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## Report of the Baseline Study in the rural belt of Muzaffarpur and Buxar districts of Bihar

Under The Project of Promotion of Sanitation as a Business (SAAB)

Submitted

To



By

**Sarva Seva Samity Sanstha (SSSS)**

A Society Promoted by:



# Report of the Baseline Study in the rural belt of Muzaffarpur and Buxar districts of Bihar

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**Acronyms:**

*BDO: Block Development Officer*

*BPL: Below Poverty Line*

*CAG: Comptroller and Auditor General*

*CRSP: Central Rural Sanitation Programme*

*GP: Gram Panchayat*

*HH: Household*

*IFC: International Finance Corporation*

*IHHL: Individual Household Latrines*

*KAP: Knowledge, Attitude, Practice*

*LPG: Liquefied petroleum gas*

*MDG: Millennium Development Goals*

*MFI: Micro Finance Institute*

*NBA: Nirmal Bharat Aviyan*

*NFHS: National Family Health Survey*

*NH- National Highway*

*NGO: Non-Government Organization*

*NGP: Nirmal Gram Puraskar*

*NSSO: National Sample Survey Office*

*ODF: Open-Defecation Free*

*PoP: Point of Purchase*

*SaaB: Sanitation as a Business*

*SBM: Swachh Bharat Mission*

*SC: Scheduled Caste*

*S.D.- Standard Deviation*

*SHG- Self Help Group*

*SSSS: Sarva Seva Samity Sanstha*

*ST: Scheduled Tribe*

*SWA: Sanitation and Water for All*

*TSC: Total Sanitation Campaign*

*WASH: Water, Sanitation and Hygiene*

*WFP: Water for people*

*WSP: Water and Sanitation Program*

*Baseline Study Report (SaaB Project)*

## 1. Background:

### 1.1. Govt. efforts to increase sanitation coverage:

Since 1980s, rural sanitation came into focus by the Govt. of India. The Central Rural Sanitation Programme (CRSP) was started in 1986 to provide sanitation facilities in rural areas. Based on the evaluation result of CRSP, Total Sanitation Campaign (TSC) approach was formulated in 1999 with the goal of achieving universal rural sanitation coverage by 2012 and implemented by Ministry of Rural Development, Govt. of India. To give a fillip to the TSC, the government introduced an incentive programme (cash prize) known as Nirmal Gram Puraskar (NGP) in 2003.

In 2014, Swachh Bharat Abhiyan (Clean India Movement), a campaign by the Government of India to clean the streets, roads and infrastructure of the country's 4,041 statutory cities and towns, was launched. The government is aiming to achieve an Open-Defecation Free (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing 12 million toilets in rural India. Government and the World Bank signed a US\$1.5 billion loan agreement on 30<sup>th</sup> March 2016 for the Swachh Bharat Mission to support India's universal sanitation initiative. The World Bank will also provide a parallel \$25 million in technical assistance to build the capacity of select states in implementing community-led behavioural change programmes targeting social norms to help ensure widespread usage of toilets by rural households.

#### Evolution of Sanitation programme in India:

**Pre-1986:** Ad hoc investment through 5 year's plan

**1986-1998:** CRSP

**1996-2012:** TSC

**2014-Till date:** Swachh Bharat Abhiyan

But even after all these noble efforts by Govt., the impact of these initiatives in society, especially in rural society, is not encouraging. Unfortunately, India stood first position while comparing with other countries in respect of open defecation (Figure 1). Government data says that the pace of toilet construction increased in 2015-16. In 2013-14, the number of Individual household latrines (IHHLs) constructed under Nirmal Bharat Abhiyan (NBA)/ Swachh Bharat (SBM) is 4,976,294; in 2014-15 it is 5,854,987; in 2015-16 the number is

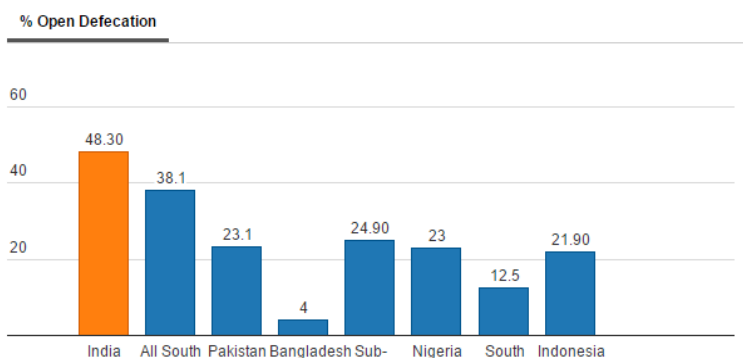


Figure1: International comparison of open defecation.

Source: Research institute for compassionate economics (r.i.c.e.), 2012

12,741,367, and in 2016-17 (till July) it is 2,559,540. But the toilet construction numbers are not always reliable, as was found by an audit report by Comptroller and Auditor General (CAG) of India that was released in December 2015. The CAG report found that during the UPA-II regime, government of at least 16 states exaggerated the data on IHHL by over 190% of the actual construction. Further, the CAG report said that, around 30% of the constructed toilets were found to be dysfunctional. On the other hand, the SQUAT survey conducted by r.i.c.e. found that 40% of the households that have a working latrine have at least one person who regularly defecates in the open. Moreover, data on knowledge, attitude and practice (KAP) on sanitation and hygiene have so far been available from KAP surveys, usually of limited scale and the report of these limited studies are not very encouraging.

#### Global Scenario:

- Globally, 2.5 billion people lack access to sanitation; 2.5 billion people use shared sanitation facilities or the facilities that do not meet minimum standard of hygiene; one billion practice open defecation (World Bank, 2013).
- World Health Organization (WHO) estimates that diseases related to unsafe sanitation were responsible for 6% of global deaths.

#### Indian Scenario:

- More than half of the 2.5 billion people, without improved sanitation, live in India or China.
- As per the most recent Swachhta Status Report of the National Sample Survey Office (NSSO, 2015), more than half of the rural population (52.1%) of the country still defecates in open.
- India has the largest numbers of malnourished people in the world. Studies show that malnourishment is not only the lack of access to food but also access to safe drinking water and sanitation.

#### Bihar Scenario:

- In Bihar, the sanitation coverage is less than 25% with usage percentage much lower. 75.8% of homes have no toilet facilities (Census 2011).
- “Sanitation-related rape” is nearly half of the more than 870 cases of rape in Bihar in 2012 (i.e. rapes take place when women go outside to defecate early in the morning and late evening) (BBC News).

## 1.2. Initiative of Water for People (WFP) and BASIX:

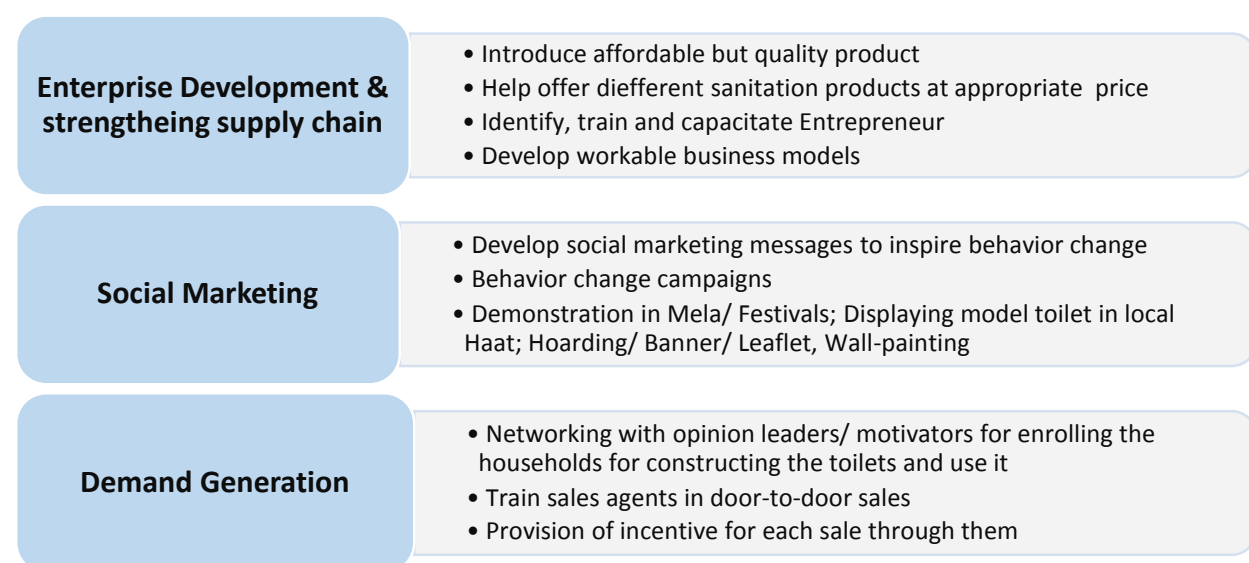
In the background of above situation, BASIX with the help of Water for People (WFP) started working in Manipur block of Muzaffarpur District, Bihar. WFP’s global sanitation strategy is

- To develop sanitation services that last and deliver affordable, beautiful toilets and/or quick hygienic emptying services
- To achieve full, permanent, easily accessible, sanitation services at scale, across cities and entire rural districts, across countries, and across regions. This is only possible by tapping in to the potential of the local private sector, designing and executing targeted marketing campaigns, and working closely with other like-minded local partners.



Community-led total sanitation (CLTS) is an approach to achieve sustained behavior change of people. It does not include the use of subsidies for hardware (such as toilets) and building toilets for the villagers with the belief that by provoking behavior change in the people this will ensure that they take ownership of their own sanitation situation, construct their own toilets (often pit latrines) and pay for necessary improvements themselves. On the other hand, WFP and BASIX started its initiative with the assumption that if the sanitation business can be established in an affordable price at doorstep with a strong supply chain and demand can be generated from a proper way and if latrine is being paid for by the household, then the percentage of latrine usage will increase. Side by side, it is important to provide improved sanitation solutions in a financially sustainable manner by selling at a price that the poor are willing and able to pay.

The project approach was establishing rural sanitation marketing<sup>1</sup> in the operational area including catalyzing a market, supporting businesses to get started, and then getting out of their way. The methodology was to lure private participation in forming a sanitation business by first starting their own small cement ring manufacturing unit and inviting potential entrepreneurs to understand and explore how the business worked. Main three components of the project were:



The main activities of the project were:

- Keeping barriers to market entry low and working with existing best-fit businesses wherever possible
- Providing training and support to businesses for taking the risk
- Understanding that sanitation can be a complementary product line within a larger business

<sup>1</sup> Sanitation marketing sees households as empowered consumers, not project beneficiaries. It focuses on the development of the sanitation marketplace, helping businesses to create and supply demand for low-cost sanitation products and services. Sanitation marketing uses the 4Ps of the marketing mix – product, place, promotion and price – to connect people to sanitation products and services they want and can afford.

- Encouraging competition
- Identifying appropriate exit strategies for market facilitators (often NGOs)
- Results-based monitoring
- Recruiting and training members from local community structures
- Helping nurture effective public-private partnerships

The project included both the demand side by increasing household awareness and motivation

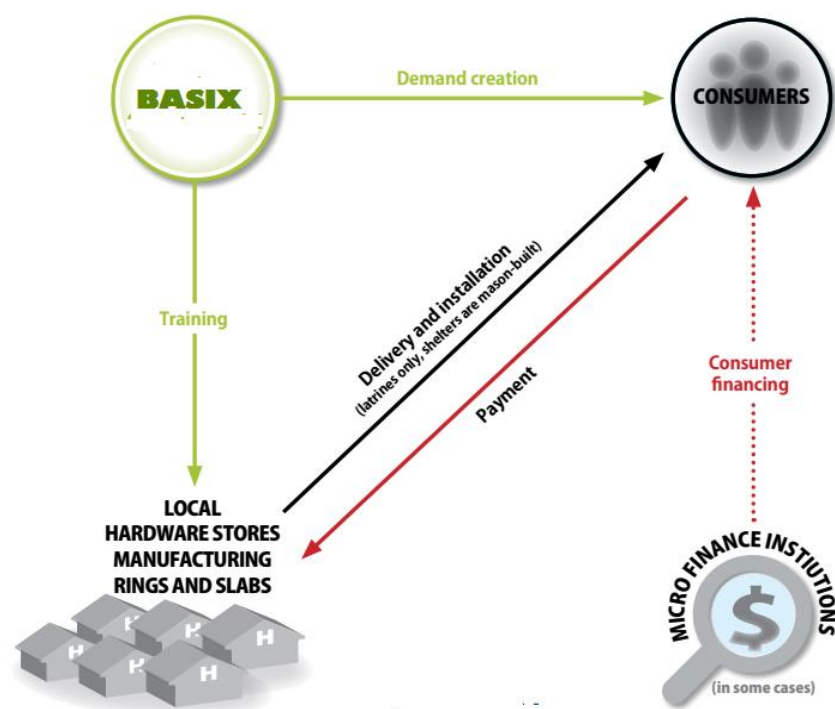


Figure 2: The Flow-chart showing the intervention of BASIX under Sanitation project

to invest in sanitation, and on the supply side by identifying and strengthening local businesses to take over the different stages of the supply chain (manufacturing, delivery and installation). The project emphasized at building entire chains that could be self-sustained after an initial intervention period. The project successfully engaged local businessman and existing construction entrepreneurs either to establish one stop shop or helping them expand their product range to latrines or latrine components. On the

other hand, the project also encouraged the entrepreneurs to design attractive, quality sanitation products, but convenient for the rural villagers.

From 2012 to 2013, BASIX with the help of WFP, facilitated the creation of eight small private-sector concrete ring suppliers in Minapur block of Muzaffarpur, mainly situated on the tarmac road leading to Shohar from Muzaffarpur city. In 2013, the project was closed, but by that time these eight entrepreneurs developed their competence and reputation against the surrounding community members. At the time they were making and supplying sufficient concrete rings to build 800 latrines per year, with the constraining factor being the demand for their products. Basix relationship with the established entrepreneurs was then limited to a few informal visits whilst traveling through Muzaffarpur.

After two years of withdrawing the project WFP undertook a study how the market behaved without the external driving force of a facilitating any organization. The report of this study done in Dec 2015 reveals that they were still in business and for some, trade and turnover increased. Moreover, 14 self-initiated entrepreneurs started sanitation business in that locality, which proves that there is potentiality of this business in that area.

Motivated by this, recently Water for people and BASIX jointly again stated the initiative to replicate the model in other three adjacent blocks of Muzaffarpur. Current research is the effort to understand the current sanitation scenario of Muzaffarpur and Buxar district.

## 2. Literature Review:

For this study, an intensive review of secondary literature was done. The literatures are mainly on the business aspects of the sanitation including market demand, supply chain and related issues. The brief of the literature review has been given below.

- A comparative study by WHO (2015) revealed that the sanitation situation of India is very poor in compared to the other country of South East Asia. In India the proportion of population used improved sanitation is only 40%, which is lower than the average proportion (49%) of South East Asia.

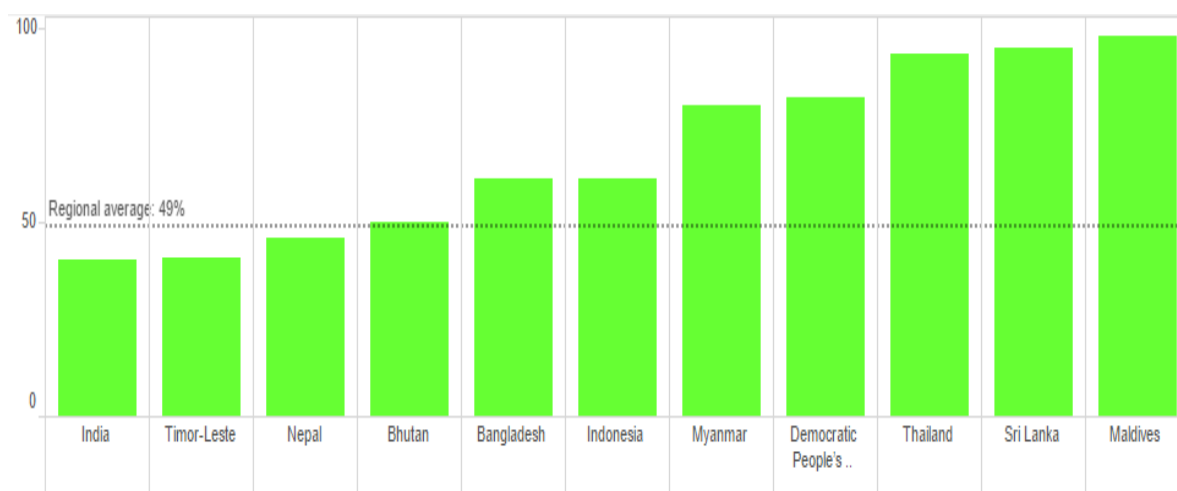


Figure 3: Country-wise comparison (in selected WHO region) of proportion of population used improved sanitation (Source: WHO 2015)

- Analysis of last two Census report reveals that the increase in toilet facility during last ten years (from 2001 to 2011) has been increased at the rate of just 1% every year. At this rate, India will be able to achieve universal sanitation only by 2081. But as per the Millennium Development Goals (MDG), India is bound to provide to 100% sanitation access by 2025, which is not possible at this rate.

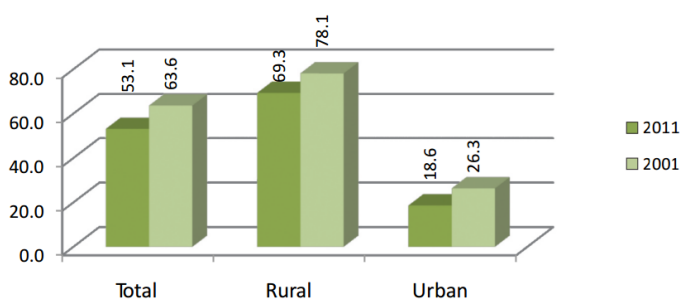


Figure 4: Percentage of HH without latrine (Source: Census 2001 & 2011)

- A study in 2013 by the Water and Sanitation Program (WSP) and International Finance Corporation (IFC) of the World Bank surveyed over 100 firms providing on-site sanitation services to the base of the pyramid of developing countries found that there are five myths regarding the business of sanitation. The main four of them are as follows:
  - **Myth-** *Firms serving the base of the pyramid are predominantly micro firms because the market is small.* **Actual-** Sanitation is a large market dominated by small players. It seems that there are presently no well-resourced players for whom on-site sanitation is a large enough business to warrant intensive efforts to develop and market solutions and coordinate activities across the supply chain.
  - **Myth-** *Sanitation is a low margin business.* **Actual-** Sanitation firms' margins per sale can climb relatively high up to 40% with space to increase by value-adding through labor. The range of firms' margin is 15-40%, quite similar to margins in construction supply retail. Micro sanitation firms have already taken advantage of the dramatic increases in contributing margins by moving from manufacture and sale of sanitation components to manufacture of components and installation (adding labor).
  - **Myth-** *Lack of interest in sanitation is driven by the lack of money.* **Actual-** Sanitation is a low expenditure priority for households, but the lack of interest is not necessarily driven by lack of money. Sanitation remains a low priority even where money is not an issue.
  - **Myth-** *Poor households are looking for 'improved' sanitation.* **Actual-** Poor households do not reference their desires against what governments or international standards define as "improved sanitation." To get households to invest in sanitation, they need an offer they cannot refuse: a quality, high value facility that is within their reach.
- Another study by World Bank with the aim of better examine the potential role of the domestic private sector in accelerating access, examined a selected number of African, Asian and Latin American countries and lays out a vision for how the domestic private sector can scale up water and sanitation services to the poor. The study found that on-site sanitation services in Bangladesh, Indonesia, Peru, and Tanzania is a potential \$US2.6 billion market out of which the poor make up a \$700 million estimated market, while building and operating rural piped water systems could generate \$90 million a year in Benin, Bangladesh, and Cambodia.

### 3. Objectives of the study:

The main objectives of the current empirical study are:

- To understand the current scenario of the POP based supply chain in Minapur area, where BASIX had developed entrepreneurs

- To understand the landscape of sanitation supply chain and sanitation status of some selected new geographical areas, where the implementation project has started side by side. So, based on the above understanding, to develop a cost-effective strategy for scaling up of sanitation services in the new areas.
- In Buxar, the study tried to understand the opportunities and suitabilities of expanding the current initiative in this area (it included status of sanitation coverage, Landscape of the sanitation supply chain, level of sanitation services available and customer awareness & satisfaction level).

#### 4. Geo Coverage of the study:

Based on the availability of latrine within premises, India has been divided into five zones. The percentage of HHs having no latrine facilities within premises- a) 35.0 and below b) 35.1- 50.0, c) 50.1- 60.0, d) 60.1- 70.0 and e) above 70.0. The present study was conducted in such a state (Bihar), which has fallen into the last category (Annexure- 1).

##### 4.1. Selection of area

The study covered two districts- Muzaffarpur and Buxar, in the state of Bihar. The map of the location has been presented in Figure 5a, 5b, 5c and 5d.

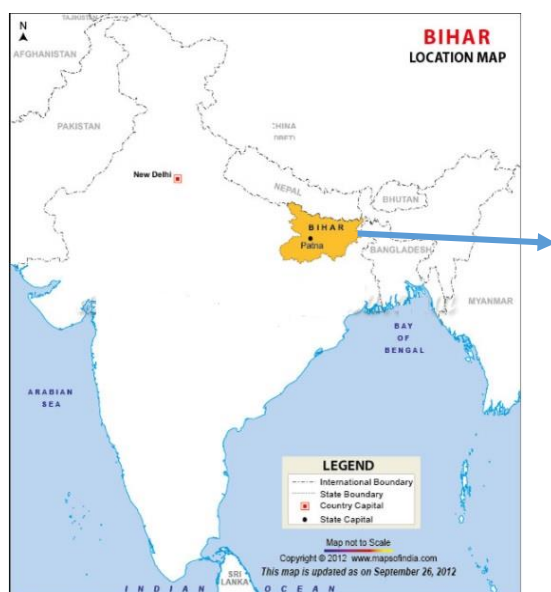


Figure 5a: Map of India showing the studied State

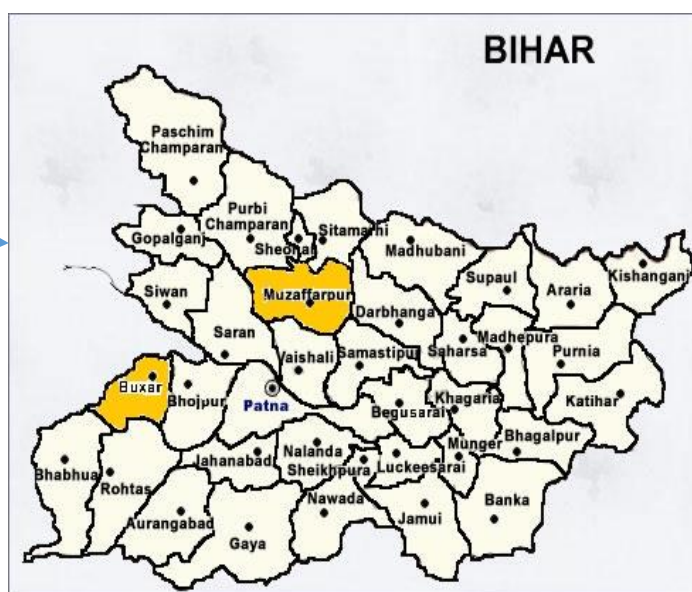


Figure 5b: Map of Bihar showing the studied Districts

In Muzaffarpur District, Minapur block (BASIX started working on Sanitation in this block from 2013 and catalyzed the growth of POP based supply chain here.) and other three new blocks- Kanti, Mushahari and Aurai (where BASIX just started working) were included.

Apart from these, one control block was selected based on two criteria:

- Socio-economic condition of the block is similar to those of the other blocks
- The block is not adjacent to Minapur block (to avoid the effect of implementing block)

The study also covered four new blocks of Buxar Districts (where the initiative can be extended in future, if required). The District has been divided into four zones- North, South, East and West. One block from each zone has been chosen. The names of the blocks are:

- Simri (from North zone)
- Nawanagar (from South zone)
- Brahmapur (from East zone)
- Chausa (from West zone)



Figure 5c: Map of Muzaffarpur district showing the studied blocks

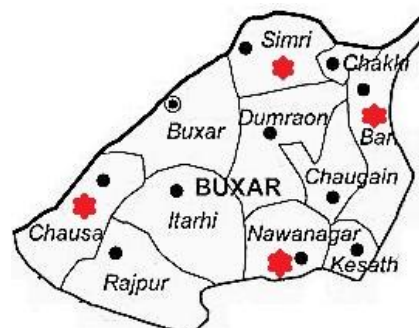


Figure 5d: Map of Buxar district showing the studied blocks

Table 1: Studied area

District	Block	Panchayat	Village/ Ward
Muzaffarpur	Minapur	Alineura	Motha
			Alineura
		Turki East	Haathi
	Aurai	Aurai	Terha
			Aurai
		Bisanpur Jagdishpur	
	Kanti	Tarajiwar	Tarajiwar
			Paramjiwar
		Harchanda	Harchanda
	Musahri	Sherukanhin	Surajpur
			Mubarakhpur
			Sherukanhin
Buxar	Nawanagar	Manika Harikesh	Manika bisulpur chand
			Mominpur
		Rohua	Rohua
	Chausa	Bandra	Kotiya
			Chapra



			Bandra
		Rampur Dayal	Rampur Dayal
			Piyar
District total	5	10	20
Buxar	Chausha	Banarpur	Banarpur
			Narayanpur
		Chausha	Chausa
			Neaipur
	Nawanagar	Nawanagar	Duddipatti
			Bisuwa
		Athar	Athar
			Athar Arazi
	Simri	Simri	Duddipatti
			Haluiapati
		Balihar	Balihar
			Nagpura
	Brahmpur	Brahmpur	Brahmapur-15
			Brahmapur-16
		Yogia	Kiratsagar
			Ojhawalia
District total	4	8	16
<b>Grand Total</b>	<b>9</b>	<b>18</b>	<b>36</b>

## 4.2. District and Block profile:

### 4.2.1. Muzaffarpur district:

Muzaffarpur district (Latitude- East 84° 53' to 85° 45', Latitude- North 25° 54' to 26° 23') was formed in 1875 from the district Tirhut. The total area of Muzaffarpur district is 3,172 km<sup>2</sup>. Thus the density of Muzaffarpur district is 1,514 people per square kilometer.

As per Census 2011, Muzaffarpur district has total population of 4,801,062, out of which 2,527,497 are males while 2,273,565 are females. Sex Ratio of the district is 900. Schedule Caste (SC) constitutes 15.7% while Schedule Tribe (ST) were 0.1% of total population. 9.9% people of total population lives in Urban areas while 90.1% lives in the Rural areas. The average literacy rate in urban areas is 80.2% while that in the rural areas is 61.5%.

Total literacy rate of the district is 63.43% (male- 58.84%; female- 44.96%), which is greater than average literacy rate 61.8% of Bihar.

Muzaffarpur is one of the largest commercial center in North Bihar. It is famous for litchis which is a fruit famous for its juicy taste and the help earning a number of households. In Muzaffarpur district out of total population, 1,547,586 were engaged in work activities. 58.8% of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 41.2% were involved in Marginal activity providing livelihood for less than 6 months. Of 1,547,586

workers engaged in Main Work, 198,918 were cultivators (owner or co-owner) while 366,307 were Agricultural labourer.

To facilitate the administration, Muzaffarpur district is further divided into 16 Blocks/ Taluka/ Tehsil/ Tahsil (Sahebganj, Motipur, Paroo, Saraiya, Kurhani, Kanti, Marwan, Minapur, Mushaharii, Bochahan, Aurai, Katara, Gaighat, Muraul, Sakra And Bandra), which are administrative divisions denoting sub-districts. Out of these 16 blocks, five blocks were included in the present study (as mentioned earlier).

**Table 2a: Socio-economic condition of the studied blocks in Muzaffarpur**

Parameters	Minapur	Aurai	Kanti	Mushahari	Bandra
Total Population	340,925	290,545	272,858	683,073	124,057
% of SC	16.20%	12.20%	17.30%	13.80%	20.90%
% of ST	0%	0%	0.10%	0.20%	0%
Avg Literacy	54.95%	52.45%	66.68%	76.13%	59.71%
Male Literacy	63.34%	60.92%	73.88%	80.48%	68.61%
Female Literacy	45.43%	42.82%	58.64%	71.27%	50.53%
Sex Ratio	886	887	899	893	960
Main worker	60.10%	60.90%	60.10%	75.50%	57%
Marginal Worker	39.90%	39.10%	39.90%	24.50%	43%

#### 4.2.2. Buxar Districts:

Buxar district (Latitude- 83°58'; Longitude-25°33'N) has located in the western part of Bihar bordering Eastern Uttar Pradesh. It is a famous historical place since the epic period for being the seats of eminent saints, battlefield of Gods and Demons as per Puranas and a combat zone between foreign invasion and countrymen in modern history.

The total area of Buxar district is 1,703 km<sup>2</sup>. Thus the density of Buxar district is 1,002 people per square kilometer. As per the initial provisional data of Census 2011, around 22 sq. km. area is under urban region while 1,682 sq. km. is under rural region.

The district is surrounded by Ganga River in the North, Rohtas in South, Bhoipur in East and Gaziabad (Uttar Pradesh) in the West.

Total population of 1,706,352 (total HH 261,660) as per the Census 2011. Out of which 887,977 are males while 818,375 are females. The Average Sex Ratio of Buxar district is 922. Out of total population, 9.6% people lives in urban areas while 90.4% lives in the rural areas. Schedule Caste (SC) constitutes 14.8% while Schedule Tribe (ST) were 1.6% of total population in Buxar district of Bihar.



The total literacy rate of Buxar district is 70.14% (Male-80.72% and female- 58.63%), which is greater than average literacy rate 61.8% of Bihar.

Out of total population of the district, 538,322 were engaged in work activities. 61% of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 39% were involved in Marginal activity providing livelihood for less than 6 months. Of 538,322 workers engaged in Main Work, 105,122 were cultivators (owner or co-owner) while 114,292 were Agricultural labourer.

Due to deforestation, the forest area of this district is very thin. Some common trees of this district are Mango, Seasm, Mahua, Bamboo and some types of long grasses (Jhalas) are found near diara area of the river Ganga. Jhalas grass is mostly used in roat making of kuccha houses. The river Sone and Ganges are the perennial source of surface water. They can provide irrigation to major portion of agricultural land.

The district of Buxar has large majority of the people engaged in agricultural pursuits and deriving their livelihood from agricultural pursuits. The possession of livestock generally adds to the social status of the farmer. There are however different types of small scale and cottage industries located in this district of Buxar like Soap Industry, Timber and Furniture works, Leather Industry etc. The important wholesale markets in the district are at Buxar and Dumraon.

The present district of Buxar consists of areas under Buxar Sadar and Dumraon Sub-Division of the old Bhojpur district and came in existence in the year 1991. Buxar town is the headquarters of the district and also its principal town. The district consist of 11 Blocks, out of which 4 are in Buxar Sub-division (Buxar, Itarhi, Chousa, Rajpur) and 7 are in Dumraon Sub-devision (Dumraon, Nawanagar, Brahmpur, Kesath, Chakki, Chougain, Simri).

**Table 2b: Socio-economic condition of the studied blocks in Buxar**

Parameters	CHAUSHA	NAWANAGAR	SIMRI	BRAHMPUR
Total Population	103,670	166,534	207,225	196,070
% of SC	17.30%	14.60%	10.90%	13.50%
% of ST	1.40%	0.20%	2.80%	1.70%
Avg Literacy	71.27%	66.57%	68.30%	66.99%
Male Literacy	82.24%	78.76%	79.53%	78.56%
Female Literacy	59.25%	53.78%	55.89%	54.43%
Sex Ratio	916	951	921	922
Main worker	61.2%	52.80%	51.70%	60.40%
Marginal Worker	38.80%	47.20%	48.30%	39.60%

## 5. Methodology of the study:

### 5.1. Sampling process and Sample Size:

Based on the requirement of the study, the sampling was done.

**Table 3: Sampling process**

Particulars	Sampling process
Area selection- Block selection	Purposive Sampling <sup>2</sup>
Panchayat selection	Random Sampling <sup>3</sup>
Village selection	Convenient Sampling <sup>4</sup>
Selection of HH	Random Sampling
Selection of Entrepreneur	No Sampling method was used, as all the entrepreneurs available in the studied blocks were covered

From each block, two Panchayats was randomly selected. From each Panchayat, two villages were selected. From each village, 25 HHs were covered. Thus from each block, 100 HHs and from two districts a total of 900 HHs were covered. These were ensured the calculation of sample size at 95% confidence level.

**Table 4: Sample Size**

District	Block	No. of HH covered
Muzaffarpur	Minapur	100
	Aurai	100
	Kanti	100
	Musahri	100
	Bandra	100
District Total	5	500
Buxar	Chausha	100
	Nawanagar	100
	Simri	100
	Brahmapur	100
District Total	4	400
<b>Grant Total</b>	<b>9</b>	<b>900</b>

<sup>2</sup> **Purposive sampling** starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose.

<sup>3</sup> **Convenience sampling** (also known as Haphazard Sampling or Accidental Sampling) is a type of nonprobability or nonrandom sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study.

<sup>4</sup> **Random sampling or probability sampling** is a method of selecting a sample (**random sample**) from a statistical population in such a way that every possible sample that could be selected has a predetermined probability of being selected.

## 5.2. Nature of data:

Both types of data, primary as well as secondary, were collected for the present study.

### 5.2.1. Primary Data:

These were collected either through the observation by the team members or through the direct interaction with the respondents like villagers and stakeholders, using different tools. Both qualitative and quantitative information were collected from administration of these tools.

### 5.2.2. Secondary Data:

The secondary data was collected from the following sources, either published or unpublished:

- Articles published in national/international journals/ e-journal
- Books, Magazines and Newspapers
- Reports of different governments/ implementing agencies

## 5.3. Methods adopted for data collection:

A glimpse of tools/ methods used for collecting primary data has been provided in following table.

**Table 5: Methods used for primary data collection**

Type of respondent	Method used
village level	<ul style="list-style-type: none"> <li>• Non-participant observation method<sup>5</sup></li> <li>• Schedule method (Multiple choice)<sup>6</sup></li> <li>• Focused Group Discussion (FGD)<sup>7</sup></li> <li>• Case study method<sup>8</sup></li> </ul>
Govt level	<ul style="list-style-type: none"> <li>• Non-participant observation method</li> <li>• Open ended Schedule method</li> </ul>
Entrepreneur level	<ul style="list-style-type: none"> <li>• Non-participant observation method</li> </ul>

<sup>5</sup> In **observation method**, data from the field is collected with the help of observation by the observer or research team

<sup>6</sup> In **scheduled method**, some preplanned questions are prepared by the enumerator and after discussion with respondents, the enumerator fill the answer on the data collection sheet. It may be direct/indirect, open ended/closed ended, multiple choice

<sup>7</sup> **Focused Group Discussion (FGD)** is a data collecting strategy, which involves an organized discussion between interviewer and more than one respondents (ideally 6-10)

<sup>8</sup> **Case Study method** is essentially an intensive investigation of the particular unit under consideration

	<ul style="list-style-type: none"> <li>• Open ended schedule method</li> </ul>
Market survey	<ul style="list-style-type: none"> <li>• Observation method</li> <li>• Open ended schedule method</li> <li>• Personal interview method<sup>9</sup></li> </ul>

#### 5.4. Data processing and analysis:

All the collected quantitative data, in the form of code sheet (where necessary) was fed and processed in the software. Quantitative details were entered into excel. Both excel and SPSS were used for analytical purposes.

During data analysis as well as data processing, if any specific data of any HH found to be blank or contradictory, the data were excluded from that specific analysis. The sample size (n), therefore, may vary from one variable to other.

The quantitative data was analyzed in each variable separately, and supported by the case studies to answer and qualify the findings of the analysis (where possible). The findings of the study were presented in the form of tables and graphs (wherever applicable).

#### 5.5. Limitation of the Study:

Every study has its own limitations, since it covers a wide spectrum of activities and people with varying degrees of capacity and understanding level. Present survey was an effort to arrive at an approximation of truth, though with its inherent limitations. Possible and inevitable limitations of the present study are enumerated below:

- **Small sample size & Sampling error:** Due to limitation of time and resources, the research sample is restricted to 900 HH from two districts. As the sample surveys do imply the study of a small portion of the population, there would naturally be a certain amount of inaccuracy in the findings when applied to the whole population. As the sampling error inversely depends upon the sample size, small sample size may affect the findings of the study. The research team used available secondary data extensively to benchmark our findings against those and by and large the findings are aligned with the larger sample studies, if any.
- **Inter-observer error:** There may have been some limitations of the understanding of the instruments by different Field Investigators involved in different area. Since they are the key people in defining the field level interventions through primary data collection, their

<sup>9</sup> **Personal interview method** involves presentation or oral-verbal stimuli and reply in terms of oral-verbal responses

perceptions may have varied in different contexts which may be reflected in the research findings. Orientation trainings and continuous supervision were done to minimize this limitation.

- **Reliability of tools:** Collecting data through schedules has a possibility to have some problems. If the respondents are indifferent to answer the questions properly or if they hide the truth, the data becomes improper. To avoid this, the enumerators sometimes cross-checked the information, if s/he felt the need for the same.

## 6. Observations and analysis:

### 6.1. Sanitation Scenario and customer perspective:

#### 6.1.1. Muzaffarpur:

The study was conducted with 500 HHs of Muzaffarpur district. Table 6 describes the socio-demographic detail of the HHs. 74-99% of the sample HHs were from Hindu religion. For Minapur block, most of the sample population were from General caste, but for rest of the blocks informants were mainly from Scheduled Caste (SC) families.

In all five blocks, majority of the HHs (58-74%) were having 4-7 family members, average household size being 6.4, which is higher than both State (5.4) and National average (4.8) (NFHS-3, 2007).

The average literacy rate of the family members of the studied HHs varies from one block to another, the highest being 65% in Kanti and lowest being 51% in Minapur. (As per Census-2011, district literacy rate is 63.43% and state literacy rate is 61.8%).

Out of 500 HHs, only 7 families reported that they have moved to Bihar from other States.

10% families (50 HHs out of 500) have at least one family members, who is physically handicapped- either disability in limbs or eye, or speech debility.

**Table 6: Socio-demographic profile of the studied household of Muzaffarpur**

Block	Religion	Caste	Household member	Average literacy rate of HH members
Minapur (n=100)	Hindu- 74% Muslim- 26%	SC- 6% ST- 1% OBC- 9% General- 84%	< 4 members– 17% 4-7 members – 63% 8-10 members – 16% >10 members – 4%	51.0%
Aurai (n=100)	Hindu- 99% Muslim- 1%	SC- 47% ST- 0% OBC- 35%	< 4 members – 5% 4-7 members – 58% 8-10 members – 16%	52.3%

		General- 18%	>10 members – 21%	
Kanti (n=100)	Hindu- 81% Muslim- 19%	SC- 41% ST- 0% OBC- 25% General- 34%	< 4 members – 4% 4-7 members – 62% 8-10 members – 19% >10 members – 15%	65.0%
Mushahari (n=100)	Hindu- 84% Muslim- 26%	SC- 47% ST- 0% OBC- 35% General- 18%	< 4 members – 8% 4-7 members – 74% 8-10 members – 14% >10 members – 4%	58.8%
Bandra (n=100)	Hindu- 77% Muslim- 33%	SC- 57% ST- 4% OBC- 24% General- 13%	< 4 members – 7% 4-7 members – 70% 8-10 members – 16% >10 members – 5%	57.7%

The study also covered the economic status of the HHs (presented in Table 7), as financial condition relates with purchasing power, and therefore, might have correlation with the decision of purchasing toilet.

The study revealed that majorities of this sample population are mostly engaged as day labour for their primary means of occupation. They go to the nearby towns in the morning for earning as labour and come back to home in the evening. Agriculture is also there, but in very negligible proportion. Primary occupation of only 2-6% populations is business. Few of the families are primarily depended on other occupation like animal husbandry or part-time job or private tuition. All other blocks showed to have secondary occupation as an additional source of income. Especially vegetable farming is very common among them, from which they also earn.

More than 80% studied population are found to be below poverty line (BPL). But 1-9% families do not have any kind of ration card till date.

Monthly income was calculated as an approximate value, as most of the cases they could not calculate the exact monthly income. The value, however, varies from one HH to other, the minimum being 2,000/- in Aurai and maximum being 32,000/- in Bandra, though these extreme values are rare (Figure 6). The mean values of monthly income is highest in Bandra (8,835/-) and lowest in Minapur (5,505/-).

**Table 7: Economic status of the studied household of Muzaffarpur**

Block	Primary occupation	Secondary occupation	Below poverty line	Monthly family income (INR)
Minapur (n=100)	Agriculture-8% Business-5% Day labor-82% Others*- 5%	74% HHs reported agriculture as secondary occupation	APL- 9% BPL-87% Don't have any card- 4%	Min- 4,000/- Max-20,000/- Mean- 5,505/-

Aurai (n=100)	Agriculture-12% Business-4% Day labor-81% Others <sup>#</sup> - 3%	39% HHs reported secondary occupation (specially agriculture, animal husbandry and small business)	APL-19% BPL-80% Don't have any card- 1%	Min- 2,000/- Max-20,000/- Avg.- 8,610/-
Kanti (n=100)	Agriculture-3% Business-6% Day labor-86% Others <sup>\$</sup> - 5%	63% HHs reported secondary occupation (specially agriculture, animal husbandry, priest, farming and small business)	APL-8% BPL-86% Don't have any card- 6%	Min- 3,000/- Max-18,000/- Avg.- 8,110/-
Mushahari (n=100)	Agriculture-0% Business-3% Day labor-96% Others <sup>^</sup> - 1%	58% HHs reported secondary occupation (specially animal husbandry, tailoring, farming and small business)	APL-2% BPL-90% Don't have any card- 8%	Min- 5,000/- Max-19,000/- Avg.- 7,465/-
Bandra (n=100)	Agriculture-0% Business-2% Day labor-98% Others- 0%	56% HHs reported secondary occupation (specially agriculture, animal husbandry, farming and small business)	APL-6% BPL-85% Don't have any card- 9%	Min- 5,000/- Max-32,000/- Avg.- 8,835/-

\*Private tuition, Housewife

# Housewife, Poultry farming

\$ Job, Priest

^ Housewife

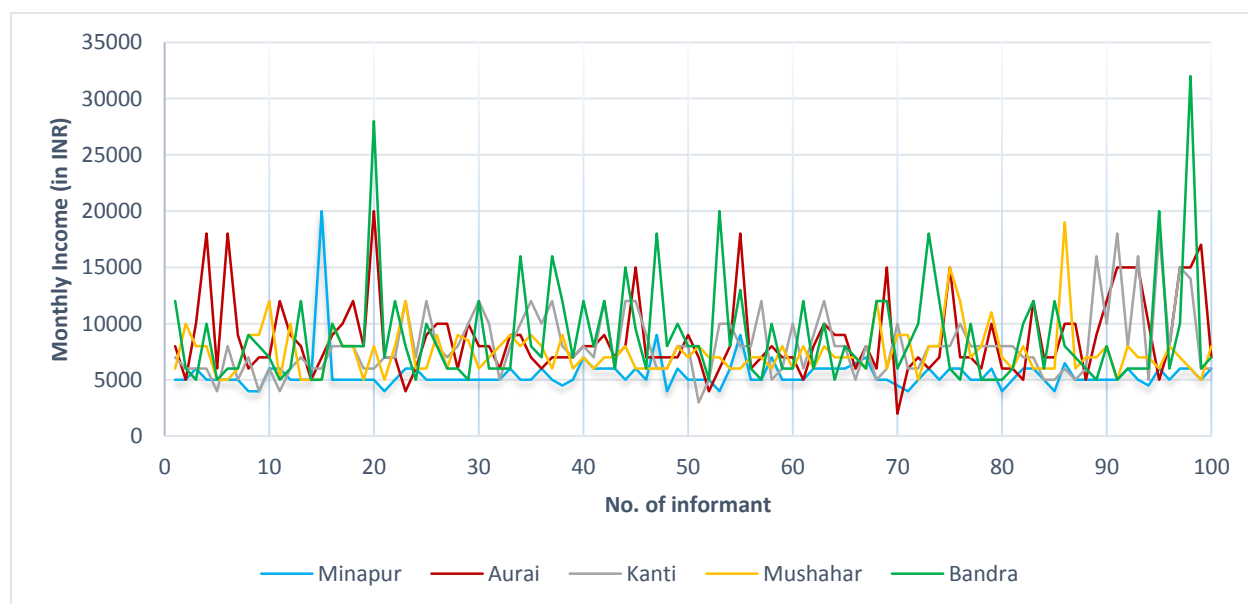


Figure 6: Monthly household income (in INR) of the families, Muzaffarpur

Regarding material asset, agricultural land and ownership of house has been considered (Table 8). Except Minapur, less than half of the studied households of all other blocks is having

agricultural land. But majority of the villagers have their own houses, though over 41% of them kaccha<sup>10</sup> and more than 34% are semi paccha<sup>11</sup>. Only 24% HHs found to have pacca<sup>12</sup> house.

Most of the families have 2-4 rooms (excluding kitchen). One room hut is also very common. Only for 2.4% cases, the households are having more than 4 rooms.

**Table 8: Material asset of the studied household of Muzaffarpur**

Block	Agricultural land			Ownership of house		Type of house		
	Own	Leased	No land	Own	Rent	Pacca	Semi-pacca	Kaccha
Minapur (n=100)	72%	12%	16%	94%	6%	11%	25%	64%
Aurai (n=100)	41%	5%	54%	100%	0%	24%	41%	35%
Kanti (n=100)	30%	28%	42%	98%	2%	30%	35%	35%
Mushahar i (n=100)	25%	20%	55%	100%	0%	26%	46%	28%
Bandra (n=100)	19%	23%	58%	99%	1%	31%	24%	45%
<b>Total</b>	<b>37.4%</b>	<b>17.6%</b>	<b>45.0%</b>	<b>98.2%</b>	<b>1.8%</b>	<b>24.4%</b>	<b>34.2%</b>	<b>41.4%</b>

Electricity is available in most the studied villages. 53-90% HHs reported that they are using the facilities of electricity (Table 9). Rest of the HHs either use kerosene lamp or candle for lightning their home. Some of the families use Chinese lamp during load shading. Solar light is very rare in this area.

Except Araui, Liquefied petroleum gas (LPG) is not very common among them as a fuel for cocking (12-23% reported the availability of LPG). Rest of the people use locally available fuel wood. They preserve dry leaves and waste agricultural product throughout the year, and use as fuel for cocking.

**Table 9: Light and fuel source of the studied household of Muzaffarpur**

Block	Source of light	Type of Fuel used for cooking
Minapur (n=100)	Electricity- 53% Kerosene lamp/ Candle- 47%	LPG Gas - 14% Wood- 85% Both gas & wood- 1%

<sup>10</sup> **Kachcha:** When both wall and roof are made of kachcha materials like stones, mud, unburnt bricks, bamboos, wood reeds, leaves, grass etc.

<sup>11</sup> **Semi-pacca:** When either wall or roof is made of pacca material and others of kuccha material

<sup>12</sup> **Pacca:** When both wall and roof are made of pucca materials like burnt bricks and cement



Aurai (n=100)	Electricity- 90% Kerosene lamp/ Candle- 47%	LPG Gas - 44% Wood- 51% Both gas & wood- 5%
Kanti (n=100)	Electricity- 75% Kerosene lamp/ Candle- 25%	LPG Gas - 12% Wood- 77% Both gas & wood- 11%
Mushahari (n=100)	Electricity- 76% Kerosene lamp/ Candle- 24%	LPG Gas - 23% Wood- 73% Both gas & wood- 4%
Bandra (n=100)	Electricity- 84% Kerosene lamp/ Candle- 16%	LPG Gas - 13% Wood- 86% Both gas & wood- 1%

Sanitation coverage is very low in the studied villages (Table 10). Out of 500 HHs studied, only 76 families are having sanitary toilet facilities. The highest coverage found was 19% in Aurai. The percentage is much low than the govt. report (Accessed on 24<sup>th</sup> June, 2017) in case of Mushahari and Bandra (Figure 7).

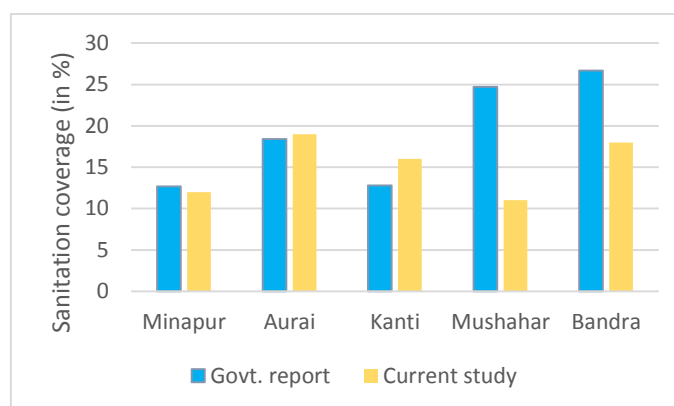


Figure 7: Govt. data vs. current study report, Muzaffarpur

More or less half of the toilets are located within their home premises.

Except Kanti, shared toilet was not found in any case. All of them reported that they have access to the latrine 24 hours a day.

For most of the cases, the superstructure is concrete made of cement. But in case of substructure, it varied. In Minapur, only 12% studied families have sanitary toilet and all of them have septic tank. In Kanti, 44% of the HHs are having Brick-lined Single pit. But more than half of the HHs with toilet in Aurai have septic tank. On the contrary, Brick-lined double pit is more common in Mushahari and Ring-lined double pit in Bandra.

**Table 10: Sanitation Coverage of the studied household of Muzaffarpur**

Block	Accessing toilet	Location of toilet	Type of sanitation						
			Superstructure		Substructure				
			Cemented concrete	Temporary structure	Brick-lined Single pit	Ring-lined single pit	Brick-lined double pit	Ring-lined double pit	Septic tank
Minapur	12%	Within premises- 50%	100%	0%	0%	0%	0%	0%	100%

		Outside premises- 50%							
Aurai	19%	Within premises- 58% Outside premises- 42%	100%	0%	5%	11%	26%	5%	53%
Kanti	16%	Within premises- 50% Outside premises- 25% Shared toilet- 25%	81%	19%	44%	31%	19%	6%	0%
Musha- hari	11%	Within premises- 64% Outside premises- 36%	91%	9%	0%	27%	45%	27%	0%
Bandra	18%	Within premises- 44% Outside premises- 56%	89%	11%	0%	33%	6%	56%	6%

For most of the cases, the villagers purchased the toilet from Private hardware shops (Table 11). Only 6% families in Aurai reported that they have purchased the toilets from PoP run by village level entrepreneurs.

In Minapur, both of the toilets cost more than 30,000/-. For other blocks, the value varies from 4,000/- to as much as 50,000/-. Except Minapur blocks, some of the informants reported that they have taken loan for constructing toilet from the groups of JEEViKA<sup>13</sup>. There were only two cases, where the family members took loan from MFI and used it for constructing toilet. Also in 15 HHs (out of 500), they took loan from money lender for constructing toilet. The loan amount varies from 5,000-35,000/- and interest rate ranges from 2-5% per month.

**Table 11: Purchasing detail of the toilets by the studied household of Muzaffarpur**

Block	Purchased from		Amount incurred for purchasing toilet	Loan taken for construction of the toilet
	PoP run by village level entrepreneurs	Private hardware shops		
Minapur (n=12)	0%	100%	Above 30,000/-	Yes- 0% No- 100%
Aurai (n=19)	6%	94%	15,000- 50,000/-	Yes-11% No- 89%
Kanti (n=16)	0%	100%	4,000- 40,000/-	Yes- 63% No- 38%
Mushahari (n=11)	0%	100%	10,000- 50,000/-	Yes- 55% No- 45%
Bandra (n=18)	0%	100%	10,000- 30,000/-	Yes- 94% No- 6%

<sup>13</sup> The Government of Bihar (GoB), through the Bihar Rural Livelihoods Promotion Society (BRLPS), an autonomous body under the Department of Rural Development, is spearheading the World Bank aided Bihar Rural Livelihoods Project (BRLP), locally known as JEEViKA with the objective of social & economic empowerment of the rural poor. It has already formed 636180 SHGs with 6992879 HHs.

The informants reported various reasons of constructing toilet. Over 44% of the informants feel

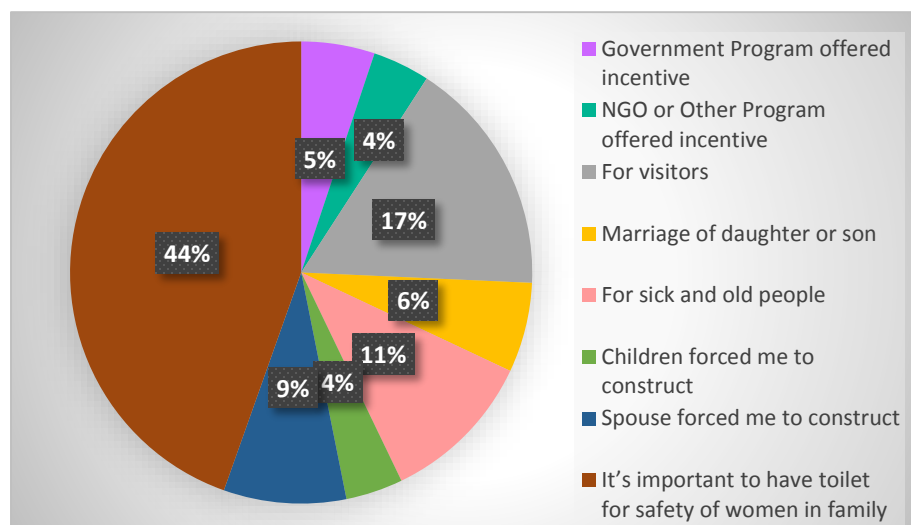


Figure 8: Reasons of constructing toilet by the villagers, Muzaffarpur

that it is important to have toilet for safety of women in the family. 17% families constructed toilet with the reason that their visitors will not face problem, while 11% have constructed for sick and old members of the family. On the contrary, though 10% of the informants (50 families) are having disability of any of his/

her family members, only 14% of them (7, out of 50 families) are having toilet in their household. They, therefore, do not think toilet within premises as essential for a disabled person.

The informants, who have the toilet in their house, were asked if the latrine was swept away in a freak wind, whether they would build another one without incentive not. All the informant of Minapur, 11% of Aurai, only 6% of Kanti, 10% in Bandra and no one in Mushahari are ready to reconstruct it.

Only 12% (n=76) of total families having toilets received technical support during construction of household toilet and that was given by either NGO staff or master mason who constructed the toilet.

All of these households reported that they have access to the latrine 24 hours a day. As much as 97% households (n = 76) reported that they clean the toilet on daily basis and the cost for the cleaning and maintenance of the toilet per annum varies from Rs. 200-1,000/-.

Over three-fourth of the informants confirmed that every one of the family use the latrine (Figure 9), while rest one-fourth do not. When they were asked the causes of not using the toilet by all members, they

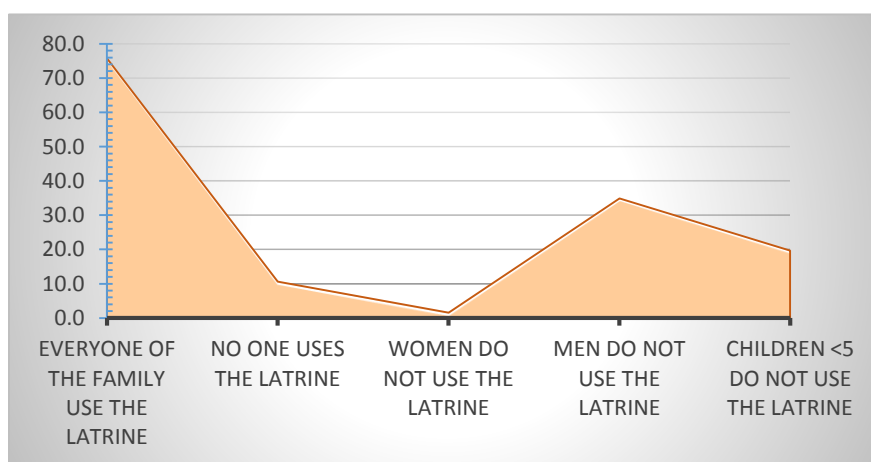


Figure 9: Percentage of family members using toilets, Muzaffarpur

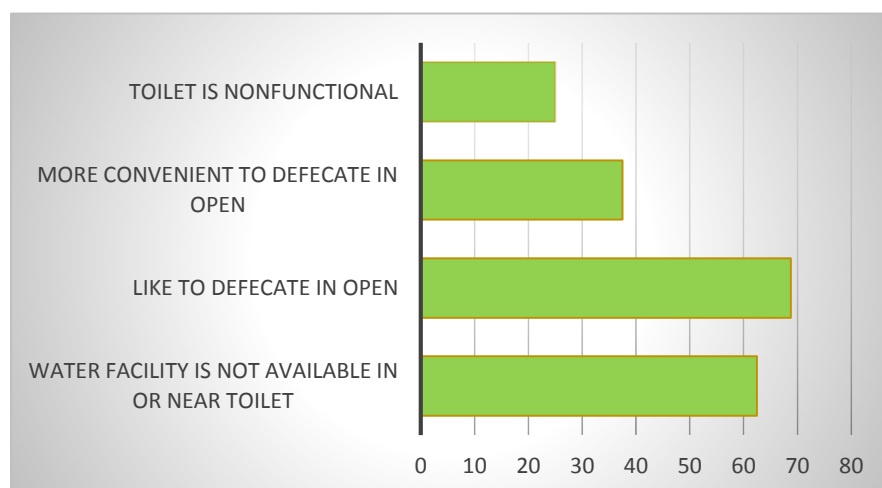


Figure 10: Reasons for not using the toilet by all member (in %)

informed a number of reason (Figure 10) like Toilet is nonfunctional, they are more convenient to defecate in open, water facility is not available in/ near toilet etc. Few informers also admitted that due to less capacity of the toilet tank, sometimes men of the family go to outside during daytime.

Observation method was applied to collect the information of the condition of existing toilets of the sample population. The floor of majority of the toilet is good (85% good). In Aurai and Kanti, the roof of respectively 74% and 81% toilets have good condition, whereas 100% toilets in Minapur, 44% in Bandra, 18% in Mushahari, 16% in Aurai and 6% in Kanti have no roof at all. For 50-95% cases, the door of the toilet is in good condition, but 44% toilet of the Bandra block do not have any door. Except Minapur, the condition of walls is good. For most of the cases no evidence of open defecation nearby or within the house was found.

Table 12: Condition of the existing toilets in the studied household of Muzaffarpur

Block	Condition of floor/ slab/ platform	Condition of roof	Condition of door	Condition of walls	Urine/feces on the floor/seat	Evidence of open defecation nearby or within the house
Minapur (n=12)	Good- 50% Bad- 50%	No roof- 100%	Good- 50% Bad- 50%	Good- 0% Bad- 100%	No- 100%	No- 100%
Aurai (n=19)	Good- 89% Bad- 11%	Good- 74% Bad- 11% No roof- 16%	Good- 95% Bad- 5%	Good- 50% Bad- 50%	No- 100%	No- 100%
Kanti (n=16)	Good- 81% Bad- 19%	Good- 81% Bad- 13% No roof- 6%	Good- 95% Bad- 5%	Good- 81% Bad- 19%	Yes- 25% No- 75%	Yes- 31% No- 69%
Mushahari (n=11)	Good- 91% Bad- 9%	Good- 45% Bad- 36% No roof- 18%	Good- 91% Bad- 9%	Good- 81% Bad- 19%	No- 100%	Yes- 18% No- 82%
Bandra (n=18)	Good- 78% Bad- 22%	Good- 50% Bad- 6% No roof- 44%	Good- 50% Bad- 6% No door- 44%	Good- 94% Bad- 6%	Yes- 6% No- 94%	Yes- 28% No- 72%

<b>Total (n=76)</b>	<b>Good- 85% Bad-15%</b>	<b>Good- 62% Bad- 14% No roof- 24%</b>	<b>Good- 82% Bad- 15% No door- 3%</b>	<b>Good- 89% Bad- 11%</b>	<b>Yes- 8% No- 92%</b>	<b>Yes- 18% No- 82%</b>
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90% of the families (n=62) informed that when the pit will fill up, they will pay someone to empty it while rest 10% will cover pit and dig a new hole. When they were asked how it will be emptied (n=66), 6% HHs informed that they will emptied it by hand with a bucket, 77% will empty with basic mechanical machine, 15% want to empty through tanker truck, while rest of the informant do not have any idea how to be emptied. 11% of the informants (n=65) want give it to the treatment plant, 25% will through it in a nearby ditch, 15% will buried in the ground, 46% will store in open field / agricultural land and 3% don't know what should be done.

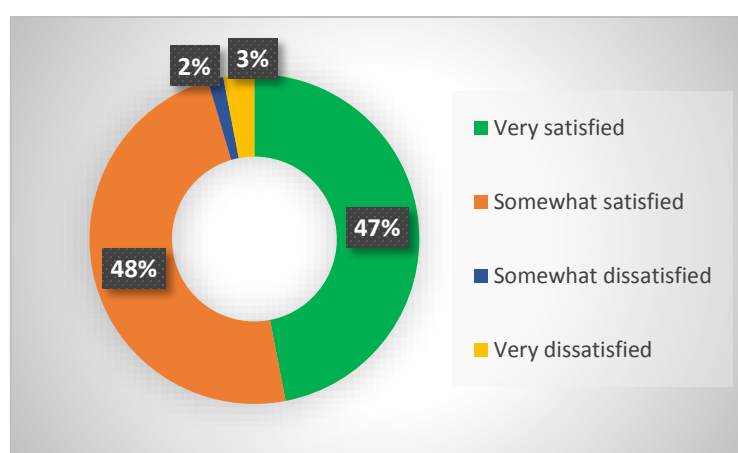


Figure 11: Satisfaction level of the customer, Muzaffarpur

Most of the people are satisfied (47% very satisfied and 48% somewhat satisfied) with their existing toilets. These people mainly invested money from their own (either from their own savings own or by taking loan from JEEViKA group), and therefore, the condition of the toilets are good. They are satisfied with the feelings that their premises are now clean than earlier and they do not have to face any safety issue for sanitation purpose during midnight. A total of

11% of these existing toilets are government subsidized toilets, and 5% “not-satisfied categories” are mainly having subsidized toilets given earlier by government.

When the HHs not having toilets were asked the causes of not constructing the same, various reasons were reported. Most common answer (95.6%) was that they are waiting for government subsidized toilet. One third of them argued that as they cannot

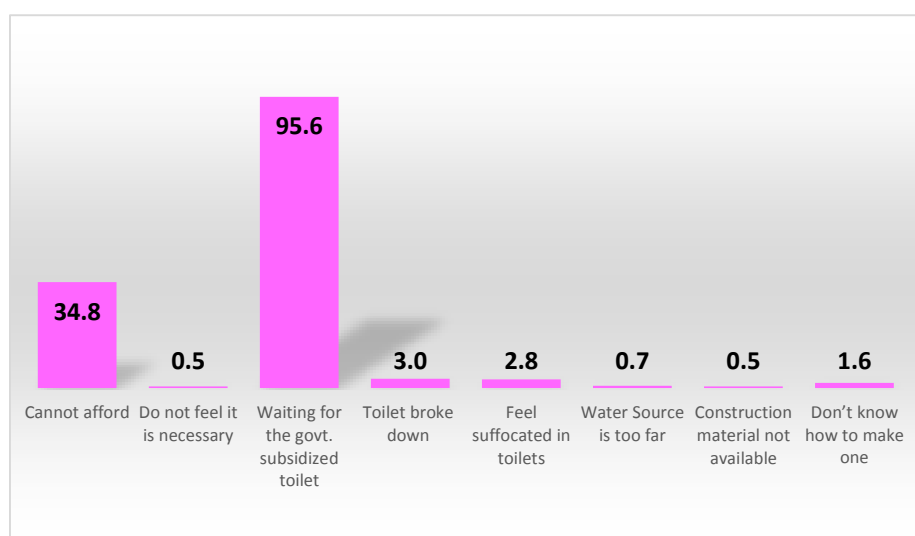


Figure 12: Reasons of not constructing toilet (in %) by villagers, Muzaffarpur

afford the toilet by their own, they are, therefore, waiting for the same.

Over 60% of these families reported that they defecate on road side/railway track, while 82% agreed that they go to agriculture field/farm and 66% in garbage space. There were some overlapping between these categories, as some of them, based on their convenience, sometimes go to open field or sometimes in road side or garbage space. No one, however, reported any public/ community toilet in these areas.

On the other hand, these people (91% participants) also confessed that open defecation is not a good habit. Sometimes it may create problem like, there might be security issues for female during night (39%), there is difficulty during rainy season (26%), it is shameful for female to defecate openly during day time (32%), it is difficult to go to garbage space or any field or home premises at midnight (27%) and it is more difficult for pregnant women. They (82%) even also agreed with the fact that there is chance of health hazards related to open defecation.

When they were asked whether they are willing to construct the toilet in future, 80% people are ready to construct it within next one year (Figure 13). These low-income rural families are ready to pay for comprehensive and aspirational sanitation solutions (i.e. status and dignity), in particular when they are offered a financing solution. Even out of rest 20% unwilling informants, a total of 47% families have a plan to construct in a distant future (like after 5 years) once the condition will be favorable. All these customers can, therefore, be tapped if favorable condition is created.

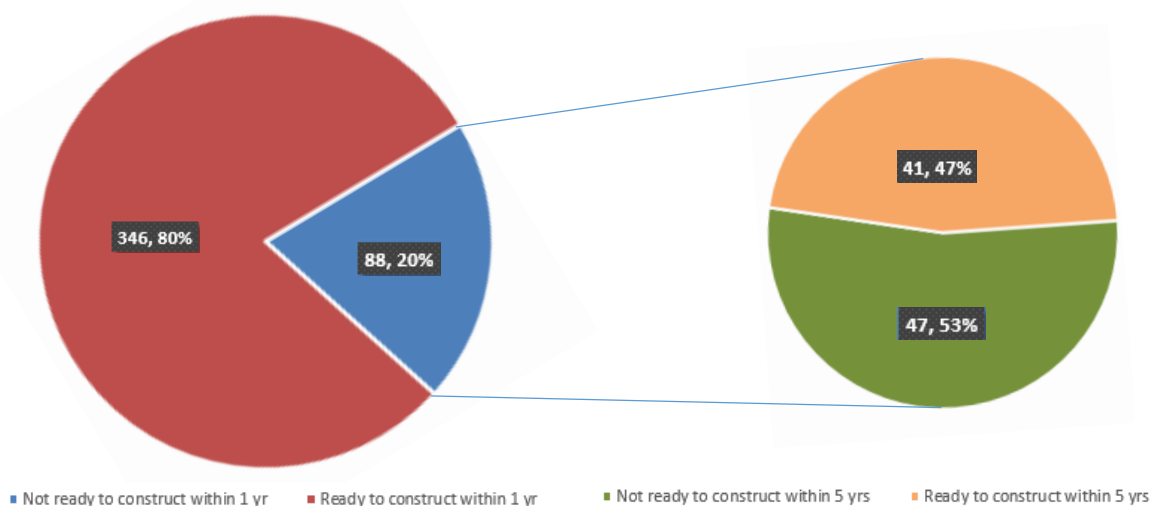


Figure 13: Readiness of the villagers of Muzaffarpur to construct toilet in near and distant

### 6.1.2. Buxar:

The study was conducted with 400 HHs of Buxar district. Table 13 describes the socio-demographic detail of the HHs. 89% and 95% of the sample HHs, respectively from Chausa and Simri block, were from Hindu religion; while it is cent percent for other two blocks. In Brahmapur, Chausa and Nawanagar blocks, most of the sample population were from Other Backward Caste (OBC), but in Simri, the informants were mainly (94%) from Scheduled Caste (SC) families.

In all five blocks, majority of the HHs (48-67%) were having 4-7 family members, average family size being 6.9 (As per NFHS-3, 2007- State average household size is 5.4 and National average household size is 4.8).

The average literacy rate of the family members of the studies HHs varies from one block to another, the highest being 53.7% in Brahmapur and lowest being 43.2% in Nawanagar, which is much lower than the District and State literacy rate (As per Census-2011, District literacy rate is 70.14% and state literacy rate is 61.8%).

Out of 400 HHs, only 5 families reported that they have moved to Bihar from other States. 7.5% families (30 HHs out of 400) have at least one family members, who is physically handicapped- either disability in limbs or eye or speech disability.

**Table 13: Socio-demographic profile of the studied household of Buxar**

Block	Religion	Caste	Household member	Average literacy rate of HH members
Brahmapur (n=100)	Hindu- 100% Muslim- 0%	SC- 28% ST- 8% OBC- 46% General- 18%	< 4 members– 4% 4-7 members – 48% 8-10 members – 27% >10 members – 21%	53.69%
Chausa (n=100)	Hindu- 89% Muslim- 11%	SC- 16% ST- 17% OBC- 36% General- 31%	< 4 members – 6% 4-7 members – 56% 8-10 members – 22% >10 members – 16%	50.05%
Nawanagar (n=100)	Hindu- 100% Muslim- 0%	SC- 12% ST- 0% OBC- 75% General- 13%	< 4 members – 7% 4-7 members – 53% 8-10 members – 26% >10 members – 14%	45.32%
Simri (n=100)	Hindu- 95% Muslim- 5%	SC- 94% ST- 0% OBC- 4% General- 0%	< 4 members – 13% 4-7 members – 67% 8-10 members – 17% >10 members – 3%	43.81%

The study revealed that majorities of this sample population are engaged as day labour (lowest being 34% in Brahmapur and highest in 97% in Simri) for their primary means of occupation (Table



14). In Brahmapur, agriculture is primary occupation for 61% families under study. Agriculture is also taken as primary occupation by Chausa (36%) and Nawanagar (22%). Primary occupation of only 2-5% populations is business. Few of the families are primarily depended on other occupation like part-time job, private tuition etc. In Brahmapur, 68% populations are having secondary occupation. All other blocks also showed to have secondary occupation as an additional source of income, but the proportion is much low.

More than 85% studied population are found to be below poverty line (BPL). Monthly income was calculated as an approximate value, as in this district also, most of the cases they could not calculate the exact monthly income. The value, however, varies from one HH to other, the minimum being 1,000/- in Brahmapur and Chausa, and maximum being 19,000/- in Chausa, (Figure 14). The mean values of monthly income is highest in Brahmapur (6,918/-) and lowest in Nawanagar (3,421/-). In 97% families of Simri block, people are working as day labour and receiving Rs. 200/- per day. For 99% cases, they do not have any subsidiary occupation. Therefore, monthly income of most of the families is approximately 6,000/- (@200/- per day).

**Table 14: Economic status of the studied household of Buxar**

Block	Primary occupation	Secondary occupation	Below poverty line	Monthly family income (INR)
Brahmapur (n=100)	Agriculture-61% Business-3% Day labor-34% Others*- 2%	68% HHs reported small business and daily labour as secondary occupation	APL- 14% BPL-86%	Min- 1,000/- Max-30,000/- Avg.- 6,918/-
Chausa (n=100)	Agriculture-36% Business-3% Day labor-58% Others* - 2%	3% HHs reported aquaculture and daily labour as secondary occupation	APL-5% BPL-95%	Min- 1,000/- Max-19,000/- Avg.- 4,990/-
Nawanagar (n=100)	Agriculture-22% Business-5% Day labor-71% Others* - 2%	4% HHs reported daily labour as secondary occupation	APL-8% BPL-92%	Min- 1,000/- Max-10,000/- Avg.- 3,421/-
Simri (n=100)	Agriculture-0% Business-2% Day labor-97% Others#- 1%	Only 1% HHs reported daily labour as secondary occupation	APL-3% BPL-97%	Min- 6,000/- Max-15,000/- Avg.- 6,160/-

\* Job

# Housewife, Private Tuition



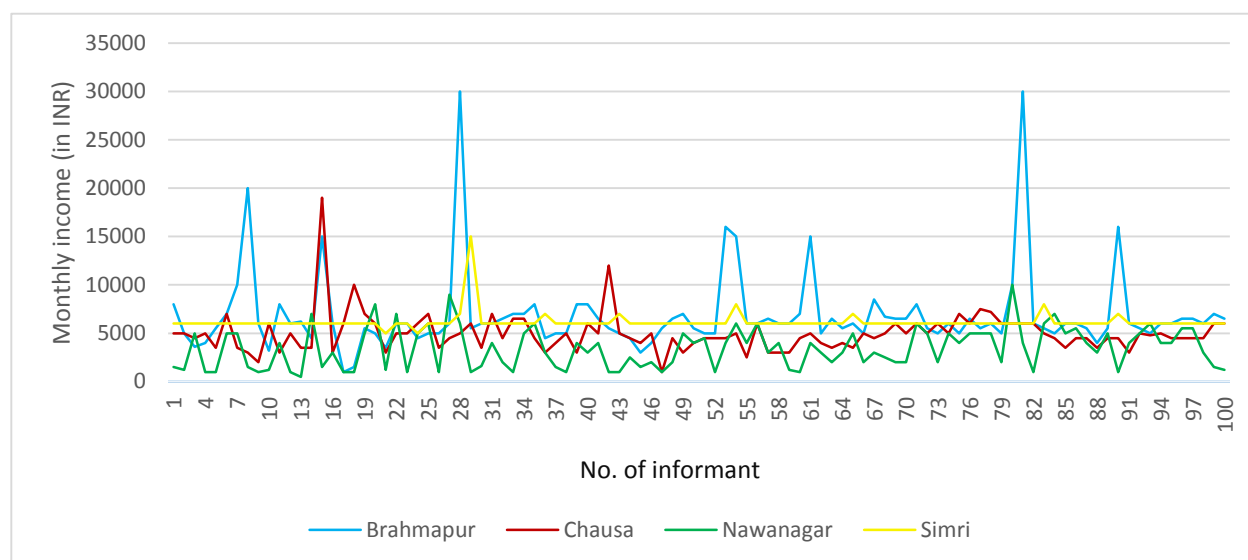


Figure 14: Monthly household income (in INR) of the families, Buxar

Regarding material asset, agricultural land and ownership of house has been considered (Table 15). Except Simri, 16-48% of the studied households of all other blocks is having agricultural land. Due to the lack of agricultural land, 97% of the HHs of Simri block is engaged in day labour.

Majority of the villagers have their own houses. In an average of 19% houses are kaccha and 43% are semi paccha. 99% HHs found to have pacca house.

About one-third of the families (131 HHs, out of 400) have one room. Over one-fourth (115 HHs, out of 400) have 2 rooms and another one-fourth families are having the house with 3-5 rooms (excluding kitchen). Rest of the HHs have more than five rooms and 30% of them have joint families.

Table 15: Material asset of the studied household of Buxar

Block	Agricultural land			Ownership of house		Type of house		
	Own	Leased	No land	Own	Rent	Pacca	Semi-pacca	Kaccha
Brahmapur (n=100)	16%	61%	23%	99%	1%	31%	54%	15%
Chausa (n=100)	48%	5%	53%	99%	1%	37%	56%	7%
Nawanagar (n=100)	47%	2%	51%	98%	2%	47%	20%	31%
Simri (n=100)	0%	4%	96%	99%	1%	38%	41%	21%
<b>Total</b>	<b>28%</b>	<b>18%</b>	<b>64%</b>	<b>99%</b>	<b>1%</b>	<b>38%</b>	<b>43%</b>	<b>19%</b>

Electricity is available in most the studied villages. Except Simri, over 80% HHs of all three blocks reported that they are using the facilities of electricity (Table 16). Rest of the HHs either use kerosene lamp or candle or Chinese lamp for lightning their home. Solar light was not found in this area.

In Chausa, LPG was found to be common among them as a fuel for cocking (67% reported the availability of LPG). Rest of the people use locally available fuel wood or Cow dung cake.

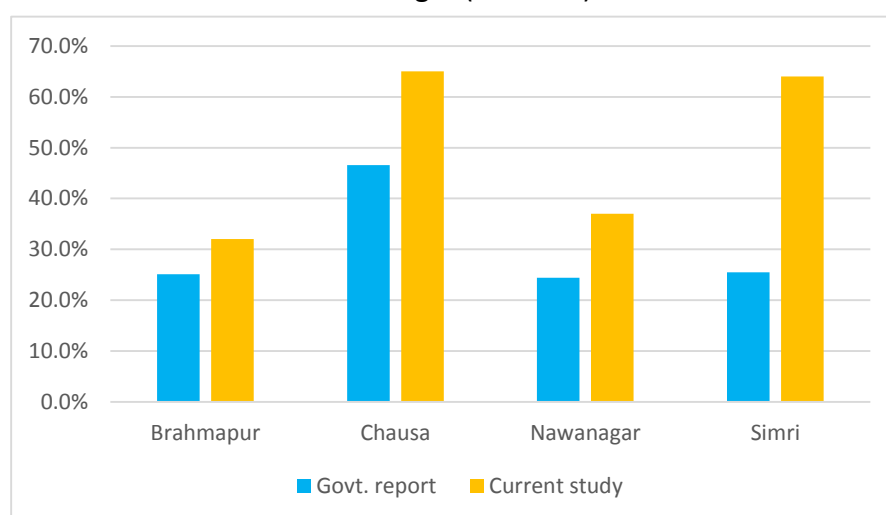
**Table 16: Light and fuel source of the studied household of Buxar**

Block	Source of light	Type of Fuel used for cooking
Brahmapur (n=100)	Electricity- 83% Kerosene lamp/ Chinese Lamp/ Candle- 17%	LPG Gas- 40% Wood- 58% Cow dung cake- 2%
Chausa (n=100)	Electricity- 92% Kerosene lamp/ Candle- 8%	LPG Gas - 67% Wood- 12% Cow dung cake- 4% Both wood & cow dung cake - 17%
Nawanagar (n=100)	Electricity- 89% Kerosene lamp/ Candle- 11%	LPG Gas - 28% Wood - 77% Cow dung cake- 1% Both wood & cow dung cake - 43%
Simri (n=100)	Electricity- 60% Kerosene lamp/ Candle- 40%	LPG Gas - 21% Wood- 79%

Sanitation coverage varies from 32-65% in the studied villages (Table 17). Out of 400 HHs studied, only 198 families are having sanitary toilet facilities. The highest coverage found in Chausa. The percentage is high than the govt. report (Accessed on 24<sup>th</sup> June, 2017).

62-88% of the toilets are located within their home premises. It is 100% in case of Nawanagar. Except Brahmapur, shared toilet

was not found in any block. The families having toilet within premises reported that they have access to the latrine 24 hours a day, but the families outside premises do not.



**Figure 15: Sanitation coverage- Govt. data vs current study report, Buxar**

In Brahmapur, Chausa and Nawanagar, the superstructure is concrete made of cement in 83-91% cases. In Simri, 94% toilets are temporary in structure. The substructure varied widely from one block to another. In Brahmapur, sanitary toilet of over two-fifth of the studied families have Brick-lined Single pit. In Simri and Chausa, more than half of the toilets have septic tank. In Nawanagar, Ring-lined double pit and septic tanks are more common.

**Table 17: Sanitation Coverage of the studied household of Buxar**

Block	Accessing toilet	Location of toilet	Type of sanitation						
			Superstructure		Substructure				
			Cemented concrete	Temporary structure	Brick-lined Single pit	Ring-lined single pit	Brick-lined double pit	Ring-lined double pit	Septic tank
Brahmapur	32%	Within premises- 63% Outside premises- 28% Shared toilet- 9%	97%	3%	66%	0%	3%	3%	28%
Chausa	65%	Within premises- 88% Outside premises- 12%	91%	9%	16%	19%	6%	2%	57%
Nawanagar	37%	Within premises- 100%	83%	17%	22%	8%	3%	32%	35%
Simri	64%	Within premises- 62% Outside premises- 38%	6%	94%	14%	5%	13%	5%	63%

About 10% toilets of Simri block is non-functioning. In this block, one local NGO had been working on Sanitation. They took 2,000-3,000/- from each HHs and constructed toilets under one project. But the quality of those toilets were too bad that these have been broken down within 2-3 years. After that the customers are so frustrated that they came back to open defecation again.

For most of the cases, the villagers purchased the toilet from Private hardware shops (Table 18), as there is no cement ring manufacturer nearby area. In 60% of Brahmapur, private contractor arranged the sanitary material, whereas 30% purchased materials from hardware shop. And cost of the toilets varies from 8,000/- to 30,000/-. In Chausa, 73% cases the villagers purchased the toilet from private hardware shops available in main market of the block. In case of Nawanagar and Simri also, private hardware shops were found to be more accessible for them than other options. For all blocks, they spent a maximum amount of 50,000/- for toilet with septic tank.

35 families (18%) have taken loan for constructing the toilet, out of which 14 families have taken it from local money lender, 17 families from a local NGO and 2 families from MFIs. Rest 2 families took general loan from local Bank and used the money for constructing toilet.

The loan amount varies from 5,000- 35,000/-, but most of the people took the loan of 20,000- 25,000/-. The interest rate ranges from 2% to 4% per month.

**Table 18: Purchasing detail of the toilets by the studied household of Buxar**

Block	Purchased from			Amount incurred for purchasing toilet	Loan taken for construction of the toilet
	PoP run by village level entrepreneurs	Private hardware shops	Private contractor arranged the material		
Brahmapur (n=32)	10%	30%	60%	8,000- 30,000/-	Yes- 0% No- 100%
Chausa (n=65)	5%	73%	22%	15,000- 50,000/-	Yes-11% No- 89%
Nawanagar (n=37)	11%	79%	10%	4,000- 40,000/-	Yes- 63% No- 38%
Simri (n=64)	9%	65%	25%	10,000- 50,000/-	Yes- 55% No- 45%

The informants reported various reasons of constructing toilet. Over 74% of the informants feel that it is important to have toilet for safety of women in the family. 17% families constructed toilet with the reason that their visitors will not face problem; 20% constructed it for sick and old members of the family, while about 32% people installed the toilet during the marriage ceremony of any of their family members. In 14% cases, the children of the family forced them to construct the same. There have some overlapping of informant within these categories, as most of the families constructed the toilet for more than one reason.

More than 7% of the informants (30 families, out of 400) are having disability of any of his/ her family members. 43% of them (13, out of 30 families) are having toilet in their household. This is one of the reason for constructing toilets in these households.

As much as 99% HHs reported that every one of the family use the latrine. Only 1% families told that no one of their family uses the latrine, due to the fact that it has been broken down.

The informants, who have the toilet in their house, were asked if the latrine was swept away in a freak wind, whether they would build another one without incentive not. Only 7 families (out of these 198 families) are ready to reconstruct it.

A total of 29% of the total families having toilets received technical support during construction of household toilet and that was given by either from local NGO staff (a local is working on sanitation) or master mason who constructed the toilet.

All of these households reported that they have access to the latrine 24 hours a day. As much as 28% households (n = 198) reported that they clean the toilet on daily basis and the cost for the cleaning and maintenance of the toilet per annum varies from Rs. 500- 2,000/-.

Through observation method, the condition of existing toilets of the sample population was tried to understand (Table 19). The floor of majority of the toilet is good (96%). The roof of 87% toilets have good condition, whereas in Chausa, Nawanagar and Simri, 6-8% toilets have no roof at all. For 83% cases, the door of the toilet is in good condition. In Brahmapur, 22% doors are not in good condition. Overall 3-8% cases, toilet does not have any door. The condition of walls is good for 94% cases. For most of the cases (97%), no evidence of open defecation nearby or within the house was found.

**Table 19: Condition of the existing toilets in the studied household of Muzaffarpur**

Block	Condition of floor/ slab/ platform	Condition of roof	Condition of door	Condition of walls	Urine/ feces on the floor/ seat	Evidence of open defecation nearby or within the house
Brahmapur (n=32)	Good- 94% Bad- 6%	Good- 91% Bad- 9%	Good- 75% Bad- 22% No door- 3%	Good- 94% Bad- 6%	No- 100%	Yes- 3% No- 97%
Chausa (n=65)	Good- 96% Bad- 4%	Good- 85% Bad- 9% No roof- 6%	Good- 88% Bad- 8% No door- 4%	Good- 97% Bad- 3%	Yes- 15% No- 100%	Yes-3% No- 97%
Nawanagar (n=37)	Good- 95% Bad- 5%	Good- 92% No roof- 8%	Good- 73% Bad- 7%	Good- 95% Bad- 5%	Yes- 3% No- 97%	Yes- 3% No- 97%
Simri (n=64)	Good- 92% Bad- 6% Couldn't observe-2%	Good- 81% Bad- 11% No roof- 6%	Good- 83% Bad- 8% No door- 9%	Good- 89% Bad- 11%	Yes- 2% No- 98%	Yes- 2% No- 98%
<b>Total (n=198)</b>	<b>Good- 96% Bad- 3% Couldn't observe-1%</b>	<b>Good- 87% Bad- 8% No roof- 5%</b>	<b>Good- 83% Bad- 13% No door-5%</b>	<b>Good- 94% Bad- 6%</b>	<b>Yes- 6% No- 94%</b>	<b>Yes- 3% No- 97%</b>

About 70% of the families (n=198) informed that when the pit will fill up, they will pay someone to empty it, 3% will cover pit and dig a new hole, and 5% will empty it themselves. About 22% cases, they do not have any idea how to empty the same.

When they were asked how it will be emptied (n=198), 53% HHs informed that they will emptied it by hand with a bucket, 26% will empty with basic mechanical machine, 3% want to empty through tanker truck, while rest 18% of the informant do not have any idea how to be emptied. 5% of the informant (n=195) want to the treatment plant, 16% will through it in a nearby ditch, 64% will buried in the ground, 1 will Flow in nearby river, 10% will store in open field / agricultural land and 4% don't know what should be done.

Most of the people are satisfied (64% are very satisfied and 59% somewhat satisfied) with their existing toilets. These are all own-invested toilets. As these are mostly good quality toilets, they do not have much issue about it. And they feel very exultant that they can use these at any time and their family members do not

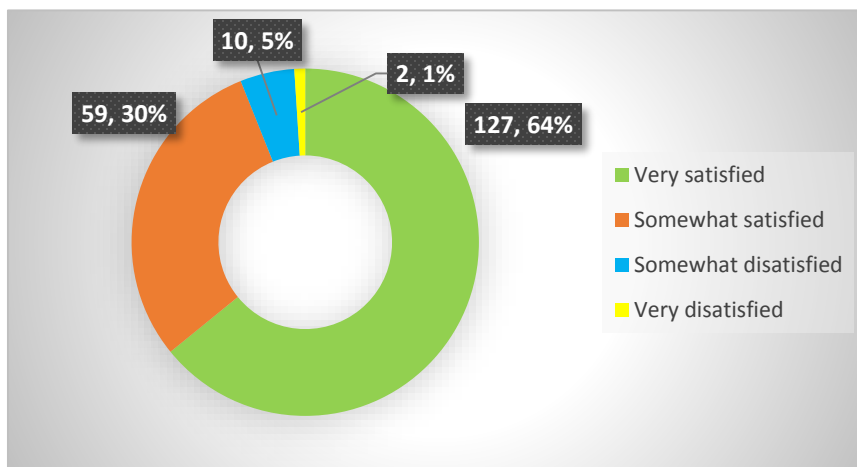


Figure 16: Satisfaction level of the customer, Buxar

have to go outside for this purpose. On the other hand, 12% of them confessed that they are happy with the feelings that they have the toilet, while their neighbor does not. However, rest 5% are somewhat not satisfied in their respective toilets, while 1% are very dissatisfied. The reason is the bad quality material provided by the contractor.

When the HHs not having toilets (n=202) were asked the causes of not constructing the same, various reasons were reported (Figure 17). Most common answer (87.6%) was that they are waiting for government subsidized toilet. About 5% informed that the construction materials are not available in nearby area; 3.5% don't know how to make a toilet and from where they can purchase it; 2.5% informed that due to lack of water source in nearby area they are unable to construct it; 1.5% told that the earlier one had broken down and they have now come back to open defecation; while 0.5% informed that as they cannot afford the toilet by their own, they are, therefore, waiting for the same.

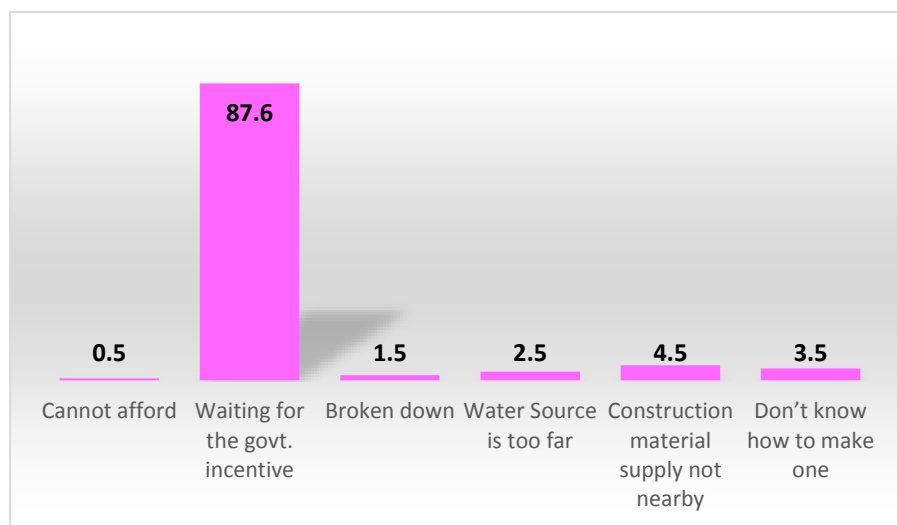


Figure 17: Reasons of not constructing toilet (in %) by the villagers, Buxar

Over 13% of these families (n = 202) reported that they defecate on road side/railway track, while 99% agreed that they go to agriculture field/farm and 0.9% in garbage space. There were some overlapping between these reports, as some of them either go to open field or in road side or garbage space, based on their convenience. No one, however, reported any public/ community toilet in these areas.

On the other hand, 60% of them also confessed that open defecation is not a good habit. Sometimes it may create problem like, there might be security issues for female during night (view of 58% people), there is difficulty during rainy season (view of 39% informant), it is shameful for female to defecate openly during day time (view of 41% people), it is difficult to go to garbage space or any field or home premises at midnight (27%) and it is more difficult for pregnant women. They (82%) even also agreed with the fact that there is chance of health hazards related to open defecation.

When they were asked whether they are willing to construct the toilet, 62% people are ready to construct toilet within one year if they get some facilities of instalment or get any credit. Rest 38% people still denied to construct it within next one year (Figure 18). 45% of these 38% informant may construct it in distant future like after 5 years or so, if they get government subsidized toilet.

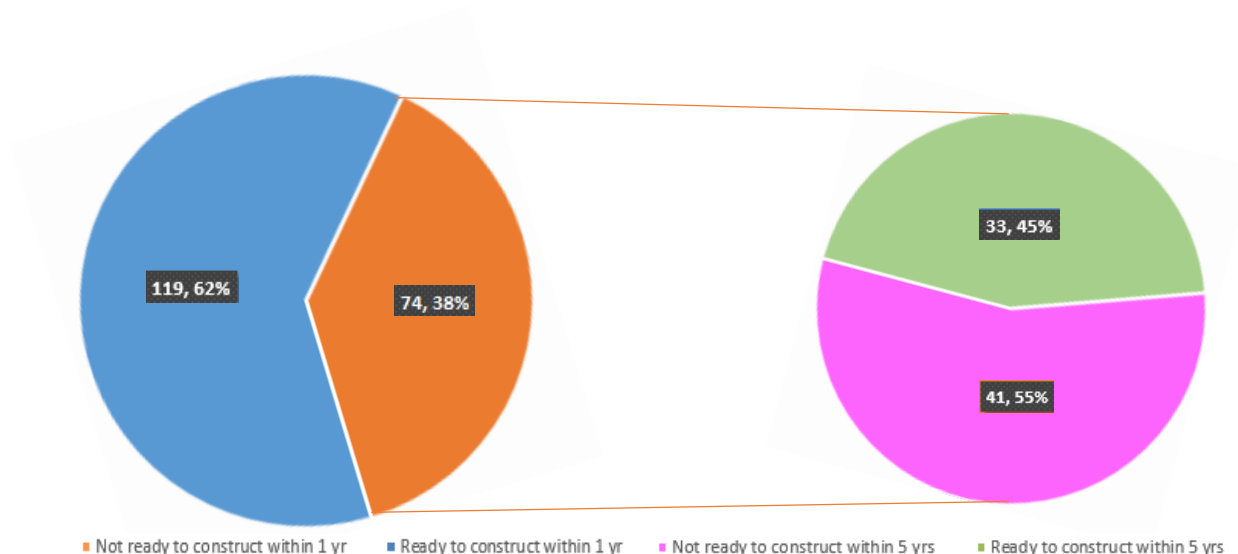


Figure 18: Readiness of the villagers of Buxar to construct toilet in near and distant future

## 6.2. Sanitation business and Supply chain:

### 6.2.1. Government Initiatives:

#### 6.2.1.1. Awareness campaign:

The supply side of sanitary toilets are being taken care by both government and private sector. But the proportion of these two, vary from area to area. In the studied areas, the government involvement is not remarkable and its impact is not also very impressive.

None of the local persons or shop owners of Muzaffarpur could recall any type of social art activities by the Govt. for creating awareness related to water and sanitation. Some of the Mukhiya and Word members of Muzaffarpur district also agreed with this and informed that Govt. has been displaying some awareness generating posters in front of BDO office and hospitals only, no other displaying materials are there within the villages. It was also reported by them that awareness campaign and health campaigns are being done by JEEViKA, but not productive enough to drive off the open defecation.

On the contrary, as per the govt. department, Buxar district administration has employed the services of the transgender community to spread the word about the importance of toilet usage and personal hygiene across Buxar and Dumraon towns. The campaign stresses mainly on the ills of open defecation and how using a toilet could help minimize the spread of disease among community members. Govt. officials claimed that the campaign has received positive response with many people agreeing to construct latrines in their houses.

#### **6.2.1.2. Monitoring:**

Local government officials of Bandra block of Muzaffarpur district reported that frequent visit to local field to stop open defecation is a regular activity from government side. On the same time, they confessed that the supply side is very weak in the block. No sanitary shop is there in the area to facilitate raw materials to build toilets. All the markets centered in Rampur Dayal and Muzzafarpur town and the people have to depend on these two markets for installing toilet. So, they admitted that if the demand will be increased, the gap between demand versus supply will also increase. So, supply side to be strong to make it Open-Defecation Free (ODF) block. There is, therefore, a large untapped solvable demand for improved sanitation in these areas.

#### **6.2.1.3. Health and Sanitation Committee:**

Muzaffarpur District Health Action Planning provides opportunity and space to creatively design and utilize various NRHM initiatives such as flexi- financing, Rogi Kalyan Samiti, Village Health and Sanitation Committee to achieve the goals in the socio-cultural context of Patna, Bihar (DHS, 2012). But in reality neither water and sanitation committee nor health and nutritional committee in these areas was found. The data was validated by the Block coordinators and Mukhiyas of Minapur, BDO and some word members of Bandra, Sarpanch of Mushahari and word members of Aurai.

There are several federations by JEEViKA in these areas, which are having some committees like Education committee, Health committee etc. But these committees are not that much functional so that they can take forward this initiative. They only meet at a certain intervals and discuss the health related issues of the village.



In Buxar district, the situation is not inspiring, but a bit difference. Here the committees have been formed by the government. By paper, the achievements are mostly as per target. But the government officials themselves agreed with the fact that 60% of the committee are inactive. JEEViKA is also working here in almost all the blocks of Buxar. They have taken a better initiatives, but impact of the same is still awaiting.

#### *6.2.1.4. Government subsidized toilets:*

During discussion with Govt. officials and villagers, some issues in the field related to the govt. subsidized toilets raised. A number of Panchayats have been declared as Nirmal Panchayat, but practically they do not. Earlier, under TSC, constructors mostly provided parts of the materials- only seat and brick (only 70 bricks, which is not at all sufficient). They did not give any cement ring to the villagers. As a result, they did not use these materials for building sanitary toilet, rather used these bricks for other purposes. On the other hand, by paper Govt. is showing these households as having toilet.

Under the current rules of Govt. subsidized toilet, the community has to pay by their pockets first, then they will get the subsidy amount. But for that, four clauses are there- a) They have to submit filled application with some required documents, b) The amount will be paid upon physical verification and approval (at various level), c) Whatever a family is invested for installing the toilet, they will get only 12,000/- subsidy amount, d) The amount is payable to their respective bank account only. But due to shortage of cash, several households, despite of having willingness, are unable to install the same. In some of the areas, Mukhiya managed to install the toilets in credit from the contractors, but for most of such cases the villagers did not pay the amount to the contractors later, once s/he gets the money in his/her accounts from Govt. Moreover, the amount will be deposited only once the area will be declared as ODF village, and therefore, the time of recovering the payment is so long that it is not possible for Mukhiya to follow-up on a regular basis to know when the amount has been deposited to his/ her account. Till now, a number of contractors is having lakhs of pending money in the market. As a result, they have demotivated to install the toilet in credit. Some, contractors have directly confessed that they will never do any business for government subsidized toilets.

In both the district, no one in the studied families till now received the subsidized amount. They claimed that though they have submitted all the documents to govt. office, and even though some of the wards have declared as Nirmal Ward (ODF), they have still not received the money. On the other hand, government officials are in view that, the process is very lengthy (documents to submit to Panchayat level and will go to District level via Block level. The approval will also come through all these levels, but in opposite direction). Moreover, for number of cases, the application forms are incomplete and/or all required documents are not attached. These are the reason of taking time to release the amount.

The Govt. has given the responsibility to JEEViKA for verifying the toilets physically in the village (submit a photo of the beneficiary with the toilet). But for some cases, there is complaint that due to overloaded task, the JEEViKA persons are not able to visit each of such site, and therefore, channelizing this task to its federation. The verification is not, therefore, strict sometimes. And whatever report the federation is giving, has been noted in the Govt. record.

### 6.2.2. Private players:

Sanitation has become a global issue and the private sector has the responsibility to be the part of the solution (WBCSD 2008). Generally, the private sector consists of:

- Individual entrepreneurs that usually engage in offering simple products and services that do not require high investments. For instance, repairing and installation of water pipes, toilets and bathrooms. They can act as masons, plumbers and traders and thus generate income.
- Small and Medium size Enterprises (SMEs) differ from individual entrepreneurs in the number of employees and turnover, which is much bigger than that of individual entrepreneurs.

For understanding the ongoing sanitation business, the study team visited to the local market and interviewed available cement ring entrepreneurs of the area. The team roamed throughout the block's all main roads, asked to the local people, and wherever any cement ring entrepreneur was found, the team met him.

#### 6.2.2.1. Muzaffarpur:

In Minapur, there were 22 cement ring entrepreneurs, out of which 8 were developed by BASIX and rest were through natural growth. But out of these two are currently inactive. Some of these entrepreneurs are very congested and rest are scattered in other parts of the block. One is just at the boarder of Seohar block, and therefore, catering the customer of both the districts.

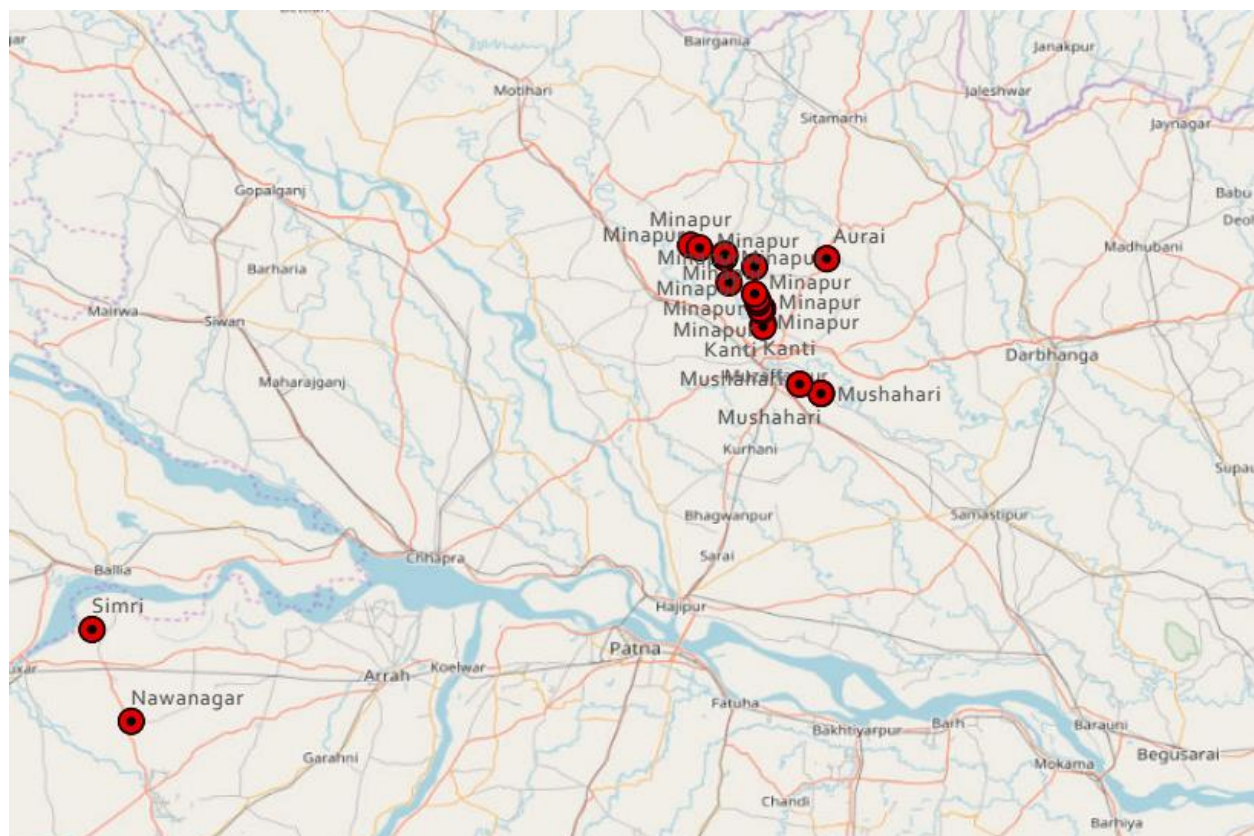
In Aurai, only one such old entrepreneurs were found in the whole block. Some new entrepreneurs have been developed by the current initiatives of BASIX, but they have not been covered under study as they are very nascent stage and the selling activities has just started. Some private hardware shops are there in the main market, who are selling toilet materials. In Kanti, the existence of three entrepreneurs were identified. Two of them are doing their business smoothly. Rest one is a private hardware shop, running the business from last several years. Recently he has extended his business by producing of cement ring, but yet to start any sale. In Mushahari, three entrepreneurs were found. They are supplying to the nearby villages. Rest of the areas are being covered by the private hardware shops, though they do not produce cement ring. In Bandra, there is no cement ring manufacturer, and therefore, sanitation market within

block is nil. They are totally dependent on Minapur market or Muzaffarpur market. The same was also confirmed by the local government officials.

A total of 22 entrepreneurs were surveyed, out of which 17 in Minapur, 1 in Aurai, 2 in Kanti and 2 in Mushahari. The detail has been given in below table-

**Table 20: List of Cement ring Entrepreneurs in the studied blocks of Muzaffarpur**

Block	Number of entrepreneurs found	Number of entrepreneurs interviewed	Remarks
Minapur	22	17*	* 3 were not available during the survey, 1 refused to provide information, 2 are inactive currently
Aurai	1	1	
Kanti	3	2 <sup>#</sup>	<sup>#</sup> 1 was not available during the survey
Mushahari	3	2 <sup>§</sup>	<sup>§</sup> 1 refused to provide information
Bandra	0	0	
<b>Total</b>	<b>29</b>	<b>22</b>	



The entrepreneurs are mostly from middle to lower middle class family- 95% are from Hindu religion and 82% are from OBC. All the entrepreneurs are male. Majority of them (over 70%) have attended school and studied upto 7-10<sup>th</sup> Standard.

All these PoPs were established during 2012-2015. The entrepreneurs promoted by BASIX have received training before starting these PoPs. But rest the entrepreneurs do not. Initially they invested 50,000-100,000/- for starting the business. But if the entrepreneurs, who already had a shop and expanded his business by producing cement ring, have invested 25,000-35,000/-. More than 90% cases they do not have any trade license for this business. Except two cases, they do not have any separate bank account for their PoP. They have only one account, which is being used personally as well as for business purpose. Except four cases, this business has now become their primary means of livelihood.

During the starting period, 65% of these entrepreneurs have taken loan for arranging the initial investment. Majority of them have collected from local Money lender, rests have taken the loan from bank. The availability of different sanitary materials have been detailed in the following table:

**Table 21: Product-wise detail of PoPs**

Product	Availability in PoP	Average monthly sale	Price per product
Cement rings	22 out of 22	Minimum- 30 Maximum- 400 Average- 146	200-400/-
Urban/ Rural pan	10 out of 22	28	300-400/-
Pipes	10 out of 22	28	300-400/-
Syphon	10 out of 22	28	Good quality- 300-400/- Low quality- 170-180/-
Y-Junction	5 out of 22	28	160-180/-
Tiles	0 out of 22	NA	NA

The number of cement ring physically available during the survey was varied from one entrepreneurs to another, ranging from 50 to as much as 200. The number of sale of toilet is based on the season. They all reported that July/ August was a poor time of sale because of the rains, while peak sales occurred in the 'wedding season'. Sale number also depends on the location of the PoP, ranging from 75 to as many as 200 rings sale per month (average being 126). These entrepreneurs reported that they sell their product mainly to individual customers. Some of them also sell to private contractors, who construct the toilet in unreached area.

Price of the ring also varies, based on the location of the PoP and quality of the product. Entrepreneurs reported that though the price of both cement and sand is increasing, the rate of cement ring is not increasing, rather decreasing in some areas due to high competition. The average current rate of ring is 200 - 300/-, while the price was as much as 400/- at 3-4 years back. The competition between two shops is even sometimes 10-15/- per ring.

Business opportunity was found to be negatively correlated with the density of Entrepreneurs. Densely situated entrepreneurs have more competition, leading to decrease the price and as a result the profit margin is less (these were found in Minapur- Seohar road). So, in densely located entrepreneurs have been divided into three clear categories.

**Category-1:** Naturally grown entrepreneurs are now preparing low quality ring (thickness is less, size is small, proportion of cement in sand is less etc.) and selling at lesser price to survive in this competitive market. To stabilize their annual revenue, they have taken some strategies: 1) They are motivating customers to buy more number of low quality rings rather than buying few number of good quality rings, with the thought that the substructure will not fill throughout the lifetime of the customers, 2) They are providing the transportation services to reach them at the doorstep of the customer safely, and thus earning some money from it, 3) They are motivating customer to take labour from them to ensure that these easily breakable low quality rings will be installed safely. These labour charges are much higher than the local labour charge, and the entrepreneurs have been earning commission from these labours also. Ultimately the total cost of installing a toilet by a customer buying low quality rings is more or less same or sometimes higher than that of the high quality ring. Moreover, due to the use of more number of rings sometimes it touches the drinking water level and polluting the environment. A technical research on this topic is needed to understand the actual effect of this on the environment. However, the customer feedback shown that, they do not bother about the quality of ring, as it is installed underground.

**Category-2:** When the details of BASIX promoted entrepreneurs have been analyzed, it revealed that they have gone through several trainings including the training on quality of the product. As a result, they are not compromising with the quality of rings, also not insisting customer to buy more than 4-5 rings for a single pit toilet. The rate of these rings are higher than the low quality rings. Thus, number of sale of these less than the earlier category stated above, and therefore revenue is also slightly less. But they are satisfied with the business ethics. Customers are also satisfied with the quality

**Category-3:** Third category includes the entrepreneurs, who are situated at least 5 Km from the nearest entrepreneur, and are therefore running good business. They are able to sell the rings @300/- or above. So, they do not have to compromise with quality and are, therefore, using comparatively good material. The differences among these categories have been detailed below:

Category- 1 Entrepreneurs located in high density area (in terms of POP), providing low quality ring to reduce price (natural growth)	Category- 2 Entrepreneurs located in high density area (in terms of POP), but not compromising with quality (BASIX promoted)	Category- 3 Entrepreneurs located in low density area (in terms of POP), no need to compromise with quality
• <b>Competition-</b> High	• <b>Competition-</b> High	• <b>Competition-</b> Low
• <b>Quality of ring-</b> Low	• <b>Quality of ring-</b> Good	• <b>Quality of ring-</b> Good

<ul style="list-style-type: none"> <li>• <b>Proportion of cement-</b> Low</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Proportion of cement-</b> High</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Proportion of cement-</b> High</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Character-</b> Easily breakable</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Character-</b> Not easily breakable</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Character-</b> Not easily breakable</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Height-</b> 8 Inch / ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Height-</b> 12 Inch / ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Height-</b> 12 Inch / ring</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Weight-</b> 20-25 kg/ ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Weight-</b> 60-65 kg/ ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Weight-</b> 60-65 kg/ ring</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Sale price-</b> 200 INR / ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sale price-</b> 300 INR / ring</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sale price-</b> 350 INR / ring</li> </ul>
<ul style="list-style-type: none"> <li>• Entrepreneur motivate customer to</li> <li>• buy <b>8-10 rings</b> per toilet</li> </ul>	<ul style="list-style-type: none"> <li>• Entrepreneur sales customer <b>4-5 rings</b> per toilet</li> </ul>	<ul style="list-style-type: none"> <li>• Entrepreneur sales customer <b>4-5 rings</b> per toilet</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Effect on environment-</b> Harmful</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Effect on environment-</b> Not harmful</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Effect on environment-</b> Not harmful</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Sale per month-</b> 150-200 rings</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sale per month-</b> 75-100 rings</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sale per month-</b> 75-100 rings</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Revenue from ring-</b> 30,000-40,000</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Revenue from ring-</b> 22,500-30,000</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Revenue from ring-</b> 26,250-35,000</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Customer feedback-</b> They don't bother about the quality, as it is installed under ground</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Customer feedback-</b> They are satisfied with the quality</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Customer feedback-</b> They are satisfied with the quality</li> </ul>

However, the study indicates that the supply chain needs to be strengthened. They are collecting sand from the truck coming from Koelwar (or Koilwar) of Bhijpur district (of Koil river or Son river), brick from local *Vata* (brick field) and cement from the local shop. For other materials like pan, syphon, Y-junction, pipe etc., they have to depend on local hardware shop. There is a need to take these entrepreneurs under a common platform and an effort is needed to link them with manufacturer of Gujrat, so that they can get quality materials at a cheaper rate.

No promotional effort were found to be taken by these entrepreneurs (only using banner in front of the shop), except for the cases of BASIX promoted entrepreneurs, where the agency itself took some of the initiatives to do promotional activities on behalf of them.

Regarding future prospect, some of the densely situated entrepreneurs are not finding it as a very potential business and therefore, not interested to expand the business in other location. During discussion, they admitted that in an unreached area, the business might be better. But they were found to be a bit frustrated with the current situation. On the other hand, where the business is good in terms of sale, the entrepreneurs were found to be quite motivated. One of them was keen to expand his business in other area. He is already under planning process. One more entrepreneur reported that he wants to open one more shop in city area, as he is guessing that through that outlet he will be able to tap more customers.



#### 6.2.2.2. Buxar:

In Buxar district, the research team roamed in all main roads of these studied blocks and also all possible markets in search of cement ring entrepreneurs. But the number is very rare in all blocks. Some private shops were there. But these shop owners are not much interested to sell other materials rather than toilet components due to the less number of sale volume. Moreover, there is no any large networks of these hardware stores, as proactive and professional suppliers of toilet materials do not exist anywhere.

The team, however, met with all identified hardware shops owners and cement ring entrepreneurs of these blocks. Block-wise detail has been given in the following paragraphs.

Simri bazar is the main market of Simri block (the area is arsenic affected area) of Buxar district, which is located at the side of Buxar-Simri road. Three hardware shops were found to be exist there, where the urban pans, syphon, pipe etc. are available. Both of these shop owners informed that the sale is very rare. Therefore, they are not interested to buy these materials in a bulk volume. However, they purchase the materials either from Dumraon market or directly from Buxar market.

Just outside this market, there is only one POP (Latitude- 25°38.671'N; Longitude-84°6.626'E), where the facility for preparing toilet is available. The shop is run by a young educated entrepreneur, who is popular in the block as he does not have any competitor here. In this district, the most common type of toilet is the use of two cement rings. One is of 8' X 3' and another one is 4' X 3'. There is a connection between these two through a pipe. First the waste is being deposited in bigger ring and through the pipe, the liquid portion goes to the smaller ring. Then comparatively clean water drain out in the field from the smaller one. He takes around 15k for this substructure (it also includes slab, one urban pan and gas pipe). He showed much interest, while the research team showed him the photo of modular toilet. He agreed that it will increase his business if he sells this ready superstructure along with the structure currently he is offering.

More or less same situation was found in Nawanagar block of Buxar district. The main market of the block is Nawanagar market (with about 1.5 km radius), located at Dumrao- Bikramgunj Road (SH- 79). There were three hardware shops, where the toilet related materials are being sold. Except one big hardware shop, the sale of two other shops are negligible. At the end of market, there was an outlet where only 4/5 cement rings were available. The owner resides in another district. A boy is looking after the shop and earning from it in a commission basis. There were only six rings in this outlet during visit (no other toilet materials were available). The structure is same, as found in Simri. But the boy reported that the selling of ring is as rare as one in an alternative month.

After around one km of this market place, there was only POP of that area, where the cement rings are available in good number (More than 100 big rings were there). The entrepreneur has been preparing it as a commercial way and the demand is also high (attached the photo). People from several villages are purchasing rings from his POP. But he is offering 'under-the-ground' or

substructure latrine components (i.e. rings and slabs) but fail to address the desire of families for the 'above the-ground-structure' or superstructure (i.e. shelters and sanitary equipment).

In Brahmapur district, the main market is Brahmapur market, near Patna-Buxar Road (NH-84), with a total of 18-20 small to big shops. This is the only market of the block. But as Dumraon market (18 km) is near to this block, people use to go to these markets while purchasing some costly materials. However, in Brahmapur market there are 7 hardware shops, where pan, pipe, syphon and Y-junctions are available. From these shops, cumulatively 100-150 toilet sets (per month) have been sold by the villagers. Outside this market, there is only one cement ring entrepreneur (Latitude- 25°36.313'N; Longitude-84°18.162'E), who has a one stop shop, where seat, pipe, syphon etc. are also available along with cement ring. The average monthly sale of the entrepreneur is 2-3 sets. Even if purchase order is placed, he could deliver a maximum of 6 full set of toilet.

The situation of Chausa is comparatively bad. No cement ring manufacturer was found to be exist within the whole block. The main market of the block is Chausa market, adjacent to Buxar-Kochas road (State Highway). There are a total of 15 shops in the market, out of which 6 are hardware shops. In these shops pipes and syphon are available. But urban pan or Y-junction were not there. The shop owner informed that if order is placed, they can supply the material. Main market of Buxar town is 11 km far from this block. The people, has therefore, to go to the Buxar town for purchasing the material which are not available locally.



Figure 19: Common type of cement ring- Muzaffarpur (Left) and Buxar (Right)

## 7. Recommendation and Conclusion:

Based on the observation during survey and the analysis of collected data, the study proposes to give emphasize on certain issues, which are important to make the approach of "Sanitation as a Business" successful.

Access to sanitation and proper use of sanitary toilet has been a global crisis since the last decade. On the contrary, sanitation is regarded to be a very profitable business with an estimated



economic return of about 10 USD for every 1 USD invested (WBCSD 2008). Market-based approaches could, therefore, help develop more financially sustainable and scalable solutions to extend access to sanitation for all.

### 7.1. The Supply Side

- **Business opportunity:** The current study indicates that sanitation coverage is still very low in these two districts. More interestingly majority of the HHs without sanitary toilet (of both the district) are willing to construct it in either near or distant future. There has, therefore, huge opportunities in these areas to establish the business and tap the market, if go ahead with proper planning.
- **Govt. subsidized toilet:** Lower-income countries have traditionally supported their public sanitation providers through budgetary grants (from taxes) and low-cost loans (supported via transfers), not expecting or requiring full cost recovery, and therefore has resulted poor quality of service (WPP 2010). India is not the exception of it. The current study result also support this. Majority of the satisfied customers have own-invested latrine, unsatisfied customers are mainly having government subsidized toilets. Emphasize, therefore, to be given on improved sanitation with quality product to build viable business and ensure long term sustainability.
- **Role of Private sector:** Here, private sector has a major role to play in strengthening the supply chain and develop a successful business models. Small to medium companies, social enterprises that run as a business and for-profit commercial enterprises can come forward for offering more sophisticated sanitation products and services. Bringing corporate expertise, assets and resources is also required to help unlock the business potential in a more commercial way.
- **Role of village level entrepreneurs:** This study also reveals that the involvement of village level entrepreneurs is obvious to reach the rural unreached areas. Moreover, the opportunity for this entrepreneurs is huge, as the market share of medium or big companies is currently negligible.
- **Selection of entrepreneur:** Village level entrepreneurs can be developed by identifying, training, and monitoring of selected person. Selection of candidate is a crucial step for promotion of entrepreneur. The ideal person may be a suppliers, already offering a diverse product like concrete elements, construction materials etc., has a sufficiently large size and outreach (serving at least 10-12 villages or 2-3k households), and has the necessary resources to invest in new production equipment and upgrade its production and warehousing capacity. In new areas, it is suggested to enroll and professionalize local hardware stores or cement pillar manufacturer, so that they can sustainably manufacture and deliver selected latrine components (rings and slabs) to neighboring villages.

- **Location of PoP:** Identifying the best possible area is also a vital step before establishing the PoP, as this study showed that the high density of shops negatively affect the sale volume as well as the quality of product. On the other hand, low sanitation rate in Minapur block, where the good number of entrepreneurs exist, indicate that the business opportunity has still not been saturated. It is only the wrong site selection of the later formed entrepreneurs, for which they are not able to tap the market, which is still potential for them.
- **Ways of generating revenue:** Even among the larger hardware shops, the professionalism and motivation level have to be boosted-up. Because the shops may lose interest in latrines if sales drop for a constant periods of time. The consultancy agency, involved in this initiative, must find ways to capture the market in order to finance their own operations and growth. The agency need to find ways to help entrepreneurs generate sufficient revenue from the sale of products or services. Possible avenues include:
  - Selling high margin products along with basic latrines
  - Offer systematic home delivery and installation
  - Branding of product
- **Initial nurturing by the consultancy agency:** Close relationship with ring and slab manufacturers or hardware shops that started manufacturing rings/ slabs is required for at least one year. The consultancy agency should ensure to develop financial, business and marketing knowledge of the entrepreneurs. Slowly once they will be developed as 'preferred supplier' of the local area from that of a 'supported entrepreneur', the consultancy agency can withdraw their support.
- **Promotional activities:** Promotional campaign are required in the long run to maintain sustained demand for sanitation solutions and reach further into poorer segments of villagers. But local hardware stores are not willing or equipped to carry on these promotion efforts by themselves. They are small, local entrepreneurs, who essentially run their business by waiting for customers to walk through their door. Thus, this initiative may be started by the consultancy agency on a pilot basis, but it has to be carrying forward by the entrepreneurs in the long run.
- **Product designing:** The design of products is also key factor to drive cost-efficiency. Health issues are not enough to convince these would-be users, rather low-cost but attractive model might change the desire of these rural families. Ready-to-assemble and lighter weight components can reduce installation time and require fewer workers, and therefore, less installation charge. The consultancy agency has to ensure to make the entrepreneurs understand that 1) offering a quality product with an optimum cost and timely supply of the material increase the goodwill of the supplier, and 2) in this way, they could capture a high enough margin through increasing the sales volume.

- **Networking:** The consultancy agency should make a network of the entrepreneurs, so that they could motivate from each other, help solve each other's challenges, learn best practices and cumulatively take innovative solution. The consultancy agency can also motivate them by creating competitive environment among themselves. They can introduce reward for best entrepreneur based on quality, timely production, sufficient inventory and the use of recommended production methods. In this way, shops can secure a stable source of business, from a client that commits to passing regular orders and ensures fast payment after delivery. But before all of these, appropriate contractual agreements need to be signed between the consultancy agency and the entrepreneurs.
- **Input linkage:** Strategic partnership of this network with for-profit company or corporate agency is required for input linkage. If a linkage of the input materials from the manufacture companies can be established, the entrepreneur will get the quality input in cheaper price at doorstep.
- **One stop shop:** The current study showed that all the cement ring entrepreneurs do not necessarily keep the provision of supplying other components line pan, pipe, syphon etc. On the other hand, cement rings are not available in any of the Hardware shop. But consumers prefer a turn-key sanitation solution. If consumers were offered a "one-stop shop", the business would expand significantly.
- **Role of other stakeholders:** Some other stakeholder can play a contributing role like:
  - NGOs can be involved in training of village-based producers to adopt efficient latrine production techniques and market them in neighboring villages
  - Local MFIs can provide credit both to the entrepreneur (for initial investment or working capital) as well as customer (for purchasing the material).
  - Construction companies can help manufacturing quality and affordable toilet units
  - Consumer goods companies could leverage their marketing expertise to develop better sanitation marketing campaigns
  - Scientists can develop new processing technologies to capture economic value from human waste
  - Chemical companies can help developing efficient solutions for odorless toilets.

## 7.2. The Demand Side

- **'Cash-in-hand' issue:** The fact that has come out from the present study is that 'cash-in-hand' availability is often the main hurdle for households to actually invest for constructing latrine. Addressing the lack of 'cash-in-hand' issue is a must to make these

products more accessible and affordable. The magnitude and complexity of the problem has also to be addressed. Financing solutions will hopefully improve the attractiveness of the product on offer, as it can be assumed that after getting financial support the families can afford one of the many products they aspire to have that would otherwise remain out of reach.

- **Sanitation loan:** In this situation MFI can play a lead role. Now a days a number of different types of loan are available in the market like agricultural loans, SME loan, education loan, home loan, car loan etc. But there is no such “Sanitation loan” in the market. Very few MFIs provide sanitation financing, as the loan amounts are low, there are regulatory ceilings for consumer finance and sanitation products appear to be hard to sell. As a result, less than 1% of MFI customers have a sanitation loan in India. But if MFIs design a good product of sanitation loan, it may help popularize the sanitation product in one hand and will enable the MFIs to generate additional revenue from it. In areas where MFI partnerships are limited and restricting, the JEEViKA group or local Self Help Group (SHG) can take the leading role to provide sanitation loan.

Gramalaya, a national level NGO located in Tiruchirapalli (Tamil Nadu), has exclusively working on sanitation and developed **SMART toilet**.

**S-** Safe and Sustainable  
**M-** Maintainable  
**A-** Affordable  
**R-** Recyclable  
**T-** Technically Perfect



Guardian, a spin-off of Gramalaya, is one of the very few successful sanitation financing projects. Guardian was created in 2007 as a non-banking financial corporation, under a status that allows providing loans that are not “income-generating”. To date, Guardian has made **more than 30,000 loans for toilets, with a 96% repayment rate**. The could be replicated in this area also

- **Model based product:** Where in-house financing is challenging, an alternative solution can be developed. Providing instalment to the customer may not be possible for these entrepreneurs having low capacity of financial investment. But splitting the purchase of latrines, shelters and sanitary equipment into 5-6 modules can be possible. For example:
  - Module 1- Installation of cement rings
  - Module 2- Installation of slab and floor base
  - Module 3- Installation of back wall and two side walls
  - Module 4- Installation of shelter roof and front wall
  - Module 5- Installation of shelter door and provision for water supply

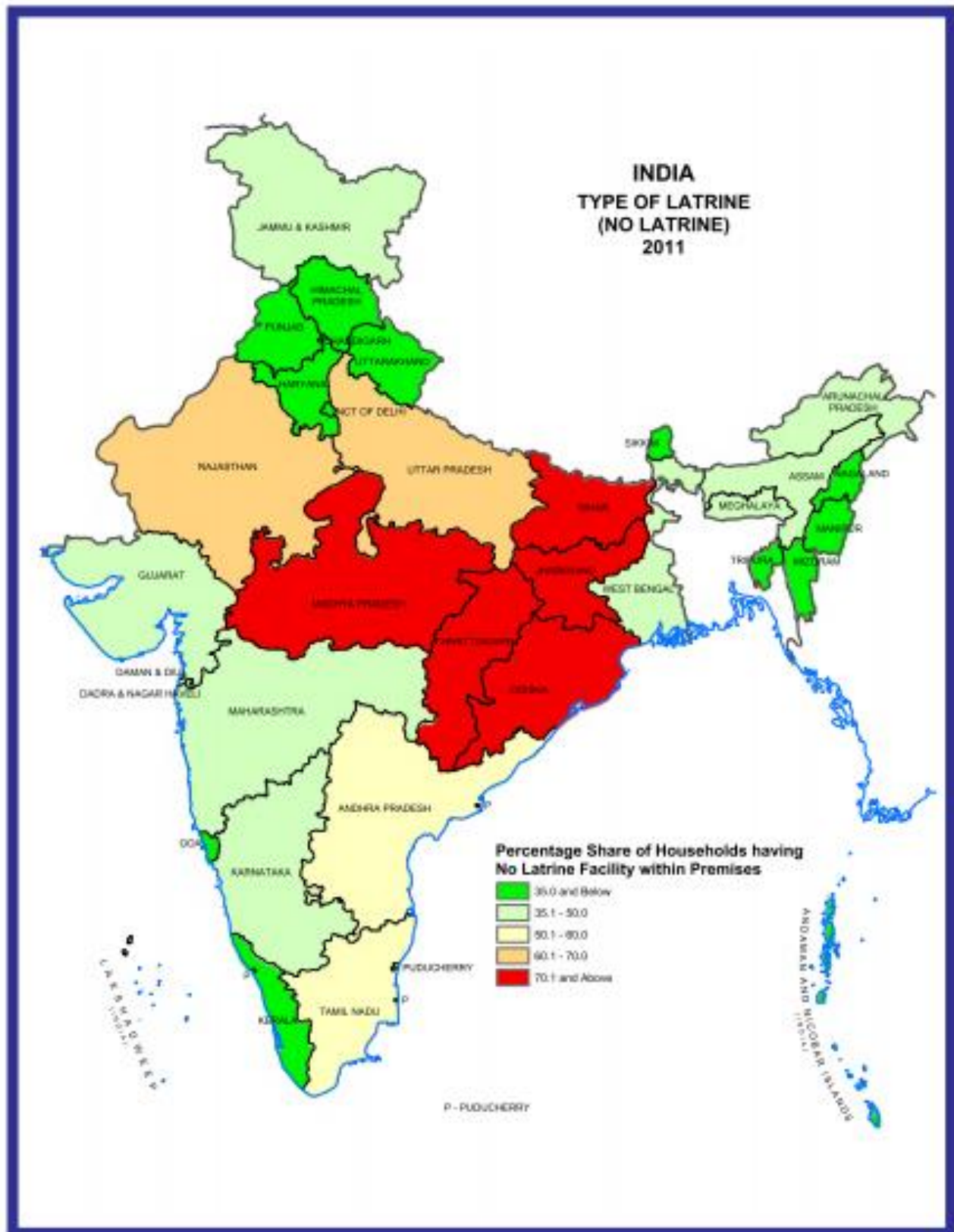
This type of module based product, with guaranteed quality and doorstep service, may encourage the customer, who are having the problem of cash-in-hand. The product will enable them to start buying the product, once they have a few amount in their hands. There is no need to wait till they will arrange a lumpsum amount. This module based product may also enhance the possibility to choose the better quality toilet. The proposed modular approach will drive adoption by making sure households can avail the whole solution at regular intervals, with high quality and good value. Moreover, this type of product will allow the consumers to purchase only the modules that they need and want (for example, if the customer needs a certain module, as this part of his existing toilet has broken down), hence broadening the customer base. But market survey and field testing is needed before launching this type product.

- **Motivating aspiration level:** On the other side, the interesting finding of the study is that, most of the poor families surveyed owned at least one mobile phone. It is 100% in case of Muzaffarpur (500 out of 500) and over 97% in case of Buxar (389 out of 400). Actually for creating demand, the entrepreneurs need to understand what the consumer really wants. While price is an obvious important factor, but it is not everything. People evaluate their options not just on price but also on convenience and access, as well as cultural preferences. Entrepreneurs should take care of all the factors that can increase the demand of the villagers. They have to understand the psychology of the customer to motivate their aspiration. The customer will choose to spend their money on a higher-priority product like a mobile phone, which is viewed as 'better value' and often seen as a status symbol. This psychology should be taken into consideration, while planning the promotional activities or preparing the IEC materials or drafting the content for advertisement.
- **Sales agent:** Sales agent can be developed in each village or in a pocket having two/ three nearby villages. Sales agents can be the village-based referrals like community leaders or former clients, who can bring clients in exchange of a small commission. It will enhance the sales volume. Sales agents gather 10-50 villagers during a few hours in a central place in order to create reinforcing group dynamics and conduct product demonstrations.

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## Annexure- 1: Map of India showing no-latrine area





## Annexure- 2a: HH Questionnaire

Interview Detail		
Date of Completed Interview	DD/MM/YYYY <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Time of Interview	Started at: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Ended at: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Name of the Interviewer		
Signature of the Interviewer		
Result of the Interview	Completed	1
	Partially Completed	2
	Refused (Provide reasons)	3
	.....	

[Interviewer should take consent from the informant: "I am conducting a survey about water and sanitation for the organization Water For People. Would you be willing to participate in this survey? It will take approximately 15 minutes to complete the survey and your responses will help us understand what your sanitation needs are"]

Identifying Information- It is mandatory to complete this information	
State	Bihar
District	Muzaffarpur / Buxar
Block (Mandal)	
Gram Panchayat	
Village/ Ward	
Location of the house/ landmark near house	
Name of the Respondent	
Address	
Mobile Number of Respondent	

[Instructions: Please encircle the appropriate code]

I: HH Characteristics			
S. No.	Questions	Responses	Codes
1.1.	Religion of the respondent	Hindu	1
		Muslim	2
		Christian	3
		Sikh	4
		Any Other (Specify)	



1.2.	Caste of Respondent	SC	1
		ST	2
		OBC	3
		General	4
1.3.	Age of the respondent (in years)	<input type="text"/> <input type="text"/>	
1.4.	Sex	Male	1
		Female	2
1.5.	Primary occupation of the respondent		
1.6.	Secondary occupation of the respondent		
1.7.	Total number of household members		
1.8.	Gender-wise number of members of family	Male	
		Female	
1.9.	Level of education of your family members (Write the number of member in each case)	Illiterate	
		Literate but no schooling	
		Schooling <5 <sup>th</sup> Standard	
		5 <sup>th</sup> – 10 <sup>th</sup> Standard	
		11 <sup>th</sup> – 12 <sup>th</sup> Standard	
		Above 12 <sup>th</sup>	
1.10	Have you/ your family moved from any another state?	Yes/ No	
1.11	Have you/ your family moved from any place within this state?	Yes/No	
1.12	Does anyone in the household have a disability?	Yes/ No	

## II: Income and Asset

S. No.	Questions	Responses	Codes
2.1.	Multiple response What are the income sources of your family?	Daily wage	1
		Agri/ Aquaculture	2
		Animal Husbandry	3
		Business	4
		Salary	5
		Others	6
2.2.	Which card do you hold?	BPL	1
		APL	2
		None	3
2.3.	What is the average monthly income of the household? (Other than subsistence production)		
2.4.	Do you have any agricultural land or you have taken it as lease	Own	1
		Lease	2
2.5.	Is the house owned by you or have taken it as rent?	Own	1
		Rent	2
2.6.		Pacca	1

	What is the nature of house (Interviewer should write it through observation)	Semi-pacca	2
		Kachcha	3

### III: Sanitation Status (Section 1)

S. No.	Questions	Responses	Codes
3.1.	How many rooms are there in your house?		
3.2.	What is the main source of lightning in your house?		
3.3.	What type of fuel does your household mainly use for cooking?		
3.4.	Do you have access to a sanitation facility?	Yes / No/ No response	
3.5.	If yes, since when are you accessing the toilet?		
3.6.	And where it is located?	Shared toilet	1
		Outside house premises	2
		within	3
3.3.	If Yes- From where did you arrange/buy the required material for toilet construction? (multiple response possible –record all)	PoP run by village level entrepreneurs	1
		Private hardware shops	2
		Private Contractor arranged for the materials	3
		Don't Know	4
		Other (please specify)	
3.4.	How much did it cost you to construct toilet?		(in INR)
3.5.	Did you have to take any loan for construction of the toilet?	Yes / No/ No response	
3.6.	If Yes- Source of loan (Multiple Response possible- record all)	BANK	1
		MFI	2
		NGOs	3
		local lenders	4
		Other (please specify)	
3.7.	If Yes- Other detail	Loan amount	(INR)
		Repayment tenure	(Months)
		Annual Interest Rate	(%)
3.8.	Did you get any govt. incentive?	Yes / No/ No response	
3.9.	If on incentive from Government/NGO program, then ask "If the latrine was	Yes / No/ No response	

	swept away in a freak wind, would you build another even without incentive?		
3.10.	What type of sanitation facility does the household have access to?	<b>Superstructure</b>	
		Cemented concrete	1
		temporary structure	2
		Other (please specify)	
		<b>Substructure</b>	
		brick-lined Single pit	1
		ring-lined single pit	2
		brick-lined double pit	3
		ring-lined double pit	4
		Septic tank	5
		Other (please specify)	
3.11.	How deep is your pit?	feet	
3.12.	What are the reasons for constructing your toilet? (the answer should come from the respondent, it should not be a leading question) (Multiple Response possible)	Government Program offered incentive	1
		NGO or Other Program offered incentive	2
		For visitors	3
		Marriage of daughter or son	4
		For sick and old people	5
		Children forced me to construct	6
		Spouse forced me to construct	7
		It's important to have toilet for safety of women in family	8
		Any other (specify)	
3.13.	Did anybody provide technical support during construction of toilet at your household?	Yes	1
3.14.	If yes, Who was it? (Multiple Response possible- record all)	NGO staff	1
		Government Staff	2
		Master Mason who constructed the toilet	3
		Nobody	4

		Any other (specify)	
3.15.	Does more than one family share the sanitation facility	Yes/ No	
3.16.	Do you have access to the latrine 24 hours a day	Yes/ No	1
	Who cleans the toilet on daily basis?	Family members	
		Hired person	
		Others (specify)	
	How much does it cost for the maintenance of the toilet per annum?		
3.17.	Multiple answer	Every one of the family uses the latrine	1
	Do all of your family members use the toilet on a regular basis	No one uses the latrine	2
		Women do not use the latrine	3
		Men do not use the latrine	4
		Children under 5 do not use the latrine	5
3.18.	If the answer of the above question is not 1, then ask reasons for not using the toilet by any member of the household (Multiple Response possible- record major 2)	Water facility is not available in or near toilet	1
		Seasonal Water Shortage	2
		Like to defecate in open	3
		More convenient to defecate in open	4
		Toilet is nonfunctional (please verify)	5
		Any other (specify)	
<b>Collection of data through observation</b>			
3.19.	Observe: What type of floor/platform/slab does the facility have?		
3.20.	Observe: Condition of floor/slab/platform	Good (no cracks-gaps what so ever)	1
		Bad (Dangerous to stand on)	2

		Could not observe latrine	3
3.21.	Observe: Condition of roof	Roof in good condition	1
		Roof in bad condition	2
		No roof	3
		Could not observe latrine	4
3.22.	Observe: Condition of door	Door (Wood / aluminum/ siding etc.)	1
		Plastic or cloth door	2
		No doors	3
		Could not observe the latrine	4
3.23.	Observe: Condition of walls	Full wall (enough to provide privacy)	1
		No wall	2
		Could not observe the latrine	3
3.24.	Observe: Is there urine/feces on the floor/seat/walls etc. in the latrine?	Yes/ No	
3.25.	Observe: Is there any evidence of open defecation nearby or within the house/compound?	Yes/ No	
3.26.	What will the household do when the pit fills up?	Don't Know	1
		Pay someone to empty it	2
		Cover pit and dig a new hole	3
		Empty it themselves	4
		Return to open defecation	5
		Use an older latrine	6
3.27.	How will it be emptied?	Emptied by hand (with a bucket)	1
		Emptying service with basic mechanical machine	2
		Tanker truck	3
		Don't know	4
3.28.	How will you empty it?	By hand and with a bucket	1
		With a basic machine	2
		Don't know	4
3.29.	Where will the waste go?	To the treatment plant	1
		In a nearby ditch	2
		Buried in the ground	3

		Flowed in the canal/river through pipeline	4
		Stored in open field / agricultural land	5
		Washed away by rain	6
		Don't know	7
3.30.	What do your neighbors do when their pits fill up?	Pay Some One To Empty It	1
		Cover The Pit and Dig a New Pit	2
		Empty It Themselves	3
		Return to Open Defecation	4
		No one has sanitation facilities	5
		Don't know	6
3.31.	How do they dispose of the waste?	Bury It	1
		Dispose of It in a Field	2
		Dispose of it in a River, Canal or Pond	3
		Take it to a treatment plant	4
		Don't know	5
3.31.	How satisfied are you with your sanitation facility?	Very satisfied	1
		Somewhat satisfied	2
		Neutral	3
		Somewhat dissatisfied	4
		Very dissatisfied	5
3.32.	Why are you satisfied?		
3.33.	Why are you dissatisfied?		
3.34.	Are there any current problems with the latrine?	Yes/ No	
3.35.	What are the current problems?	No water to flush latrine	1
		Latrine is full	2
		Structural problems	3
3.36.	Observe: Is the latrine being used for the purpose it was intended?	Yes/ No/ Could Not Observe Latrine	
3.37.	Is there water available for hand washing near the sanitation facility?	Yes/ No/ Could Not Observe Latrine	1
3.38.	Is soap available for hand washing near the sanitation facility?	Yes/ No/ Could Not Observe Latrine	1

**IV: Sanitation Status (Section 2)**

If the Household do not have latrine:

S. No.	Questions	Responses	Codes
<b>4.1.</b>	Why the HH does not have a toilet so far? (answer should be given by the householder & should not be a leading question) (Multiple Response possible- record major 2)	Cannot afford	1
		Do not feel it is necessary	2
		Waiting for the govt. incentive	3
		Toilet was there earlier but broke down due to poor construction	4
		Have other priority (please specify)	5
		Feel uncomfortable and suffocated in closed toilets	6
		Water Source is too far	7
		Construction material supply not nearby	8
		Don't know how to make one	9
		Any other (specify)	
<b>4.2.</b>	Where do you and other family member defecate? (Multiple Response possible- record major 2)	On road side/railway track	1
		Agriculture field/farm	2
		Garbage space	3
		Toilet facility in another household	4
		Public/ Community toilet/ other shared toilet	5
		Any other (specify)	
<b>4.3.</b>	Is there any issue you face while defecating in open?	Yes/ No	
<b>4.4.</b>	If Yes, what are those? )this should not be a leading question ,answer should come from the repondent) (Multiple Response possible- record major 2)	No problem	1
		Security/ safety of female member	2
		Difficulty during rainy season	3
		Difficulty during day time	4
		Difficulty during night time	5
		Loss of dignity/feel ashamed	6
		During menstruation	7

		Problem in ailments, pregnancy, old age	8
		Any other (specify)	
4.5.	Do you think that there are health hazards related to open defecation?	Yes/ No	
4.6.	If Yes, what are those (Multiple Response possible- record all)	Person can fall sick	1
		Women safety issue	2
		Contamination of surroundings	3
		Do not know	4
		Any Other (specify)	
4.7.	If I returned in 1 year would you have built a latrine?	Yes/ No	1
4.8.	If Yes, "What is preventing you from building one now?" (Multiple Response possible- record all)	Cannot afford	1
		Waiting for the govt. incentive	2
		Construction material supply not nearby	4
		Don't know how to make one	5
		Any other (specify)	
4.9.	If No, "If I returned in 5 year do you the household will have built a latrine?"	Yes/ No	



## Annexure- 2b: Questionnaire for Entrepreneur

Interview Detail		
Date of Completed Interview	DD/MM/YYYY	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Time of Interview	Started at:	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Ended at: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Name of the Interviewer		
Signature of the Interviewer		
Result of the Interview	Completed	1
	Partially Completed	2
	Refused ( <i>Provide reasons</i> )	3
	.....	

Identifying Information- It is mandatory to complete this information	
State	Bihar
District	Muzaffarpur / Buxar
Block (Mandal)	
Gram Panchayat	
Village/ Ward	
Name of the Respondent	
Address	
Mobile Number of Respondent	

[Instructions: Please encircle the appropriate code]

## I: Socio Economic Characteristics of Respondents

Questions	Responses	Codes
Religion of the respondent	Hindu	1
	Muslim	2
	Christian	3
	Sikh	4
	Any Other (Specify)	
Caste of Respondent	SC	1
	ST	2
	OBC	3
	General	4

Age of the respondent in completed (in years)	<input type="text"/> <input type="text"/>	
Sex	Male	1
	Female	2
What is highest level of education have you attained?	Illiterate	1
	Literate but no schooling	2
	Schooling <5 <sup>th</sup> Standard	3
	5 <sup>th</sup> – 10 <sup>th</sup> Standard	4
	11 <sup>th</sup> – 12 <sup>th</sup> Standard	5
	Above 12 <sup>th</sup>	6
	Which card do you hold?	BPL
	APL	2
	None	3

## II: Detail of the business

GPS location of the Point of Purchase (POP):

Business inception information		
What is the name of your POP?		
What was your source of livelihood before this POP?	Agriculture	1
	Labor	2
	Animal husbandry	3
	Construction related activities	4
	Any other please specify	
	When did you start the POP?	DD/MM/YYYY
	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Do you have a trade license/ registration?	Yes/ No	

(If yes, please have a look at it, it is mandatory to display/ keep it in the office/ shop in original)	Yes/ No	
How much have you invested for establishing the POP? (Including the cost of leased land, Cost for procurement of sanitary components like cement, sand, pans pipes etc., hiring of masons, labors, signboards)		
Have you taken any loan for your business from any Institutions? If yes-	Yes/ No	
From where? (Multiple response possible- record all)	Bank	1
	MFI	2
	Local money lenders	3
	Relatives	4
	Others	5
	No response	6
How much money have you taken?		
What is the annual rate of interest?		
What documents the loan providers have asked for?		
Do you have any other income source apart from this business? If yes,	Yes/ No	
Involved in school latrine construction/ any other business/ other economic activity		
Do you have a separate bank account for your POP?	Yes/ No	

<b>Training and Support</b>		
Have you received any training? If yes-	Yes/ No	
Who provided you this training?		
What have been the duration of the trainings (initial and refresher)		
Have you received more than one training?	Yes/ No	

If yes, how many times?		
What kind of training did you get? (Technical, basic book-keeping, marketing etc.)		
How was the training(s)?	Excellent	1
	Good	2
	Average	3
	Poor	4
Any suggestions to improve the training		

Awareness and Promotion		
Have you seen any social art activities in this area to create awareness among the local communities on the importance of safe drinking water, sanitation and hygiene promotion activity? If yes-	Yes/ No	
Who did it?	Govt.	1
	NGO	2
	Any other	3
	Don't know	4
Type of Activities:	Film	1
	Street Play	2
	Audio Campaigning	3
	Demo-stall in Mela	4
	Banner/ poster/ leaflet/ wall painting	5
	Any other (Specify)	
For each of the activities seen, please ask for recall of messages communicated. Was he able to recall the message?	Film	1
	Street Play	2
	Audio Campaigning	3

	Demo-stall in Mela	4
	Banner/ poster/ leaflet/ wall painting	5
Has there been any increase in your sales/ or sales enquiries after these social art performances?	Yes/ No	

Linkages with external organization		
Do you have any linkages with external organization that supports your business in any form? If yes-	Yes/ No	
What is the name of the organization?		
Is there any documents stating the same? (If yes, kindly verify and get to know the important terms & conditions if any)	Yes/ No	
What kind of support you get?  (Multiple response possible- record all)	Financial support	1
	Free material supply	2
	Technical inputs	3
	marketing support	4
	Any other (Specify)	
At what frequency have you received that support?	Day to day	1
	Weekly	2
	Monthly	3
	Quarterly	4
	Half yearly	5
	Yearly	6
	Once	7
How important is their support system for the survival of your business?	Don't know	1
	Less/not important	2
	Important	3

	Very important	4
--	----------------	---

Status of Current business			
Do you own the land or has it been taken on lease?	Own	1	
	Lease	2	
If on lease - What is the rate per sq. feet?	(INR)		
What is size of the total landholding for the POP? (sq. feet)			
What are products you trade in? (this is apart from the sanitation related components)			
Observe and count the number of cement rings present within the POP compound (proxy indicators for sales) (This should be compared with the rings in stock to give a more accurate figure)			
Products	Trades in	Average no. of sale every month	Price per product
Cement rings	Y/N		
Urban/ rural pan	Y/N		
Pipes	Y/N		
Syphon	Y/N		
Y-junctions	Y/N		
Tiles	Y/N		
Can you please give the details for the following?			
Sanitary Products sold (not exhaustive, kindly add/ delete on case to case basis)	Procured from (place)	Quantity (how many units you purchase at one time)	Amount spend (including transportation for each lot)
Urban/ rural Pans			
P- traps			
Pipes			
Syphon			

Y-junctions			
Sand			
Cement			
Bricks			
Whom do you sell your products to? (Multiple response possible- record all)	Individual customers	1	
	School/ College	2	
	Public Toilet	3	
	other contractors	4	
	Any other (Specify)		
If you sell 100 rings every month, how much would be taken by each of them?	Individual customers		
	Contractors		
	Other players		
	Total	100	
Is there any challenge you face in your day to day operations? (Multiple response possible- record all and Rank them from higher priority to least priority as from 1 to 5)	Availability of skilled Labor		
	Problem of working capital		
	Recovery of payments from customers, contractors etc.		
	Generating demand		
	Lack of training		
	Procurement of sanitary components		
	Any other ( please specify)		
Do you have any knowledge on repair and maintenance of Hand pumps	Yes/ No		

If Yes, would you like to pursue this water related business in addition to your sanitation business	Yes/ No	
If No, would like some training so as to start this water related business	Yes/ No	

Future Prospect		
If we come back after two years would you have opened a new POP in geography?	Yes/ No	
If yes – What is the indicator which would help you to take that decision  (Multiple response possible- record major 2)	growth in existing sales and increased profit	
	incentives from external agencies	
	demand from the new area	
	competition from other neighboring POPs	
	Any other (Specify)	
If No- Would you require any support to do the same	Yes/ No	
If yes – What support you would require	Financial	1
	Technical	2
	Marketing	3
	Any other (Specify)	



## Annexure- 2c: Questionnaire for Govt. officials

Interview Detail		
Date of Completed Interview	DD/MM/YYYY <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Time of Interview	Started at: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Ended at: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Name of the Interviewer		
Signature of the Interviewer		
Result of the Interview	Completed	1
	Partially Completed	2
	Refused ( <i>Provide reasons</i> )	3
	.....	

Identifying Information- It is mandatory to complete this information	
State	Bihar
District	Muzaffarpur (1) / Buxar (2)
Block (Mandal)	
Gram Panchayat	
Name of the Respondent	
Designation	
Mobile Number of Respondent	

[Instructions: Please encircle the appropriate code]

I: Demographic Profile of the GP			
S. No.	Questions	Responses	Codes
1.1.	Number of village in the GP		
1.2.	Number of Wards/Sansad		
1.3.	Number of Household		
1.4.	Number of VWSCs (Village water and sanitation committees)		
1.5.	Number of VHSNC (Village Health Sanitation and Nutrition Committees)		
1.6.	Number of any other CBOs		
1.7.	Number of Population (Religion-wise)	Hindu	1
		Muslim	2
		Christian	3

		Sikh	4
		Any Other (Specify)	
1.8.	Number of Population (Caste-wise)	SC	1
		ST	2
		OBC	3
		General	4
1.9.	Literacy rate		(in %)
1.10.	Number of BPL card holder		

## II: Sanitation Status

S. No.	Probing Points	Responses			
2.1.	Sanitation coverage of the GP (absolute and in percentage)				
2.7.	Do the villagers still practice open defecation? Or are the people demanding toilets in the present days?				
2.8.	Have any of the villages under this GP received <i>Nirmal Gram Puraskar</i> ?				
2.9.	How many VWSCs /VHSNCs/CBOs are functional i.e. met at least once in the last 3 months?	Institutions	No.	%	Remarks
		VWSCs			
		VHSNCs			
		CBOs			
		Not aware			
2.10.	Is there any system of Solid and Liquid Waste Management (SLWM) under SLWM project				
2.11.	What are the mechanisms that are in place taken for awareness generation about safe drinking water, improved sanitation and hygiene practices?				

<b>2.12.</b>	Is there any capacity building programme for the stakeholder like Panchayati Raj Institutions (PRIs)? If Yes, please give details.	
<b>2.13.</b>	Is there any capacity building programme for the stakeholders like Village Water and Sanitation Committees (VWSCs)? If Yes, please give details	
<b>2.14.</b>	Is there any capacity building programme for the stakeholders like Village Health Sanitation and Nutrition committee (VHSNCs)? If Yes, please give details	
<b>2.15.</b>	Is there any capacity building programme for the CBOs present in the villages ? If Yes, please give details	

### III: Supply Chain Probing points

S. No.	Questions	Responses
3.7.	How the individuals do built latrines in this GP?	
3.8.	Is there any Point of Purchase (PoP) in the GP for selling readymade toilet or materials required for construction of Toilet?	
3.9.	How many contractors are there in the GP for construction of toilets? How many are empaneled?	

Awareness and Promotion	
Have you seen any social art activities in this area to create awareness among the local communities on the importance of safe drinking water, sanitation and hygiene promotion activity? If yes-	Yes/ No
Who did it?	Govt. 1
	NGO 2
	Don't know 3
Type of Activities:	Film 1

	Street Play	2
	Audio Campaigning	3
	Demo-stall in Mela	4
	Banner/ poster/ leaflet/ wall painting	5
	Any other (Specify)	
For each of the activities seen, please ask for recall of messages communicated. Was he able to recall the message?	Film	1
	Street Play	2
	Audio Campaigning	3
	Demo-stall in Mela	4
	Banner/ poster/ leaflet/ wall painting	5
Has there been any increase in your sales/ or sales enquiries after these social art performances?	Yes/ No	

Remarks/ Suggestion on the issue

## Annexure- 3a: Existing PoPs and cement ring entrepreneurs





### Annexure- 3b: Some snapshots of data collection

