)
OD Preference	11% (1/9)	25% (6/24)	21% (7/33)
Unsustainable Usage	78% (7/9)	88% (21/24)	85% (28/33)
Sustainable Usage	22% (2/9)	12% (3/24)	15% (5/33)

Table F.24: Simra Keshopur, Uttar Pradesh Conventional Usage Sustainability Problems

	APL Households	BPL Households	All Households
No Access	33% (3/9)	64% (16/25)	56% (19/34)
Unsustainable Access	22% (2/9)	8% (2/25)	12% (4/34)
OD Preference	11% (1/9)	8% (2/25)	9% (3/34)
Unsustainable Usage	67% (6/9)	80% (20/25)	76% (26/34)
Sustainable Usage	33% (3/9)	20% (5/25)	24% (8/34)

APPENDIX G: VITA

Originally from Milwaukee, Wisconsin, USA, Brian graduated from the University of Minnesota with a Bachelor of Civil Engineering and an Architecture minor in 2009. During his undergraduate, Brian volunteered with Engineers Without Borders-USA, a non-profit that seeks to help communities in developing countries improve their quality of life resources. After building interest in rural water and sanitation while working on projects in Uganda and Haiti, Brian joined the Master's in Sustainable Development-International Development at Utrecht University in the Netherlands. As part of the programme, he interned with UN-HABITAT Nepal researching School-Led Total Sanitation approaches and outcomes from February to June 2010. Over 5 months in 2011, Brian conducted research for this thesis in northern India with facilitation of numerous experts, officers, and leaders.