

## Mapping the innovation infrastructure and innovation enterprises in the Central Karoo District

### Introduction

This briefing note aims to provide insights on the extent of the availability of infrastructure that supports or is relevant for innovation in the Central Karoo District.

### What is innovation infrastructure?

Innovation infrastructure refers to the physical and organisational structures and facilities that are required for the creation of new knowledge, competency building (education and skills), as well as the diffusion and exploitation of innovation. Innovation infrastructure includes basic infrastructure (roads, energy, and water), knowledge infrastructure (schools, colleges, universities, research institutions, innovation hubs, living labs, and libraries) as well as information, communication and technology networks (smart grids, broadband and wireless networks) which the innovation actors need to flourish.

Mapping has been conducted for the following:

- Availability of innovation infrastructure
- Location of profiled innovators
- Accessibility: distance matrix maps
- Shortest route maps

### Methods

Primary and secondary techniques were used in mapping the innovation infrastructure and enterprises in the Karoo. Mapping innovation infrastructure and enterprises in the Karoo consisted of utilising existing geospatial information and imagery of the municipalities. These were accessed from sources such as the office of the surveyor-general, planning units of municipalities, government departments, and the South African National Space Agency (SANSA), among others. Participatory methods, together with observation methods, were used to identify and include information that is excluded from the mainstream or official maps. The identified key innovation infrastructure and innovative enterprises were then visited to acquire GPS coordinates to add to and verify those already obtained from other sources.

### Distribution of innovation infrastructure

Figure 1 shows the spatial distribution of key innovation infrastructure in the Central Karoo District. The road infrastructure is relatively good in the Central Karoo. However, many artillery roads require upgrading and others require construction especially in and near the indigent areas of the municipalities. Access to farms is on gravel roads that stretch for kilometres. Many of the smaller towns have poor to non-existent road infrastructure and are located in far distances from Beaufort West, the District capital and hub. The Central Karoo District has only one Technical and Vocational Education and Training (TVET) College, located in Beaufort West. There are no universities, science councils or private research institutes in the District. The figure shows that the District has 30 schools, which are located mainly in areas around major towns. Figure 1 also shows several libraries scattered across the District. Most have very old books, and these books are often not related to recent science. Some of the libraries have few or no computers. Some of the libraries do not have access to internet, a challenge that impedes the locals, particularly learners from conducting research.

### Location of profiled innovators

Most of the innovative enterprises were mainly located in the urban areas, in the proximity of key infrastructure such as major roads, schools, ICT centres, and libraries.

The blue dots (showing innovators) appeared to overlap with the red dots (showing infrastructure) on the maps. This emphasises the importance of infrastructure and market potential in stimulating innovation activities. It is, however, concerning that some of the innovators are located far from urban centres or innovation infrastructure, highlighting the question of long-term sustainability or potential growth of these innovative enterprises.

### Distance to economic hub

With regard to the distance of the innovative enterprises from Beaufort West, the main town and economic hub in the District, findings showed that few (35%) of the 17 innovators mapped in the Central Karoo District were located within a radius of 10km from the main economic hub (Beaufort West). The majority (59%) of the innovators were situated far from the main hub (over 100 km away) and these were based mainly in the small towns in the District.

### Shortest route to economic hub

The general observation is that most of the mapped innovative enterprises were located far away from the main economic hub in the District. Consequently, this means that they have to travel long distances (in most instances distances over 100km) to the main economic hub. In the Central Karoo District, the shortest distance for innovators located in the northern side of the main hub (Beaufort West) is 95 km, followed by those in the east of the hub with 134 km. Innovators located in the southern part travel the longest, at 228 km, to go to the main hub, while the eastern located enterprises incur a distance of 144 km. However, most of these innovators in the western and southern areas of the District are located in small towns outside of the main hub, and they rarely travel these distances to the main hub.

### Summary of key insights

The Central Karoo district is characterised by moderate levels of basic infrastructure (such as roads), and very limited information or knowledge infrastructure (such as universities, research institutions, and libraries). Internet connectivity is limited in most of the small towns. While there are many schools across the District, there are not many institutions of higher education in these districts, with only one TVET College. Most of the innovators were located near the infrastructure and towns, emphasising the importance of infrastructure and market potential in stimulating innovation activities.

### Suggested citation:

Dlamini S., Mokhele T., Moeti T. And Sinyolo S. (2022). Mapping the innovation infrastructure and innovation enterprises in the Central Karoo District. Briefing Note. Human Sciences Research Council: Pretoria

This Briefing Note was derived from the report that was submitted to Department of Science and Innovation titled "Sinyolo, S., Mokhele, T., Mpyana, M., Nyezi, K., Bolosha, A., Dyantyi, P., Booys, M., Dlamini, S., Ramigo, P., Maila, M., Molewa, O., Ubisi, N., Lekomanyane, P. & Jacobs, P. (2020). Mapping the Innovation Landscape of the Karoo Region with Local Innovation Advancement Tools. Consolidated Final Report. Human Sciences Research Council, Pretoria. Commissioned by Department of Science and Innovation." Available from: [https://www.dst.gov.za/images/2020/Karoo\\_innovation\\_mapping\\_phase\\_1\\_final\\_report.pdf](https://www.dst.gov.za/images/2020/Karoo_innovation_mapping_phase_1_final_report.pdf)

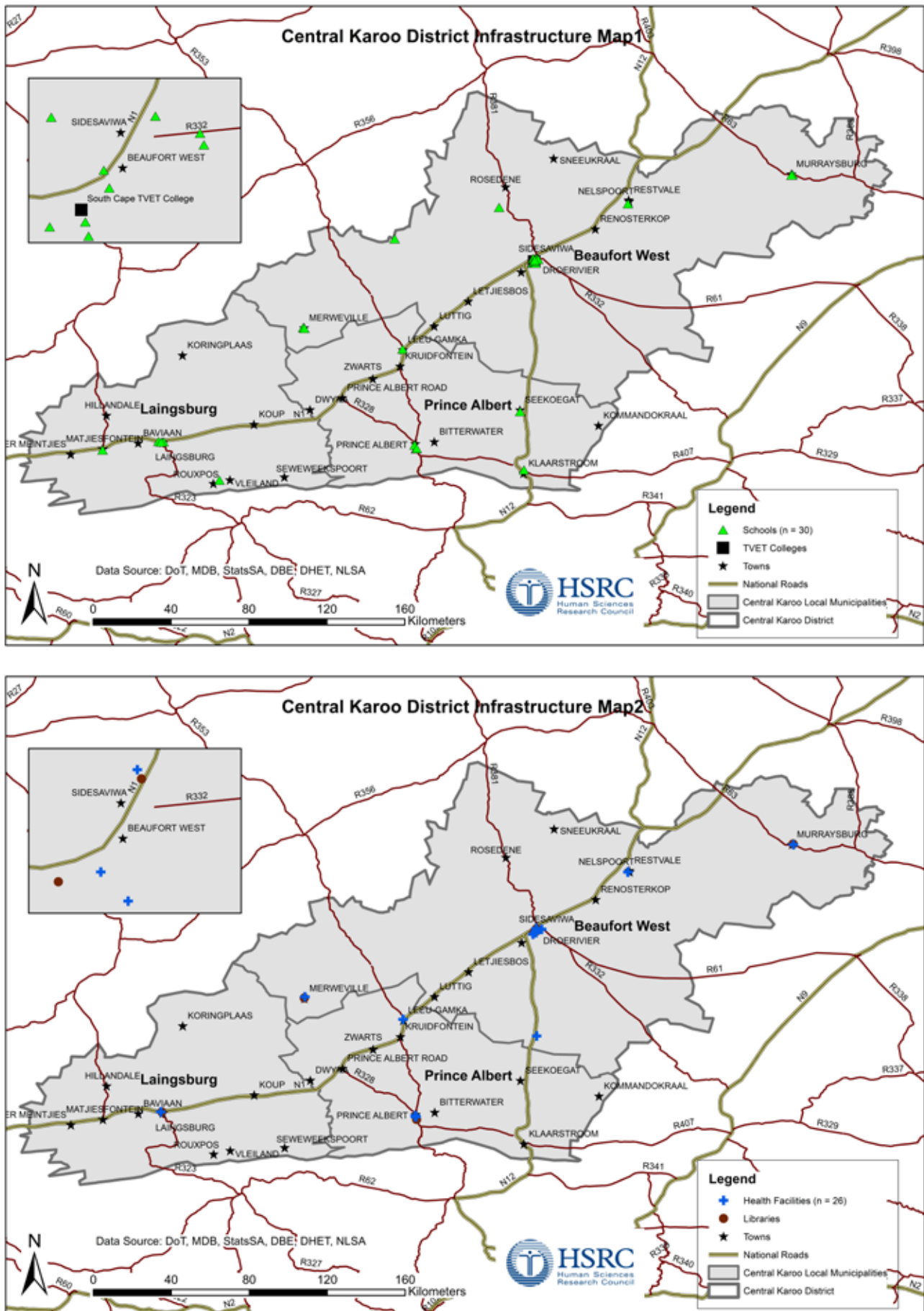


Figure 1: Spatial distribution of innovation infrastructure