



## Learning from VIP-MOZ project – Innovative, clean, resilient and participatory cities in Mozambique

Country  
**Mozambique**



Implemented by



Budget  
**350.000 €**

Duration  
**05/2021 - 01/2023**

### Contributions to SDGs



Implemented by



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*Can digital social innovation strengthen the resilience of cities for sustainable and inclusive urban development, how and in which context?*

## PROJECT OVERVIEW

### Reason

**Urban solid waste management (USWM)** is an important challenge for Mozambican municipalities against a general background of **population growth** and **urban expansion**.

In most cities, urban solid waste (USW) collection services are **not evenly distributed** across all neighbourhoods, leading to **increased inequalities**. For example, urban centres are advantaged over poorer outlying areas. The officials in charge of urban solid waste management do not have the **resources** and **tools** to **analyse the real situation** in each area and thus improve service planning.

Furthermore, this poor management of USW in large cities has **negative environmental** and **health consequences\***, further increasing the vulnerability of already disadvantaged populations.

Urban solid waste management in Mozambique therefore faces important challenges in terms of **functional improvement** (coverage rate, worker productivity, ecological efficiency), **financing** (types of resources, collection methods, budget balance of the sector) and, more broadly, **organisation** (scale and nature of actors, respective shares of market and public service principles).


### Digital Social Innovation

In 2012, a **national strategy** on urban solid waste management was adopted with a vision for 2024. It identified the ambitions to be achieved and the approach to be followed and implemented by municipalities. This is the setting of the VIP-MOZ project.


\*What a Waste : A Global Review of Solid Waste Management, WB, 2012

The objective of the VIP-MOZ project was to increase the collection of solid waste in the cities of Nampula and Beira by 20%, especially in disadvantaged and hard-to-reach areas, through the use of digital tools. To achieve this, the project introduced the digital platform MOPA (**MONitoria PARTICipativa or participatory monitoring**), which allows the reporting of waste management problems directly by citizens.

Reporting is done anonymously, either by texting or via the website.

- By sending a free USSD\* code to the number \*311#, the citizen accesses a drop-down menu with instructions to choose the type of **problem** and its **location**, possibly completing the details in free fields. Each report is sent to the **municipality** and classified by a code, which the citizen receives directly by return SMS.
- Within the municipality, notifications received in real time are analysed by the managers of the technical service in charge of the urban solid waste (USW) management, who assign the task to the **logistics** cell. Once the problem has been solved, the citizen is notified by SMS as well.
- Reporting can also be done via the **website** . An internet connection is required, but this notification can include geolocation data and photos of the reported problem.

In both cases, citizens can **follow the progress** of their **report** and operations using the code they receive.

 \* USSD (Unstructured Supplementary Service Data) is a feature of the GSM, 3G and 4G mobile telephone networks, generally associated with real-time or instant messaging type telephony services. It does not include any of the save and forward capabilities that are a feature of "normal" SMS short messages. Response times for interactive USSD-based services are generally faster. than those for SMS.

All activities – reports, communications, monitoring and problem solving – are stored and published on an **online dashboard accessible** to different **officials, operators and technicians**, depending on authorisations given. Follow-up reports are also sent by e-mail to the project coordinators and managers within the municipality.

In addition, the MOPA platform allows for periodic reporting on the basis of aggregated data. With this feature the situations in different districts or cities using MOPA can be **compared**.

The MOPA platform is already being used by other USW management actors in Maputo, the capital of Mozambique. It uses **open source technology** (i.e. the source code provided free of charge allows the approved user to own the data system and ensure its security) and is based on a cloud server system compatible with a low speed internet connection.



## From the perspective of the human rights-based approach (HRBA)

MOPA empowers the **rights holders** – the **citizens** of the **cities** of **Beira** and **Nampula** – to report an urban solid waste problem and thus participate in improving the services and resilience of their city. On the other hand, it gives the **municipality** – the duty bearers – a tool to analyse existing problems and implement more effective and inclusive services.

The VIP-MOZ project has worked extensively on raising citizens' awareness of their rights (especially in the area of health) through **mobilisation** and **communication campaigns**, and on **sharing** their **capacity** to participate.



**120** neighbourhood representatives have been trained in the use and dissemination of the MOPA system

**50** technicians from the municipalities of Beira, Nampula and Maputo were trained in the system and the MOPA platform  
**50%** were women

## KEY MESSAGES

As a means of digital social innovation MOPA represents a **direct** and **real-time communication channel** between users (citizens) and managers (municipal officials). MOPA facilitates the follow-up of identified problems on both sides.

MOPA **reduces** the **time** and **costs** of **monitoring** (human resources and transport), while allowing the direct localisation of urban solid waste-related problems.

The periodic reports created in MOPA are an **important source** of **information** for municipalities. On the one hand, they allow for a better vision and analysis of the weaknesses of the existing system and thus for better planning and resource allocation. On the other hand, they gather **systematic, objective** and **verifiable data** that feed into policy advocacy for more funds for the solid waste management sector.

MOPA provides an opportunity for all citizens to play an active role in **improving the urban solid waste management services** by reporting concrete and localised problems. The follow-up by SMS and the direct observation of the results have strengthened the ownership and the feeling of **citizen responsibility**.



▶ The MOPA system, through awareness raising and direct and localised reporting of urban solid waste-related problems, has reinforced a **sense of involvement** with the wider environment and has sometimes acted as a deterrent through **'social control'**. For example, there is less illegal dumping of household waste in areas where the tool has been used.

In summary, the digital tools have helped to improve solid waste management mainly by:

1. **increasing** the direct involvement of citizens
2. **reducing** monitoring costs
3. **enabling** the municipality to improve service planning service on the basis of problems reported by citizens



The direct participation and the possibility to do my part in the care of the common House is the greatest opportunity that we have. Not only for us, but also for our children and all the people that will choose Nampula as their city

“ **Agostinho, 43 years old father, living in a bairro (neighborhood) of Nampula** ”



**lixo**

REPORTA PROBLEMAS NAS SEGUINTE CATEGORIAS:

- Contentor está cheio
- Entulho na rua
- Ramos no chão
- Contentor a arder
- Lixo fora do contentor
- Tchova não passou
- Amontoado de lixo
- Lixo na vala de drenagem

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## LESSONS LEARNED

Using free USSD technology that requires only a mobile phone, MOPA promotes the **active participation of all citizens**, regardless of gender, age or social and economic status. However, due to the anonymity of the platform users, it is impossible to determine the real profile of these users.

MOPA facilitates communication between users and managers and enables better planning, but the digital tool **cannot replace a management system**. The MOPA innovation can only work if the municipality already has the **capacity to manage** and **plan the services** in place, i.e. material and human resources and the capacity to manage these resources.

The MOPA system only works if citizens use it to report problems identified in their neighbourhood(s). Ownership is therefore crucial and awareness campaigns have a big role to play. To reach as many people as possible in the target cities **periodic** and **diversified campaigns** should be planned via **schools, markets, door-to-door, radio, television**.

Awareness raising should include both the use of the digital tool and the sharing of **good practices for a clean and resilient environment**. Awareness campaigns enable citizens to better understand the link between solid waste management and health/environment, and thus motivate them to use the tool on the one hand and to participate in the well-being of their community and family on the other.

It was observed that participation is often high after an awareness campaign but that it decreases rapidly if **communication** between citizens and the municipality is not **reactive** and reported problems are not quickly **resolved**. Therefore, the project has focused on awareness campaigns in limited areas so that urban solid waste management services can respond to the high demand after the campaign and thus ensure that the tool is used over time by citizens. It is also important to start awareness raising only after the municipality's technicians have been trained.

The project organised an **open house** at the municipality's MOPA management room so that citizens could see for themselves that the tool was real and functional. In Beira, 68 people came to the open house, 50% of whom were women (mainly students, representatives of civil society associations, awareness campaigners).

The VIP-MOZ project was short-track and faced several challenges related to the specific context of Beira and Nampula, despite a long-term collaboration with the municipalities of these two cities. However, the project ensured sustainability through (1) the **integration** of the **system** and **procedures** within the municipalities' services, (2) the training of **technicians** in the use and maintenance of the tool and (3) the **networking among partners**.



## PERSPECTIVES

The VIP-MOZ project organised a number of meetings between **municipalities** and **stakeholders** in order to generate a common reflection on the prospects for the development of digital tools in Mozambique. Representatives from public services, the private sector, Mozambican universities related to the urban solid waste sector and representatives of municipalities (including representatives of the political parties in power) participated based on their role in the project and/or their experience in the sector. The meetings established a shared interest in the continued use of the MOPA innovation.

Also a number of **recommendations** and **ambitions** for the future were formulated:

### ***Adopt an cross-sectoral approach***

On the one hand, solid waste management requires a cross-sectoral and dynamic approach. The MOPA system could be extended to several sectors and made accessible to various departments within the municipalities to foster sustainable urban management (water, land management, road restoration...). In this perspective, the platform should address the problem reported by the citizens to the **most relevant department for its resolution**. Thanks to the shared platform, the departments would collaborate and exchange more information.

On the other hand, the MOPA platform would address the need for **reliable data, collected in a systematic way** and **accessible in real time** to the different users : the departments of the municipalities involved in sustainable urban management. As in the case of the project supported by Wehubit in Beira and Nampula, access to data would allow for better analysis of the situation and better management.

As part of a cross-sectoral approach, it will be necessary to plan for the evolution of the system of data collection, use and sharing in order to integrate the planning and activities of the various sectors to ensure **transparent management** of **services** and **greater efficiency**.

***Promote the creation of a strong network*** between the actors involved in the solid waste management sector (municipalities, service providers, microenterprises, universities, etc.). Digital tools can support this ambition.

### ***Link the monitoring system to geolocation***

Under VIP-MOZ, citizens, when reporting a problem, had to provide information so that the municipality can locate the problem. This choice for USSD technology was made to promote inclusion and accessibility of the digital tool to most citizens in urban areas. However, a **geolocation system** would allow for more **accuracy** and therefore **less travel time**.

In addition, although municipalities already have their own system for monitoring and checking their services, the use of connected smart mobility applications with geo-referencing of the equipment used would allow a **better visualisation** and **control** of the **territory** and of the whole circuit of urban solid waste management: drop-off and collection points, necessary transport, dumping, collection routes... Open source platforms such as the Arduino system (automatic control of container filling, QR code for access and discharge of waste linked to means of transport, etc.) have been proposed to enhance the efficiency of the urban solid waste service monitoring system.

### **Informing decisions**

The data collected and stored via digital tools can, if shared on a usable platform and given meaning, be used by decision-makers to justify **new policies** and/or **financial allocations**.

### **Improve financial management**

The municipalities of Beira and Nampula, and Mozambican cities in general, struggle to identify **revenues versus expenditures**, which prevents them from developing **financial** and **investment forecasts**. Access to data that allows them to better analyse the context and demand is already a step forward. However, it will also be necessary to couple this with **demographic** and **commercial analysis** and better management and verification of various fees and taxes.

Before considering replication in other cities in the country or elsewhere, partners should allow **sufficient time to understand the context of intervention** and **existing processes** and adapt the digital tool(s) to the context in order to allow ownership by the actors and integration of the tool into the existing system. It is not enough to share the capacity of municipalities and their technicians to use digital tools; it is necessary to promote the acceptance of the tool in a context where digital principles are not yet well established.

**Strengthen the skills of actors** interacting with the MOPA tool or any other digital tool used in the future, according to their responsibility and function, so that they have both a **technical** (the tool as such) and a **sectoral** (urban solid waste management) perspective.

### **Develop a business case**

The financial resources recovered through the use of data for better planning are significant, but this benefit takes time to become really visible. ACRA and its partners in the coming years could gather the hard evidence and develop a strong business case based on **objective data** and to thus **convince implementation in cities** and **beyond**.

In summary, the VIP-MOZ team concludes, after various multi-partner workshops: After a study of the sector of intervention, the actors and the available resources, it is necessary to identify a tool with a **geo-referenced system** of the urban solid waste management sector and a mechanism interconnecting actors and build to respond to the specific characteristics – **integrated, dynamic** and **participatory** – of urban solid waste management.