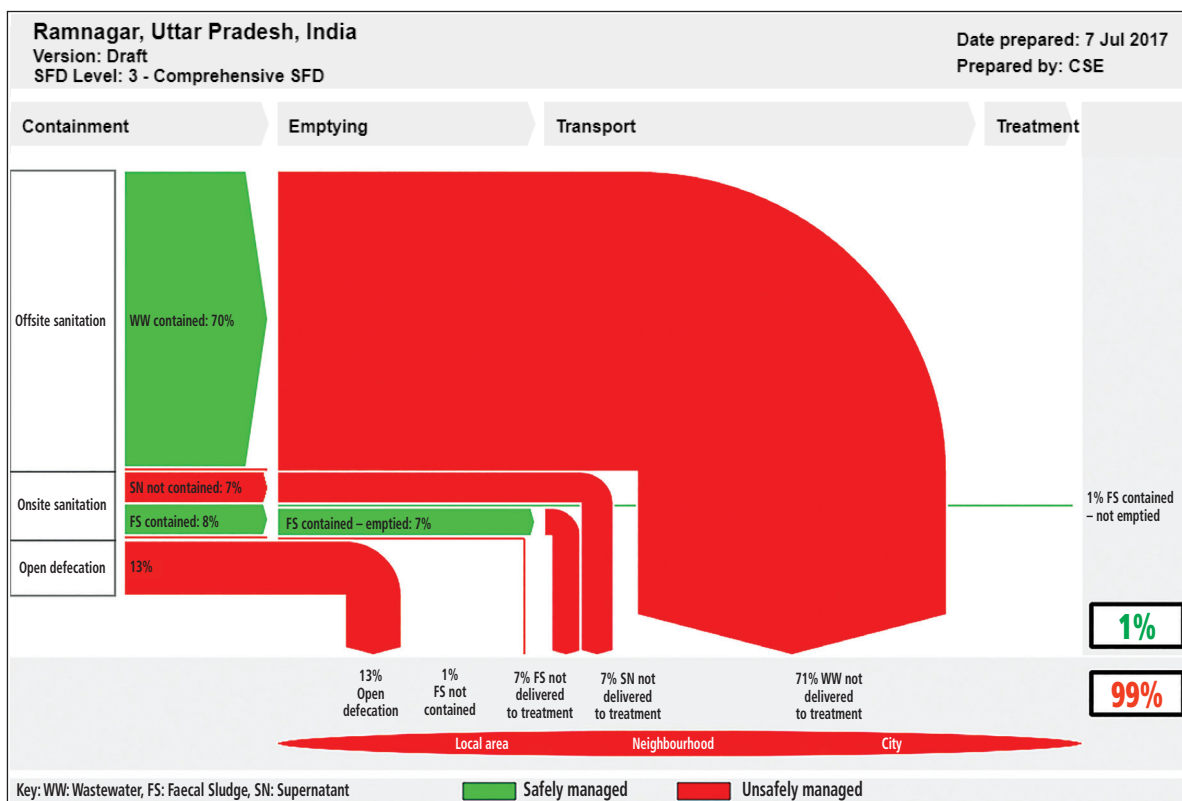




SHIT FLOW DIAGRAM (SFD)

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SFD Description

A Sanitation (or Shit) Flow Diagram presents a clear picture of how excreta flows are managed within the city. The diagram clearly depicts how excreta flows from user interface to the final disposal. It has the following stages:

Containment

- The city has coverage of 70% households connected to sewer line (Census, 2011), which covers 20 wards
- Households in the city other than those connected to sewers are majorly dependent on 2 chambered or 3 chambered septic tanks or pit latrines
- The size of the septic tanks and pits are based on the space availability and affordability of the households.
- Due to no standardization being followed while constructing the containment system, few households have constructed septic tank large in capacity irrespective of household size with the general perception of emptying the septic tanks only after an interval of 15-20 years
- The household dependent on on-site sanitation systems and constructed within 7 years have septic tanks with baffle walls (Key Informant Interviews, 2016)
- Types of on-site containments observed during field visit: -
 - Septic tank with outlet connected to open drain (15% population dependent on such a system)
 - Septic tank with outlet connected to open ground (1% population dependent on such a system)
 - Pit latrine without outlet or overflow (1% population dependent on such a system)
- Supernatant (SN) generated from onsite systems, that flows in open drain is attributed to be from 8% population (8% from septic tank connected to open drain)
- FS contained, is attributed to be from 8% population. It refers to FS remains in the septic tank. FS not contained is attributed to be from 1% population dependent on pit latrines which are polluting the ground water





Figure 1: 2-chambered septic tank connected to a soak pit.

- 13% population defecates in open. Mostly open defecation is practiced in the wards deprived of sewer networks and the wards in proximity to riparian of Ganga

Emptying and Transport

- Ramnagar Nagar Panchayat Palika (NPP) owns a suction machine; a tractor mounted vacuum tanker of 3000 l capacity only, which is often used for emptying and cleaning of sewer manholes
- The vacuum tanker usually covers a distance of 2-3 km per trip within the municipal boundary. It also serves up to 10 km distance outside the NPP boundary (Mr. Sanjay Pal, Sanitation Officer, NPP)
- The NPP receives seldom applications requesting for emptying the on-site containment systems. Past 2 years only 5-6 containments of the



Figure 3: Vacuum tanker emptying/cleaning sewer manholes.



Figure 2: Pit latrine with no effluent pipe.

- households have been emptied yet
- Mostly the settlement in the city is informal and unplanned. Due to narrowness and congestion of the roads manual scavenging is prevalent (Key Informant Interviews, 2016)
- The manual emptying is usually carried out by 2-4 people, depending upon the size of the containment
- FS of 8% population is emptied (1% from unlined pits and 7% from septic tanks connected to open drain)
- FS of 1% population is contained and not emptied. FS of 1% population is not contained and not emptied it includes 1% of infiltration
- The sewer system is connected to the sewage pumping station (SPS) at Jamdari Tola, Bandha Road, Old Ramnagar



Figure 4: Tractor mounted vacuum tank owned by the NPP.



Sewage Pumping Station



Distribution network



Mixing tank of sewage & tubewell water



Wastewater to agricultural fields

Figure 5: Sewage pumping station & associated distribution network.

Treatment and Disposal

- Sewage generated in the city is used for agricultural activities based on the demand. Sewage is diluted with groundwater from the tube well in a ratio of 50-50 at SPS and distributed by UP Irrigation Department to the farmers at a tipping charge of 30 INR/hr
- During the lean period of the year, the wastewater from the sewer is directly disposed into Ganga river through a bypass at SPS
- There is no treatment of sewage and septage generated in the city
- Sewage is conveyed through sewers and eventually disposed either at agricultural fields or river Ganga
- The effluent from the on-site sanitation system is conveyed through open drains and disposed at Ganga river directly without treatment
- The private emptiers dispose the faecal waste at low-lying open grounds anywhere in and around the city
- Apart from dumping, maximum quantity of faecal sludge flows into the Ganga river through big and small nallas



Figure 6: Jamdari Tola, Bandha Road.



Figure 7: Yadav Basti, Bandha Road.



Figure 9: Malaiya, Bandha Road.



Figure 8: Balua Ghat, Bandha Road.

SFD Promotion Initiative

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On behalf of



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