SHIT FLOW DIAGRAM (SFD)

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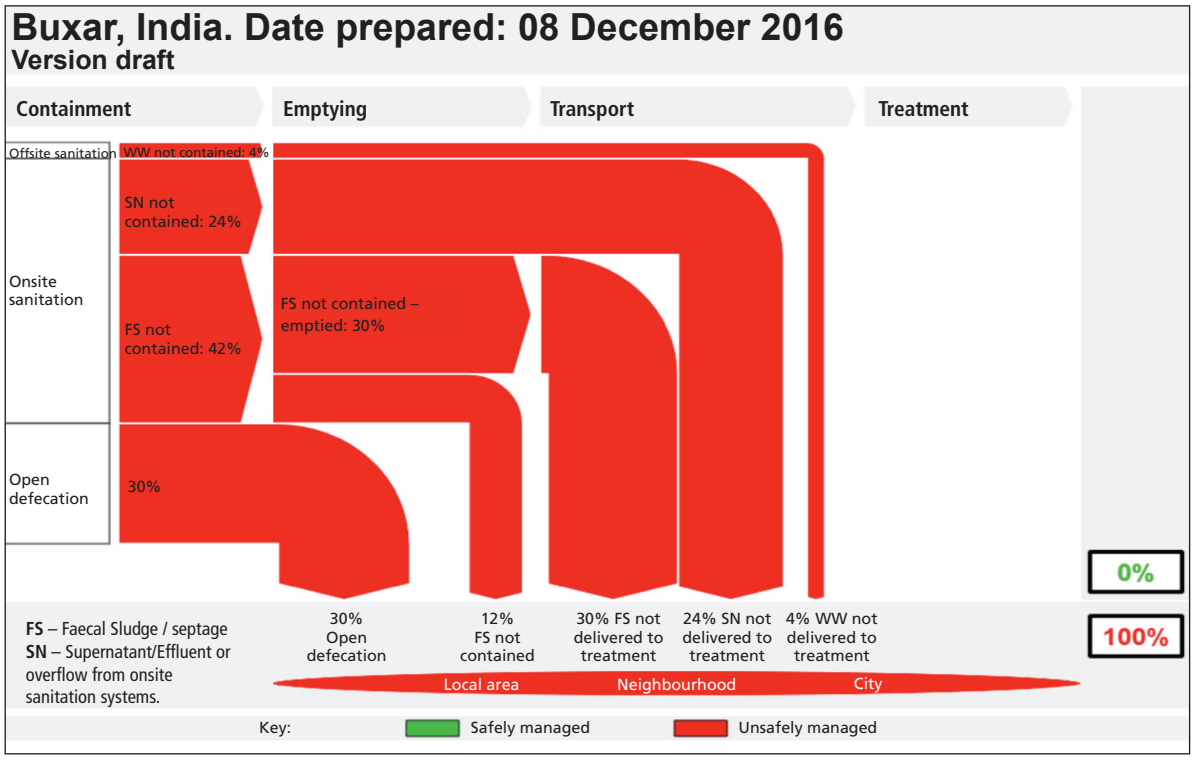

BUXAR, BIHAR

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:

1. Containment

- Total population within municipality is dependent on onsite sanitation systems
- The containment systems in Buxar mainly comprise of septic tanks and pits
- There are 6 main types of containment systems found in Buxar
- Open defecation is still in practice and it is attributed to be from 30% of the population
  - Septic tank connected to open drains is attributed to be from 48% population
  - Lined pit with semi permeable walls and open bottom is attributed to be from 4% population
  - Lined pit with semi permeable walls and open bottom with no outlet is attributed to be from 18% population
- Septic tank is generally constructed with 2-3 chambers majorly oversized in capacity, while near the ghat (riparian) of river Ganga twin pits are mostly observed

2. Emptying

- Emptying service in the city is performed by vacuum truck owned by the Nagar Palika
- An application form is to be submitted at the ULB to the Kajpalak (Sanitary supervisor). After approval the application is forwarded to the Safai Karamchari (Sanitary workers) to whom the requisite amount is submitted and a receipt is received
- As per the city's officials, two finding came to light during field based study:

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Figure 1: Opening for effluent

Figure 2: Newly constructed septic tank

- Emptying / desludging machine available with the Nagar Parishad is used once in a month, this is due to low demand for the service and the narrowness of the roads
- Narrowness of the roads becomes a guiding factor behind manual emptying method used to empty the septic tanks. Use of kerosene oil is common practice while emptying the conatinment to reduce odor
- No safety gears are used by emptiers while emptying service
- Manual emptying is done by specific community of people only using thela gaadi (cart)
- Due to no standardization in the size of the septic tanks, they have been made large enough to contain fecal sludge, the general perception is of emptying the septic tanks only after an interval of 15-20 years
- Cost of emptying service is ₹ 1300 per trip. Emptying service by the ULB is only limited to within the municipal boundary

Figure 3: Ventilated Improved Pit built under a room.

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Figure 4: Vacuum Cleaner at Nagar Parishad

- FS not contained is attributed to from 42% population, of which FS not contained emptied is attributed to be from 30% population while FS not contained not emptied is attributed to be from 12% population

- FS not contained emptied - 22% is received from septic tanks while 8% is received from pit systems. FS not contained not emptied - 2% is not emptied from septic tank. While 10% is not emptied from pits that remain at the bottom of the tank as well as infiltration into the ground

3. Transportation

- Supernatant (SN) generated from onsite systems comes from 24% population using septic tanks connected to open drains

- Household's discharge wastewater (WW) directly to the open drains without any containment is attributed to be from 4% population

- Tractor mounted vacuum tanker is used for transportation of faecal sludge and septage in Buxar as shown in figure 4. Capacity of the vacuum tanker is 3500 liters

Figure 5: Point of Fecal Waste Disposal in the Outskirts of the city

Figure 6: Point of Fecal Waste Disposal along the main road of the city

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- A generator run motor is used for suction installed in between the tractor and tanker having a head capacity of 65ft
- Average distance covered per trip is 7km.

4. Disposal and Treatment

- Sludge collected by Vaccum Tankers is disposed at various points in the city and its outskirts
- Sludge disposal points mostly consist of low lying land as shown in figure 5 above or in Sone Canal. An important fact to note here is, Sone Canal meets river Ganga at Ramrekha Ghat
- There is no treatment of sewage and septage generated in the city

Figure 7 : Ramrekha Ghat, point of Sone Canal meeting River Ganga

Figure 8 : Quality of water entering River Ganga

SFD Promotion Initiative
sustainable sanitation alliance
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
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