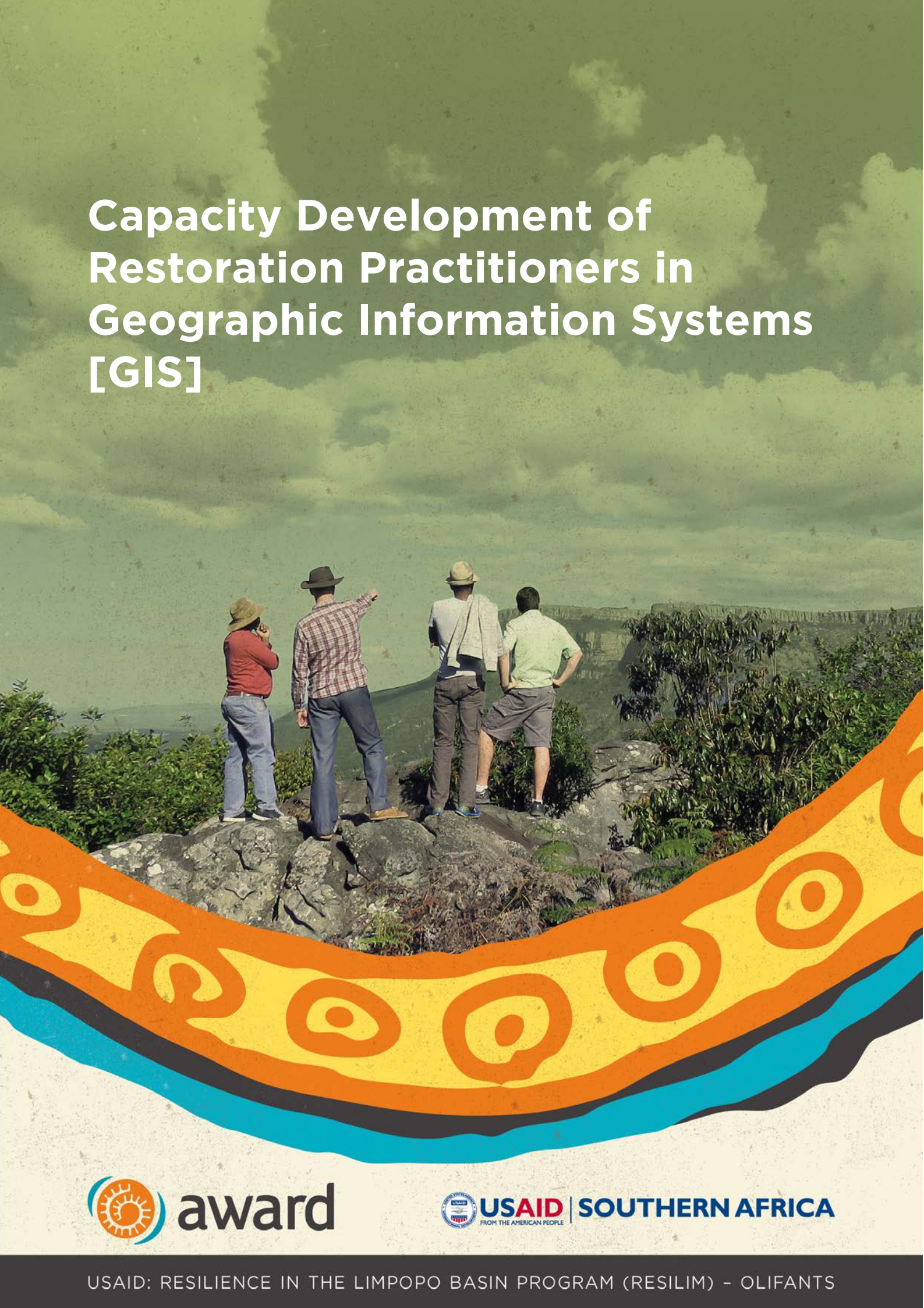


Capacity Development of Restoration Practitioners in Geographic Information Systems [GIS]



Acknowledgements

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Summary

This report summarizes the GIS capacity development and training of restoration practitioners carried out under the Blyde Restoration Project during 2019. This is in support of the project's fifth objective "to support the capacity development of practitioners on key technical skills for restoration planning and implementation in the upper Blyde, Klaserie & Sand Catchments". A brief overview is provided of the skills needs assessments and capacity development processes conducted before 2019, and the design process leading up to the training event in 2019. The training event was carried out in February 2019, and involved various staff members of Mpumalanga Working for Water (WfW). The training was focussed on basic concepts of GIS and geographic information, general data-management, and the use of desktop-based and mobile GIS applications. Practitioners reflected on the usefulness of the topics and tools covered, and subsequent follow-ups noted the successful use of these tools by practitioners, as well as the sharing of these tools with other colleagues. This training will be carried forward under the DEFF NRM Blyde LUI project during 2020.

1 Blyde Restoration Project

1.1 Project Background

The Blyde Restoration project is focused on the ecological restoration and sustainable management of the Blyde, Sand and Klaserie Catchments through a collaborative partnership called the Blyde Restoration Working Group. The overall aims of the project and group are focussed on improving and maintaining water security, biodiversity conservation, development of natural resource based livelihoods, and the development of custodianship. The project was initiated in 2015 as part of the USAID RESILIM-Olifants Programme implemented by AWARD. The work outlined in this report is primarily in support of the capacity development of restoration practitioners. The work however is also closely aligned with and aimed at supporting coordination and alignment amongst different implementing agencies in the focus area.

1.2 Background to Capacity Development & Training

A collaborative assessment with partners during 2015-16 of the restoration work carried out in the upper Blyde, Klaserie & Sand Catchments, suggested that several challenges were constraining effective restoration. Through a social learning process, challenges were explored with stakeholders to identify potential underlining capacity constraints. This process as well as ongoing engagements highlighted the need for capacity development on a range of technical skills and competencies supporting both restoration, as well as the further professional development of practitioners at various levels within the practice.

Technical skills such as GIS and data management are key for practitioners to carry out their work. The rapid development of mobile GIS technology during the last decade, had resulted in much of the GIS technology used by the NRMPs, as well as their associated data management processes, being largely out of date and inefficient. Given the very large amounts of information and data that practitioners, project coordinators and area managers have to work with, as well as the central role of GIS in the practice, these aspects were selected as initial focus areas for capacity development. The different GIS aspects that needed to be addressed to support capacity development were identified and customised to fit the needs of our various stakeholders to make it relevant to their work. Starting in 2017 we then hosted a number of training events on the above.



Figure 1: GIS and data management training event conducted during July 2017 at the Mpumalanga WfW offices in Nelspruit

2 GIS & Data Management Training for WfW practitioners

2.1 Design & Intended Learning Outcomes

Before the training event we engaged with key WfW staff to identify the specific technical areas they considered most important to focus on during the training, and to collectively design the programme for the event. This included consideration of the various existing GIS abilities of the practitioners, as well as their different levels of competency or previous exposure to these tools. The training aimed to outline basic spatial concepts and tools and techniques that are essential in the use of all GIS and data management processes.

The main learning outcomes identified collectively with partners beforehand included the following:

- 1 Understanding geographic information and spatial orientation;
- 2 Planning of an in-field data collection trip;
- 3 Using a GPS efficiently in the field;
- 4 Basic mapping, displaying and analysing of geographic information on a desktop based application;
- 5 Conducting more advanced manipulation of geographic information on a desktop based GIS programme.



2.2 Training

The training in 2019 took place on 26 and 27 February at the WfW offices and surroundings in Nelspruit. This training was attended by Area Managers, GIS technicians, Project Coordinators, and Interns and included a total of 23 people from the whole Mpumalanga WfW staff complement. The training was facilitated in an interactive manner and had several practical exercises focusing on spatial information and data management.

The course covered the following topics as outlined in the programme below:

Understanding spatial or geographic information

Understanding a GIS

- Using GIS to identify, explore, understand and solve challenges

Understanding data file formats, data sharing and data management

Fundamentals of a GPS

- Components of a GPS
- How a GPS works
- GPS error sources

Using a GPS in the field

- MapIT software Installation
- Basic settings
- Taking points
- Loading existing GIS data onto GPS
- Finding points/lines/polygons
- Editing existing data

Downloading and saving data

Sharing and exchanging data

Planning data collection trip

Importing points into a GIS (such as Google Earth Pro)

General Google Earth Pro functions and setting:

- Basic settings (navigation and orientation)
- Google Earth Pro layers and creating and opening layers
- Historical imagery

Digitizing and mapping errors

Calculating geometry (area, distance and slope)

Producing maps

- Opening layer
- Map scales and labelling

Key data capture and management rules

Introduction to QGIS

- Downloading QGIS
- QGIS interface
- Adding backdrops
- Opening layers



Figure 2: In-field training on the use of the MapIt GIS mobile application. This application was loaded onto and operated from the smart phones of participants

2.3 Reflections after the Training

At the end of the training event participants were invited to reflect on the training event itself, as well as the event in relation to their work and previous GIS training. The following were the main reflections:

The participants expressed how GIS problems really hinder their productivity, especially during fieldwork. They noted how the GIS tools and systems they had been using until now often malfunctioned and limited their data collection in the field. Practitioners often had to resort to using landmarks, which may be difficult to identify on Google Earth back in the office or when they returned to the site. This may lead to clearing in unplanned areas, verifying wrong areas, reporting incorrect data, amongst other negative outcomes.

The partners found the MapIT GIS app very user-friendly, easy to understand, efficient in the field, and thought it would be helpful in locating planned polygons and for verification of clearing efforts. Use of the MapIt app was explored together with Google Earth Pro, and although partners had been working with Google Earth Pro for some time, they were not aware of the full capabilities of the software. Google Earth Pro was explored to show its full potential in the NRM work, as a platform to create and analyse data, and to track changes and progress over time.

Partners mentioned that another round of QGIS training is needed to further develop their understanding of the programme. They found that they needed more time to grasp all the aspects under this topic. This was expected as this section covered more advanced GIS aspects, which looks at in-depth elements of GIS which are more complex. Participants noted that a shorter period in between training events would be beneficial, as they had forgotten some of what had been learned previously. This highlighted the need for this to be an ongoing process, with more regular communication between participants and ourselves. This could include processes such as sharing of materials and distributing tutorials via email or online in between training events.



What's needed?

*... more frequent GIS training,
with ongoing capacity development*

2.4 Follow-up Support & Plans Forward

Since the training there has been continued active interest in the MapIT app from the participants and their colleagues. Further staff members have also started downloading and using the app in the field, with regular requests for assistance and troubleshooting, as well as back and forth sharing of materials with other partners (including WfW Limpopo). This demonstrates that the tools introduced were appropriate and are assisting them in their work. Given the above, we will continue with GIS training in 2020 under the Blyde Restoration Project with the DEFF NRM LUI funding. This will be done in conjunction with the exploration of new GIS techniques, which would support the work carried out as well as continued learning. In particular we aim to establish a cloud hosted GIS database allowing all Blyde partners to share their data, such as planned and active clearing areas, with each other more regularly. This platform could also be used for troubleshooting, sharing tutorials and new GIS tools, etc., while allowing for peer learning to maintain an ongoing learning process.





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The Association for Water and Rural Development

AWARD is a non-profit organisation specialising in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

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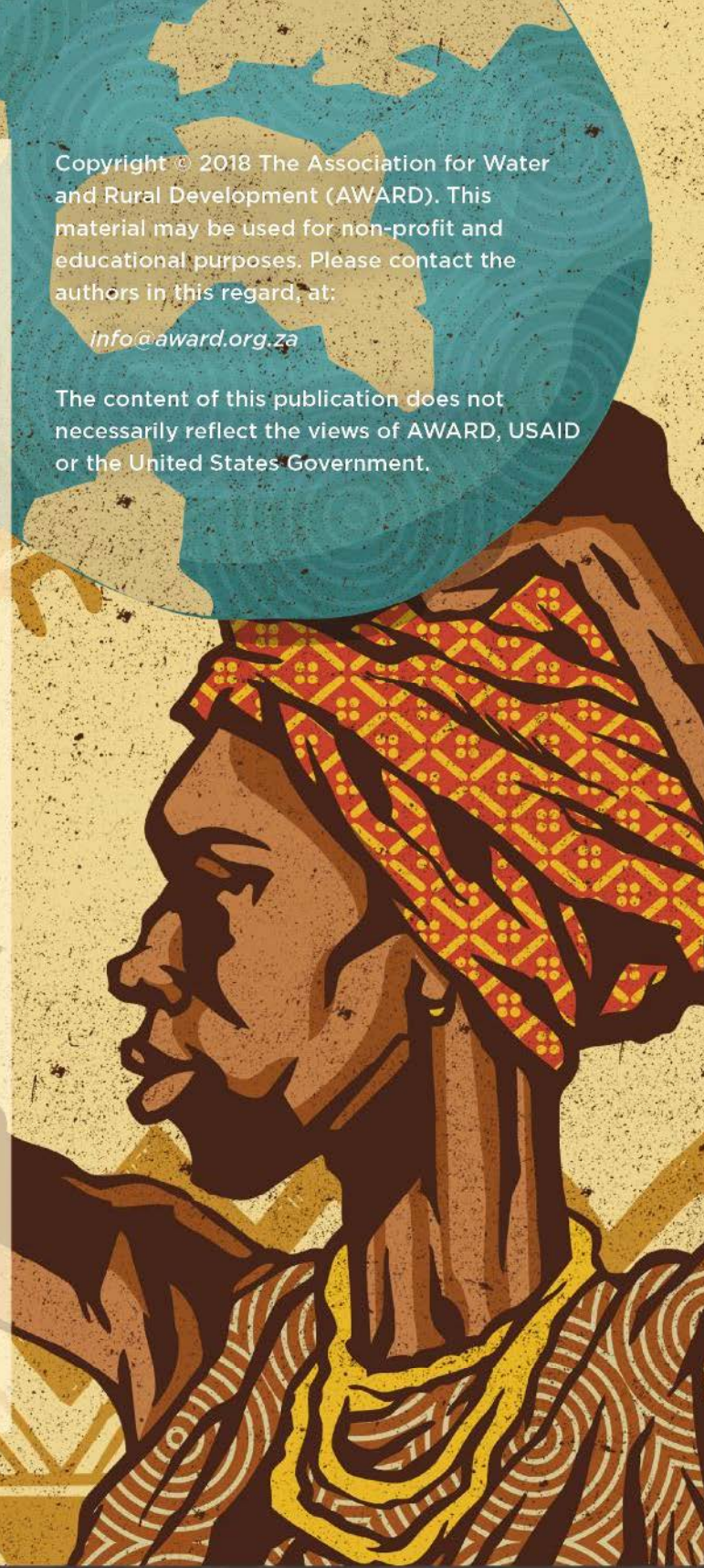
About USAID: RESILIM-O

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year programme, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.

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