

Enhancing waste collection in municipalities through digitalisation: Implementation of the digital solution “Clean 8” in Djerba Midoun, Gabès and Kairouan

Circular economy and waste management

Integrated waste management is a major challenge for local authorities in the context of rapid population growth. International initiatives focus on sustainable practices that encourage waste reduction and sorting at source, recycling and responsible waste disposal. In Tunisia, waste management has become a strategic priority for the government. The country is committed to adopting an approach based on sustainability and the promotion of circular economy, including innovative awareness-raising strategies and incentive policies.

The regional project City-to-City Cooperation Maghreb-Germany (KWT II), commissioned by the Federal Ministry for Economic Cooperation and Development (BMZ), was implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in cooperation with the Service Agency Communities in One World (SKEW) of Engagement Global gGmbH, from March 2020 to February 2024. Among other activities, the regional project supported project partnerships between German and Maghreb cities. The good practices highlighted in this factsheet have been developed by the partner cities of Midoun and Fürth, Kairouan and Darmstadt, as well as Gabès in partnership with the Region of Hanover. These practices will be scaled up as part of the follow-up regional project “Urban Adaptation to Climate Change in the Maghreb”, running from March 2024 to February 2027.



Implementation of Clean 8 activities in Midoun, Gabès and Kairouan

In Tunisia, the regional project KWT II was implemented in collaboration with the Directorate-General of External Relations and Decentralised International Cooperation of the Ministry of the Interior.

The Clean 8 actions were implemented as part of the project partnerships established by the regional project KWT in 2016 between the Tunisian municipalities of Midoun, Gabès, Kairouan and their respective German partners, Fürth, the Region of Hanover and Darmstadt. The objective was to enhance the operations of the hygiene and environment departments in these municipalities by adopting a digital approach to the waste collection process.

Developed by the regional project KWT II, Clean 8 is an interactive application designed to serve various stakeholders, including citizens, waste collection truck drivers, as well as the municipal staff and supervisors. This application allows citizens to access information on municipal waste collection and submit complaints. For garbage truck drivers, it optimizes their workflow by providing real-time visibility of issues reported during waste

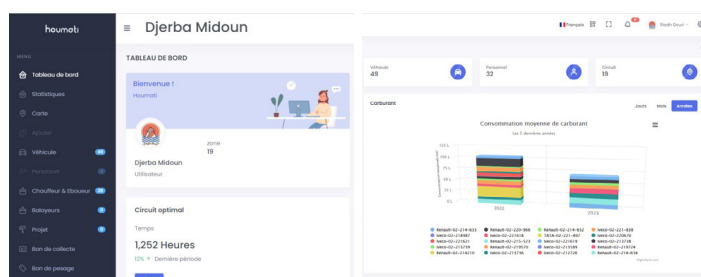
collection rounds. Clean 8 also facilitates the organisation and supervision of waste collection operations for the local authority's staff. Additionally, it makes it possible to manage the monitoring of human and material resources and to dispatch targeted notifications by address, effectively dealing with citizens' complaints.



Approaches and actions

During the technical exchanges on waste management, the partner municipalities identified significant malfunctions and deficiencies in waste collection and transport activities. These included inefficient deployment of teams and equipment, limited availability of information on the various inputs used in these processes and a lack of accurate data on the quantities of waste generated, collected and informally disposed of, as well as their locations. The municipalities of Kairouan, Gabès and Midoun expressed the need to remedy these shortcomings by adopting a digital solution to optimise these processes.

As a first step prior to the development of Clean 8, an on-site assessment was carried out in the municipalities by an IT engineering company in collaboration with the relevant municipal teams.



Both photos: Overview of the management dashboard of the municipality of Midoun, showing the time saved according to the optimal waste collection route and average fuel consumption.

This assessment included an inventory of the components of the waste collection and transport service, its organisation and the allocation of resources. The main findings from this assessment served as the basis for developing the digital solution (diagram 01).

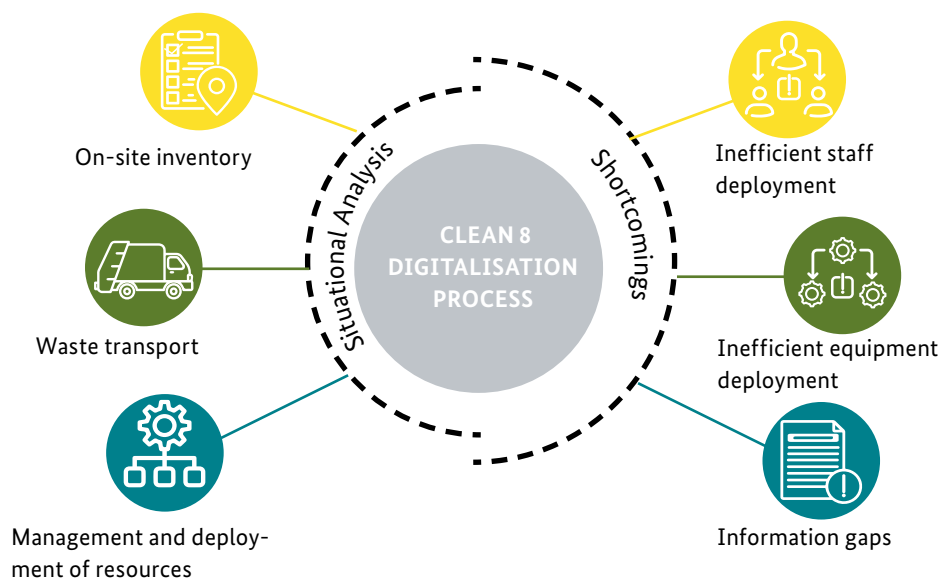


Diagram 01: Methodological approach. © GIZ



Achievements

The Clean 8 measures in Midoun, Gabès and Kairouan have achieved the following results (diagram 02):

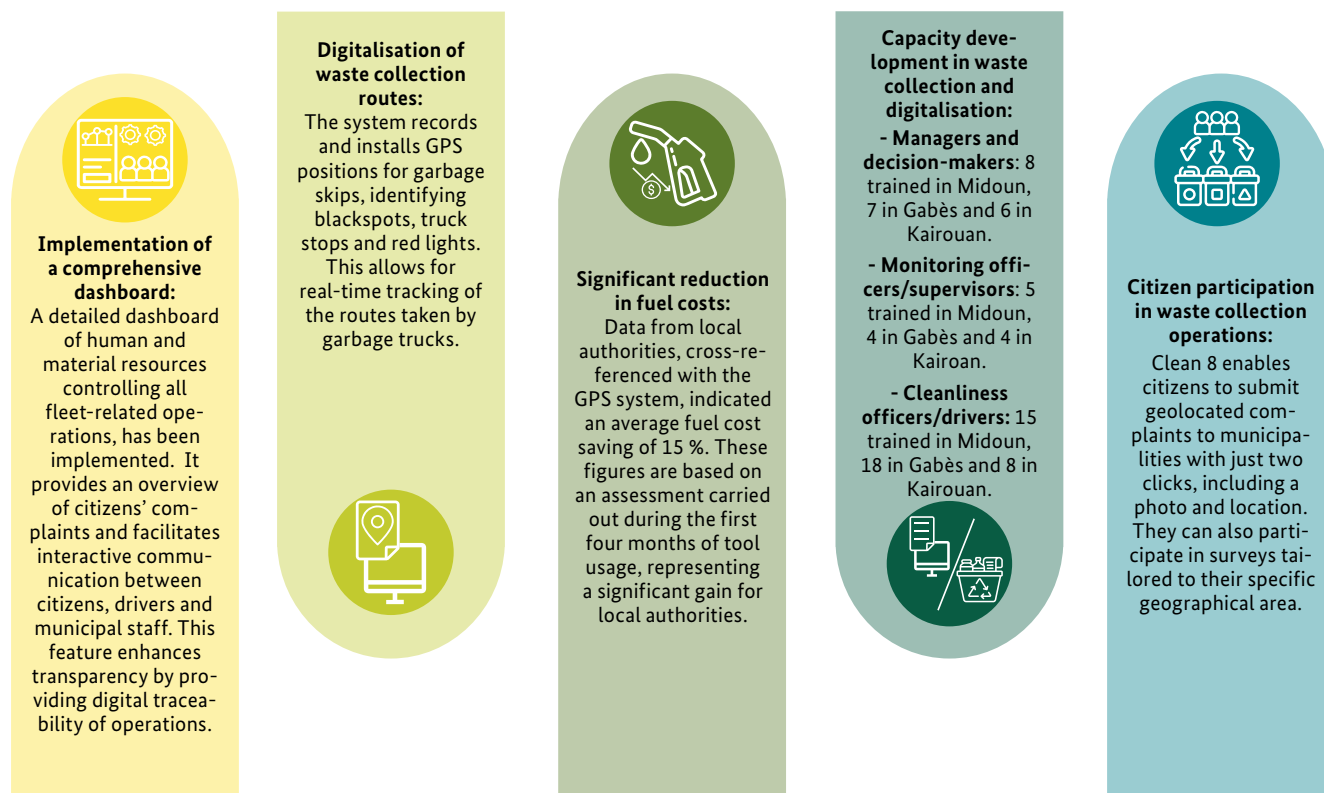


Diagram 02: Achievements. © GIZ



Challenges

A host of challenges were encountered, necessitating tailored solutions. These challenges are detailed in diagram 03:

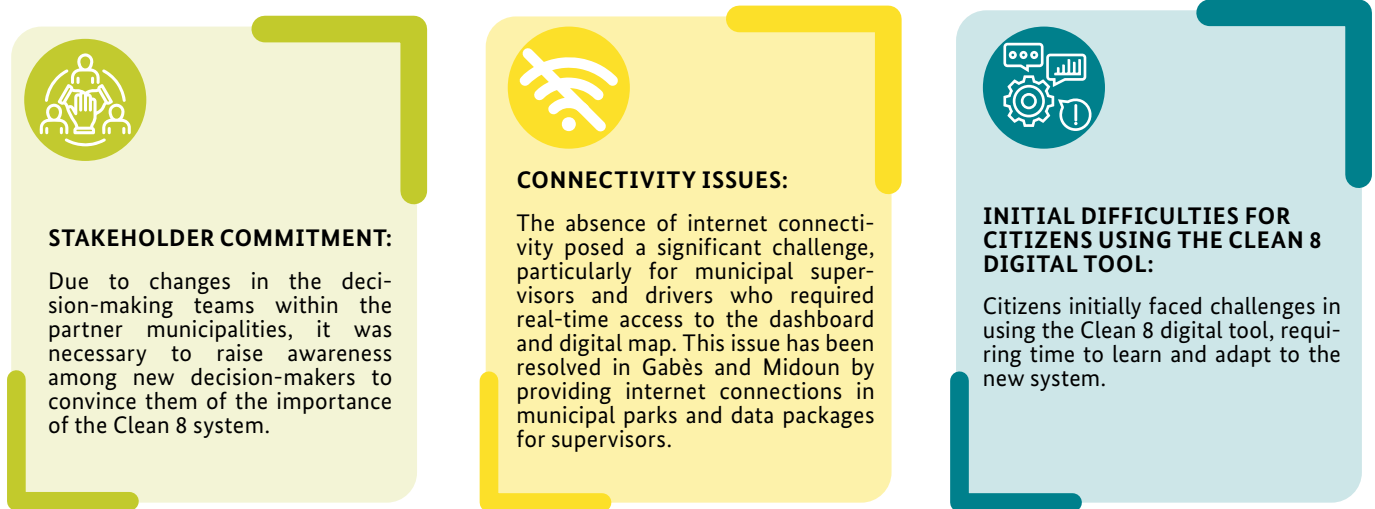


Diagram 03: Challenges encountered during the implementation. © GIZ



Innovative aspects and strengths

The Clean 8 measures stood out for their strengths, reflecting a commitment to sustainable waste management and circular economy (diagram 04):

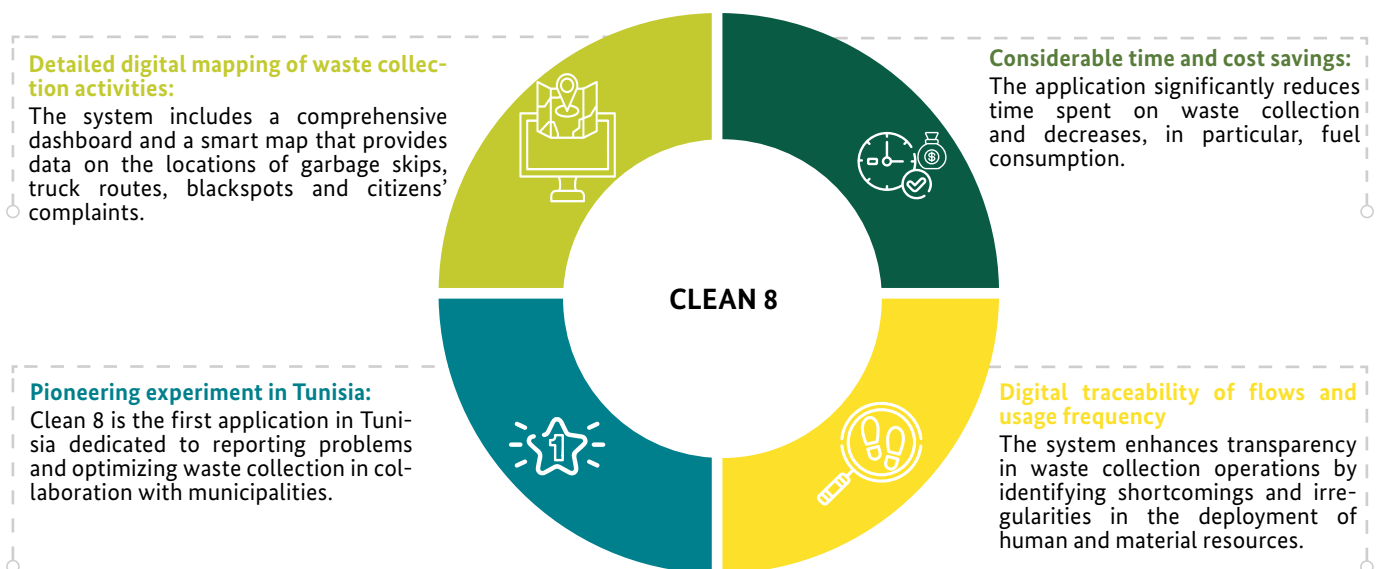
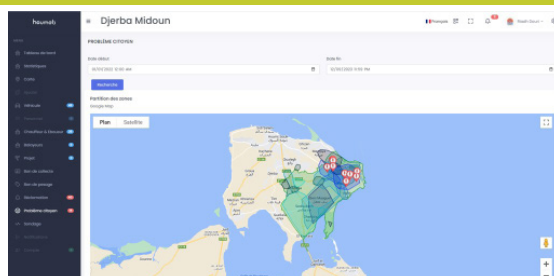
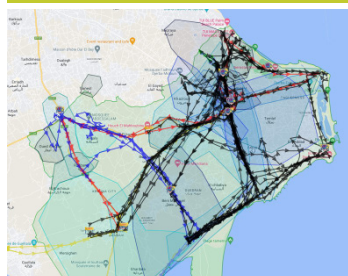


Diagram 04: Innovative aspects and strengths. © GIZ



Left: Overview of the real-time tracking of waste collection routes, categorized by zone and route.

Right: Overview of the precise geolocation of all requests.

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Best practices, lessons learnt and advice

Several important lessons have been learnt and best practices identified from the experiences in Midoun, Gabès and Kairouan, which should be considered when implementing similar projects (diagram 05):

01

ACTIVE, ONGOING COMMUNICATION AND PUBLIC AWARENESS-RAISING:

Exchanges on the use of the Clean 8 tool have been pivotal in engaging citizens. This has encouraged them to submit geolocated complaints with just two clicks and participate in targeted surveys based on their geographical location.



INTEGRATING DIGITALISATION INTO MUNICIPAL WASTE MANAGEMENT:

Implementing a digital solution like Clean 8 can optimise the work schedules of waste service managers, supervisors and fleet managers. This approach enhances efficiency by reducing the time spent writing reports, which are automatically generated in PDF format. It also reduces the time required for activity coordination, which is traditionally managed by telephone between managers and municipal staff.



02

Diagram 05: Best practices, lessons learnt and advice. © GIZ

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