



SFD Lite Report

Bandipora India

This SFD Lite Report was prepared by
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1 The SFD Graphic

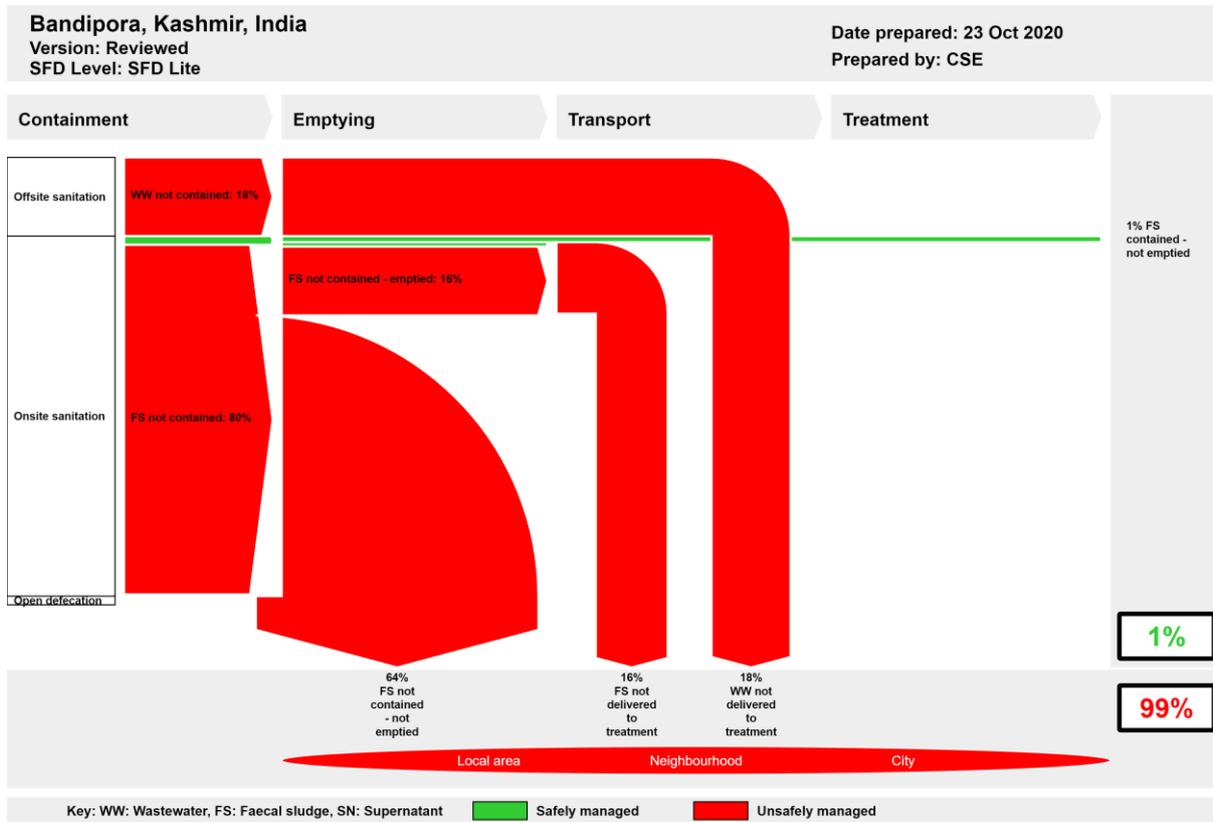


Figure 1: SFD Graphic for Bandipora.

2 SFD Lite information

Produced by:

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- This report was compiled as part of the SFD Promotion Initiative by Centre for Science and Environment (CSE) and Bill & Melinda Gates Foundation (BMGF). I would like to thank Mr Basharat Nazar, Municipal Chairman, Bandipora Municipal Council (BMC); Mohammad Mushtaq, Municipal Commissioner, BMC; Mr Prince Ejaaz, Sanitary Inspector, BMC; Mohd. Iqbal, Data assistant, BMC; Mohd. Mushtaq, NIC officer, BMC and Mr Shehnawaz, Vacuum truck driver for providing all the required secondary data and cooperating for Key Informant Interviews (KIIs) & Focus Group Discussions (FGDs).
- This report would not have been possible without constant support of Ubair Sufi, Sheena Sachdeva and Kriti Arora who helped in conducting sample surveys and FGDs in the field.

Collaborating partners:

- Centre for Science and Environment, New Delhi, India.
- Bandipora Municipal Council, Bandipora, Jammu and Kashmir.

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3 General city information

Bandipora city is the headquarters in Bandipora District. Bandipora District is one of the 22 districts of Jammu and Kashmir Union Territory¹. The District lies in Northern Kashmir with Baramulla District in South and Kargil District in East. It is the 14th largest District by population in Jammu and Kashmir.

Bandipora city is located at a distance of 47 km from Srinagar and at a distance of 330 km from Jammu. It is located at mean elevation of about 1701 msl at 34° 25' 12" North and 74° 39' 00" East². The urban local body governing the town is Bandipora municipal council (BMC). Bandipora municipal council recently got promoted to a council status from a committee in July 2020. According to the 2011 census, the population of the city was 37081 and total number of households was 5584. BMC has an administrative area of 13.40 sq.km which is divided into 17 wards¹.

Table 1: Population Growth rate Bandipora City.

Year	Population	Growth rate	Source
1971	6,201		Census 1971
1981	14,218	5.6	Census 1981
1991	18,000	2.1	Projected population
2001	25,795	3.0	Census 2001
2011	37,081	3.0	Census 2011
2020	44,801	1.7	Projection through Arithmetic method

Bandipora city is located on the banks of Wular lake, Asia's largest freshwater lake. In the recent years, the lake has been polluted due to inadvertent dumping of the polluted river waters and sewage effluence has led to a pandemic growth of algae in the waters of the Wular which is threatening the lake and its supporting life itself. The main source of pollution to Wular is Jhelum River. The Jhelum River carries all the waste from Srinagar city and other surrounding areas and deposits it in Wular.

The topography of Bandipora city is hilly since it lies at the foothills of Himalayas. The average rainfall is about 1,200 mm per annum³. The climate in the district is *temperate cum mediterranean* with cold weather in most part of the year. Average minimum and maximum temperature ranges from -10 to 32 degree Celsius³. The soil type is silt clay loamy (70%) and sandy loamy soil (30%)¹. The water supplied in the city is predominantly through piped system⁴. The total water supply in the city is 4.8 Million Litres per Day (MLD) with per capita water supply of 135 Litres Per Capita and per Day (LPCD).

¹ District Census Handbook 2011 for Bandipora District.

² Bandipora District disaster management plan 2019, Bandipora District Administration.

³ Revised District Disaster Management Plan: Bandipora 2019-2020.

⁴ Jal Jeevan Mission District census 2019 report.

4 Service outcomes

Bandipora, Kashmir, India, 23 Oct 2020. SFD Level: SFD Lite

Population: 44801

Proportion of tanks: septic tanks: 50%, fully lined tanks: 50%, lined, open bottom tanks: 50%

Containment						
System type	Population	Transport	Treatment	Emptying	Transport	Treatment
	Pop	W4c	W5c	F3	F4	F5
System label and description	Proportion of population using this type of system	Proportion of wastewater in open sewer or storm drain system, which is delivered to treatment plants	Proportion of wastewater delivered to treatment plants, which is treated	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated
T1A1C6 Toilet discharges directly to open drain or storm sewer	18.0	0.0	0.0			
T1A3C10 Fully lined tank (sealed), no outlet or overflow	2.0			30.0	0.0	0.0
T1B10C10 Containment (fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded - with no outlet or overflow	5.0			0.0	0.0	0.0
T2A3C5 Fully lined tank (sealed) connected to a soak pit, where there is a 'significant risk' of groundwater pollution	30.0			60.0	0.0	0.0
T2A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	41.0			30.0	0.0	0.0
T2A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	4.0			30.0	0.0	0.0

Table 2: SFD Matrix for Bandipora.

Overview on technologies and methods used for different sanitation systems through the sanitation service chain is as follows:

4.1 Offsite Systems

The city does not have any sewerage network within the administrative boundary of Bandipora municipality. In the sample household survey, it was found that in few wards (15 and 1B), the households have connected their toilets directly to open drains⁵ (Figure 2). It was concluded that such households correspond to 18% population of Bandipora (T1A1C6).

⁵ Sample household survey, 2020.



Figure 2: Wastewater is discharged directly to open drains.

4.2 On-site Sanitation Systems

Containment: Based on the sample household survey, KIIs and FGDs with relevant stakeholders, it was concluded that 82% of the population is dependent on the On-site Sanitation Systems (OSS)^{6,7,8}. The OSS in the city are fully lined tanks, no outlet or overflow (T1A3C10, 2%), containment failed, damaged, collapsed or flooded - with no outlet or overflow (T1B10C10, 5%), fully lined tanks connected to a soak pit (T2A3C5, 30%), lined tanks with impermeable walls and open bottom, no outlet or overflow (T2A4C10, 41%) and lined pits with semi-permeable walls and open bottom, no outlet or overflow (T2A5C10, 4%).

Many households have built a sealed containment system with two chambers and very few households with a containment system are having three chambers and connected to a soakpit¹⁰. The OSS prevalent in the city does not adhere to the standards prescribed by the Bureau of India Standards (BIS)¹³. The size of the containment system is generally decided by the factors like space availability and economic status of household. The general size of OSS varies from 8 – 15 feet (2.4 – 4.5 metres) depending upon the household size and income level. The minimum and maximum depth of OSS ranges from 6 feet to 15 feet (1.8 – 4.5 metres)⁵.

Community Toilets/Public Toilets: Under Swachh Bharat Mission (SBM), around 2,200 households out of the total of 5,700 households have constructed Individual Household Latrines (IHHL)⁹ during 2014 to 2019 through the support of incentives to beneficiaries. According to BMC, the toilets constructed under SBM have fully lined tanks connected to a soak pit⁷.

There are 12 public toilets across the city¹⁰. According to BMC, the average size of containment system in public toilets is 6 x 4 x 4 feet (1.8 x 1.2 x 1.2 metres) which are desludged every 6-8 years¹⁰ (Figure 3). The use of public toilets is very low in the city due to low floating population and lack of hygiene in these toilets. It was also informed by BMC that the public toilet facility is closed due to political unrest and foul sanitary conditions during most of the year⁷.

There are no instances of open defecation observed in the city as every household has their own individual toilets⁶.

⁶ Field Observations.

⁷ KIIs with sanitary inspector and MIS officer.

⁸ FGD with masons.

⁹ KII with BMC Chairman and MIS officer.

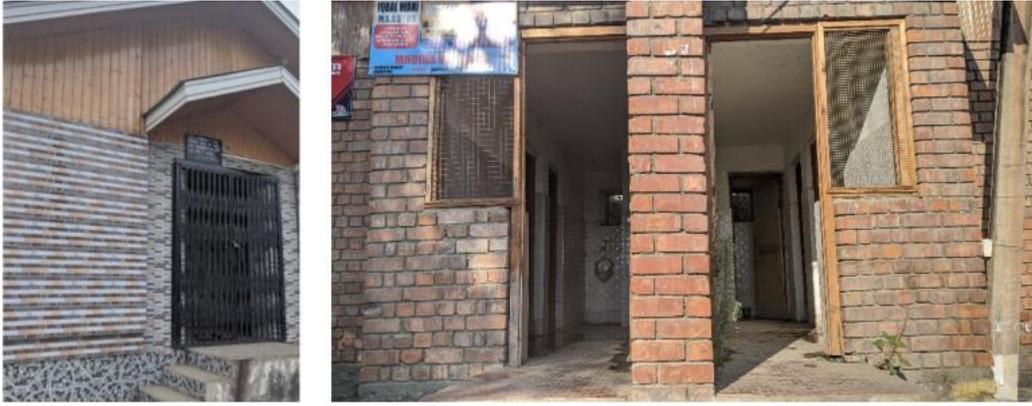


Figure 3: Public toilet located in Kaloosa in ward 13 (Right) and public toilet located in Gulshan chowk market area (Left).

Emptying: The city is dependent on government desludging service providers for emptying of faecal sludge (FS)¹⁰ from OSS on demand basis. There is a single operating vacuum tanker plying in the city with a capacity of 2,000 Litres¹¹(Figure 3). The vacuum tankers are equipped with a motorised pump and a long hose pipe to access the containment systems in narrow and congested areas¹¹.



Figure 3: Govt. operated vacuum tanker of 2,000 L capacity.

The mechanical emptying service is carried out by 2-3 people (1 Driver + 1-2 Helpers)¹¹. They usually charge between INR 3,500 (US\$ 46) per trip for emptying within city premises to INR 4,000 (US\$ 53) per trip for emptying in outskirts of the city¹¹. The variation in fees depends upon the size of the containment system and the extent of solidification of sludge at the bottom. There are no advertisement followed for emptying services across the city and the emptying services are done by filling of emptying form at BMC⁶. The emptiers are not provided with Personal Protective Equipments (PPEs)⁶. There are no instances of manual scavenging found in the city⁵.

The emptying frequency for households varies from 6 to 8 years (demand based) depending upon the nature and the size of containment system⁵. It was found that emptying frequency of containment systems among citizens is very low and some households have not emptied their containment systems in decades⁷. The frequency of emptying varies from 10 to 20 years and even a practice of dismantling the old toilet to build a new one is also prevalent in the city⁵. Bandipora faces extremely cold climate during winters with heavy snowfall in the region during December, January and February. Due to extremely cold weather, emptying services are not available for 3 months of the year i.e. - December, January and February¹¹. It was also observed that emptying requests from citizens are occasionally

¹⁰ KII with Sanitary Inspector, BMC, August, 2020.

¹¹ KII with govt. desludging operator, September, 2020.

turned down due to lack of a dedicated emptying service provider which is also responsible for managing the solid waste collection due to lack of staff⁶.

Transportation: The emptied faecal sludge is transported through truck-mounted vacuum tanker in around 1-2 trips per day¹¹. The vehicle covers a distance of 1-6 km per trip on an average¹². The time taken for emptying and discharge of FS is 90 minutes on an average with exceptions of households in congested areas where it may take as long as 3 - 4 hours¹¹. The emptied faecal sludge is discharged close to Wular Lake. Since none of the FS getting emptied is delivered to the treatment facility, variable F4 is considered 0% in SFD matrix for all sanitation systems.



Figure 4: Emptying of faecal sludge on the outskirts of city close to Wular Lake.

Treatment/Disposal: BMC has no designated site for the treatment and disposal of faecal sludge¹⁰. Therefore, in the absence of such provision, the government emptiers discharge the faecal sludge in the outskirts of the city¹³ (Figure 4). In discussion with government desludgers, it was found that there are 2 locations outside the administrative boundary of BMC which is found to be suitable disposal location close to the city¹¹. Since there is no proper treatment of emptied faecal sludge, F5 is considered 0% in SFD matrix for all sanitation systems.

4.3 SFD graphic

The SFD graphic for Bandipora shows that only 1% of the excreta generated is classified as safely managed (Figure 1), and originated from FS not emptied from fully lined tanks (sealed), no outlet or overflow. The remaining 99% is classified as unsafely managed. This 99% of unsafely managed excreta comes from wastewater not delivered to treatment (18%), FS not contained - emptied but not delivered to treatment (16%) and FS not contained - not emptied (64%).

5 Data and assumptions

Census 2011 was considered as the baseline and the data for all the stages of sanitation chain were updated based on the data collected from field through KII, FGDs, observations and secondary data collected from relevant stakeholders. Following assumptions were made for developing the SFD graphic for Bandipora:

- Population of the city is projected to 44,801 for the SFD graphic using arithmetic growth method.
- 50% of the contents of septic tanks and fully lined tanks is faecal sludge (step two of the Graphic Generator).
- Volume of wastewater generated is 80% of water supplied.
- The proportion of OSS emptied is considered 30% assuming 10 years as the threshold based on the size of the tank and number of people dependent on that system. So, households getting their systems emptied in less than 10 years are considered to be using their system with

¹² FGD with government emptying operators.

¹³ Field observation, September 2020.

emptying and those who are taking more than 10 years are considered as not emptying their systems.

- The proportion of fully lined tanks connected to soak pits emptied is considered 60% assuming that the new constructions made during 2014 – 2019 under SBM will be emptying their containments regularly.

6 List of data sources

Reports and literature

- District Census Handbook 2011 for Bandipora (Houses and household amenities and assets table HH-08: percentage of households by availability of the type of Latrine Facility. https://censusindia.gov.in/2011census/dchb/0109_PART_B_DCHB_BANDIPORE.pdf
- IHHL, SBM data, Bandipora, Jammu and Kashmir (2014-2019).
- MoUD. 2017. National Policy on Faecal Sludge and Septage Management. Ministry of Urban Development.
- MoUD. 2014. Guidelines for Swachh Bharat Mission.: Ministry of Urban Development. Government of India.
- MoUD. 2013. Septage Management in Urban India. Ministry of Urban Development, Government of India.
- Faecal sludge and septage management policy, Housing and urban development department, Government of Jammu and Kashmir (2017) - http://jkhudd.gov.in/pdfs/FSM%20Policy_J&K.pdf
- Advisory on on-site and off-site sewage management services, MoHUA (July 2020) link - https://cdn.cseindia.org/attachments/0.56710500_1595661605_sbm-sewage-management-book_1-july-final.pdf
- Brief industrial profile of Bandipora District, Ministry of micro, small and medium enterprise, <http://dcmsme.gov.in/dips/DPS%20Bandipora.pdf>
- Digest of statistics (2013-14) - <http://ecostatjk.nic.in/Digest1314/1%20area%20and%20papulation.pdf>

Key Informant Interviews (KIIs)

- Sanitary inspector, Bandipora municipal council (BMC).
- MIS executive, Bandipora municipal council (BMC).
- Office executive, sanitary office, Bandipora municipal council (BMC).
- Driver, Government desludging vacuum tanker.
- Basharat Najar, Chairman, Bandipora municipal council (BMC).
- Mohd. Mushtaq, Executive officer, Bandipora municipal council (BMC).

Focus Group Discussions (FGDs)

- Emptiers.
- Masons.
- Ward members.

Field Visits

- Survey of 12 Public toilets.
- Visit to approximate 60 households covering Slums, Lower Income Groups (LIG), Middle Income Groups (MIG) and Higher Income Groups (HIG) spread throughout the town.
- Visit to current faecal sludge discharge location.

SFD Promotion Initiative



SFD Bandipora, India, 2020

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