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BROWN GOLD

Policy Brief

Prioritising Safely Managed Sanitation in Nepal: Beyond ODF and Toilet Construction

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Safely Managed Sanitation: An Urgent Challenge

Safely managed sanitation - ensuring there are toilets for every household and that the faecal waste is treated - is pivotal for human wellbeing, productivity, health, and gender equality. Yet many countries in the Global South face poor access to facilities and unsafe containment and disposal of faecal waste. All members of society are negatively affected by this, but marginalised groups, and in particular sanitation workers, are often exposed to the greatest risks arising from poor sanitation systems.

Nepal was the first country in South Asia to be declared Open Defecation Free (ODF) in September 2019. This was achieved following extensive mobilisation, driven and owned by organisations across the country which included/ consisted of federal, provincial and local level governments; development partners; civil society groups; and community-based organisations.

Despite this great accomplishment, there is a need to improve service levels and ensure equality in access in order to achieve universal safely managed sanitation. In places where ODF was achieved through construction of rudimentary latrines, people may face increased health risks. Where faecal sludge management has not been taken into account, the job of pit emptiers becomes dangerous and faecal waste ends up untreated in fields and watercourses, creating a public health hazard. Policies have focussed solely on ODF and did not address these emergent post-ODF challenges.

This policy brief shares recommendations to address these challenges, drawing on interdisciplinary research from the Towards Brown Gold project[1], with a case study in Gulariya municipality.

1 Towards Brown Gold seeks to explore the challenges and opportunities of off-grid sanitation in growing towns in Ghana, India, Nepal and Tigray Region of Northern Ethiopia. We are examining how local communities experience and live with off-grid challenges as well as the kinds of social and technical processes needed to re-frame 'shit' — a harmful, polluting waste product — as 'brown gold'.

Gulariya Municipality

Gulariya Municipality is in Bardiya district, the first Terai district in Nepal to be declared Open Defecation Free in 2015. Through an ODF campaign, the municipality witnessed a dramatic increase in toilet coverage - from less than 15% in 2014 to 100% in 2015. A district coordination committee brought together and mobilised stakeholders comprising government agencies, NGOs, development partners, and civil society groups (e.g. school clubs, women's group and user committees). Financial and technical support was provided where needed (e.g. concrete rings for poor households and information on toilet construction). Although residents cited various reasons for toilet construction - ranging from personal conviction to the threat of withdrawal of municipal services and social pressure during the ODF campaign – there has been widespread acknowledgement of the benefits of toilets. This experience highlights the importance of

Research Methods

The Brown Gold project brings together social science, engineering, microbiology and creative arts expertise to help facilitate bottom-up processes and innovations. Research methods consisted of:

- Two stakeholder workshops with representatives of local government, NGOs, community leaders, farmers network representatives and sanitation workers
- Focus group discussions, transect walks and observations in 22 vulnerable communities across 10 (urban and rural) wards out of the district's 12 wards
- 21 key informant interviews (including representatives from the municipality, ward officials and NGOs)
- Surveys of 33 households from 9 (urban and rural) wards
- Field-based microbiological and physical-chemical monitoring of hand pumps at source, treated and stored water (n=50) during the dry and rainy season
- Lab-based microbiological, physical-chemical and heavy metal monitoring of faecal sludge (raw and treated), FSTP effluent (liquid component) and dried end-product from Gulariya's FSTP during dry and wet seasons
- Controlled aerobic degradation of faecal sludge and organic solid waste in different proportions to assess the co-composting potential and optimise the quality of the compost

coordinated but decentralised planning, and of participative approaches for the successful implementation of the National Sanitation and Hygiene Master Plan 2011.

Gulariya is one of the few municipalities in Nepal where waste management was initiated in 2017 under the *Safa and Swastha* (Clean and Healthy) Gulariya project with the construction of an integrated waste management centre (IWMC) with a faecal sludge treatment plant (FSTP). Yet challenges remain in faecal sludge containment, storage, treatment and disposal, which affect water security and expose marginalised communities and sanitation workers to severe health risks.

Key Findings

Inadequate containment of faecal sludge poses a risk to drinking water sources in Gulariya

The majority of household toilets are connected unsealed containment structures, consisting of a single chamber, either cylindrical made of prefabricated concrete rings or rectangular, and unsealed at the bottom. Despite many households referring to these as 'septic tanks', these containment structures cannot be considered as such, as they do not allow the controlled separation of liquid and solid components, key for anaerobic digestion and reduction of settled solids (sludge). Instead, the liquid component (leachate) can leach into the surrounding terrain, where it can contaminate the groundwater, which is the main source of drinking water.

Poor on-site containment poses considerable risks to water users due to groundwater contamination, especially as most of the households visited consumed drinking water directly from hand pumps and without any Point-of-Use treatment. Our research found that *E. coli* levels in water from hand pumps exceeded recommended World Health Organization (WHO) and Nepal Drinking Water standard safe levels during both the dry season (51% of samples classified 'high risk'; Mean *E. coli* = 40.8 MPN/100mL) and the wet season (91% of samples classified 'high risk'; Mean *E. coli* = 91.3 MPN/100mL). While municipal piped water is provided in some areas, the majority of households in those areas and beyond reported that the cost of grid connection and monthly supply of piped water was unaffordable.

Pit emptying is unregulated, aggravating health and safety risks especially for sanitation workers

Households typically empty their containment structures when they are full or overflow. At such time, they seek the quickest, easiest and cheapest option. That means they resort to manual emptying, performed either by the households themselves or by informal sanitation workers. They commonly use a piece of cloth as a face mask and pour kerosene into the pit to reduce the odor as they empty them with rudimentary tools. Even municipal sanitation workers were reported to lack access to personal protective equipment such as masks, gloves and protective shoes, and did not have any health or medical insurance. Both informal and municipal sanitation workers largely belong to the *Balmiki* community (a certain community of people who have been involved in sanitation work, especially cleaning toilets and managing sludge) who have long faced social marginalisation and undignified working conditions.

The municipality offers mechanical pit emptying services to all wards, in theory, using suction trucks with a 35metre suction pipe. However, households lacked knowledge of the availability of the service, how to access it and which areas were covered by these services, particularly in the rural wards. In informal urban areas, the trucks are unable to reach households in narrow allies. Furthermore, households are discouraged from seeking the service due to the cost, the need for payment in advance and having to visit the municipality and fill a form in advance of emptying. The cost is of particular concern for poorer households with smaller pits that fill up quickly and need more frequent emptying.

In most cases, the emptied faecal sludge is directly disposed of in farmland, forest or in a pit dug nearby, increasing the risk of water pollution, especially during the monsoon. Some households have biogas systems where faecal sludge and animal dung supplement household energy needs. The use of biogas differs by socio-ethnic group and is more prevalent among Tharu communities (Tharus are an indigenous ethnic group in the lowlands and make up 5% of Nepal's population). Cultural practices inhibit some

Key Messages:

- Inadequate containment of Faecal Sludge poses a risk to drinking water sources in Gulariya
- Need to move beyond a focus on toilets to safely managed sanitation – including safe containment, emptying, treatment and reuse and safe disposal of Faecal Sludge

Action - Address challenges of containment

- Pit emptying is unregulated, aggravating health and safety risks, especially for sanitation workers

Action - Improve emptying service provision and address containment challenges

- The Integrated Waste Treatment Centre (IWTC) could serve as a model of good practice for sustainable waste management, but is not fully operational

Action - Address functionality of treatment to realise the potential for reuse (Brown Gold)

- Poor support/coordination for a sanitation strategy since the ODF campaign

Action - Increase the priority and reform policy to focus on safely managed sanitation services

Action - Ensure appropriate costed municipal wide sanitation plan and budget allocation for safely managed inclusive sanitation services

communities from cooking with biogas produced using faecal sludge. Moreover, biogas production is only viable where a substantial quantity of additional waste is available, such as animal dung, limiting its potential.

"Biogas is good if you have cows or buffaloes, you need at least 10 kg of sludge a day. Without cattle, it does not make much sense to have biogas." [Resident, Ward 5]

"We want a septic tank, they can last for years. The pit fills up too quickly, every 4-6 months. It is too much, paying to empty it every few months!" *[Resident, Ward 7]*

"Jaane ke liye bohot khet hai, khaane ke liye bus ek pet hai" [There are many fields we can go to, but only one stomach which has to be filled" *[Resident, Ward 4]*

There is a risk of reversion to open defecation without sustained efforts

Although the value of using household toilets has been acknowledged, several challenges persist that risk reversion to open defecation. The research found several such cases, including pits filling up, or damaged due to infrastructure projects, toilets rendered unusable due to installation of hand pumps in close proximity and monsoon flooding causing pits to overflow. These diverse challenges highlight the need for continued efforts working with households to devise solutions, and a and move towards the construction of standardised dual-chamber septic tanks and more regular pit emptying.

The Integrated Waste Treatment Centre (IWTC) could serve as a model of good practice for sustainable waste management, but is not fully operational

The Integrated Waste Treatment Centre is located in a community forest with good road access, at a distance from human settlements, and with area available for expansion. It has the potential for integrated solid waste and faecal sludge treatment and biogas production, but faces numerous challenges. Although the municipality has an integrated waste management plan with a solid waste collection fee built into tax, insufficient efforts to expand outreach has meant low awareness among residents about the services. At the time of this research, only around 8% of faecal sludge and solid waste of four urban wards had reached the IWTC.

Importantly, at the time of the research, the IWTC was not fully operational and appeared to be working intermittently. Analysis of FSTP end product (treated sludge) by Environment and Public Health Organization (ENPHO) showed that levels of E. coli and helminths were above those required by WHO Guidelines. Co-composting trials (involving organic solid waste and faecal sludge) have shown that the nutrient value of fertiliser produced was sufficient but required an addition of carbon-rich materials (e.g. plant husks, saw dust) to balance the nutrient profile. The small amount of fertiliser produced from the plant was sold only once. The safe reuse of faecal sludge as fertiliser is, however, contingent on the redesign and operational improvements of the existing FSTP and the quality and quantity of feeding materials used for co-composting need to be maintained. Therefore, notwithstanding the promise of the IWMC, many issues with operation and technical performance remain that need to be addressed.

Poor support/coordination for a sanitation strategy since the ODF campaign

Key informants noted that sanitation declined as a public funding and policy priority after the declaration of ODF. During the time of research, respondents reported emerging challenges in coordination between the previous structures (including local Tole Lane Organisations, which played a key role in the ODF campaign) and institutions under the new federal structure. Links with water supply matter, too. While governments are investing in water infrastructure, municipal, provincial and national governments' approaches are not coordinated, thereby contributing to duplication and overlap in the same areas. For instance, while the provincial government has supported the piped drinking water system, the municipal government has continued to subsidise hand pumps. Importantly, sanitation has not been prioritised or funded within these budgets. Our research found a lack of alignment between the provincial and local government and lack of clarity on the division of responsibilities within the municipality regarding sanitation.

"The ODF campaign was like a war, after this now they have all gone to sleep" [Municipal official]

"During the ODF campaign there was a lot of committee structure, everyone was working collectively to a master plan. Now they are not looking at it at all." [NGO representative]

Clearly the ODF campaign failed to recognize long-term health risks arising due to the neglect of proper containment issues which has led to second and third generation challenges.

Recommendations

Address challenges of containment

- Support vulnerable households who do not have access to functional toilets (e.g. due to damage), by building or rebuilding their facilities.
- Explore options to incentivise the upgrading of existing unsealed containment into standardized dual-chamber septic tanks and improve regulation and enforcement so that any houses being built or renovated have sealed containment.
- Improve water supply, with a focus on transitioning priority households relying on shallow wells for drinking (at highest risk of faecal contamination from latrines) to safer sources. These are generally more vulnerable and marginalized households.
- Build awareness in the community to promote adequate behaviours (including uptake of emptying services) and to ensure there is no slippage back into open defecation. Social mobilisers played a key role in the ODF campaign, and similar methods could be adopted. Inclusive approaches including art interventions (such as

workshops, street drama, creative humanure planting, song competitions) can be extremely useful tools for generating and disseminating knowledge about sanitation challenges and increasing awareness of sanitation issues.

Improve emptying service provision and address containment challenges

Parallel to improving containment, the existing emptying service provision needs to be revamped as follows:

- Incentivize households and service providers to practice safe emptying, transport and disposal of faecal sludge and unsafe practices should be penalised. This would be supported by awareness raising, as already recommended above.
- Work with private and municipal emptier to identify the best way to improve services, reduce household pit emptying, avoid contamination, and protect their occupational health and safety
- Focus on the health, dignity and rights of sanitation workers, particularly informal workers. Given that they usually belong to marginalized groups, they should be a core focus. Sanitation workers should be given due recognition, provided with PPE, health insurance and social security systems, and be offered support in their jobs, or to transition to other occupations if they so prefer.

Address the functionality of treatment to realise the potential for reuse (Brown Gold)

- The sludge the emptier remove needs to be properly treated, or the contamination will just be displaced to unsafe dumping sites.
- The current treatment facility needs to be made fully operational (including the FSTP and biogas plants) and scaled-up in terms of coverage of household waste collection. Once that is achieved, more viable and safer resource recovery can help recoup some of the costs of sanitation services (e.g. by helping reduce reliance on costly imported chemical fertilizers).
- To maximise this opportunity, it is critical that nutrient recovery is based on an assessment of social feasibility and develops a value chain that addresses market needs for the end products. This would require working with the Ministry of Agriculture and District Agriculture Development Offices to develop products that respond to local market needs. It will also be important to address the socio-cultural and regulatory barriers to reuse of waste.

Increase the priority of and reform policy to focus on safely managed sanitation services

- Achievement of all these improvements in the sanitation chain will require commitment and prioritisation from local, provincial and national governments.
- Policies, regulations, plans, and their implementation need to move beyond a focus on toilets to safely managed sanitation - including safe containment, treatment and disposal or reuse of faecal sludge.
- Governments need a better coordinated policy and improved governance of waste management. The national government needs to determine the overall strategy and direction of sanitation policy, while the municipalities need to implement policy at the local level, and the provincial level can play an important role in facilitating training and coordination across the provinces.

Ensure costed municipal wide plan, appropriate budget alloction and performance monitoring for sanitation service chain

- Any commitment needs to be reflected and supported by adequate resources, which will be critical to bring about the ambitious changes set out above.
- Given the challenges faced by poor residents to pay for services to empty toilet pits, it is critical to ring-fence budget for sanitation as a public good, and support where the market will not ensure universal safely managed sanitation.
- This includes (partially) subsidizing poorer residents unable to pay emptying fees, or toilet improvements, financially incentivizing regular emptying and discharge in the treatment facility, and funding the operation and maintenance of the treatment plant. Municipal budget should fund sanitation services to reduce (or eliminate) service charges currently borne by households and remove the risks linked to household self-emptying.
- Municipal budgets should substantially fund sanitation services and, recognising the role of the national and provincial governments in fulfilling the right to sanitation enshrined in the constitution, reliable fund transfers and other support mechanisms should be put in place to contribute to this cause.
- All these need to be well reflected in a municipal wide sanitation plan followed by a strong performance monitoring system.

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Read more about Towards Brown Gold here