# STATUS OF GREY-WATER MANAGEMENT IN RURAL AREAS OF BANDA DISTRICT OF UTTAR PRADESH

Photo credit: Pradeep Kumar Mishra/CSE

CSE surveyed 31 villages in the district of Banda in Uttar Pradesh to understand the generation and management of grey water.

Around 2.6 lakh households in rural areas of Banda have been connected with household water connections under Jal Jeevan Mission. Households also have private borewells and/or handpumps.

This clearly indicates that the amount of water received per capita is more than the norm of 55 litres per day set by Jal Jeevan Mission.

According to the thumb rule, 70 per cent of the water used is converted to wastewater. Injudicious use of water will lead to generation of huge amounts of grey water from washing areas, kitchens and bathrooms.

Initiatives so far taken for rejuvenation of the ponds are not enough as the focus has never been on management of grey water.

In most cases, the drains are not well-designed and are clogged and silted up. The CSE survey during the monsoon period showed that the drains overflow and flood neighbouring areas.

Diseases such as cholera and malaria are prevalent in villages during the rainy season, and more so in villages where households lack toilets.

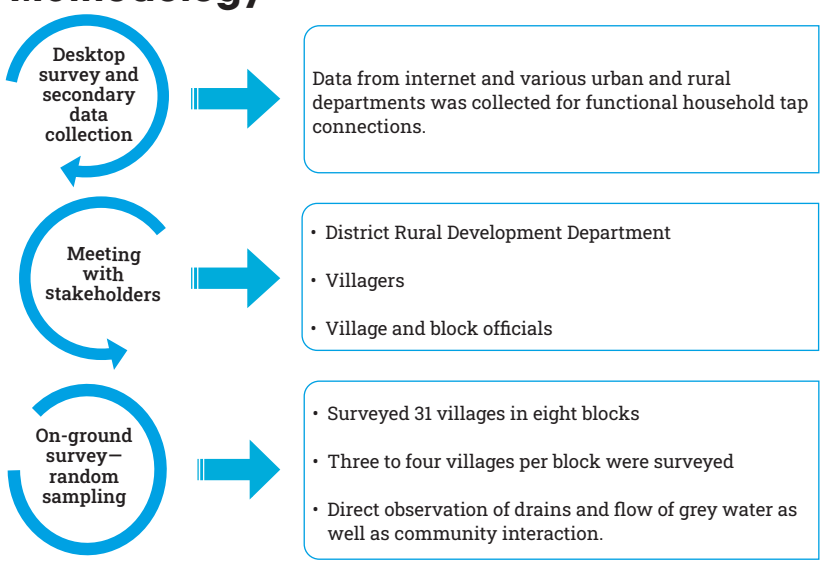
## INTRODUCTION

Banda district of Uttar Pradesh is part of the Bundelkhand region, lying in the Indo-Gangetic Plain. The district is largely covered with clayey, sandy and loam soil. The city of Banda is the district headquarter. Around 94 per cent of the population lives in rural areas of the district, depending on groundwater for their domestic needs. Around 283 waterbodies have been rejuvenated under Mission Amrit Sarovar. Despite this, several waterbodies have either been encroached on or receive wastewater from nearby villages.

Jal Jeevan Mission (JJM), which is in the process of connecting every rural household with drinking water, has reached almost 99.33 per cent of the households, i.e. almost 267,173 households as per the current data of the Department of Drinking Water and Sanitation under the Ministry of Jal Shakti.[1] Out of the 649 villages, 567 villages—accounting for about 87 per cent—have 100 per cent of the households with tap connections. Work on providing 100 per cent of the households with water connections is under progress for almost 13 per cent of the villages.

As per the JJM guidelines, the rate of water supply to the households is 55 litres per capita per day. This means that a family of six people will use almost 330 litres of water per day. The on-the-ground reality however is that although tap connections are reported on the JJM dashboard, most of the households in

### Methodology




Compiled by CSE

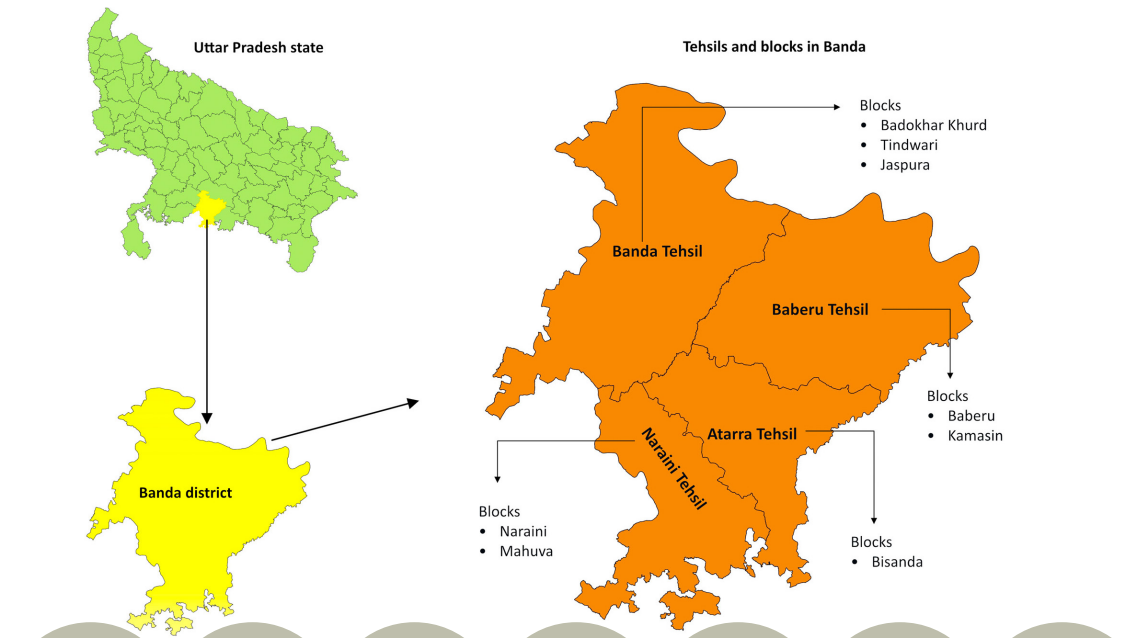
https://ejalshakti.gov.in/jjmreport/JJMBlockMapView.aspx as viewed on December 22, 2024

the surveyed areas depend on borewells and handpumps. Each household extracts groundwater and stores it either in the 500-litre overhead tank or in any other vessels available. In other words, the volume of water actually used by a family of six people is more than what is provided by government departments. This means that the amount of grey water generated in the survey area is more than the amount predicted. Once all the households connected through taps start receiving water, a huge amount of grey water will be generated as, according to the thumb rule, around 70 per cent of the water is converted to grey water. People with individual borewells and tubewells may use more water than the others, generating even more grey water. CSE's ground survey clearly shows that rural areas in Banda district are unable to manage their grey water.

The Centre for Science and Environment studied rural areas of Banda to understand the state of waterbodies in this region. Interaction with government officials and communities revealed the real stories on the ground, showing that most of the waterbodies in the sampled villages were contaminated with wastewater.

## Banda district at a glance

**Banda district map with tehsil and blocks**




Source: Census 2011; compiled by CSE

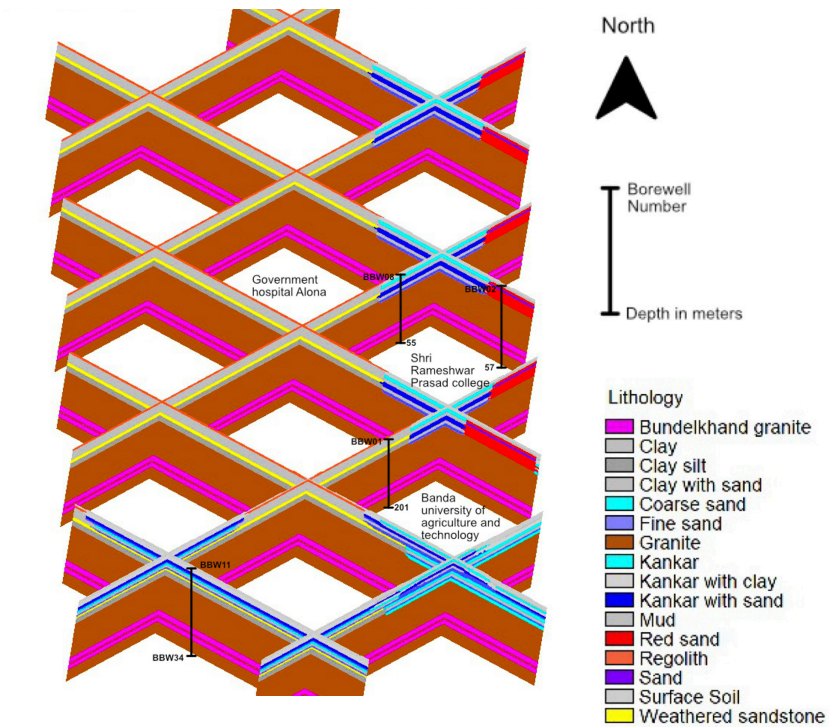
## Rivers and streams in Banda district

- The Yamuna River flows in the north of the district from northwest to southeast on the borders of Jaspura, Baberu, Tindwari and Kamasin blocks.
- The Ken River flows from the south of the district towards the north through Naraini, Mahuva, Badokhar Khurd, Tindwari and Jaspura, and meets the Yamuna River.

## Soil lithology of Banda district

Around 11 borewells were analysed to create a soil lithology of the district. The dominant topsoil in the district is clay; however regolith and sand are also seen in some eastern and north-eastern parts of the district. The thickness of the soil is in the range of 20–35 metres. Since the clay is porous but non-permeable in nature, it allows water during rainfall to be absorbed in the ground very slowly. The grey water overflowing from the drains leads to mosquito breeding, as it stagnates for long periods. There is an urgent need for management of grey water in the rural areas of Banda district.

### Figure 1: Soil lithology for Rae Bareli district




Source: Borewell logs sourced from UP Jal Nigam—Urban and Rural; compiled by CSE

## Community speaks

Our village has good groundwater levels in some parts, as high as 1–2 metres. But due to construction of septic tanks and other types of toilets, our groundwater source is being polluted. The tap connections through Jal Jeevan Mission have not yet reached every household in the village. Recently (for three to four years), many people in our village have been diagnosed with cholera, diarrhoea and typhoid, which is due to consumption of polluted groundwater. Our village ponds only receive wastewater which has filled the pond with algae and weeds. We are worried about the health of our future generations.

**Munnalal Yadav, 63, resident, Village Aau, Block Naraini, District Banda**

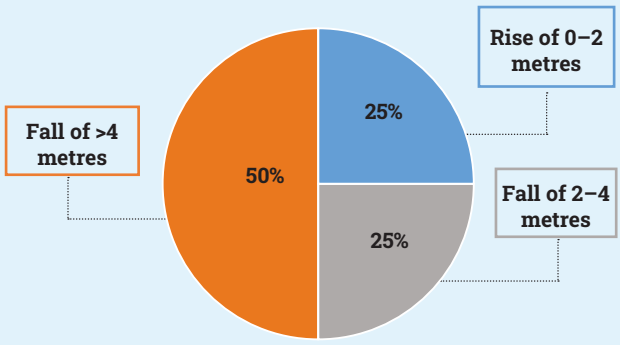
**Grey water from handpumps directly discharging into nearby depressions and ponds due to faulty design of community soakpits.**

## Need of the hour

- ✓ Banda district is largely dependent on groundwater and should hence focus on the protection and rejuvenation of its waterbodies to recharge the groundwater.
- ✓ The waterbodies in the rural areas of the district are polluted, encroached on and filled with solid waste. They must be restored for their sustainability.
- ✓ As per Jal Jeevan Mission, around 99 per cent of the households in the district have under the mission been connected with taps, but more water is being extracted through private borewells. This unregulated use of water generates more grey water from households.
- ✓ CSE's survey shows that though community soakpits are constructed in some villages, the grey water from households is not managed properly.
- ✓ Grey-water management is crucial to rejuvenate waterbodies in the villages.
- ✓ The district must explore different options for grey-water management at the household and community levels, as per the local soil conditions.

## Status of groundwater in Banda district

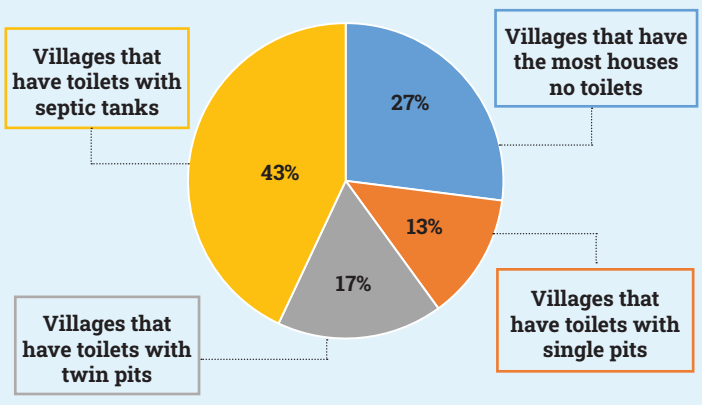
**Percentage of wells with decadal water-level fluctuation (May 2012–May 2021)**




- Badokhar Khurd, Tindwari, Jaspura and Mahuva block have water levels 10–25 metres below ground level (mbgl). Baberu, Kamasin and Bisanda have water levels 2–10 mbgl.
- Some blocks have th presence of fluoride and nitrate in their groundwater.

Source: Central Groundwater Board, 2023, Ground Water Year Book Uttar Pradesh-2022–23, https://cgwb.gov.in/cgwbpnm/public/uploads/documents/17032384351875462524file.pdf

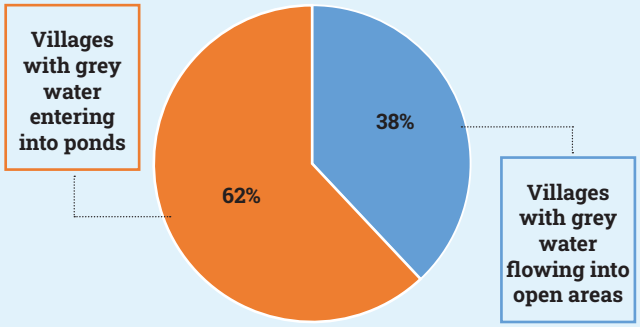
## Status of toilets in surveyed villages of Banda district




- Villages such as Gokrahi, Gaur Shivpur, Parsauli, Ararrra Rural, Mau, Prempur, Tindwara and Bilgaon in Tindwari, Mahuva, Kamasin, Naraini and Bisanda blocks do not have toilets, and communities opt for open defecation.
- Black and grey water mix in open drains.

Source: Compiled by CSE

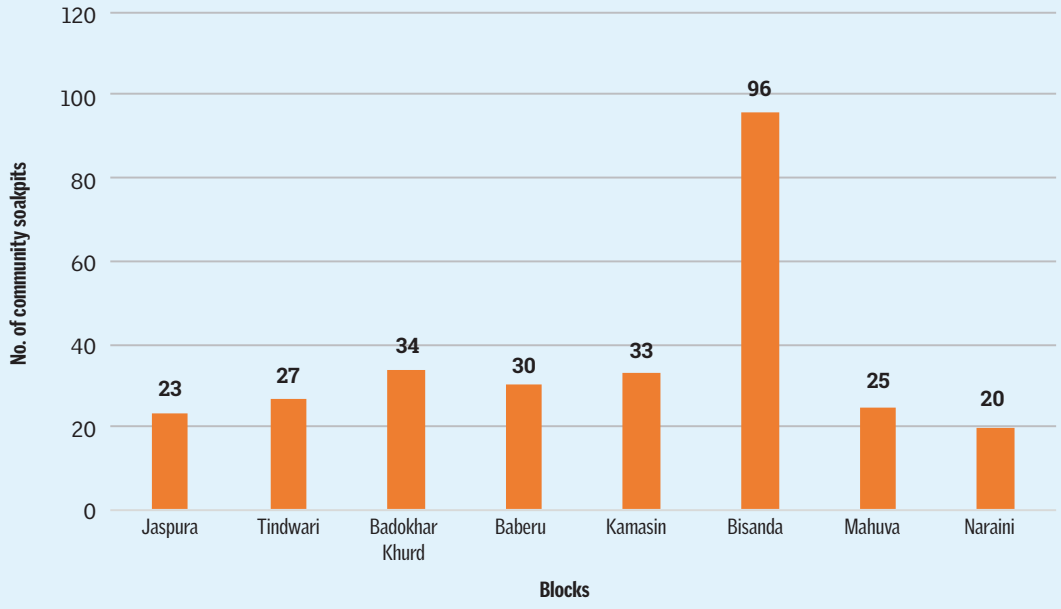
## Status of grey water in surveyed villages




- Drains are either absent or are unlined, clogged or encroached on.
- Wastewater enters village ponds.
- The design of the drains does not allow them to carry storm water and/or grey water.
- Solid waste, including plastics, are dumped around the waterbodies.

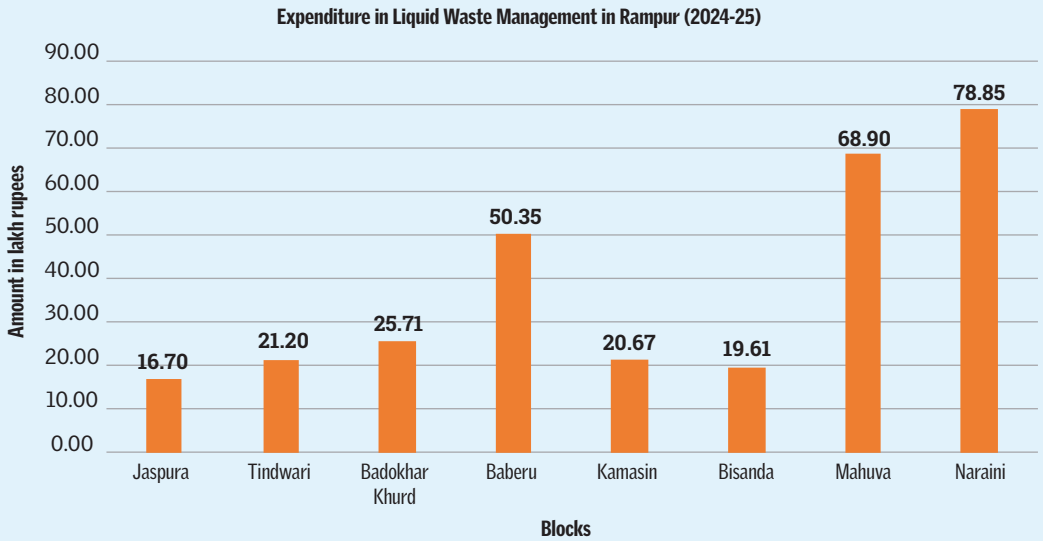
Source: Compiled by CSE

## Details of community soakpits in Banda district




Source: Data received from the District Panchayati Raj Officer (DPRO); compiled by CSE

## Details of expenditures in liquid waste management (LWM) in Banda district




Source: Data received from District Panchayati Raj Officer (DPRO), compiled by CSE

## Status of grey water in surveyed villages of Banda district

| Block | Population (Census 2011) | Number of villages visited | Names of villages visited | Quantity of grey water generated (70 per cent of 55 lpcd) (lakh litres per day) | Type of structures for grey water management | Expenditure in SLWM (in lakh rupees) * | Data as per SBM-G dashboard as on January 6, 024 | CSE's observations in villages surveyed |
|---|---|---|---|---|---|---|---|---|
| **Jaspura** | 105,180 | 4 | Batha, Gauri Khurd, Jhanjhari, Rampur | 42.07 | Community soakpits | 16.70 | Community soakpits: 162<br><br>25 villages have solid waste management arrangements<br><br>42 villages have liquid waste management arrangements | Household grey water is not managed properly, and it is allowed to flow openly into open areas. The ponds are filled with grey water and a large number of water hyacinths can be seen in these ponds. |
| **Tindwari** | 178,627 | 3 | Gakroho, Mahui, Wasilpur | 71.45 | Community soakpits | 21.20 | Community soakpits: 240<br>52 villages have solid waste management arrangements<br><br>76 villages have liquid waste management arrangements | Grey water directly enters ponds and canals. There are community soakpits, but they are not able to capture all of the grey water generated in their catchment. In many villages, grey water openly flows outside houses and into open areas. |
| **Badokhar Khurd** | 199,300 | 7 | Arbai, Bisandi Khurd, Chilli, Dingwahi, Kanwara, Rewna, Tindwara | 79.72 | Community soakpits | 25.71 | Community soakpits: 249<br><br>50 villages have solid waste management arrangements<br><br>71 villages have liquid waste management arrangements | Grey water can be seen flowing directly in open areas and in village ponds. Most of the drains are unlined and are not efficient enough to convey all the grey water. |
| **Baberu** | 212,099 | 3 | Amarganj, Simouni, Tola Kala | 84.84 | Community soakpits | 50.35 | Community soakpits: 351<br><br>57 villages have solid waste management arrangements<br><br>79 villages have liquid waste management arrangements | In most of the villages, cattle sheds have been made on the banks of the ponds. Due to this, excreta from cattle, grey water generated by washing them and other waste material is discharged into the ponds. The septic tanks are not properly designed and community soakpits are of under-capacity. |
| **Kamasin** | 172,913 | 3 | Beera, Mau, Parsauli | 69.17 | Community soakpits | 20.67 | Community soakpits: 275<br><br>61 villages have solid waste management arrangements<br><br>73 villages have liquid waste management arrangements | In most of the villages, there are no proper roads. In the rainy season, it becomes difficult to move around the village. Grey water also flows in the open areas, due to which people walking in the villages are directly exposed to the wastewater. |

# FACTSHEET

## BANDA

| Block | Population (Census 2011) | Number of villages visited | Names of villages visited | Quantity of grey water generated (70 per cent of 55 lpcd) (lakh litres per day) | Type of structures for grey water management | Expenditure in SLWM (in lakh rupees) * | Data as per SBM-G dashboard as on January 6, 024 | CSE's observations in villages surveyed |
|---|---|---|---|---|---|---|---|---|
| **Bisanda** | 184,494 | 4 | Amwan, Biogaon, Ghoori, Kurrahi | 73.80 | Community soakpits | 19.61 | Community soakpits: 270<br><br>42 villages have solid waste management arrangements<br><br>57 villages have liquid waste management arrangements | In most of the villages, solid waste dumping can be seen around the ponds and in the drains. Open defecation is still in practice. The drains for grey-water conveyance are inefficient, broken and overflowing. |
| **Mahuva** | 254,707 | 4 | Gaur Shivpur, Girwan, Pangara, Prempur | 101.88 | Community soakpits | 68.90 | Community soakpits: 225<br><br>80 villages have solid waste management arrangements<br><br>113 villages have liquid waste management arrangements | Villages have polluted ponds filled with grey water, weeds and solid waste. Grey water is not managed by households, and it is released on roads where drains are not properly built. |
| **Naraini** | 282,083 | 3 | Aau, Atarra Rural, Basrehi | 112.83 | Community soakpits | 78.85 | Community soakpits: 337<br><br>88 villages have solid waste management arrangements<br><br>120 villages have liquid waste management arrangements | Grey water directly enters into ponds and canals. There are community soakpits, but they are not able to capture all of the grey water generated in their catchment. The cattle sheds have been made on the banks of the ponds. Due to this, excreta from cattle, grey water generated by washing them and other waste material is discharged into the ponds. Due to high groundwater levels, faecal sludge contaminates the groundwater. |

Source: Compiled by CSE

# FACTSHEET

## BANDA


Photo credit: Ujjawal Chaurasia

Village Amarganj in Baberu district has faulty drains through which grey water is allowed to overflow on roads and fields.


Photo credit: Ujjawal Chaurasia

Grey water from water sources is directly discharged on to open roads, creating breeding grounds for mosquitoes and spreading vector-borne diseases.


Photo credit: Ujjawal Chaurasia

A mix of grey water, black water and solid waste in the main drain creates a vulnerable situation for people in the neighbouring village Kurrahi of Bisanda. Foul smell, choked drains and overflowing wastewater exposes the local community to health risks.


Photo credit: Ujjawal Chaurasia

Water from handpumps gets mixed with household grey water in village Mau of Kamasin block. Proper management of grey water is required.

Photo credit: Pradeep Kumar Mishra, CSE

A twin pit toilet in village Basrehi, block Naraini

Photo credit: Pradeep Kumar Mishra, CSE

A handpump, used as a drinking-water source, is located in a main drain carrying storm water and grey water. This source caters to around 25 households living nearby.