Spatial challenges from peri-urban expansion of small rural towns in South Africa

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Transdisciplinary linkages in the project

Dr Ingwani, Project coordinator and expert in social science research in peri-urban and rural communities.

Prof. Ekelund, expert in aquatic ecosystems and the ecosystems services approach.

Dr Thynell, expert in global cities, processes of urbanization.

Prof. Gumbo, expert on RS, GIS and quantitative data analysis.

Prof. Nel, expert in urban planning, planning theory, and urbanization.

Dr Schubert, expert in physical geography and in RS and GIS.

RS - Remote Sensing, GS - Geographic Information Systems
The aim of the study

Study the spatial challenges from urban expansion of selected small rural towns of Vhembe District in Limpopo Province of South Africa onto ecologically essential sensitive areas; and the resultant impact on municipal service provision, ecosystems services and household livelihoods.
The study seeks to

(1) Map the spatial configuration of three small rural towns in Limpopo Province (Thohoyandou, Makhado Biaba, and Elim) over time (1996 to 2018).

(2) Determine and explore the drivers of peri-urban expansion in the selected small rural towns and to study the impact on ecosystems services; household livelihoods and municipal service provision.

(3) Make a comparison between Tanzania and South Africa regarding studies of environmental management.

(4) To provide a framework or guidelines on adaptive strategies on sustainable management of spatial challenges in small rural towns.

(5) Write a proposal.
Methods

The research adopts a mixed methods approach.

Data collection will be done through a reconnaissance and text analyses of policy documents; mapping; interviewing; household questionnaire surveys and observations.

Mapping will be done using RS and GIS.

Students will participate in this research.
Mapping the three rural towns using geographical information systems (GIS)

• Requires digital map layers representing different themes relevant for the study.

• Requires remote sensing data in order to produce map layers that are not readily available.
The study area in Limpopo Province

The approximate position of the three towns Thohoyandou, Makhado Biaba, and Elim is marked by the pin.
The OSM road network in Elim compared with Google Earth

Unfortunately, we can easily see that connections and roads outside town are missing.

Discussion points

• How to initiate and develop further collaboration?
• Any suggestions of collaboration partners?
• How to find new data sources of digital map layer data?
• How to find data sources of aerial photographs?
• How are the plans for infrastructure, roads and settlements defined in relation to green areas and ecosystem services?