



A model of community-based repairs and maintenance of informal settlement water and sanitation infrastructure

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A. Introduction

In 2020, International Budget Partnership South Africa (IBP South Africa) and grassroots partner organisations across the country established the Asivikelane campaign, an initiative aimed to improve access to basic services for people living in informal settlements, and to build meaningful relationships between these communities, government and other key stakeholders. As part of this initiative, Asivikelane has created multi-stakeholder platform or “hubs” in seven metropolitan and one local municipality. These hubs focus on finding lasting solutions to specific service delivery problems. Hubs are a space for participants to work together to find sustainable solutions to service delivery issues and related budget issues. (See Appendix A for more about the Asivikelane initiative.)

In the City of Cape Town, the Development Action Group (DAG) and IBP South Africa, working with informal settlement communities and other stakeholders, set up the Repairs and Maintenance Hub to find a sustainable solution to the persistent challenges that informal settlement residents and municipalities experience with broken water and sanitation infrastructure in their settlements. (See Appendix B and Appendix C for more on DAG and IBP South Africa.)

The proposed solution involves a community-based model for repairs and maintenance, making informal settlement residents an essential part of the process. The main idea is to train residents as plumbers so they can fix broken communal taps and toilets within their own communities.

B. Current challenges with informal settlement repairs and maintenance

Taps and toilets in many communities frequently break due to overuse, lack of regular maintenance and the absence of preventative maintenance plans. Although residents report these faults to the municipality, responses are often slow, and in some cases, the services are never repaired. This leaves residents without reliable access to basic water and sanitation.

In May and June 2024, Asivikelane carried out physical inspections of taps and toilets in informal settlements in Cape Town. The findings showed that 84% of taps had a least one fault, but 71% of those were minor issues such as leaking taps or standpipes, missing taps or taps not attached to standpipes. Similarly, 96% of communal flush toilets had faults, and 92% of these were relatively minor, including broken flush handles, leaking cisterns or toilet bowls, and blockages.

Municipalities face their own challenges in maintaining water and sanitation infrastructure. Cape Town Water and Sanitation depot workers reported that photos uploaded to the fault reporting system often do not reach them, leaving them to rely on written descriptions. This leads to maintenance teams arriving without the correct tools or materials. In addition, finding the broken facilities is difficult since services in informal settlements are usually not numbered. Safety is another



major concern, as teams are sometimes exposed to crime and extortion. Ongoing vandalism further complicates repairs.

C. Proposed model of community-based repairs and maintenance of informal settlement water and sanitation infrastructure

The proposed model offers a community-based solution to the ongoing challenges of repairing and maintaining water and sanitation infrastructure in informal settlements. It brings together residents, government officials, training institutions, and other stakeholders to co-develop and implement a system where community members play a central role in the repair and maintenance of basic infrastructure.

The benefits of the model include:

- More reliable access to basic water and sanitation services in informal settlements.
- Faster repairs of broken taps, toilets and pipes.
- Longer lifespan of existing infrastructure through regular maintenance.
- Fault reporting that considers settlement constraints, such as limited access to data and lack of knowledge of reporting systems, enabling quicker repairs.
- Stronger partnerships between communities and municipal officials, helping to tackle issues like vandalism and difficulties locating faulty infrastructure.
- Eliminating the need for officials to be escorted by law enforcement or police officers when entering communities to address service delivery challenges.
- Greater community ownership and responsibility for local infrastructure.

Building blocks of the proposed model

The model is built on several key building blocks or elements, beginning with community mobilisation. Asivikelane has piloted these elements in informal settlements in Khayelitsha in the City of Cape Town, and in informal settlements across the Knysna Local Municipality as part of the Repairs and Maintenance Hubs in these two municipalities.

The sections below describe each building block and how it was implemented in these two municipalities, reflecting on successes and challenges.

The overall coordination, management, resourcing and oversight of the pilots have been led and supported by the Asivikelane Initiative, IBP South Africa and DAG's team of staff, Community Facilitators (CFs) and volunteers living in informal settlements.

1. Community mobilisation

In Cape Town DAG recruited and employed community residents as CFs, with three of the seven full-time CFs also leaders in their respective communities. These CFs currently work across 32 informal settlements in six wards. The CFs have built strong working relationships with their ward councillors, community structures, and residents at large. Asivikelane and the ward councillor rely on CFs for community mobilisation, to lead community education, trainings and to build awareness on relevant information regarding informal settlements.



Since the start of the Asivikelane campaign, CFs have gathered evidence about service delivery challenges from residents and have shared with residents the analysis and findings based on this data. This consistent engagement enabled CFs to lead efforts to address major issues. One example was organizing solid waste clean-up campaigns in partnership with City departments. During these clean-ups, it became clear that uncollected waste often hides the real causes of service delivery problems, like blocked drains or leaking pipes. Once the waste was cleared, it was easier to identify which infrastructure needed repairs. The success of these campaigns motivated residents to take a more active role in solving service delivery issues. Many said that if they had the skills to fix minor problems with taps, toilets, drains, and pipes, they could make repairs themselves right away.

2. Evidence collection

Evidence collection played an important role in identifying the most common types of faults that needed to be repaired, identifying how long the municipality takes to repair these faults, and identifying challenges with the fault reporting process.

In May/June 2024 Asivikelane conducted a physical verification process in informal settlements in Cape Town and Knysna. (See Appendix D for more information about how this data was collected)

CFs assessed each tap and toilet in several settlements using a questionnaire developed by the CF themselves, DAG and IBP South Africa. The questions assessed the structure and functionality of the taps and toilets, for example “is the tap missing” or “is the toilet cistern leaking”. The CFs recorded any faults with the taps or toilets and took photos of these faults. Where possible the number of the tap or toilet was recorded, and if the service was not numbered, the number of the closest dwelling was recorded.

In the Cape Town, the CFs reported a small sample of these faults on the C3 fault reporting system and monitored if the faults were fixed and how long it took.

3. Stakeholder engagement

Ongoing stakeholder engagement is an important building block to ensure that key stakeholders participate in the development of the service delivery solution, the testing of the model and contribute to thinking how the model can be institutionalised.

In Cape Town, CFs have built strong relationships with Depot Managers from Khayelitsha, as well as with repairs and maintenance workers in settlements in this area. They have also established close working relationships with sub-council managers and ward councillors where the model is being tested. CFs hold regular meetings with these managers and councillors to provide updates on their work. This ongoing communication ensures clarity about the role of community plumbers and addresses concerns that residents might attempt repairs on underground infrastructure, which could cause costly damage.

DAG and the CFs have also been engaging with the MMCs responsible for Urban Waste Management and Water and Sanitation respectively. These Councillors have expressed support for the Asivikelane campaign and the objectives of the Repairs and Maintenance Hub.



Training providers are important stakeholders as the community plumbers need training and tools to equip them to repair the damaged taps and toilets. In Cape Town, the Industries Education and Training Institute (IETI) is a key partner in the Hub.

4. Recruitment of community plumbers

In Cape Town, Asivikelane recruited ten potential community plumbers from informal settlements in Khayelitsha. Asivikelane held workshops in these settlements to inform residents about the training opportunity and to identify residents that were interested in being trained to become plumbers to fix minor faults in their settlements on a voluntary basis. Community leaders and ward structures helped to nominate recruits, and the nominations were also confirmed at community meetings.

A key requirement was that the recruits live in these settlements, and they represented a range of ages and genders.

5. Training

The potential community plumbers were enrolled in a 10-day, in-person basic plumbing course at the IETI campus in Goodwood. Each student received a training manual, and much of the course focused on practical work. All IETI facilitators are qualified artisans and deliver the training in English. The program was customized to equip participants with skills to repair minor faults on communal taps and toilets and to connect pipes in informal settlements. Because it was customized, the course is not accredited; however, all learners received an IETI certificate of completion detailing the following skills covered:

1. Basic Plumbing
2. Understand basic infrastructure units used in informal settlements
3. Fault-finding
4. Basic tools and materials required to fix faults
5. Repair leakages
6. Repair / replace cistern (flushing system)
7. Replacing washers and taps
8. Fix / replace toilet lids and seats
9. Repairing of faulty ball valves
10. Rodding and cleaning of drains

The plumbers also received a toolbox with basic tools.

The community plumbers found the training practical and useful. It gave them the skills and confidence to fix issues in their communities. An added benefit is that the training helped them accurately diagnose faults and identify specific damaged parts of taps or toilets. This improved their reporting on the C3 system, allowing the City's maintenance teams to respond quickly with the right tools and materials.

The plumbers highlighted the need for more practical training on tasks such as repairing and installing cisterns, unblocking drains, and installing sewer lines and standpipes. They explained that these skills would help them address some of the most persistent challenges in their settlements. They also requested training on how to read layout plans and sewer flow diagrams. Many felt the



course was too short to cover more complex tasks fully and suggested that practical exercises be done in their own settlements to better reflect real conditions.

Although the trainees valued the toolbox provided, they noted that some essential tools were missing, including a threading machine, plunger, and drain rod.

They further recommended that access to the training be broadened to include participants of all ages and the introduction of follow-up support in the form of refresher courses and mentorship from experienced technicians. They also suggested adding training on how to track C3 reference numbers and municipal feedback after faults have been reported.

6. Community plumbers: way of working

Formation of task teams

In Khayelitsha, community plumber task teams were formed to repair minor faults, to improve fault reporting and responses to the reports, and to improve communication with the municipality. Their specific role is to diagnose problems, fix minor faults or do temporary repairs and log faults on the C3 system with photos. They also liaise with councillors and depot staff to access materials and to report larger faults.

The task teams were formed after the plumber training and community engagement and public workshops. Some members of the task teams have been selected because of their active involvement in Asivikelane activities, including having been trained to report faults on the City's fault reporting system. Other task team members are existing community leaders or are active in ward and street committees and in other community structures. These community involvements help with coordination between the communities and the task teams.

Fault reporting and repairs

Community plumbers and task teams receive reports of faulty taps and toilets through various channels. They monitor community WhatsApp groups where residents post issues and photos. Teams also conduct regular walkabouts in their settlements, sometimes fixing minor problems on the spot. Residents sometimes report faults directly to plumbers, and issues are also raised during community meetings or through the ward councillor's office, where the councillor then contacts the plumber.

After they have received a report of a fault, the team will document the problem with photos, and assess the materials needed. They immediately log the fault onto the C3 system. If the fault is urgent, such as a water leak, they temporarily stop it using any materials, sometime improvising by using an item like a broomstick. They wait for the municipality's team to respond and if a team does not arrive within 24 hours, the community plumbers will do the repairs themselves if they are able to.

All work is documented with photos or videos taken before and after the repair. When materials are not available, community facilitators contribute funds to purchase what is needed so the repair can go ahead. This process ensures that faults are both tracked and resolved, even when municipal response is delayed.



Relationships with communities

Plumbers have a good relationship with the community and the community facilitators, as residents regularly share information about faults and often offer to assist with repairs. Communication is maintained through community WhatsApp groups, which makes it easier to receive reports quickly. In some cases, residents contribute their own money to help buy materials for repairs. Plumbers also hold community workshops to raise awareness about maintenance and water safety. In addition, they work closely with community structures, building strong local networks that support their work.

Relationships with the municipality

Strong relationships have been established with ward councillors, depot superintendents, and municipal workers serving informal settlements, including those dealing with stormwater issues. CFs and residents now act as the “eyes and ears” of the municipality, reporting service delivery challenges. They also help improve safety and security by escorting officials during visits to settlements to assess and address service delivery issues.

Successes

What is working well is the ease and speed of reporting faults, as well as the quick turnaround in fixing them.

The teams and community plumbers have built strong relationships with the residents in the community they work in. As a result, there are fewer incidents of taps breaking, and communities can rely on having at least one functioning tap and toilet. As a result, taps break less often, and communities can usually rely on having at least one working tap and toilet. High levels of trust between plumbers, residents, and community leaders continue to support cooperation and problem-solving.

Regular engagement between Asivikelane and City of Cape Town officials has fostered a collaborative approach to solving challenges and has begun to bridge the historic trust gap between communities and local government. This partnership has brought significant benefits: communities feel heard and respected, while officials feel safer and more appreciated for their efforts to improve service delivery.

Challenges

Lack of access to materials and certain essential tools is one of the main challenges faced by the community plumbers and this complicates or delays repairs. The high demand from the community to repair faults generally exceeds the capacity of the task teams. Plumbers also report that it is sometime difficult to get the municipality to attend to faults.

The community plumbers feel that their contributions are not formally recognized by the City. They work as volunteers and while Asivikelane support them with resources, these are limited. They need data or airtime to assist with reporting faults to the city. They are asking depots to support them with capacity building around where to source materials.



More community engagements are needed to facilitate access to locked toilets for repairs and maintenance.

D. Key considerations for the integration and institutionalisation of the community plumber model in the City of Cape Town

The above outlines the key building blocks of the community-based repairs and maintenance model for informal settlement water and sanitation infrastructure. However, it is important to recognize that there are still many outstanding issues and challenges. These will need to be discussed and resolved collaboratively by the City of Cape Town and Asivikelane, working together in partnership to find effective solutions.

Below we list a few of these issues:

Clear definition of roles and responsibilities of community plumbers vs municipal teams

It is essential to clearly define and distinguish between minor and major faults. Minor faults—such as leaking taps, blocked drains, or faulty toilet mechanisms—should be within the scope of community plumbers, while major faults involving underground infrastructure or complex repairs should remain the responsibility of qualified municipal teams.

Effective Communication and Fault Reporting Systems

A reliable and user-friendly system for reporting faults and communicating between the City and community plumbers is essential.

Alignment with Municipal Laws and Policies

An understanding of the City's existing laws, by-laws, and policies and how these are implemented are needed to determine what is possible regarding community-based service delivery.

Exploration of the different options for integration and institutionalization

Options to be considered might include the integration of community plumbers into the City's supply chain management system through community-based service delivery contracts and using public employment programmes such as the Expanded Public Works Programme.

Risk management and quality assurance

The City of Cape Town and Asivikelane will have to develop measures that will protect both the City and community plumbers against potential risk and will also ensure that service delivery standards are maintained.

Sustainable Funding and Resource Allocation

To support sustainability of the model dedicated funding is needed for several components such as the training programmes for community plumbers, the provision of tools, consumables and PPE, data/airtime, transport, etc.



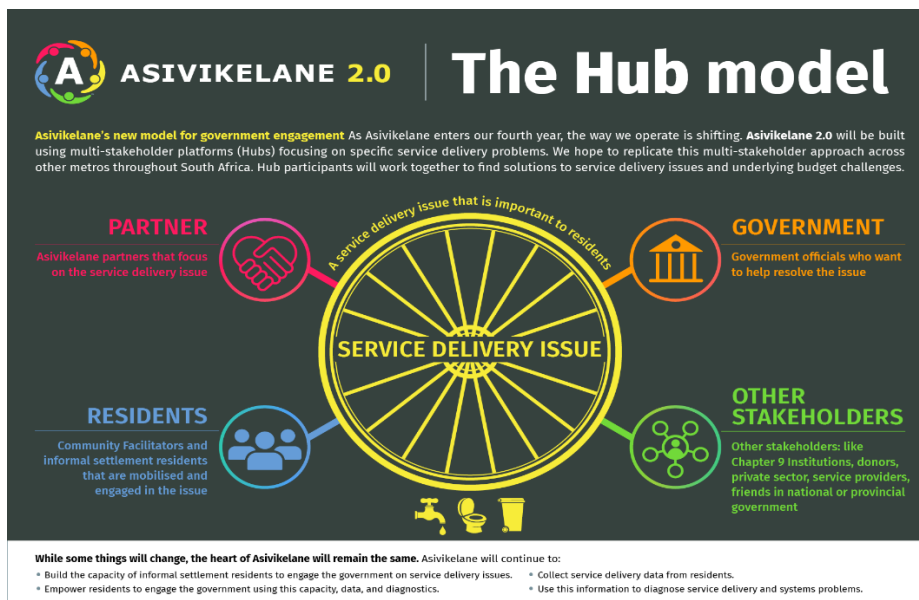
Appendix A: Overview of the Asivikelane Campaign

Asivikelane¹ is a coalition of 8 grassroots organisations working together to amplify the voices of informal settlement residents about basic services.

- Asivikelane means ‘Let’s protect one another’ in isiZulu.
- Of South Africa’s 60 million people, 14 million live in informal settlements, most of whom face daily challenges in accessing water, sanitation and refuse removal services.
- Asivikelane has created a network of informal settlements that provides a platform for urban informal settlement residents to engage with government about basic service delivery reforms.
- Since its creation in 2020, Asivikelane has helped improve services to over 8 million people.

Asivikelane’s hub model for solving service delivery problems:

- Asivikelane convenes multi-stakeholder hubs of informal settlement residents, government officials, community organisations – like DAG and Planact – and other stakeholders like the Auditor General of South Africa, C40, Nicro, and training colleges.
- Hub participants co-design and implement lasting solutions to service delivery problems and their underlying budget challenges.
- IBP South Africa currently convenes 8 hubs that each focus on issues of water, sanitation, refuse removal, repairs & maintenance of infrastructure, and disaster management.
- We currently work in Cape Town, Tshwane, eThekweni, Knysna, Mangaung, Johannesburg and Nelson Mandela Bay and Buffalo City.



What Asivikelane does:

- IBP South Africa and other Asivikelane partners train residents on budget and service delivery systems, data collection and navigating government organograms.

¹ <https://asivikelane.org/>



- Residents then collect regular data about their access to water, clean toilets, and waste removal.
- IBP South Africa researches who in government is responsible, what level of service they should be providing, and the reasons they don't provide this level of service.
- We believe that by training residents, enabling the collection of service delivery data, and providing them with diagnostics of budget and service delivery system problems enables them to engage government as equals.

Who are Asivikelane Community Facilitators (CFs)?

CFs live in the communities where they operate and are directly impacted by the service issues addressed in the campaign. We currently work with 65 CFs, across 8 municipalities. CFs are an essential bridge between Asivikelane and informal settlement residents. This network of CFs is central to the training of and engagement with residents, serving as an extension of the work done by partners. CFs allow us to increase our reach and allow economies of scale so that we can continue to grow Asivikelane into the future. They are also instrumental in building relationships with local metro officials / implementers and ensure continuous on-the-ground monitoring.

Appendix B: Who is Development Action Group

Established in 1986, the Development Action Group (DAG) is a leading non-profit, nongovernmental organisation working throughout South Africa to fight poverty and inequality and promote integrated urban environments.²

DAG supports communities in need of adequate housing by enhancing their capacity to engage with and lead their own development. DAG's strategies support pro-poor urban development practices using community-based development to foster social cohesion and strengthen citizenship and democracy.

DAG influences state policy and practice through four functional areas: research, advocacy and lobbying, partnerships, and demonstration (projects). Critical partnerships with the government are central to DAG's strategies and take place through a combination of policy advocacy and demonstration projects.

Appendix C: Who is International Budget Partnership South Africa

The International Budget Partnership South Africa (IBP South Africa) is a registered Non-profit Organisation that facilitates the empowered engagement of informal settlement residents in government budget processes so that government improves basic services in their areas. We bring skills and knowledge of how government budgets and service delivery work, and we partner with community organizations with deep roots in informal settlements.³

IBP South Africa's work pursues the following objectives: train informal settlement residents to understand and engage in government budget and service delivery systems; monitor the delivery of basic services in informal settlements; analyse and identify the budgetary reasons for poor service delivery; convene informal settlement residents, reformist government officials and other

² <https://www.dag.org.za/>

³ <https://asivikelane.org/about/>



stakeholders to design and implement lasting solutions to chronic basic service delivery problems; advocate for improved budget transparency and participation.

Appendix D: Evidence Collection

The evidence collection process followed four main stages:

1. Development of the questionnaire – this stage involved formulating questions that assess the structure and usability of the tap or toilet such as “is the tap missing” and “is the toilet cistern leaking.” Questions are uploaded on KoboCollect, a humanitarian platform for data collection. The questions are developed in consultation with residents.
2. Training of Community Facilitators (CFs) – this stage involved training CFs on the data collection process, understanding of the different components in taps and toilets, what to look for when assessing the taps and toilet.
3. Fieldwork assessment of taps and toilets – CFs on the ground assessed each tap and toilet in the settlements, this involved walking around the settlement and identifying the tap and toilet. The CFs captured the data on KoboCollect and where there were faults with the tap or toilet, these were logged on the C3 fault reporting system and the reports were monitored to assess turnaround time.
4. Analysis of data: this involves cleaning and verification of the data by IBP South Africa as well as analysis and reporting of the data.