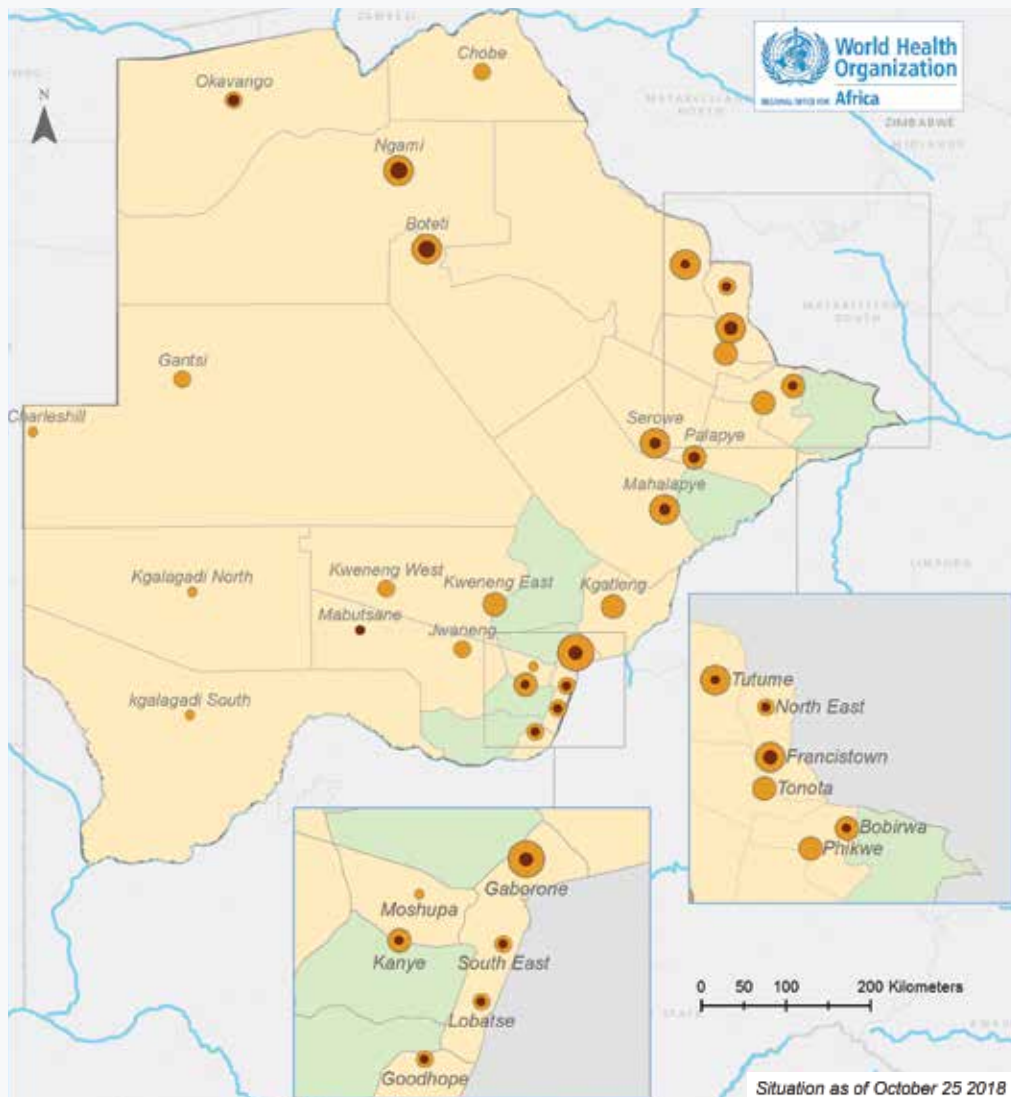


Republic of Botswana

BOTSWANA Sanitation Roadmap



Cases and deaths in children with diarrhea with dehydration in Botswana, weeks 36 - 42



Map by Health Emergencies Programme, Source: MOH Botswana, Copyright: WHO 2018

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BOTSWANA Sanitation Roadmap

November 2019

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Lack of basic sanitation is a major cause of death from childhood diarrhoea

MINISTER'S FOREWORD

First and foremost, I would like to concede that Botswana still has a considerable number of individuals without access to improved sanitation facilities, particularly in the rural areas. The moderate advancement in access to sanitation, particularly in rural areas, can influence individual safety and self-confidence, particularly for women and the girl-child.

I wish also to register that the Government of Botswana is focussed on improving the quality of sanitation services in the country, hence the production of "The Botswana Sanitation Roadmap". In line with achieving the aspirations of both our **National Vision 2036 and the 2030 Agenda for Sustainable Development Goals (SDGs)**, the government is committed to making the provision of sanitation services a national top priority area of focus. We are creating activities that are designed to encourage improved sanitation attitudes with a view to achieving the best hygiene practises nationwide.

Further to that, Botswana takes a keen interest in the World Health Organisation's Global Analysis and Assessment of Sanitation and Drinking

Water (GLAAS) review process. We treat the GLAAS review process as an efficient system which can work to help us assess and efficiently administer Water, Sanitation and Hygiene (WaSH) at national level. We note and accept that the goal of GLAAS is to scrutinise all the components of WaSH frameworks, which is very important in supporting the extension and reach of services to all people, particularly the marginalised members of society.

The GLAAS survey report has identified deficiencies in the management of sanitation services in Botswana and has become very handy in assisting us to draw up national sanitation guidelines. In the process, we have been able to take a step further to develop the Botswana Sanitation Roadmap. The Roadmap has identified key focus areas which we commit to implement for the next three (3) years to improve the provision of sanitation services in the country. Therefore, it becomes even more important that we must execute this national roadmap more rationally, and in an integrated manner. We need the support of our local stakeholders and our international development partners to make it a successful endeavour.

Let me conclude by expressing the deep appreciation and gratitude of the Government of Botswana for the continued assistance we get from our development partners, specifically the World Health Organisation and the United States Agency for International Development, through the Resilient Waters Program for this project, and many others. We note their support and the positive change it has brought to the WaSH sector in our country and we are looking forward to continuing to work with you in facilitating the success of this project.



Honourable Kefentse Mzwinila
Minister of Land Management, Water and
Sanitation Services
REPUBLIC OF BOTSWANA

ACKNOWLEDGEMENTS

The Ministry of Land Management, Water and Sanitation Services on behalf of the Government of Botswana gratefully acknowledge the financial and technical support by USAID Resilient Waters Program for the development of this Botswana Sanitation Roadmap and the support they provided for Botswana to fully participate in the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS) Survey 2018/19.

Preparation of this report involved contributions from the Botswana WaSH team, formed by individuals representing WaSH line ministries in Botswana, and immense contribution from the OKACOM Secretariat. The Botswana Government would like to extend gratitude to all those individuals and organisations who contributed to the development of this Botswana Sanitation Roadmap.

Maps attributed to Google (Map data ©2019 AfriGIS (Pty) Ltd & Map data ©2019), aerial photo of oxidation ponds courtesy of Paulina Steinhilber.

EXECUTIVE SUMMARY

The Botswana Sanitation Roadmap 2020 – 2022 aims to create a platform for enhancement of sanitation management in Botswana by identifying critical activities to implement over the next three (3) years. The Roadmap is a precursor to development of a more detailed sanitation strategy and outlines the sequence of interventions that need to take place to create an enabling environment for sanitation management.

The Roadmap was developed in the context of the Sanitation Service Chain and is aligned with the realisation of Vision 2036 and Agenda 2030 of the Sustainable Development Goals, taking into account the “leaving no one behind” agenda. The Sanitation Service Chain relates to the movement of faecal sludge from the toilet, through containment,

conveyance of sewage to treatment, and finally to disposal. In the context of the SDGs, it is important that all parts of this process are safely managed.

Development of the roadmap was based on an analysis of the current status of sanitation in Botswana under the following strategic areas:

- Legislation and regulatory standards
- Policies and plans
- Institutional arrangements
- Technical and infrastructural issues
- Data and information
- Financing for sanitation

This analysis resulted in the conceptualisation of the following 11 activities to be implemented over the next three (3) years.

- **Activity 1: Define the goal:** To develop consensus amongst all relevant government ministries on the ultimate goal for sanitation in Botswana in the context of the SDGs and the “leave no-one behind” agenda.
- **Activity 2: Develop the institutional framework:** To establish the institutional mandates for lead and supporting agencies in Botswana, as well as the linkages and mechanisms for sector coordination.
- **Activity 3: Develop the regulatory framework:** Aimed at ensuring that there are adequate regulatory conditions in place for all aspects of the Sanitation Service Chain.
- **Activity 4: Develop sanitation standards:** To define the required sanitation standards, such as onsite sanitation and faecal sludge management (FSM) standards.
- **Activity 5: Secure the relevant data:** To ensure that strategic decisions can be based on accurate data, and that feedback loops are created.
- **Activity 6: Secure the necessary funding:** To ensure that adequate financing is provided to the relevant agencies for implementation, and investment in the sanitation sector is consistent.
- **Activity 7: Update the investment programme:** To ensure that funding is targeted to strategic sector gaps

by increasing the scope of the Sanitation Master Plan to include onsite sanitation and faecal sludge management.

- **Activity 8: Set up a national campaign for behaviour change:** To improve Water, Sanitation and Hygiene (WaSH) knowledge in all Botswana communities and schools through national School-Led and Community-Led Total Sanitation programmes.
- **Activity 9: Separate industrial wastewater and domestic systems:** To ensure efficient operation of treatment facilities designed to deal with domestic waste only.
- **Activity 10: Improve regulation and management of vacuum tankers:** To secure a set of measures to control the operation of vacuum tankers.
- **Activity 11: Coordinate specific research and training:** To ensure that sanitation implementation is based on the most appropriate sanitation solutions for Botswana conditions, and establish the management capacity for those solutions.

Once implemented, these activities are expected not only to establish a strong enabling environment for the implementation of sanitation for all in Botswana, but also to put the country on the road to achieving the SDG goals for sanitation.

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LIST OF ACRONYMS

BOBS	Botswana Bureau of Standards
CAPEX	Capital Expenditure
CLTS	Community-Led Total Sanitation
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
FSM	Faecal Sludge Management
GLAAS	Global Analysis and Assessment of Sanitation and Drinking-water
GoB	Government of Botswana
JMP	Joint Monitoring Programme of WHO/UNICEF
LIMCOM	The Limpopo Watercourse Commission
MLWS	Ministry of Land Management, Water and Sanitation Services
NDP	National Development Plan
NGO	Non-governmental Organisation
ODF	Open Defecation Free
OKACOM	The Permanent Okavango River Basin Water Commission
ORASECOM	The Orange-Senqu River Commission
SDG	Sustainable Development Goal
SLTS	School-Led Total Sanitation
WaSH	Water, Sanitation and Hygiene
WHO	World Health Organisation
WUC	Water Utilities Corporation
ZAMCOM	The Zambezi Watercourse Commission

BACKGROUND TO THE ROADMAP

In Botswana, urban sanitation services are largely connected to sewer systems, while dry sanitation is predominant in rural areas, where open defecation is

often practiced. The 2017 UNICEF and WHO Joint Monitoring Programme (JMP) reports the following status of sanitation coverage in Botswana:

Sanitation type	% coverage (Total)	% coverage (Urban)	% coverage (Rural)	Definition of sanitation type
At least basic sanitation	77%	89%	51%	Use of improved facilities which are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site OR Use of improved facilities which are not shared with other households
Limited sanitation	6%	3%	10%	Use of improved facilities shared between two or more households
Unimproved sanitation	6%	6%	7%	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
Open defecation	11%	1%	33%	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste

Source: UNICEF/WHO Report 2017

Since 2014, Botswana has participated in the WHO GLAAS survey – a country-led biennial survey to evaluate the enabling environment for WaSH at the national level. In response to the findings of the GLAAS report 2018-2019, the ministries involved in sanitation decided to formulate a roadmap for reaching the SDG goals on sanitation.

The mandate of sanitation management was given to the Ministry of Land Management, Water and Sanitation Services following the rearrangement of ministries on 1st September 2016. In October 2018, the Department of Water Affairs was renamed the Department of Water and Sanitation (DWS).

INTRODUCTION TO THE BOTSWANA SANITATION ROADMAP

This Roadmap is a short-term plan for priority actions for establishing the foundation of the Sanitation Sector in Botswana over the next three (3) years. The Botswana Sanitation Roadmap is a precursor to development of a more detailed sanitation strategy. The Roadmap outlines the sequence of planning interventions that need to take place to create an enabling environment for sanitation management in Botswana.

Since this Roadmap is aimed at establishing elements of the Sanitation

Sector in Botswana, and the enabling environment for sanitation, it should be recognised that the process towards achieving these will be gradual, with a transition approach taken to issues such as regulation of onsite sanitation in areas of construction and service delivery.

Botswana's Sanitation Roadmap was developed in the context of the Sanitation Service Chain (Figure 1) and is aligned with the realisation of Vision 2036 and Agenda 2030 of the SDGs.



Figure 1: The Sanitation Service Chain



STRATEGIC AREAS OF THE ROADMAP

The activities in this Roadmap were based on the analysis of the current situation for sanitation in Botswana under key strategic areas.

Legislation and regulatory standards

Sanitation is recognised as a right in the Constitution of Botswana, which, according to the GLAAS 2018/2019 survey submitted to the WHO, section 7(1), read with section 16 and 24, implies that access to drinking water and sanitation are human rights. In addition, international law recognises the human right to sanitation. Botswana has ratified the Revised SADC Protocol on Shared Watercourses (2000) and treaties of the four river basin commissions; ZAMCOM, LIMCOM, ORASECOM and OKACOM. Standards exist for wastewater and effluent discharge, as well as wastewater reuse, but there are gaps, particularly with regard to onsite sanitation and faecal sludge management.

Policies and plans

Botswana's policy landscape currently advocates safe sanitation for all, as well as promoting the health and well-being of all Botswana. Furthermore, there are policies that provide subsidies to poor people for sanitation services. While there is a basis for strong sanitation governance, the policy landscape is fragmented, and sanitation is often included with water or defined as liquid waste management. Onsite sanitation and faecal sludge management are

not considered in current (2016) water and wastewater policy and planning frameworks.

Institutional arrangements

The institutional structure for sanitation in Botswana is currently limited. This is the case for the sanitation services, as well as for extension work, sector leadership, and policy. The Sanitation Division of the Ministry of Land Management, Water and Sanitation Services is established in name only, and is currently not staffed. A separate division within the Water Utilities Corporation (WUC), which is responsible for all urban sanitation services, does not exist. This means that there are no clear mandates to formulate, implement or monitor policies in relation to sanitation, or to ensure coordination in the sanitation sector. Finally, there is not yet a regulator in place for the WaSH sector.

Data and information

In essence, while a considerable amount of data on various aspects of sanitation is collected, this is not consolidated or analysed, and sanitation monitoring systems need significant strengthening for effective implementation and tracking against policy targets. Research and training are needed to manage onsite systems as well as faecal sludge. Training in the promotion of sanitation behavioural change is also important.

Technical issues

The condition of sanitation systems in the country, from the perspective of WUC, private operators, industries and schools; and household systems were evaluated, and the following conditions observed:

- There is widespread non-compliance with national standards in wastewater treatment facilities
- The status of private systems and schools is largely unknown
- Pit latrines in various forms are being used but there is little data available on their status and condition
- Widespread open defecation is practised in rural areas
- Formal faecal sludge transport services exist, but these services are not fully regulated
- There are no FSM treatment facilities – both faecal sludge and septage are disposed of at wastewater treatment facilities which results in these facilities being overloaded
- Industries are generally not complying with trade effluent agreements; and domestic and industrial waste are combined, again overloading treatment facilities
- Lodges and mobile tourist arrangements operate sanitation facilities, which generally function well

Financing for sanitation

There is not yet an operational budget earmarked for onsite sanitation. This situation is being revised, under the mid-term review of NDP 11. The cost of implementing the goals of the NDP is not yet clearly understood, nor is there a financial plan for the sanitation sector. There is funding allocated to sanitation under the World Bank loan to the Government of Botswana for the Botswana Emergency Water Security and Efficiency Project that began in 2017, under which it is estimated that 177,000 people will benefit from improved wastewater treatment and faecal sludge management systems. In addition to this, the project has allocated funds for institutional reform, including restructuring of WUC, and various regulatory and policy reforms.



A roadmap for the sanitation sector



Activity 1

Define the goal

The ultimate goal is to have good sanitation and hygiene for all Batswana and visitors to the country, wherever they live or stay, reflecting the ultimate goal of SDG6 to “Ensure availability and sustainable management of water and sanitation for all” (<https://sustainabledevelopment.un.org/sdg6>). The immediate objective in terms of sanitation in Botswana, therefore, is to lay the foundation for achieving universal access to safe sanitation.

The definition of the sanitation goal for Botswana should take into account the goals and indicators of SDG6. These are, however, aspirational goals. This activity should consider what is realistic and achievable in the Botswana context, while ensuring that the sanitation types and technologies are appropriate for the various contexts of the country (e.g. urban and rural, vulnerable populations and marginalised groups), and the physical conditions where people live.

The indicator connected to this goal is “Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water”. The indicator is not tied to one specific technology, such as waterborne toilets everywhere. Achieving the goal is very likely to happen through the application of a mix of technologies and learning. Eventually the goal will need to be anchored in a policy, which will be one of the results of this Roadmap.

“Ensure availability and sustainable management of water and sanitation for all”.

Activity 2

Develop the institutional framework

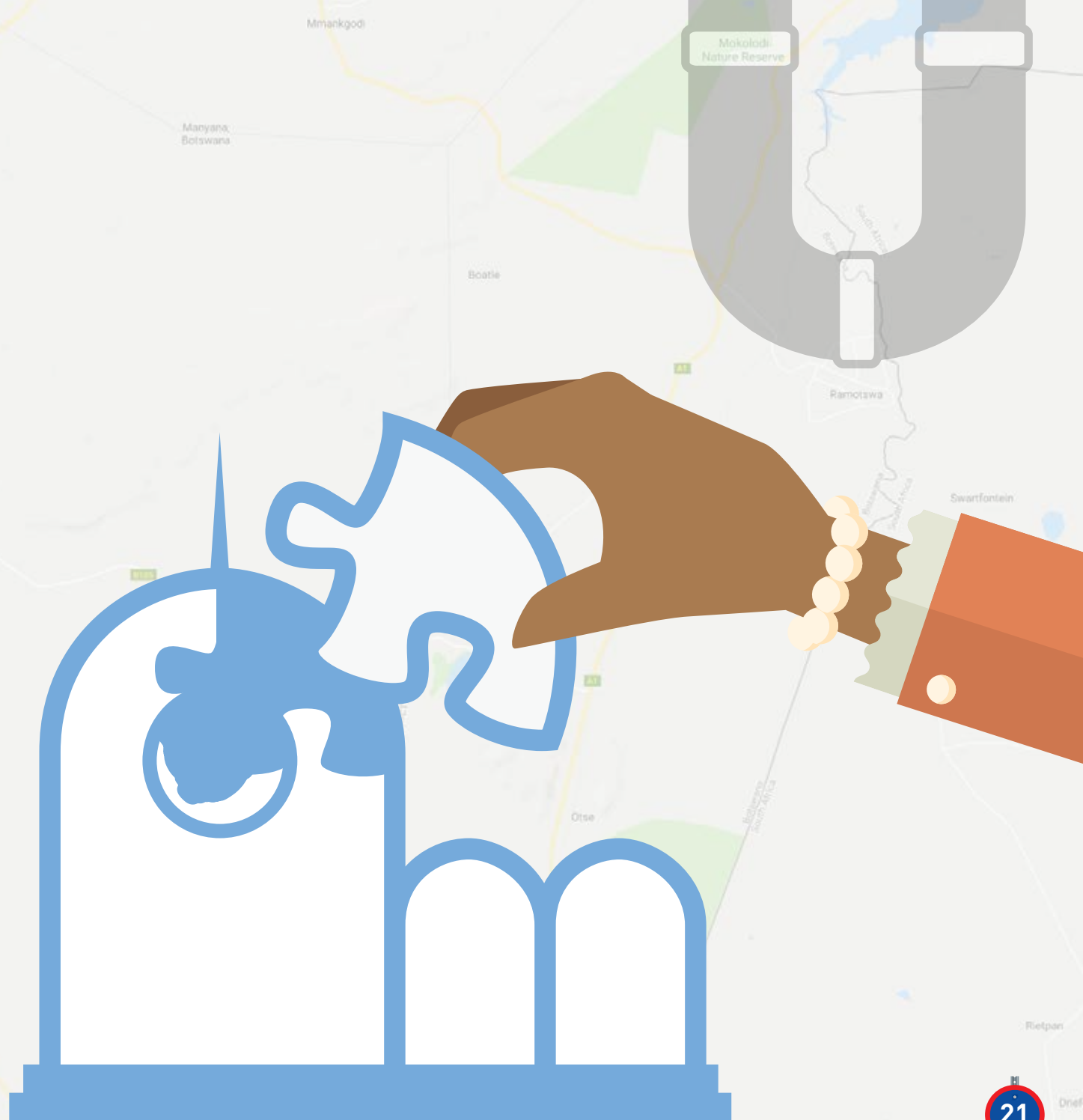
In order to achieve the goal, a robust and collaborative institutional framework should be established to implement both the activities in the Roadmap and the policy that should result from it. This activity ensures that institutional mandates for the activities related to sanitation are clear, and that the linkages among institutions support the necessary sector coordination to achieve the sub-goals for all aspects of the sanitation sector.

An important activity is the creation of an advisory board for the sector, where consultation can be secured at the highest level, enabling discussion of bottlenecks and opportunities, avoiding conflicts, and facilitating cooperation among key actors.

Finally, as indicated in the *WHO Guidelines on Sanitation and Health (WHO 2018)*, the role of the health sector is critical in ensuring that the benefits of improved sanitation are realised in terms of public health.

These recommendations should be considered in building the institutional framework for sanitation in Botswana.

An important activity is the creation of an advisory board for the sector.



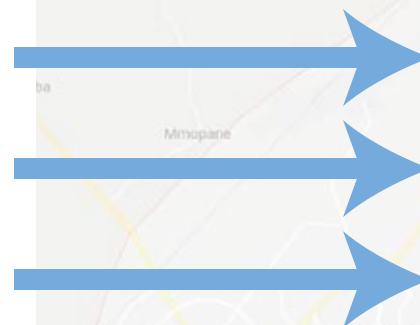
*A clear regulatory framework
should be in place for all parts of
the Sanitation Service Chain.*

Activity 3

Develop the regulatory framework

Sanitation services are provided by a mix of actors: public, parastatal and private. Such a mix requires regulation to make sure that service is provided as intended, with the fair and clear contribution of all actors, and a framework to set, monitor and meet relevant standards. A clear regulatory framework should be in place for all parts of the Sanitation Service Chain.

It has been suggested to work towards an independent regulator as sanitation services are being developed. In the meantime, the regulatory role should fall under the Department of Water and Sanitation.



Activity 4

Develop sanitation standards

There is a Botswana standard in place for wastewater (BOS 93: 2012, Botswana Bureau of Standards), but other standards are needed. The proposed basis for achieving the overall goal is the *WHO Guidelines on Sanitation and Health (WHO 2018)*.

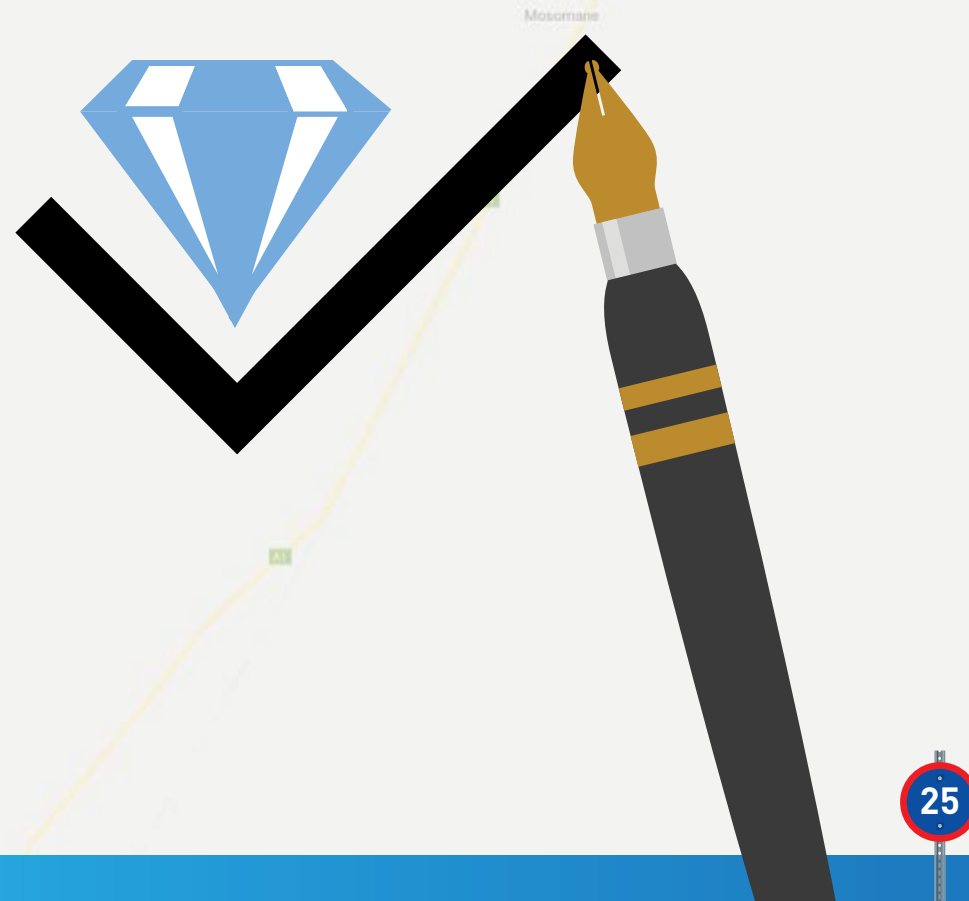
These guidelines provide a flexible basis for aligning national sanitation sector frameworks with the SDGs, addressing the whole system for delivering sanitation services. These guidelines were referred to when formulating this Roadmap.

An important initial step is to develop proper standards for onsite sanitation and for the emptying of onsite facilities (operation of vacuum truck services). Both are key elements for development of safely managed sanitation services in Botswana.

For developing rural sanitation in Botswana, there needs to be clarity about the technical options for onsite sanitation.

The options need to include solutions that are attainable for all, while at the same time, technologically and environmentally sound.

For developing rural sanitation in Botswana, there needs to be clarity about the technical options for onsite sanitation.



Activity 5

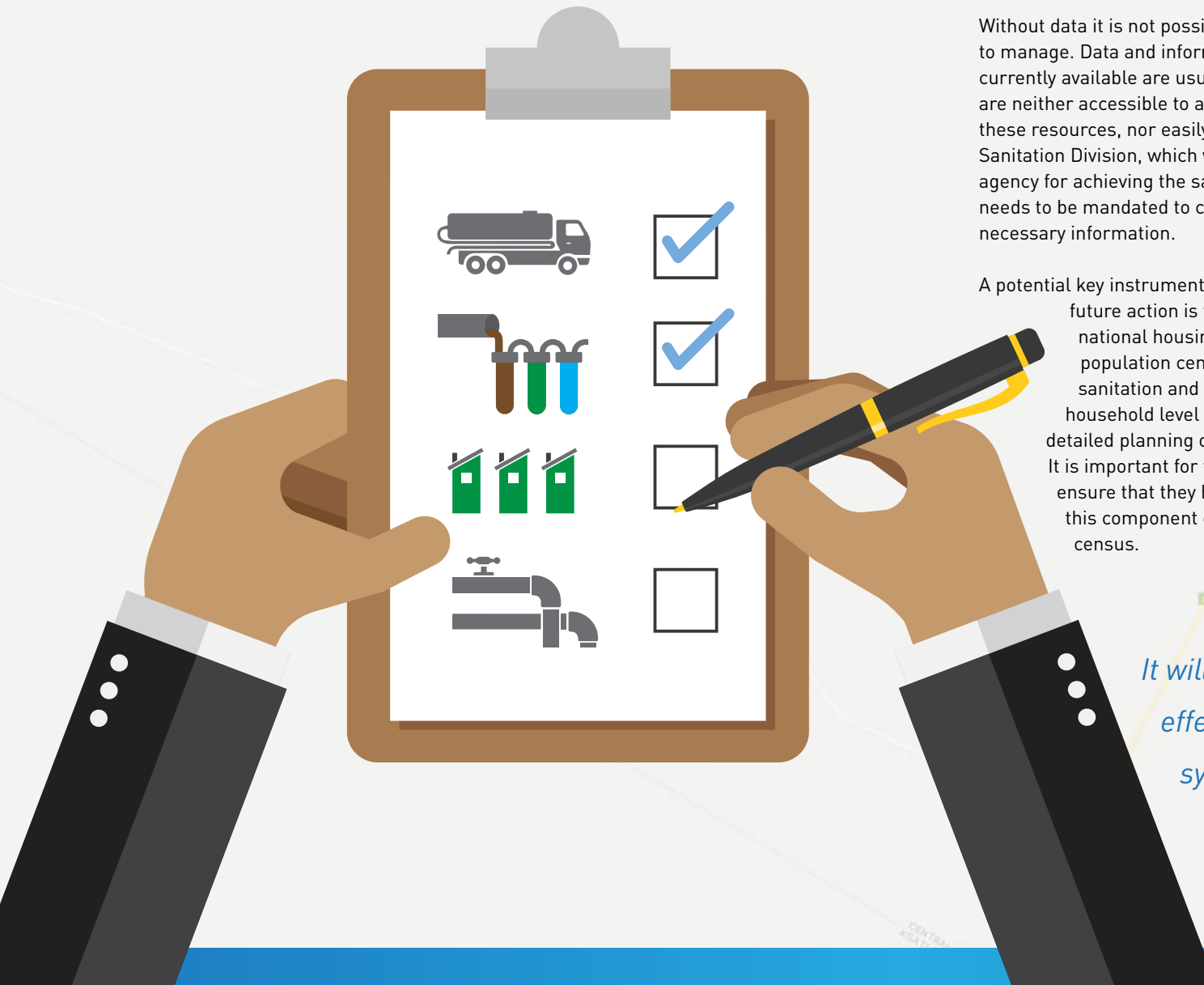
Secure the relevant data

Without data it is not possible to plan or to manage. Data and information that are currently available are usually in silos and are neither accessible to all that require these resources, nor easily shared. The Sanitation Division, which will be the lead agency for achieving the sanitation goal, needs to be mandated to collect all the necessary information.

A potential key instrument for planning future action is the upcoming national housing and population census. Data for sanitation and hygiene at household level will enable very detailed planning of activities. It is important for the DWS to ensure that they have input to this component of the national census.

In addition, it will be important to establish effective monitoring and evaluation systems and feedback loops to inform future planning and implementation decision support, through the development of a data and information strategy.

It will be important to establish effective monitoring and evaluation systems and feedback loops.



Activity 6

Secure the necessary funding

To implement the activities in this Roadmap, and the goals of the NDP 11 and Vision 2036, funding should be secured for developing solutions, training future staff, and for consistent implementation of solutions.

It is critical to develop and agree on a funding strategy for sanitation, and subsequently determine the various budgets that are required in developing the service in accordance with the SDGs.

It is critical to develop and agree on a funding strategy for sanitation.



Activity 7

Update the investment programme

In 2003, a *Master Plan for Sanitation* was developed, but it has not since been updated. It is recommended that the master plan document be supplemented by addressing the following issues:

- Faecal sludge management and onsite sanitation
- Climate change adaptation – particularly with reference to dry sanitation options
- The requirements of aligning to SDG6

It is recommended that the master plan document be updated.



Activity 8

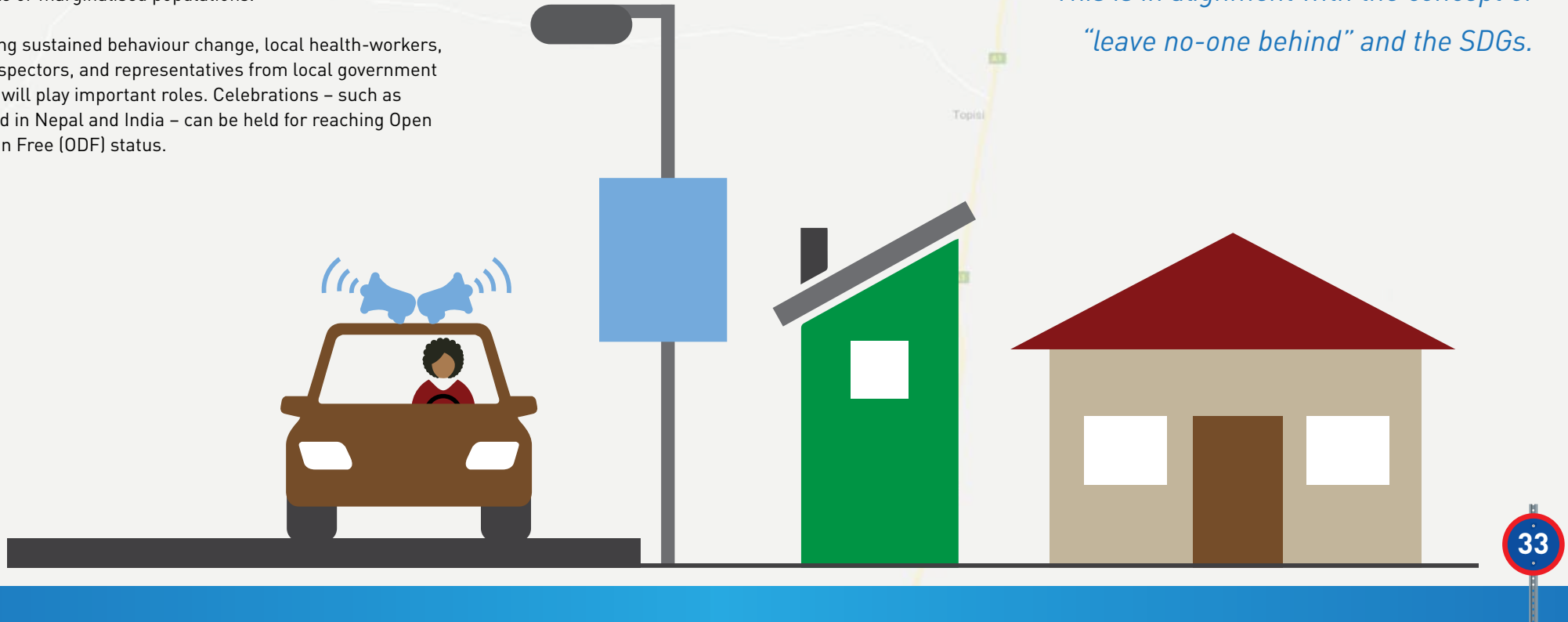
Set up a national campaign for behavioural change

According to the JMP, more than 30% of people in Botswana's rural areas still practise open defecation in fields, the bush and on the fringes of human settlements.

It is recommended that interventions such as Community-Led Total Sanitation (CLTS) and School-Led Total Sanitation (SLTS) are implemented in communities and schools, particularly in areas where open defecation is more widespread. This is in alignment with the concept of "leave no-one behind" and the SDGs, as these areas are also likely to be places where there are vulnerable or marginalised populations.

In ensuring sustained behaviour change, local health-workers, school inspectors, and representatives from local government agencies will play important roles. Celebrations – such as those held in Nepal and India – can be held for reaching Open Defecation Free (ODF) status.

This is in alignment with the concept of "leave no-one behind" and the SDGs.



Activity 9

Separate industrial wastewater and domestic systems

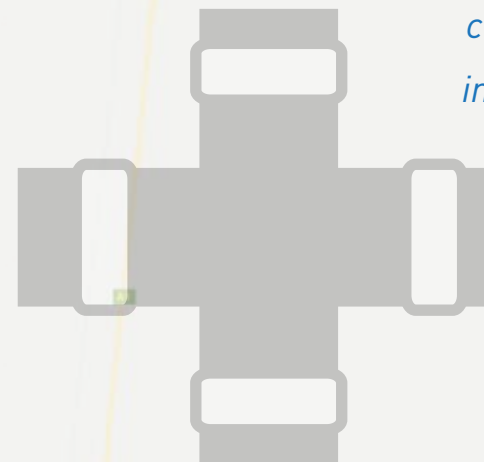
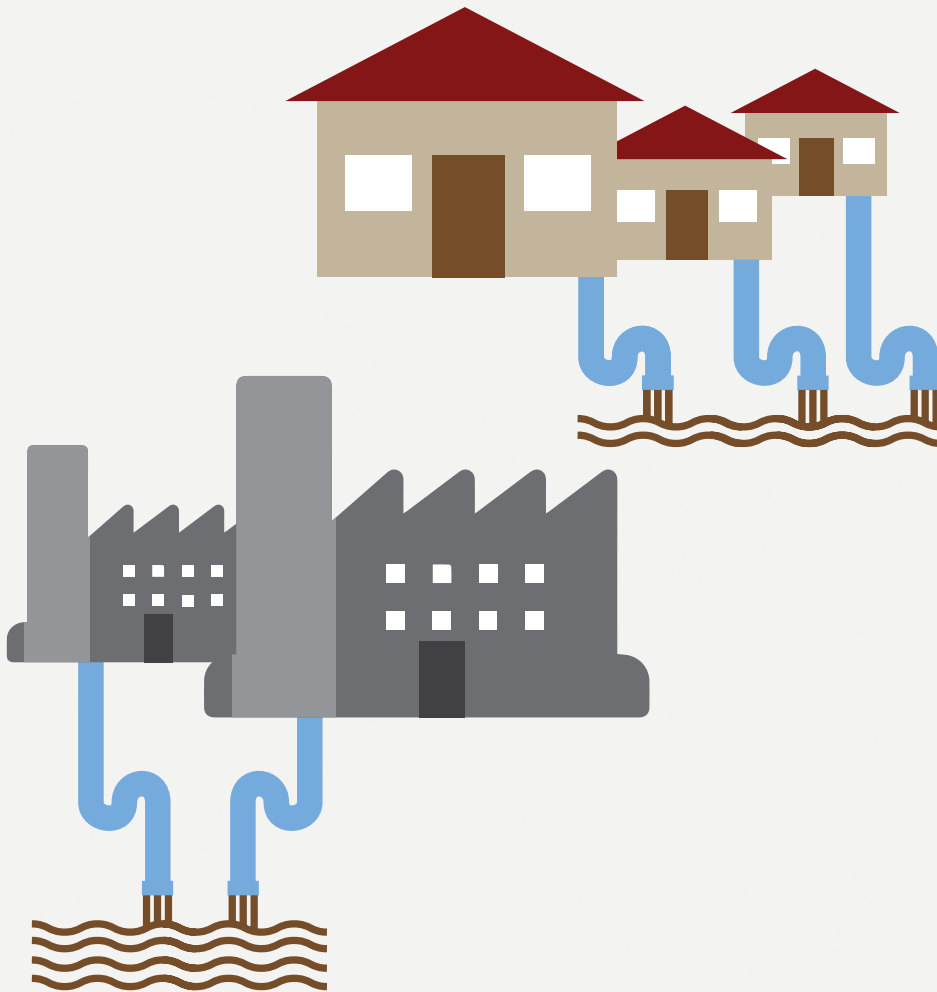
There is currently a combination of waste-flows, resulting in major problems for wastewater treatment systems operated by WUC. The focus of this activity should be where industrial waste and wastewater are currently discharged via WUC facilities intended for the treatment of domestic and institutional waste.

It is important to establish a system that sets standards for the waste disposed to treatment plants, with the possibility of excluding a commercial operator on the basis of operational limitations.

In line with the “polluter pays” principle, as well as ensuring that priority is given to human sewage, commercial operators need to be regulated to ensure that they move towards cleaner production, internal reuse of water and onsite treatment of wastewater.

To make this possible, standards for effluent to treatment should be developed and agreed to by industries such as mining and meat production, and these standards applied for all wastewater sent to treatment facilities.

Industrial waste and wastewater are currently discharged via WUC facilities intended for the treatment of domestic and institutional waste.



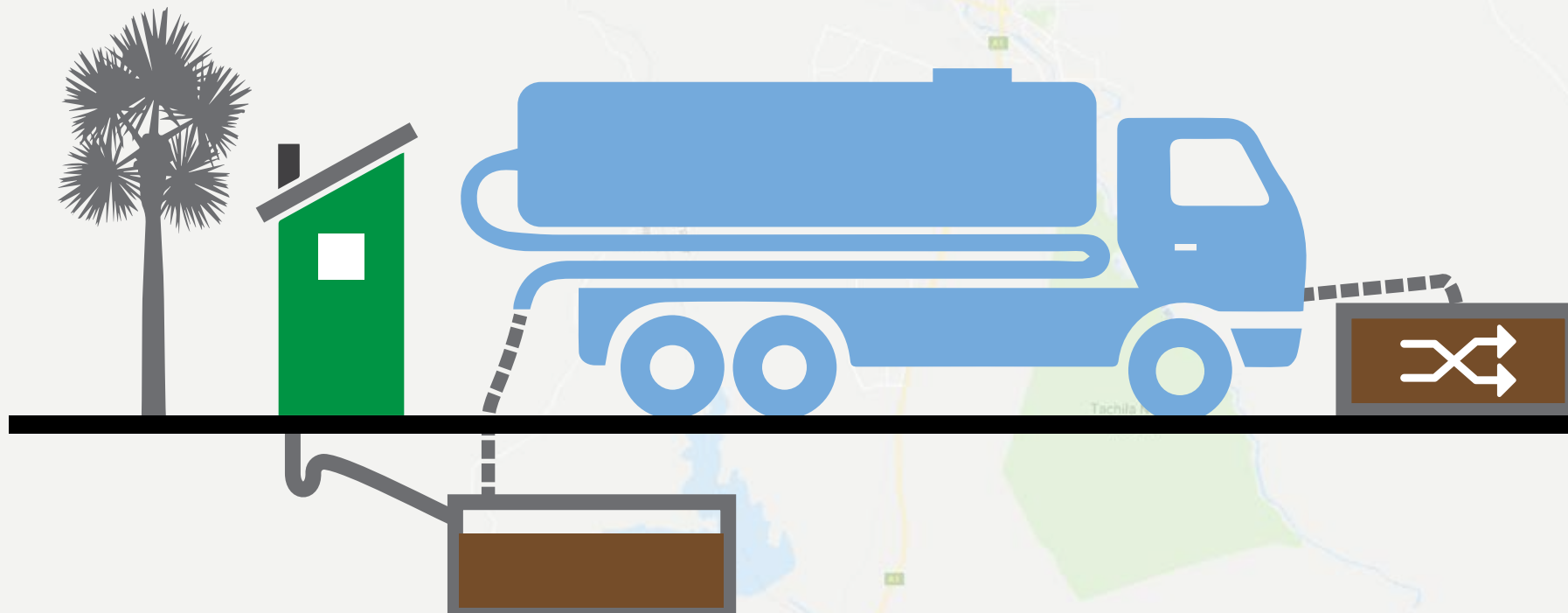
Activity 10

Improve regulation and management for vacuum tankers

In the current sanitation system there is a key role for vacuum tankers. Given that a high percentage of households in Botswana have no access to sewage networks, and do not have permission for onsite disposal, vacuum truck operators are a primary service provider.

The Roadmap aims to secure a set of measures to control the operation of these tankers. This includes obligatory technical measures for closely monitoring the operation of the tankers. It is in the interests of these operators that their services are understood by the government to be trustworthy. The preparation for these decisions and measures should be carried out in consultation with the operators.

The Roadmap aims to secure a set of measures to control the operation of vacuum tankers.



Activity 11

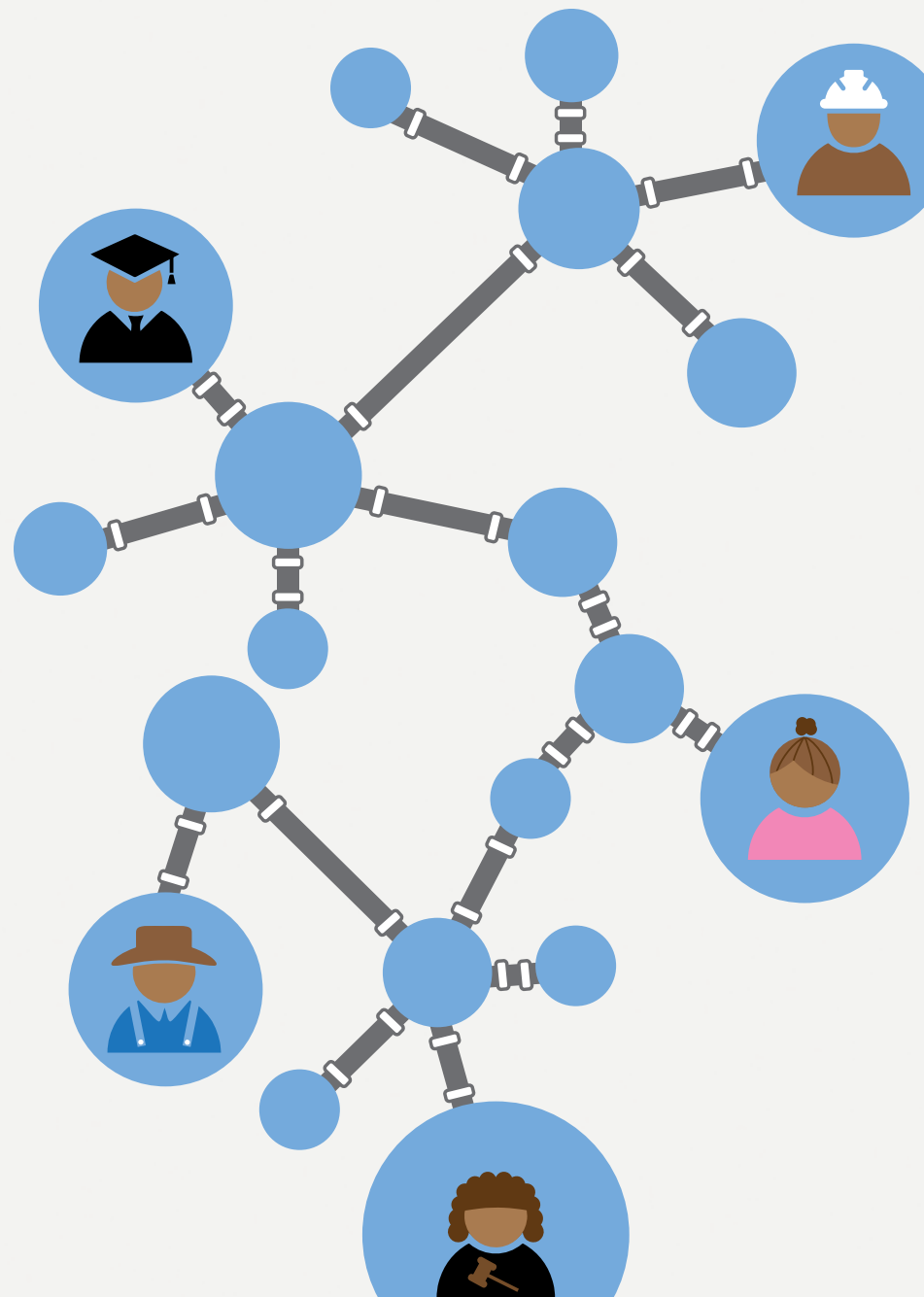
Coordinate specific research and training

The topic of sanitation can be complex, due to the varied aspects of the sector. Botswana is a small country in terms of the size of its population, but it is vast in area, with varied physical conditions. As a result, multiple solutions are needed for proper sanitation.

A research agenda should be developed by research centres together with government, commercial operators and civil society organisations in the sector. The same group could also look at the training requirements for the sector, inviting representatives from the education system to make recommendations.

Botswana's varied environmental conditions make the country attractive as a location for training engineers and sanitation practitioners for the entire African continent.

A recommendation for future development would be to market this research and training agenda to international students on a commercial basis.



*Market this research
and training agenda to
international students on a
commercial basis.*

ANTICIPATED RESULTS OF THE ROADMAP

The anticipated results of the Botswana Sanitation Roadmap address all parts of the Sanitation Service Chain. A summary of these is as follows:

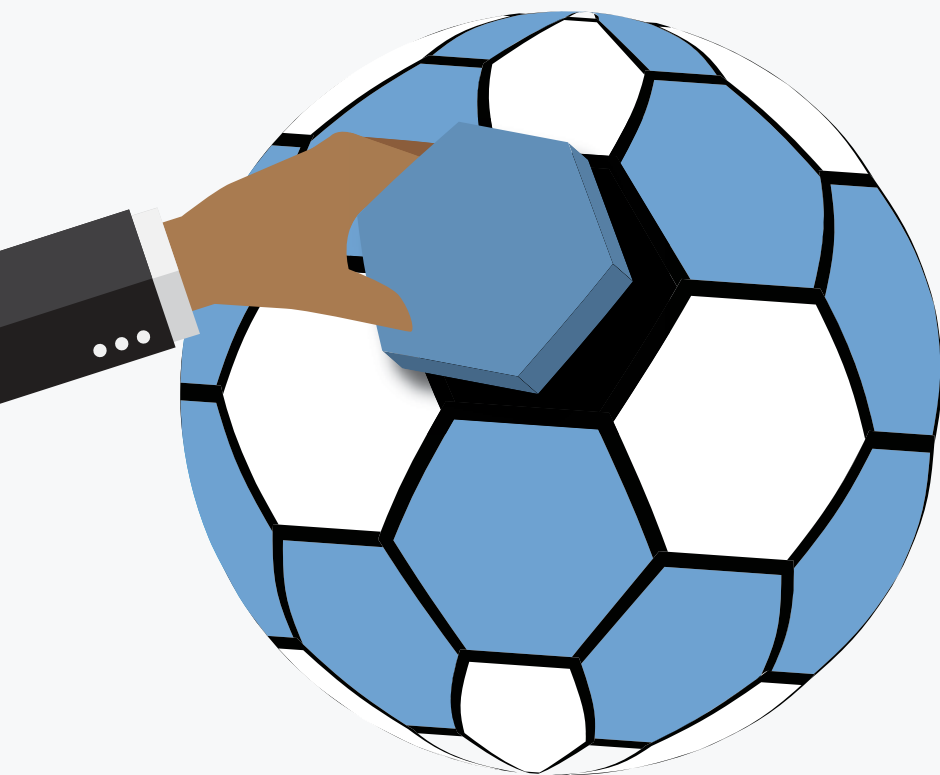
- A management information system for all sanitation types will be operational in the Sanitation Division of the DWS
- WUC will have a functioning management information system, containing data for all the locations where they operate
- A standard for onsite sanitation will be in place
- A standard for operation and oversight of vacuum trucks will be in place
- Plans for extension of relevant networks and treatment facilities will have been made, together with clients and District Councils, as part of the updated Master Plan
- A management information system will be functioning at WUC, with information about infrastructure accessible to both government and relevant users, such as contractors that need to work sub-surface
- Annual reports of WUC will inform the public about performance
- Wastewater treatment plants will comply to standards
- A periodic inspection process for assessing the standard of irrigation water quality will be initiated
- There will be clear, published reporting for effluent water that is used for irrigation
- Adequate technical solutions for FSM plants will have been prepared for tendering
- A budget to provide construction material as part of the CLTS campaign will have been allocated
- School sanitation will have been planned and funded
- Public facilities will be maintained and monitored, and the public will be consulted in the planning process for new facilities
- Reasonably priced desludging services will be available to the public

In addition to these results, the following improvements are expected:

- A functioning Sanitation Division at the DWS, with sufficient staff and budget will be in place



- WUC will have a clear management contract, and a separately organized section for sanitation
- National coordination mechanisms for sanitation will be in place
- Coordination of sanitation will have commenced in all districts
- Regulation will be operational
- The necessary funding will have been secured
- The Master Plan for Wastewater and Sanitation will have been updated
- The Sanitation Division will be collecting and managing relevant data
- A behavioural change campaign for ending open defecation will be underway
- A program for separating industry wastewater from domestic sewage will have been formulated and initiated
- Research and training agendas will have been formulated, funded, and applied, where relevant
- There will be a publicly accessible system of information on sanitation, including legal texts, policies, national reports, and international reports.



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