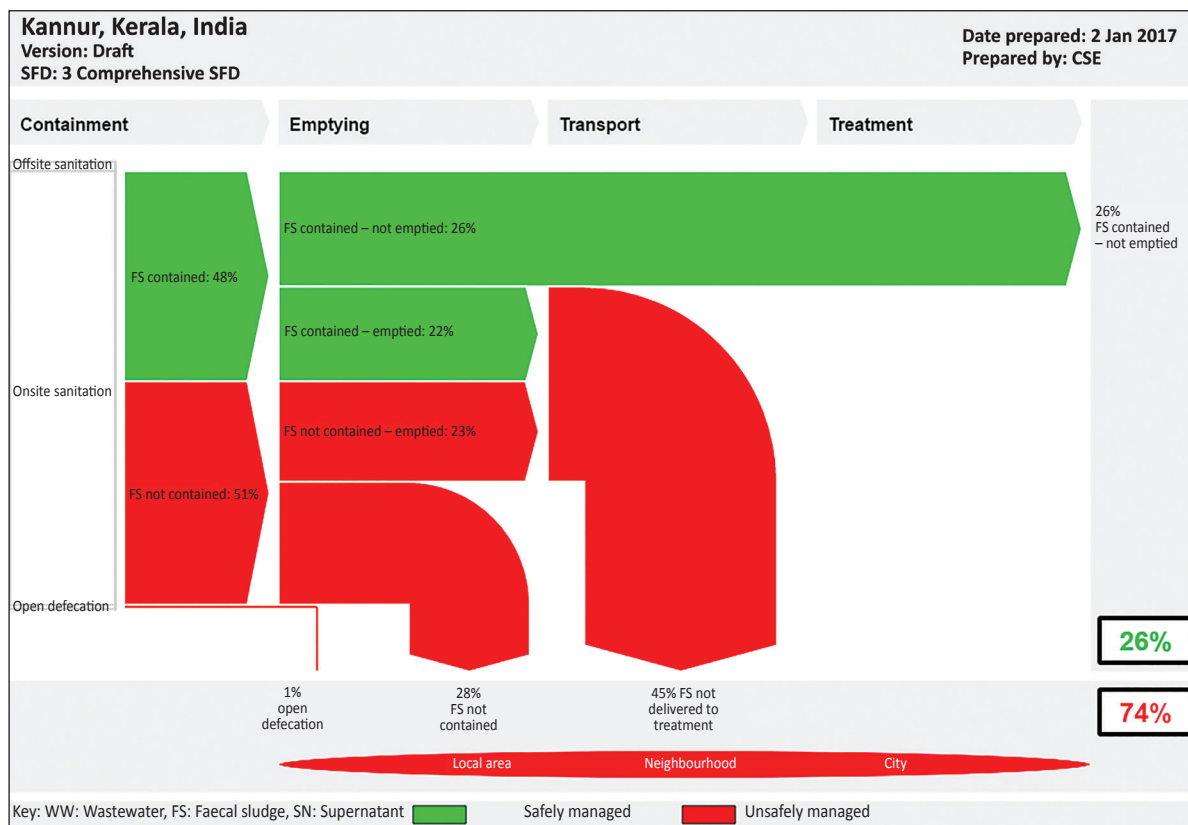




SHIT FLOW DIAGRAM (SFD)

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394- 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



SFD Description

Containment

- According to Census 2011, city has coverage of 20.3% households connected to pipe sewer system but during the field-based study including Key Informant Interview (KII) with ULB, it was found that there is no household connected to functional underground drainage system
- Households in the city are majorly dependent on septic tanks connected to soak pits or circular pits constructed with granite stones having unplastered/plastered walls and open bottom
- Readymade septic tank made up of Polyvinyl Chloride (PVC) is also prevalent in the city, installed mainly in plain areas. It is manufactured in Coimbatore and is available for Rs.10000 – Rs.40000, depending on size
- According to Kerala Municipal Building Rules 1999 (KMBR), each house must have a septic tank connected to a soak pit. Plan for construction will not get approved if the household does not comply with KMBR 1999
- KMBR states that 'No leech pit, soak pit, refuse pit, earth closet or septic tank shall be allowed or made within a distance of 7.5 metres radius from any existing well used for supply of water for human consumption or domestic purpose or within 1.20 metres distance from the plot boundaries'
- FS contained or not is dependent on the system polluting the groundwater. Depth of groundwater table <10m from the sanitation system is considered to pose a significant risk
- Types of on-site containments observed during field visit: -
 - Circular pits with open bottom, constructed of unplastered/plastered granite stones
 - Fully lined tanks connected to soak pit
 - Septic tanks connected to soak pit
- FS contained is attributed to be from 48% population dependent on septic tank connected to soak pit
- FS not contained is attributed to be from 51% population





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



Photo 2: Covered pit on surface

- Open defecation is attributed to be from 1% population

Emptying

- The emptying service is only provided by private emptiers within the city municipal boundary
- A few households have constructed septic tanks larger in size than the standards stated in KMBR, the reason for this is to decrease frequent emptying of septic tank to save the high emptying cost
- The emptiers advertise their contact numbers in local newspaper on alternate days

- In order to avail the services for emptying, the residents can contact private emptiers through a phone call. It was observed during field study that there is another way of calling emptiers through agents who are like agents of emptiers contacting the residents interested in emptying service. These agents were local manual emptiers in earlier days and have the contacts of motorized emptier running in other cities or rural areas. The agents then contact the private emptier and earn a commission from an emptier to fetch a deal
- There are some low wage labourers from Tamil Nadu state in the city who practice manual scavenging. They are also well known for emptying of septic tanks



Photo 3: Ready-made septic tanks made of PVC

- The emptying vehicles are situated in the city of Payyanur (about 30 km from the city) and the service is provided only at night as these activities are considered as reprehensive
- Usually, 3 to 5 labourers are accompanied with a driver for cleaning the tanks
- Due to no clear differentiation between the volume of the effluent and solid FS generated from the containment, it is assumed to be 50% each to reduce maximum error
- FS not contained emptied is attributed to be from 45% population (22% from septic tanks connected to soak pits and 23% from fully lined tanks & granite stone pits)
- FS not contained not emptied is attributed to be from 28 % population

Transportation

- The emptying service is mechanical run by truck mounted vacuum tanker
- The capacity of the vacuum tanker is typically 5000 liters. The emptying duration is dependent on the size and type of containment. But generally, it takes about half an hour for emptying one septic tank
- The emptying fee is 6000-10000 INR/containment (KII with an agent of private emptiers)
- A pump of 2 hp is assembled with the truck which is the source of power to process suction for emptying containment
- Each truck makes 4 to 5 trips per day
- Only for grey water disposal, a separate soak pit



Photo 4: Grey water connected to a separately constructed soak pit

is constructed within the premises of a household. Thus, no wastewater (black and grey) is leaving the household premises and is managed on the site. Only a few households are discharging their grey water to open ground

- As per KII with an agent, police keep an eye on private emptiers and if they are caught discharging the collected FS in and around the city, they are fined heavily and even their vehicles are confiscated

Treatment and Disposal

- There is no treatment of sewage and septage generated in the city, and the faecal sludge collected by the vacuum tanker is disposed at open low-lying areas outside the city
- The storm water drains, which collect storm water as well as grey water from some households, terminate in the Arabian Sea
- Emptying service though, motorized is an expensive affair and is not preferred often. It is observed that when a pit is full, it is covered with soil, closed permanently and abandoned. Preferably another pit is constructed within compound of a household which costs less compared to cost for emptying service
- It is also informed through KII that faecal sludge collected from the tanks is seldom taken to a treatment plant located in Payyanur, where it's used in making manures and biogas
- The agent informed that disposing of FS is a huge issue as there is no specific place for FS discharge. The emptiers have threat from the local police for which they have to bribe them sometime
- In total, FS of 74% population is unsafely managed and 26% population is safely managed



Photo 5: Grey water flowing into the open drain.

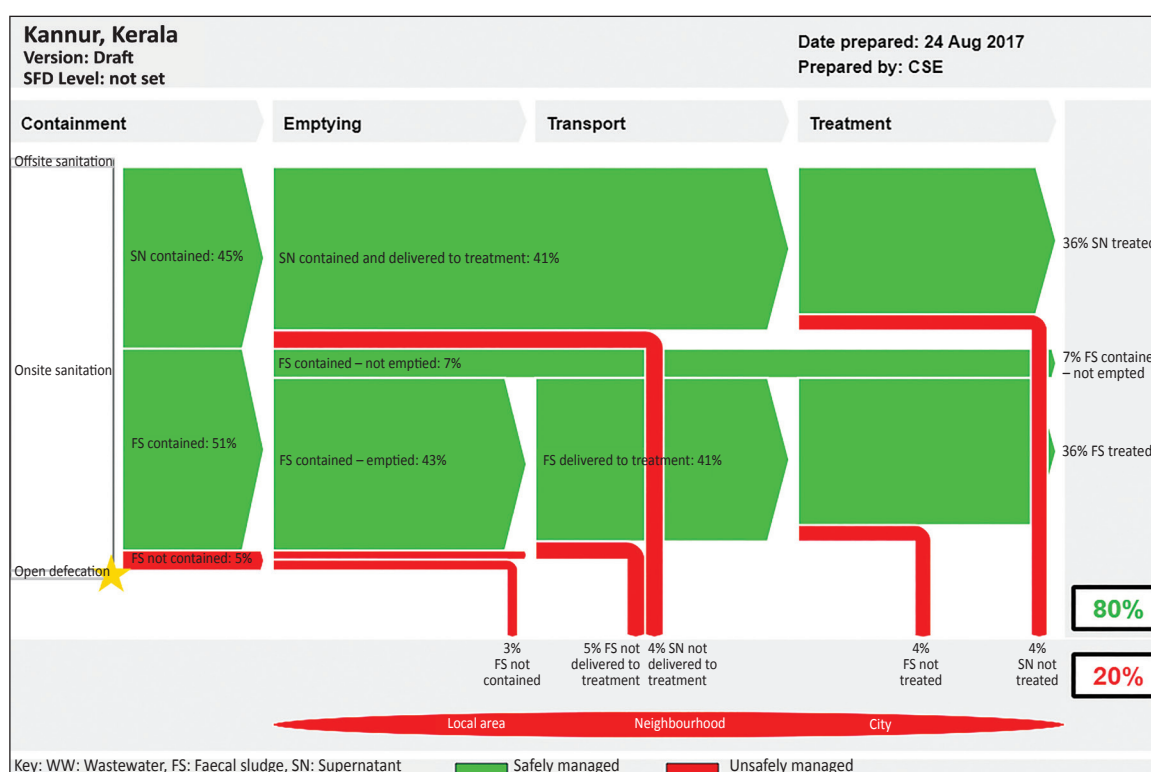
Suggestions

Short term goals

- Recognize the private emptiers and issue them license to operate
- Buy vacuum trucks, if there is a shortfall
- Identify 1-2 suitable disposal/treatment sites (so that the distance traveled by the trucks is optimized). The land could be taken on lease or could be a vacant plot in the nearby area
- Develop DPRs for FSTPs (faecal sludge treatment plants)

Medium term goals

- Demarcate land for STPs/FSTPs in the master plan
- Enforce scheduled desludging
- Implement decentralized waste water treatment systems at institutions/commercial establishments and at neighborhood level wherever applicable to treat supernatant and grey water



SFD Promotion Initiative

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Deutsche Gesellschaft
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On behalf of



Federal Ministry
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