Waste Collection and Recycling Benefits and Challenges in Tribal Rural Areas - The Case of Umkhanyakude & Zululand Districts, Kwazulu-Natal Province in South Africa

by

Bonginkosi R. Dlamini & Isaac T. Rampedi

Dept: Geography, Environmental Management & Energy Studies

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Outline of Presentation

- Introduction
- Research Problem & Objectives
- Description of Study Area
- Research Methods
- Results & Discussion
- Conclusions

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INTRODUCTION

- In developing countries, **mismanagement of solid waste** & **poor waste recycling trend**s pose an **increasing risk to environment & human health** (United Nations, 2009; Taboada-Gonzalez, 2011 & Jacobsen *et al*., 2013).
- Since 1998, South Africa has introduced **new environmental laws & regulations** in order to:
  - Protect human health & natural environment
  - Enhance sustainable waste management & recycling rates
- With new waste laws & regulations, waste **must be prevented from generation**; & where not possible, it must **be recycled** or **be treated & disposed off** in a sanitary manner (RSA, 1998; 2008)
- This goal is **long term & difficult to achieve** in a country with **many development challenges**
- Currently, there is **limited knowledge** on how this new regulatory framework is impacting waste management & recycling effectiveness & efficiency, **especially in rural areas**

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INTRODUCTION

- Given new laws such as the National Environmental Management: Waste Act (Act No.59 of 2008) & **associated regulations** , our Local Municipalities are expected to:
  - provide effective delivery of waste services to all citizens &
  - to ensure that all communities are aware of the detrimental impact of waste on human health & the environment
- However, **very few detailed studies have examined waste management challenges outside of our urban areas & the plight of rural municipalities who are challenged by**
  - Lack of financial resources,
  - Lack of environmental awareness & community initiatives,
  - No appropriate infrastructure,
  - Lack of sound institutional arrangements for effective & efficient waste management (Van der Merwe, & Steyl, 2005).
- Moreover, **waste management research** in **deep rural areas** & **role of informal waste pickers** is poorly documented

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RESEARCH PROBLEM & OBJECTIVES

- To address these literature gaps, this paper **characterised current status of waste management services & solid waste recycling challenges** in the **Umkhanyakude & Zululand District Municipalities, KwaZulu-Natal province of South Africa**
- To address this research problem, the following **research objectives** were formulated for the study:
  - To describe the **involvement** of informal waste pickers in waste collection & recycling activities
  - To determine **roles & responsibilities** for waste management services &
  - To identify **benefits & challenges** faced by waste pickers and municipalities.

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DESCRIPTION OF STUDY AREA

- **KwaZulu-Natal province** is one of the largest (**94 361 km2**) provinces in South Africa

- It is divided into one **Metropolitan Municipality** & **10 District Municipalitie**s comprising **50 Local Municipalities**

- Many of these local municipalities **have socio-economic problems & high poverty levels**, especially in previously disadvantaged rural areas

- **Umkhanyakude (UDM) & Zululand (ZDM)** were chosen because of:
  - their poor socio-economic conditions,
  - physical size; &
  - rapid population growth, which is higher compared with other districts in the province

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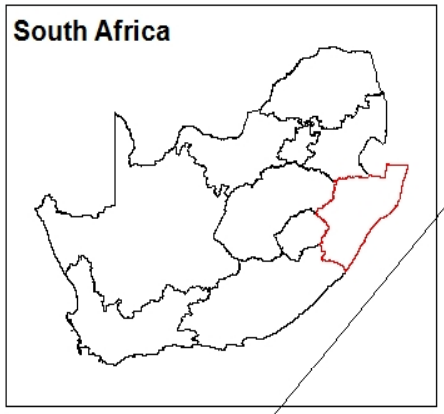
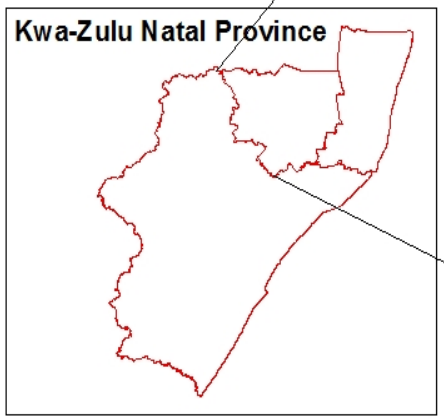
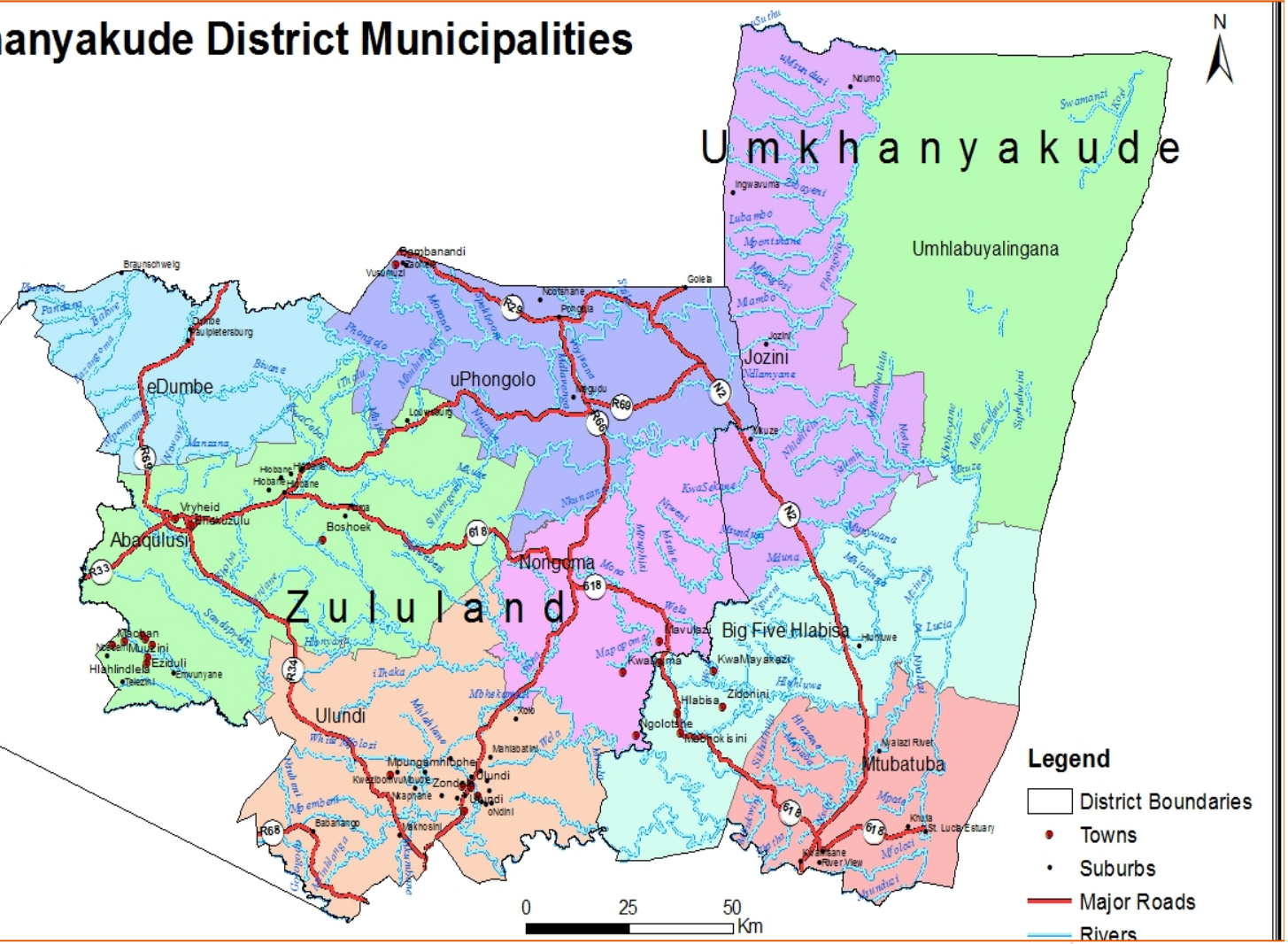
Zululand and Umkhanyakude District Municipalities







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RESEARCH METHODS & SAMPLING FRAMEWORK

- **Survey** was carried out by closed ended & open ended questionnaires
- Questionnaires were comprised of the following sections:
  - **Section A:** Socio-Economic Characteristics of Informal Waste Pickers;
  - **Section B:** Experiences of waste pickers on waste service delivery;
  - **Section C:** Perceptions of waste pickers on waste collection services;
  - **Section D:** Waste Minimisation & Recycling Initiatives in the study area
  - **Section E:** Informal waste picker's willingness to participate in recycling initiatives
  - **Section F**: Informal waste picker's experiences regarding benefits, barriers and challenges
- The **Internal Reliability** of all these aspects (Cronbach Alpha=0.6-0.9)
- The questionnaires had a **Reliability Coefficient=0.748**
- **126 Informal Waste Pickers** were randomly chosen for interviews
- The **Informal Waste Pickers** were found in the following points:
  - Municipal Landfill Sites;
  - Streets, &
  - Illegal dumpsites
- All the primary data collected was **processed, analysed & interpreted** by means of descriptive statistics
- Results were presented in **Tables & Graphs**

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RESULTS AND DISCUSSION

- Majority (**75%; n=92**) of informal waste pickers are women meanwhile **24.6% (n=30)** are men
  - Similar results were obtained in seven rural municipalities (Horažďovice, Horomeřice ect) Czech Republic, (**Men =24.14%; Women=75.86%**) (Tydlitatova *et al.*, 2014) Different results **(Men=80%; Women=20%)** with studies in the outskirts of Gaborone, Botswana (Rankokwane & Gwebu, 2006).
- **98.4%** of respondents were self-employed in informal waste picking, whereas **1.6%** (n=2) were in formal employment.
- More than **55%** of respondents were earning not **>R1000** (~75.5 USD) meanwhile **32.5%** were earning between **R1500** (~113,3 USD) & **R5000** (~377, 9 USD) per month
- Close to **50%** (n=62) of waste pickers lacked formal education, & only **8.8%** had an important educational achievement

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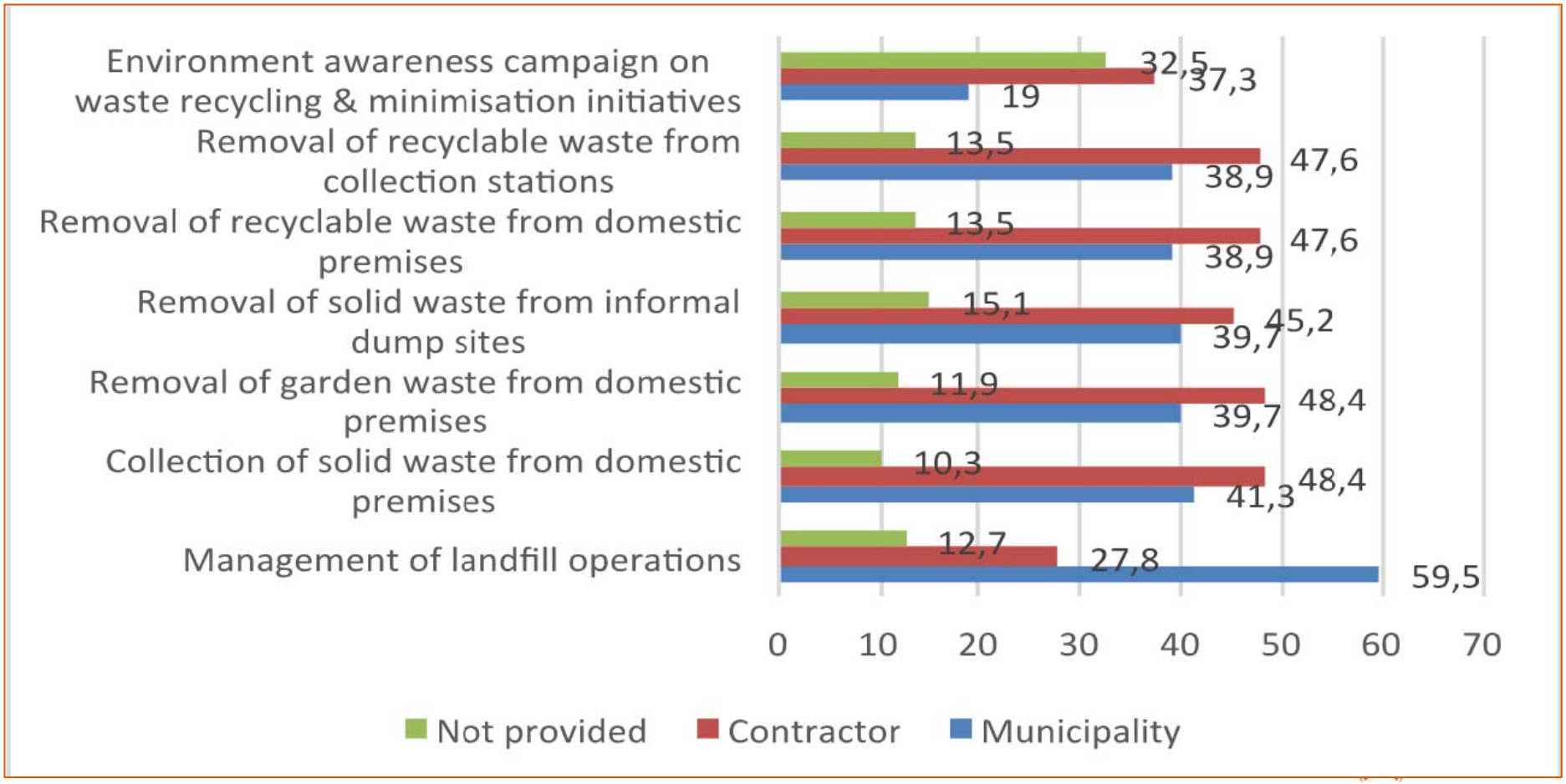
Based on feedback from Informal Waste Pickers, these are different Roles & Responsibilities for **waste management services** in the **study area**



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SATISFACTION LEVELS REGARDING COLLECTION OF SOLID WASTE

- **65% of waste pickers** reported **no access to waste management services**
- **Less than 40%** had their solid waste **collected once or twice a week**
- A large **majority (97.6%) of waste pickers** voiced dissatisfaction with municipal service quality
- **100% of them were not willing** to pay for waste collection services rendered
- Such unwillingness to pay was also reported in Ensenada Municipality, Mexico (**Taboada-Gonzalez, 2011**).

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Existing waste minimisation initiatives

- **92.9% reported no community recycling facilities** by local municipalities except those which were **initiated by the Informal Waste Pickers**
- Similar findings were reported in peri-urban parts of Haidian District in Beijing (China) (Wang et al., 2008).
- **98-99% of those involved**, were prepared to participate in future recycling initiatives, even **though there were no tangible benefits**
- **97.6%** complained **about lack of provision of separate bins** for recyclable wastes
- These findings indicate **a lack of adequate resource** allocation on the part of local municipalities
- **Absence of separate bins** and **appropriate infrastructure**, **improved waste recovery** and **recycling** will continue to be an unattainable goal

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BENEFITS LINKED TO WASTE MINIMIZATION & RECYCLING INITIATIVES

- Various **benefits associated with recycling** were mentioned:
  - **Creation of employment** opportunities
  - **Earning money to buy food**,
  - **Cleaner streets & keeping** their settlements tidy
- Results indicates that **waste minimization activities can change the socio-economic circumstances** of rural informal waste pickers in a positive light
- Similar results reported by Buque & Riberio (2014) and Ezeah *et al*. (2013).

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BARRIERS & CHALLENGES IN RECYCLING & WASTE MINIMISATION

- Informal waste pickers (100%) mentioned the following barriers:
- Lack of **support from three spheres of government** & **financial schemes.**
- **Limited community recycling operating** without an enabling infrastructure
- 96.8% mentioned lack of **appropriate operational shelter** or **space**
- Inconsistent with findings were obtained in Serbia (Ili & Nikoli, 2016).
- 50.8% mentioned **the lack of tools or equipment and** infrastructure (59.25), and the lack of community involvement (42.3%).
- To a little extent, some waste pickers felt that the non-**formalisation of the entire recycling** business sector

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Conclusions

- This study has provided **first base line information on status & current problems facing municipal solid waste management in selected rural areas in the KwaZulu-Natal province**
  - Educational and income levels **remain low** amongst informal waste pickers
  - **Private contractors & municipalities** play an important role regarding waste collection services
  - **Satisfaction levels** amongst informal waste pickers **are very low**
  - All waste pickers were not willing to pay municipal services for collection where they live
  - **No sustainable waste minimisation initiatives** exist
  - **More barriers & challenges & few benefits**
- **Based on these findings,** it can be concluded that municipal solid waste management practices & attendant services in the uMkhanyakude & Zululand District Municipalities **are very poor** & **are not in line with the goals of the new waste–related laws and regulations in South Africa**

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References

- Buque, L.L.B., Riberio, H.: Overview of the selective waste collection with pickers in Maputo Municipality, Mozambique: Challenges and perspective. Public Health School, Department of Environmental Health University of Sao Paulo, Brazil (2014)
- Ezeah, C., Fazakerley, J. A., Roberts, C. L.: Emerging trends in informal sector recycling in developing and transition countries. Waste Manag. 33, 2509–2519 (2013)
- Ili, M., Nikoli, M.: Drivers for development of circular economy: A case study of Serbia. Habitat Int. 56, 191-200 (2016)
- Jacobsen, R., Buysse, J., Gellynck, X.: Cost comparison between private and public collection of residual household waste: Multiple case studies in the Flemish region of Belgium. Habitat Int. 33, 3-11 (2013)
- Rankokwane, B., Gwebu, T.D.: Characteristics, threats and opportunities of landfill scavenging: The case of Gaborone-Botswana. Geo Journal. 65,151-163 (2006)
- Republic of South Africa (RSA). 1998. The National Environmental Management Act (NEMA). (Act No. 108 of 1998). Pretoria: Government Printers

References

- Republic of South Africa (RSA).: National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), Pretoria, (2008)
- Taboada-Gonzalez, P., Aguilar-Virgen, Q., Ojeda-Benitez, S., Armijo, C.: Waste Characterization and Waste Management Perception in Rural communities in Mexico: A case study' Environ Eng Manag J. 10, 1751-1759 (2011
- Tydlitatova, E, M., Havrland, B., Ivanova, T.: Social awareness on waste production in rural areas. Eng Rural Dev. 05, 29-30 (2014)
- United Nations, 2009. World Demographic Trends Report of the Secretary-General. Commission on Population and, Development. Accessed 18 June 2016.
- Van der Merwe, H., Steyl, I.: Solid waste management in intensively farmed rural areas. : A Western Cape case study. Acta Acad. 37(3), 184-211 (2005)
- Wang, J., Han, L., Li, S.: The collection system for residential recyclables in communities in Haidian District, Beijing: A possible approach for China recycling. Waste Manag. 28, 1672-1680 (2008)

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THANK YOU

- Bonginkosi R. Dlamini
- PhD. Candidate
- University of Johannesburg
- Bzr.dlamini@gmail.com
- Direct Line: +27 12 3999 9778
- Mobile No. +27 718824637

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STOCKPILES OF RECYCLABLE MATERIALS

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