german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

in cooperation with

ENGAGEMENT GLOBAL Service für Entwicklungsinitiativen

With its

SERVICE AGENCY COMMUNITIES IN ONE WORLD

Towards an efficient urban management: Implementation of Geographic Information Systems (GIS) in Ben Mostefa Benaouda and Constantine

Digitalisation at the service of urban management

Promoting sustainable urban management through digitalisation remains a major concern for local authorities. It significantly influences various domains, from the social, environmental and economic to the urban and political sectors. In Algeria, the context of the digitalisation of urban services is experiencing a gradual transformation. However, other challenges persist due to the rapid urban growth, such as the increased demand for infrastructure and the necessity to ensure efficient urban services.

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 fact sheet have been developed by the partner cities of Ben Mostefa Benaouda and Sindelfingen on the one hand and by the cities of Constantine and Aschaffenburg on the other. 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 a Geoportal for the new city of Ben Mostefa Benaouda

In Algeria, the regional project KWT II was implemented in collaboration with the National Urban Planning Agency (ANURB), of the Ministry of Housing, Urban Planning and the City.
The Geoportal project in Ben Mostefa Benaouda (Annaba) is the result of the partnership with the German city of Sindelfingen since 2016. This geoportal serves as a functional tool designed to facilitate the processing of geospatial data, thereby enhancing urban management and planning.

Implementation of a GIS project in Constantine

The project, initiated in 2020 as part of a partnership with the German city of Aschaffenburg, aimed to develop a Geographic Information System (GIS) to enhance urban management through the efficient processing of geospatial data. The project incorporated advanced urban management functionalities to ensure optimal monitoring and management of urban services.

Approaches and actions

The GIS tools in Constantine and Ben Mostefa Benaouda were developed through a well-defined approach (diagram 01):

a) Technical exchanges and workshops: Knowledge transfer on various digital tools (e.g. QGIS, FME) and feedback from the German partner cities on how to approach a municipal GIS enabled the two Algerian cities to quickly develop a vision and an effective action plan to begin the GIS projects.
b) Needs assessment: This step, undertaken with technical managers and decision-makers, identified the challenges related to the lack of geolocated digital data. It underlined the necessity of integrating a GIZ tool to enhance the sustainable management of urban services in Constantine and Ben Mostefa Benaouda.
c) Action plan and GIS implementation: The assessment resulted in an action plan focusing on three dimensions:

- ***Mobilisation of human and material resources:*** In both cities, a team has been set up, to manage and monitor the GIS project. In addition, IT-equipment was procured to ensure the smooth execution of the projects.

Left: GIS work session between the two partner cities Ben Mostefa Benaouda and Sindelfingen, on November 27, 2019 in Sindelfingen (Germany).

Right: Ben Mostefa Benaouda's study mission to Sindelfingen, on November 8, 2022. Practical exercise.

Photos: Left: © City of Sindelfingen / Thomas Bellon;
Right: © GIZ / Doria Adman

➤ ***Capacity building plan:*** A series of workshops and training sessions were conducted to support the GIS project teams in the two cities. This covered the basics of GIS, the use of GIS software and the principles of developing a geoportal.

➤ ***Data management :*** The project teams progressively fed the GIS in Constantine and the geoportal in Ben Mostefa Benaouda by collecting and georeferencing essential data.

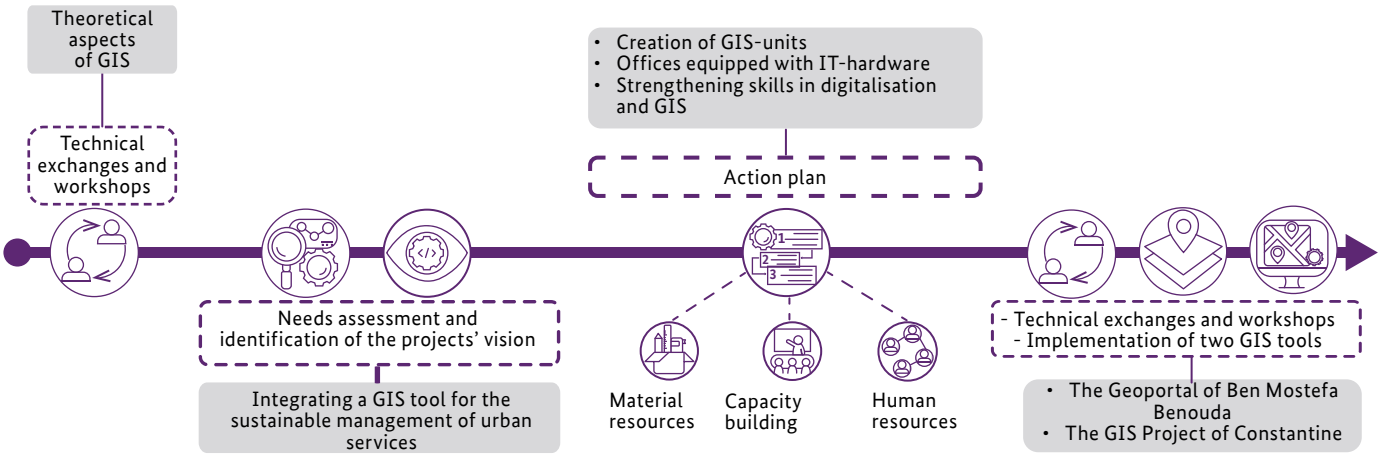


Diagram 01: *Methodological approach for the two projects. © GIZ*

The projects in Ben Mostefa Benaouda and Constantine applied the same implementation approach. The differences are the following (diagram 02):

A local steering committee

In **Constantine**, the GIS project team comprises executives and managers from various municipal departments, including the planning office, as well as a university lecturer. The planning office is exclusively dedicated to the GIS project.

A cross-sectoral GIS unit

In **Ben Mostefa Benaouda**, the GIS unit comprises representatives from 10 cross-sectoral organisations. For the members of this unit, carrying out the GIS project is a supplementary responsibility to their primary day-to-day duties.

GIS on desktop

In **Constantine**, the GIS project was developed as a technical solution to simplify departmental workflows and the municipal decision-making process.

Implementation of GIS tools

In **Ben Mostefa Benaouda**, the Geoportal is designed as an easily accessible platform for technical professionals and decision-makers, promoting coordination between the various entities responsible for urban management and planning.

Diagram 02: *Methodological differences between the two projects. © GIZ*

Achievements

The following results were achieved by the GIS projects in Ben Mostefa Benaouda and Constantine (diagram 03):

Development of GIS skills

More than 40 face-to-face and virtual exchanges took place. In addition, 27 members of the two units were trained in GIS basics and in the creation of a Geoportal.

Organisational change in Constantine

In Constantine, the city's planning office, with trained staff and GIS-accurate equipment, was exclusively dedicated to the project's development. Furthermore, a steering committee comprising municipal technical managers and a university lecturer was established to oversee the GIS project.

Implementation of GIS tools

A Geoportal for the new city of Ben Mostefa Benaouda and a GIS project for the city of Constantine were successfully implemented. These initiatives serve as tools to support urban planning, management and decision-making in the two cities.

Diagram 03: *Achievements of the two projects. © GIZ*

Challenges

Several challenges were encountered, necessitating tailored solutions. Here are the challenges in more detail (diagram 04):

1. Fluctuation within the multi-sectoral coordination team

Over the years, some members of Ben Mostefa Benaouda's GIS unit were reassigned to other departments. To address this, a governance charter was developed to define the roles of each involved organisation.

2. Sensitive data management

GIZ organised awareness-raising sessions to clarify the types of sensitive and non-sensitive data that could be shared. An agreement was established between GIZ and the relevant departments to authorise the sharing of data samples.

3. Daily workload combined with Geoportal project tasks

In Ben Mostefa Benaouda, the GIS project was perceived as an additional task to the daily responsibilities of the coordination team members, resulting in an increased workload. In Constantine, this issue was mitigated by creating a planning office dedicated exclusively to the GIS project, thereby ensuring greater project sustainability.

4. Lack of high-quality, standardised digital data

To address this, a capacity development approach based on 'learning by doing' was adopted in Constantine, facilitating the progressive development of the GIS with a focus on data digitisation. A strategy was developed to identify short-, medium- and long-term actions related to the management of human resources, IT infrastructure, data collection and authentication procedures.

Diagram 04: *Challenges encountered during the implementation of the two projects. © GIZ*

Innovative aspects and strengths

The innovative aspects of the projects were extensive and pivotal for urban management and development (diagram 05):

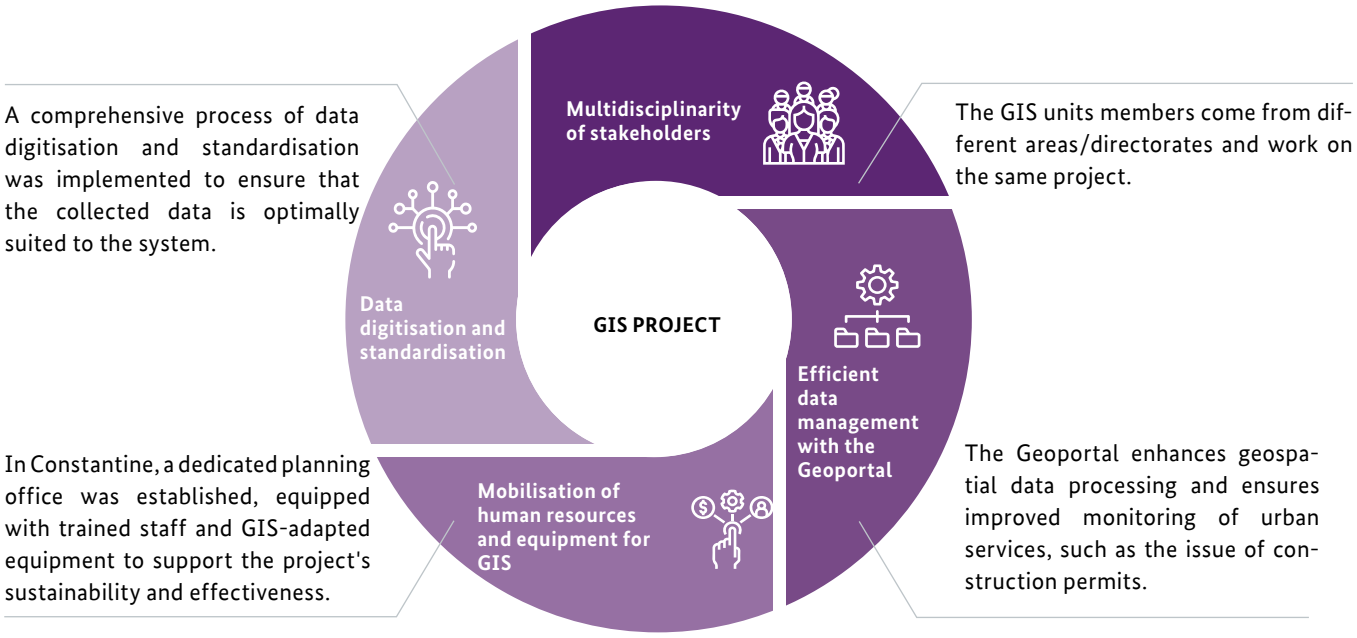
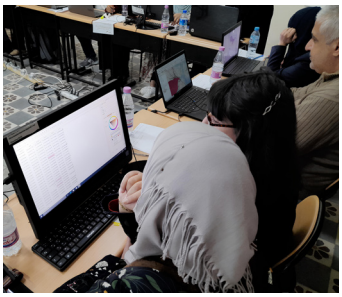


Diagram 05: *Innovative aspects of the GIS projects of Ben Mostefa Benaouda and of Constantine. © GIZ*

Photos: © GIZ / Doria Adman



Left: Qualitative survey with the Human Resources Department on the capacity of the city of Constantine to implement a GIS.

Right: GIS and cartography training. Introduction workshop on QGIS, City of Constantine.

Contact person

Anita Sebio Kouhè
Project Manager
anita.sebio-kouhe@giz.de
T +49 6196 79 - 1068
Dag-Hammarskjöld-Weg 1-5
65760 Eschborn
Germany

Best practices, lessons learnt and recommendations

Several lessons have been learnt and best practices identified from the experiences of the two Algerian cities, Ben Mostefa Benaouda and Constantine, which should be considered when implementing a GIS project:

Building on existing experiences

Germany's 20 years of GIS expertise have enabled the Algerian cities to avoid common pitfalls and gain valuable insights when launching their GIS projects. For instance, Constantine drew inspiration from Aschaffenburg's experience, which involved integrating academics into the GIS project to expedite the implementation process. The academics provided support in data collection and GIS development.

Start small, then evolve

A key lesson from Ben Mostefa Benaouda's experience is to start small and evolve gradually, avoiding cross-sectoral involvement at the beginning. Involving multiple departments in the early stages led to delays. Constantine opted for a modest start to ensure better project control.

Mobilisation of human resources

The experience in Ben Mostefa Benaouda highlighted the challenges of assigning additional tasks to the steering committee, which can lead to inefficiency. In response, a dedicated planning office with trained staff was established for the GIS project in Constantine, ensuring exclusive focus on project development.

Capacity development

Tailored technical training courses for the steering committee members facilitated a 'learning by doing' approach in Constantine. This led to rapid progress and reduced project implementation costs.

Focus on cost-effectiveness

Ensure that GIS investments are cost-effective by regularly assessing costs and benefits and making necessary adjustments to maximise return on investment.

System security

Ensure that the collection, storage and dissemination of data integrated into the GIS adhere to interoperability standards (according to the Open Geospatial Consortium) and security protocols to safeguard the system. Additionally, ensure compliance with Law 18-07 of August 10, 2023, on personal data protection for both, institutional and individual data.

Diagram 06: *Best practices, lessons learnt and recommendations. © GIZ*

Published by
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Registered offices Bonn and Eschborn, Germany

Regional project City-to-City Cooperation
Maghreb-Germany (KWT II)
Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
Tel +49 (0)6196 79 1068
info@giz.de
www.giz.de

As at
October 2024

Text
Samah Flissi, Doria Adman, Essodom Loufaï

Design
Narimane Boucena, Essodom Loufaï

On behalf of
Federal Ministry for Economic Cooperation and Development (BMZ)

In cooperation with
National Urban Planning Agency (ANURB) within the Ministry of Housing, Urban Planning, and the City in Algeria