

GNSS applications for Managing Informal Settlements in Swaziland

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Swaziland



Swaziland is a small land-logged country in Southern Africa. It has a population of one million people and covers an area of 17,363 square kilometres. It shares borders with South Africa on the west and Mozambique in the east. The country does not have vast deposits of natural resources and as result the main source of income is agriculture. With the downfall of the sugar prices in Europe and pulp markets in Asia, the country has had to rethink new survival strategies.

Introduction



Sometimes it is difficult in life to translate the advanced technology that we live with into practical and useful applications in our daily lives that will benefit all the citizens of our countries.

Introduction



Currently, trends illustrates that poverty and hunger are on the increase in Swaziland in both rural and urban areas, with people living on food aid increasing from 210,000 in 2005/06 to more than 400,000 in 2006/07.

Introduction

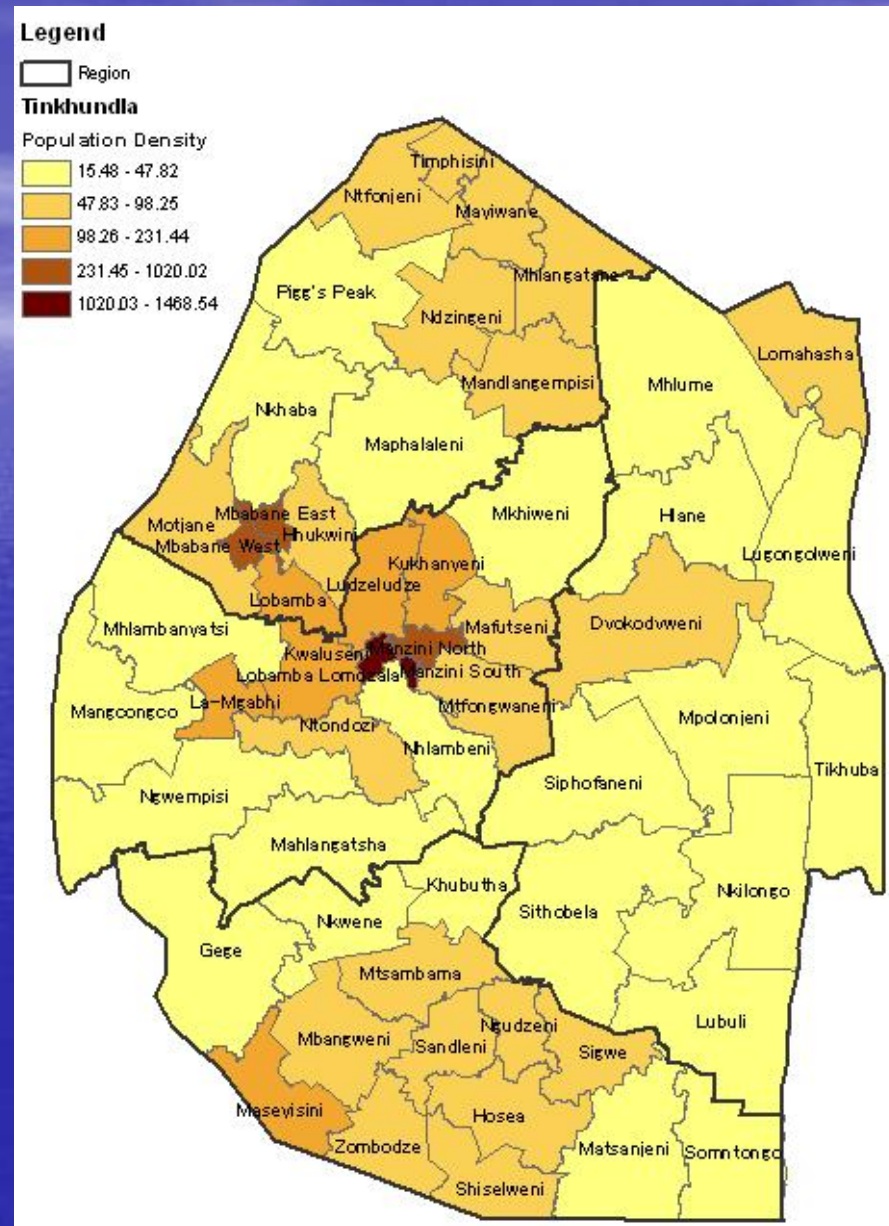


As a result, Swaziland is in the process of implementing the Millennium Development Goals (MDGs) to try and alleviate the situation

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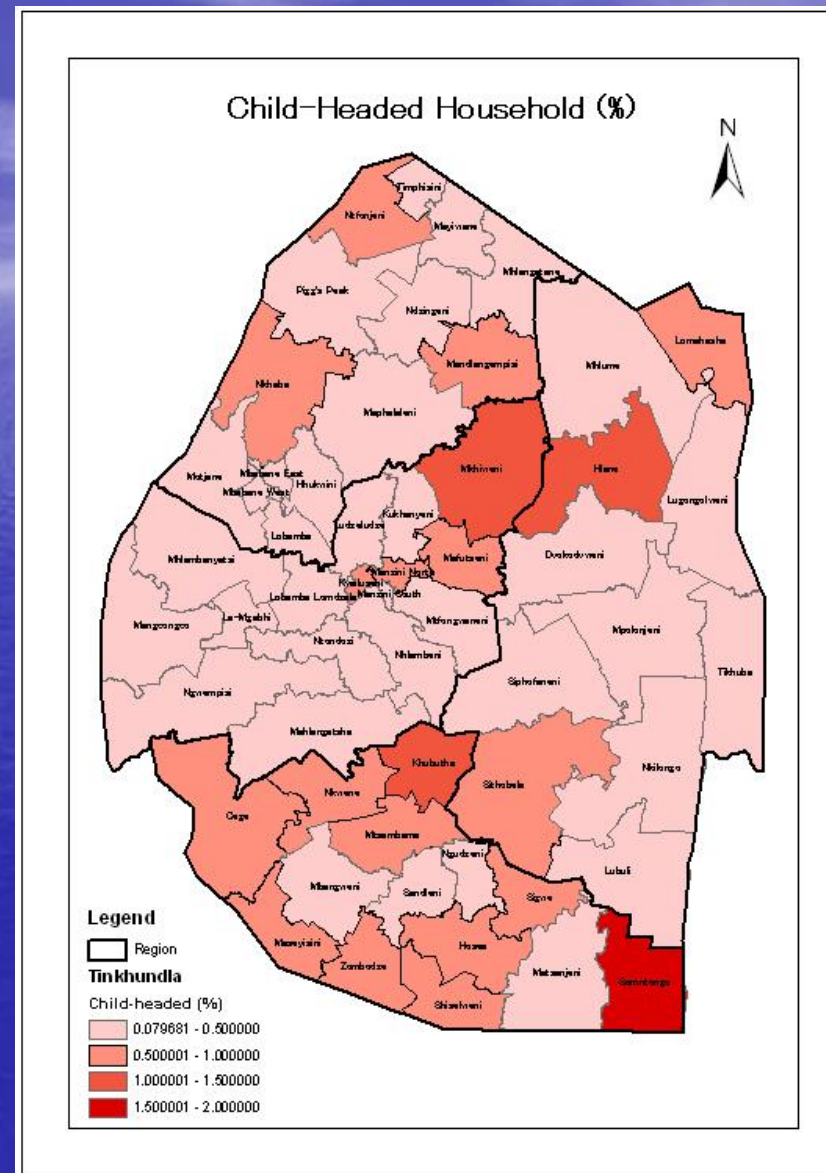
Population density shows that there is a high population concentration around the two cities, Mbabane and Manzini



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Serious poverty indicators such as Child-Headed households also highlight the problem



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- People living in the rural areas believe there are jobs in town and hence a better life.
- They move to town and try to find jobs and only to realise that the jobs are not there.
- They then have to find means to survive.

Introduction



The temptation to steal from the haves becomes great and this may result in the rate of crime increasing

Introduction

- They realise that they can not build informal settlements within the urban area as they are controlled by municipalities.
- They then move to the peri-urban areas where there is less control and still not far from town.
- They bargain with the controversial traditional authorities.

Introduction



The results of the
controversial
agreements

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A Pro-active Approach

- After all is said and done, it is the government that has to take a pro-active approach towards solving the created problem.
- The structures constructed are not safe in many respects such as:

A Pro-active Approach

- The quality of the materials used for the structures is sub-standard.
- There is no infrastructure to provide the necessary services such a water, electricity and roads.
- Some of these structures can collapse at any time, especially after heavy rains.

A Pro-active Approach



An orthophoto map showing a comparison of formal and informal settlements

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TENURE	OWNERSHIP	ADMINISTRATION	Characteristics
<p>Swazi Nation Land This is land that was reserved as native land upon which the Swazi people were settled. It was subdivided into huge farms and was still managed by the traditional structures such chiefs and indunas.</p>	<ul style="list-style-type: none"> -Rights to use the land -Land belongs to the kind -Can be passed from generation to generation 	<p>Chiefs/Induna or other traditional structures</p>	<ul style="list-style-type: none"> -Easy access to land -No technical expertise to monitor structures - Land rights are not permanent, land can be repossessed -Can not be used as collateral in financial institutions -You can not sell the land
<p>Free Hold Land This is privately owned land that has title deeds and registered in the Registry of Deeds.</p>	<ul style="list-style-type: none"> -Full rights to land -Title Deed Land 	<p>Municipal Councils or Ministry of Natural Resources and Energy</p>	<ul style="list-style-type: none"> -Quite expensive - Can not be used as collateral in financial institutions -You can sell the land
<p>Concession Land This is the land that was used by colonialists and now vests in the king.</p>	<ul style="list-style-type: none"> Rights to use the land -Land belongs to the kind -Can be passed from generation to generation 	<p>Land vested on King</p>	<ul style="list-style-type: none"> - Land rights are not permanent, land can be repossessed -Can not be used as collateral in financial institutions -You can not sell the land

The Cadastral System

- The Cadastral System is applicable to the whole country.
- The main challenge is the administration of the different areas under the different land tenure systems.
- Swazi Nation Land has no official records of the extent of the properties within.

The Cadastral System

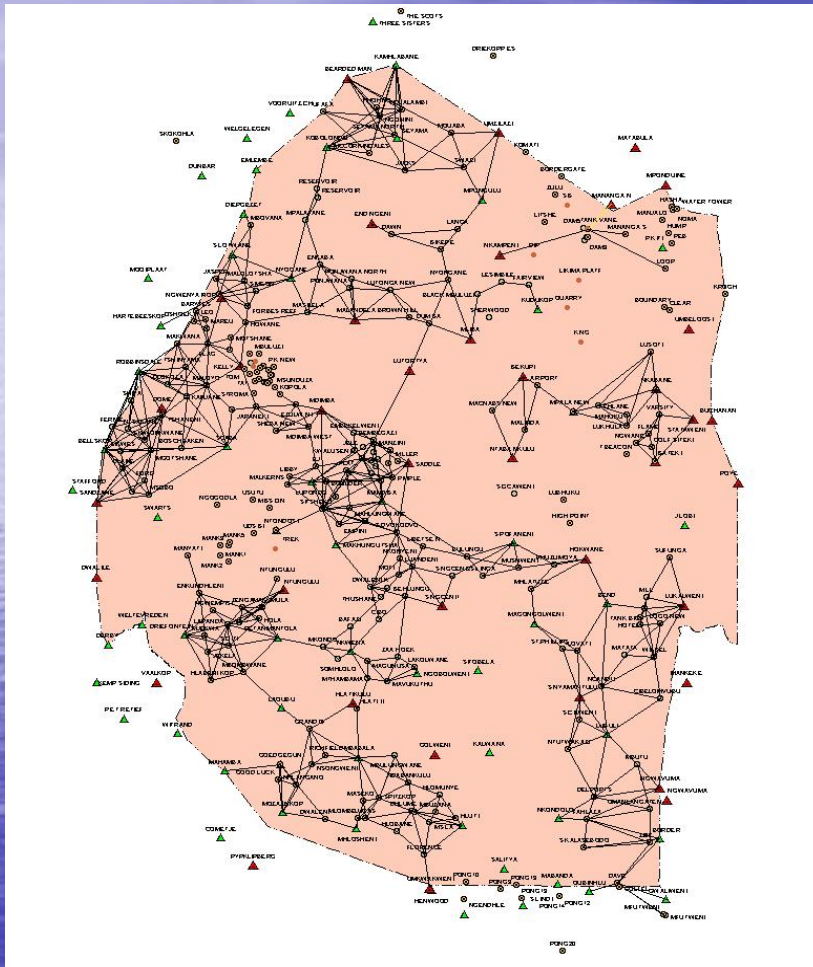
- The Trigonometric Network is the framework on which the cadastral system is based.
- The rise in boundary disputes between Swazi Nation Land and Freehold land is an indication that the system is likely to collapse in the future.

The Cadastral System



The trigonometric network has been maintained by the office of the Surveyor General

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A number of baselines have been re-observed to facilitate the transformation from WGS 84 to the local coordinate system

GNSS Applications



A number of GNSS receivers have been purchased by the office of the Surveyor General for the monitoring of Informal Settlements

GNSS Applications



Survey Field Teams have been setup to monitor the expansion of these informal settlements

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Conclusion

- The bread and butter issues are still very pertinent in developing countries.
- Resources for research and development are considered to be a luxury.
- This does not mean they don't need the technology, they do.

Conclusion

- In the spirit of humanity and the quest to improve basic human lives, it suffices to say these technologies are “impossible” to live without.
- It is worth recognising the efforts that developed countries and international organisations put into research and development for the well-being of mankind

Conclusion

- The application of GNSS to the upliftment of standard of living for mankind is an example of translating abstract concepts into practical situations that meet the requirements of our daily living.

A photograph of two giraffes in a savanna landscape. One giraffe is in the foreground, looking towards the camera, while another is behind it, partially obscured. The background features green bushes and a blue sky with light clouds. A semi-transparent teal rectangular box is overlaid on the image, containing white text.

Thank You

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