COMMUNITY-BASED MULTI-DIMENSIONAL POVERTY PROFILE IN GREATER TzANEEN AND MUTALE LOCAL MUNICIPALITIES IN LIMPOPO PROVINCE SOUTH AFRICA

DESIGN AND METHODOLOGY

RESEARCH PAPER 2
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Community-based monitoring [CBMS] South Africa team has taken care to ensure that the information provided in this report and the accompanying data are correct. However, this report and the methodology followed represent ‘work-in-progress’ and the information presented here may change in subsequent reports. The information and analysis presented here, as well as any errors or omissions are the sole responsibility of the authors and should not be attributed to Poverty Economic and Policy Network (PEP) or to others who have any connection to this report.
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### Acronyms/Abbreviation

- **ASGISA**: Accelerated and Shared Growth Initiative for South Africa
- **CBMS**: Community based Monitoring System
- **IDP**: Integrated Development plans
- **MSA**: Municipal systems Act
- **RDP**: Reconstruction and development programme
- **UN**: United Nations
- **UNDP**: United Nations Development Programme
CHAPTER 1: INTRODUCTION

1.1 Rationale for Development of CBMS in South Africa

Evidence-based decision making on poverty reduction is increasingly becoming a paramount best practice, which many countries including South Africa embrace. (Reyes & Dues, 2009) argue that the lack of appropriate local data about the poor in majority of developing world, including South Africa, hinders development planning, programs, and constrains efforts to monitor change. In addition, the definition of universally agreed definition of poverty remains the subject of some debate amongst policy analysts (Scott, 2005).

Strengthening the evidence base of policy-making in developing countries has always been important; however, more than 55 countries either lack information on the share of the population living in poverty or have no data on poverty trends (Scott, 2005). To effectively tackle issues on poverty, there must be a consistent monitoring framework that revolves around rationalizing monitoring mechanisms (Department of Rural Development and Land Reform (DRDLR), 2008). Community Based monitoring tool provides a consistence poverty monitoring framework for local planning, budgeting and implementation at Ward and village levels.

In South Africa, years of active discriminatory policy-making, segregation, and neglect have resulted in high levels of poverty and inequality. This condition is rampant especially in townships and rural areas characterized by extreme wealth on one hand and desperate poverty on the other (Woodland, and Kasen, 2004). According to Landsman and Hausermann (2003), the eradication of poverty had been one of the top priorities for the government of South Africa since its independence. An appropriate multi-dimensional poverty measuring design and methodology are required for an effective policy decision that would improve the lives of poor individuals and households. Thus, while poverty was originally measured exclusively in monetary terms and in terms of income, its conceptualization and measurement has recently extended to encompass the ability of individuals and households to meet their basic needs (Oosthuizen, 2011).

The South African Constitution of 1996 created space for Integrated development planning to ensure sustainable provision of services, promote social and economic development,
promote a safe and healthy environment, encourage involvement of communities, and give priority to the basic needs of communities (Integrated Development Plans [IDP], 2012). This study was an attempt to implement a community-based multidimensional poverty measuring and monitoring system design and methodology in Limpopo province starting with Mutale and Tzaneen local municipalities.

1.2 Statement of the problem

Although Limpopo province has a relatively large number of marketing outlets, abattoirs, canneries and preservers, the province’s single biggest problem is widespread unemployment and poverty. According to Human Science and Research Council (HSRC), (2007), much of Limpopo’s population is economically marginalized and deeply vulnerable, dominated by women-headed households, pensioners, and youth. This group is dependent on meager transfers, from urban relatives and/or state grants for nearly all of their cash income. The province has the second lowest gross geographical product in South Africa and the lowest per capita economic output. According to Limpopo Employment Growth and Development Plan (2009), the economic performance, in terms of job creation, the quality of jobs, reduction of poverty and inequality, has fallen far short of expectation and aspiration. Approximately 40% of the households in Limpopo province live in areas that are characterized by extreme poverty and underdevelopment. Identification of poverty pockets in the province using appropriate design and methodology therefore paramount for an effective strategic intervention by local government.

Furthermore, the Municipal Structures Act of 1998 and Municipal Systems Act of 2000 provided a framework for people to participate in budget processes and formulation of Integrated Development Planning. However to date, the involvement of grassroots community in decision-making processes has not been successful due to lack of appropriate poverty targeting and a continuous community-based poverty monitoring systems (Integrated Development Plans [IDP], 2007). The non-existence of any institutional mechanism to generate and monitor poverty data at the local government structure levels remains a significant constraint in designing an effective poverty reduction agenda. Moreover, efforts and initiatives aimed at promoting the implementation of integrated development planning process are beset by various challenges including the lack of adequate designs and tools to capture conditions at village and ward levels. (Integrated Development Plans [IDP], 2007). The above challenges highlight the need for a tool that is able to generate and monitor multidimensional poverty data at local government level. Community Based monitoring tool capture multidimensional poverty data at households, village and Ward level therefore enhancing local government planning, prioritization of
projects at these levels. Furthermore Community –based monitoring tool is able to provide timely data at the local level and accurately diagnose the cause and extent of multi-dimensional poverty in order to formulate appropriate policies and intervention strategies.

1.3 Description of the Study Area

1.3.1 Limpopo Province

Limpopo Province is situated in the far northern part of South Africa. It covers an area of 13.5 million hectares and has a total population of approximately six million people, about 70% of whom reside in rural area(Integrated Development Plans [IDP], 2007). Limpopo has five district municipalities namely, Vhembe, Mopani, Sekhukhune, Capricorn, and Waterburg. The pilot project was conducted in Mutale Local Municipality Ward One based in Vhembe District.

1.3.2 Mutale Local Municipality Ward 1

Mutale Local Municipality is the first CBMS pilot site. It is characterised by underdevelopment, poverty, and lack of skills. As a result of the Bantu Education system introduced during the apartheid, 60% of the Mutale local municipality is officially defined by the government of South Africa as poor (Integrated Development Plans [IDP], 2007).

Majority of families in the district are dependent on meagre transfers from urban relatives and/or state grants for nearly all of their cash income. Nearly 70% of the potential labour force is either unemployed, in subsistence agriculture, or in the informal sector. Greater Tzaneen Municipality is made up of 13 Wards with approximately 24,139 households. The first pilot site on CBMS was undertaken in Mutale Ward1.

1.3.3 Greater Tzaneen Local Municipality Ward 1

The Greater Tzaneen Municipality comprises a land area of approximately 3240 km. The municipal boundaries form an inverted T-Shape, which results in certain developmental implications for the Municipality, and more specifically the distance to markets, difficulties in respect of service provision. Greater Tzaneen has a population of approximately 375,000 people. The Greater Tzaneen Municipality is made up of 34 Wards and 125 rural villages and almost 80% of households reside in these rural villages. Integrated Development Plan
The second pilot site on Community based monitoring system [CBMS] was undertaken in Greater Tzaneen Ward 1.

**Source:** Limpopo provincial Government. (2013).

1.3.4. Justification of the Study

Poverty monitoring surveys in South Africa is significantly institutionalized both in design and coverage at the national level. In fact, Statistics Council is an advisory body to Statistics South Africa and the Minister of Finance on issues around Poverty monitoring in the country. According to the UN, (2005), the survey conducted by Statistics South Africa has become a comprehensive source of data for poverty measurement in the country.

Despite the absence of an official poverty line and a national definition of poverty, there is a broad consensus as to the severity of poverty and many of its faces. (Department of Rural Development and Land Reform [DRDRL], 2008). Much of government work is already aimed at addressing poverty and ensuring a better life for all. (The National Planning Committee ( 2011), in Vision 2030 highlights some key multidimensional poverty priority areas that also affects Limpopo province. These include, Education, Health, water, energy, agricultural land, Housing, illiteracy.

In addition, the Municipal Systems Act (Act 32 of 2000) requires that municipalities to develop and review Integrated Development Plans annually. Progress has been in many areas, however, the formulation of strategies, policy options, and viable mechanisms to evaluate effects of implementation, monitoring impact on poverty, and service delivery at District and local municipality levels are yet to be met (United Nations Development Programme [UNDP], 2000).
Moreover, the White paper on Local Government considers the integrated development planning process as an instrument aimed at creating room for municipalities and communities to engage each other; aligning scarce resources around agreed objectives and prioritizing the essential needs. It was the objective of CBMS to support the Mutale and Tzaneen Local Municipalities in accomplishing this goal. Community based monitoring tool offer grass root level simple and easy tools to collect data on poverty indicators, highlight the impact of strategies, and determine the trend of multi-dimensional poverty per ward, villages and household levels.

1.4 Research Objectives

1.4.1 General objectives

The Objective of CBMS was to profile multidimensional poverty pockets in Mutale and Tzaneen local municipalities and to assess the policy implications on service delivery at ward, village and household levels.

1.4.2 Specific objectives were to:

- Determine multidimensional poverty pockets in Mutale and Tzaneen local municipalities
- Determine core CBMS indicators to be used by the municipalities
- Develop a CBMS Design and methodology for use in Mutale and Tzaneen Local municipalities.

CHAPTER 2. RESEARCH METHODOLOGY AND DESIGN

2.1 Methodology

Although CBMS is relevant to South Africa, especially in the townships and rural areas, Limpopo province has been selected for the pilot phase of the project because it is one of the poorest provinces in South Africa and the university of Venda is already working with The Presidency on issues around anti-poverty campaign. In collecting data, the researchers made use of primary and secondary data. Secondary data was collected from various literatures, research journals, periodicals, government official reports, Statistics South Africa, and the Internet. Both quantitative and qualitative methods of data collection were
used through an administrative household profile questionnaire. The questionnaire was used to interview 11 villages in Mutale and 8 villages in Tzaneen Local municipalities. A Ward-based questionnaire was also used to collect data on general services in Ward one. The researchers interviewed a total of 1,159 households with a population of 4,599 in Mutale Local Municipality Ward one and 2,140 households form Tzaneen local municipality Ward one. Village listings was provided by traditional leaders. The village listing was used to countercheck the names, ID and location of Households by the enumerators during the data collection exercise. Where the names or Id differed, such cases were further discussed with the traditional leaders for clarification.

2.2 Data design, Analysis and Management

2.2.1 Survey instruments and analysis

The survey/data collection was carried out using the Household Profile Questionnaire (HPQ) developed by the CBMS South Africa team in consultation with the local municipalities. Furthermore, the research utilized both quantitative and qualitative data collection methodologies. The design allowed validation of results from the separate components of the research which gave an allowance to confirm or corroborate findings within the study (Cresswell, Plano Clark, Gutmann and Hanson, 2003).

After data collection, the responses from questionnaire were inspected to establish whether proper and complete data was acquired. Data editing was undertaken to ensure quality, integrity and compliance prior to processing. Any information that was missing or had errors, was marked for further investigation. Any mistakes identified were corrected by the enumerators and an accompanied data editing manual was used to ensure integrity. The questionnaire had two accompanying manuals namely field editing and household profile manual that were used as a guide for the enumerators on how to conduct the survey. Ward profile questionnaire was also developed. The Ward Councilor and Ward committee members were interviewed by using the Ward profile questionnaire.

One of the most critical steps in the implementation of Community Based monitoring [CBMS] was data processing. This is because results from this procedure formed the basis for further planning and decision-making. Data processing for both sites was done using tally sheets and excel software. Excel data content, frequency distribution and measures of central tendency were analyzed using both qualitative and quantitative methods of data analysis. The data was then coded and entered on to the excel data file. Various pre-established codes on the questionnaires were used. Data regarding numbers was analyzed using measures of central tendency. Graphs and tabulations were used interchangeably to answer the objectives of the study when necessary. Comparison with the Local municipality
integrated development plans and statistics South Africa 2011 findings were used as much as possible where appropriate to assess potential for possible future integration and supplementation.

Data processing was done with the support of a pool of Community Based monitoring [CBMS] enumerators. This was because they were more familiar with the concepts, definitions and the accomplished household profile questionnaires. This made the processing easier and more accurate. The participants were trained in processing the results from the survey questionnaire on how to compute proportions and rates of the CBMS core and other additional indicators. They were also trained to understand and interpret these indicators. Data boards were used to record the results of computations of CBMS core and other additional indicators. Formulas and definitions of the indicators were included for easier reference. To ensure comparability, concepts were made in line with, and consistent with the statistics produced by the South Africa national government agencies.

This researchers employed a convergent design, also known as parallel integration approach. This is because equal priority was given to both quantitative and qualitative strands. The designs were conducted concurrently and the data was merged at the point of data analysis and interpretation (Angell and Townsend, 2011). This research design was appropriate for this study because both qualitative and quantitative strands provided a better understanding of multidimensional poverty profiles. Community based monitoring methodology does not use sampling procedure, therefore the study aimed to interview the entire households within the study sites. There were households who could not be reached due to various reasons. However number did not have a significant impact on the findings of the study.

The data was then coded, tallied and entered on to the excel data file. Specific data analysis methods such as frequency distribution analysis, were employed to achieve specific objectives of the study. Data regarding number and types was analyzed using measures of central tendency. Content analysis was employed to determine specific themes emerging from the responses such as educational institutional attendance levels, quality of water health and climate change among others. This involved a detailed analysis of responses given by household heads. Data processing and coding was done using both manual and computerized software and editing manual.

- Manual tally sheets, data boards and computerized (excel)
Data dictionary was developed
- Raw and processed Data-sets for core indicators
- Excel software to calculate proportions
- NRDP software to create Village poverty mapping.

2.3.1. Consultation process with stakeholders in pilot Sites
2.3.1.1 Mutale Local Municipality Ward 1

The consultation process in Mutale local municipality continued throughout the data collection period. The CBMS South Africa team assigned to facilitate engagements in Mutale Local Municipalities held a series of meetings with key stakeholders within the pilot sites. This was designed to create awareness and secure support for planned CBMS implementation. Literature review assisted with obtaining supporting secondary data. All policy documents in the Internet and materials obtained from both district and local municipality were reviewed.

During the consultation meeting, the performance management team in Mutale local municipality explained that there was a problem with service delivery due to lack of information at the ward and village levels. They said that information produced by Statistics South Africa was too aggregated and the time span for data collection was too wide making the information inadequate for effective decision-making. The municipality explained that they needed a methodology that would assist in tracking the needs of the local community by identifying and targeting the right beneficiaries.

In Mutale Local municipality, meetings were held with the local economic development offices in the district to orient them on CBMS and plan to undertake the exercise in Mutale local municipality. A meeting was also held with the planning teams who are in charge of national surveys and planning for the activities within the district for various reasons. The first reason for these meetings was to assess the challenges currently faced in the planning process and to determine their buy in to the proposed CBMS methodology. The second was to find out the challenges and constrains currently faced at the district and local municipality levels. The third was to get an approval from the speaker to go ahead with consultations at the local municipality level.

The second part of the consultation meetings were held with the Mayor, Local economic development officer, and Integrated development planning teams. The meetings had four objectives. The first meeting was to orient the team and get approval to undertake
the exercise in ward one. The second was to discuss activities planned and to seek support in meetings with the stakeholders at the local municipality and ward one level. The third was to request support in facilitating meetings with the ward councilors, the village wards committees, and the traditional leaders in ward one where the Community-based monitoring [CBMS] exercise would take place. The fourth was to review the proposed indicators and to access any additional documentation that would help in the exercise.

2.3.3.2 Greater Tzaneen Local Municipality

A series of meetings were also held with Greater Tzaneen Local Municipality team to get their commitment to the Community-based monitoring [CBMS] process. The second purpose was to introduce the team on the Community-based monitoring (CBMS) tool. The third purpose of the meeting was to request Tzaneen municipality official for permission to pilot the project. The fourth purpose of the meeting was to agree on the way forward knowing that the process is quite comprehensive will require additional funding from the municipality and require commitment from all key stakeholders from local municipality on the move. Presentation on Community-based monitoring [CBMS] was made to the Municipality senior officials, a proposed activities plan and core indicators were also presented for input. It was agreed that the proposed Community-based monitoring [CBMS] would be beneficial to Greater Tzaneen Local Municipality.

2.3.4. Selection of data collection support personnel

2.3.4.1 Mutale Local municipality Ward 1

In Mutale Ward 1, data collection process was undertaken through a survey covering all households in the 11 villages across localities in Mutale local municipality. Twenty-one trained enumerators from the villages and University of Venda were tapped to administer the survey process. The process was overseen by two CBMS South Africa team. Supervision was done by the one Ward councilor and 11 Ward committee members who were conversant with the households in villages under their jurisdiction. Aside from conducting interviews, the students doubled up as team leaders. Ward community members acted as eyes and ears during the data collection exercise to ensure that the enumerators are doing the data collection effectively. The traditional leaders were used to establish the authenticity of the household heads by using the household listings kept by the traditional leaders.
2.3.4.2. Greater Tzaneen Local municipality Ward 1

In Greater Tzaneen Ward 1, data collection process was undertaken through a survey covering households in the 8 villages across all localities. Twenty-three trained enumerators from the villages and University of Venda were tapped to administer the survey process. The process was overseen by three Community-based monitoring [CBMS] South Africa team and two local economic development personnel from Greater Tzaneen office. Supervision was done by the local economic development officer assigned to the project and 8 Ward committee members who were conversant with the households in villages under their jurisdiction. The traditional leaders provided respective household listings that were used to establish the authenticity of the household heads. University of Venda Community-based monitoring [CBMS] students also doubled up as enumerators.

2.3.5. Enumerators selection criteria for Mutale and Tzaneen Local Municipalities project sites.

The enumerators’ selection criterion was done in two methods. The students were selected based on their area of discipline, background and interest on poverty related issues. The selection of the village enumerators were done by the community members overseen by the Ward councilor and the Ward committee members. The selection criterion was based on the level of education and community preference. A minimum of Matrics level of qualification was required. The total number of enumerators was determined by the number of villages, the budget, and the total households that was to be covered during the survey operation, landscape and distance between households. It was reasonable to have two enumerators per village especially in larger ones.

2.3.6 Training for CBMS data collection and editing for pilot sites enumerators

Enumerators in Mutale underwent a three-day, with a follow up mentorship rom the supervisor in the field, while in Tzaneen the training took four days plus one day field orientation and a two day field mentorship prior to actual data collection. The training in Tzaneen took longer due to the distance from the University of Venda. It was resolved that data collection and editing training should be done as a block release. In both cases CBMS orientation and training manuals were used as a guide. The training covered a general background and rationale for CBMS. In the training, the enumerators were introduced to the concept of the CBMS. Their role as CBMS enumerators and how to conduct an interview,
The training was both theoretical and technical in nature and was conducted using PowerPoint presentations. It included scenario exercises and group presentations. Sample questionnaires were given to the enumerators to help in pre-testing the quality of the questionnaire and to test their understanding on how to conduct the enumeration exercise. Returned pre-tested questionnaires were reviewed and mistakes were corrected as part of the training. This was also helpful in determining the number of questionnaire that would be completed per day. The facilitators were also able to assess the questions that the communities were not comfortable to answer and come up with strategies on how to deal with them. The trainings also engage participants in classroom group exercises and field exercises on tallying the respondent’s answers in the questionnaires. They were also trained to correct their own work by doing field editing procedures so that errors are minimized during enumeration. The other objective was to practice how to conduct interview and how to edit questionnaires.

2.3.6.2 Training for data editing exercise

Data editing manual was used to conduct the training in PowerPoint presentations in both local municipalities. Theoretical and practical training methodologies were used. Completed questionnaires from pre-test exercise were used to test the participants’ understanding on how to conduct editing exercise. Participants in a group of two were given questionnaires each from the pilot areas to access their competence before getting involved in the full exercise. The partnering method was used to help them discuss between themselves any areas that they did not understand. Mistakes were discussed and clarified during the exercise. Enumerators were asked to check accomplished questionnaires from the classroom and during the field pre-test exercise.

2.3.7 Pre-testing study instrument
2.3.7.1 Mutale Local municipality Ward 1

A pretest was done in seven villages in Mutale Local Municipality Ward 1. The aim was to get experience of various types of household. Enumerators were trained on household data collection profile questionnaire and participatory tools. Each enumerator was given 15 questionnaires to assess their readiness in data collection process. The pre-test was conducted in the last week of February, 2012. The sample was distributed
proportionately based on the number of households in each village. The pre-test sites were Mabulo, Mphagane, Khakhu, Makuleni, Mukondeni, and Tshifume.

The enumerators were accompanied by the village representatives selected by the village and ward councilors. The Community-based monitoring [CBMS] team also accompanied the enumerators. Some enumerators were able to complete at least eight questionnaires, indicating that during the pilot test, enumerators should complete a maximum of at least 8-10 questionnaires per day. Most villages in Mutale Ward 1 are in mountainous areas and are impassible during rainy season. The villages are far apart and required in between transportation. The roads are not paved and need four wheel drive vehicle during rainy seasons.

Several questionnaires contained some errors. This meant that during the actual data collection, care had to be taken to ensure accuracy. Some enumerators reported that the questionnaire was too long and others said that it was not possible to get the head of the household. Some household were not comfortable with issues relating to contraception and disclosure of income. Some households also refused to answer questions that they felt uncomfortable with. Other errors were related to manual entry and tally. The team felt that it was a worthwhile exercise as they were able to put into practice what they had learnt and to test their understanding on the Community-based monitoring [CBMS] process. Others enumerators felt that another run prior to the pilot test was necessary to polish up what they had missed. It was resolved that mentorship during field supervision would be appropriate.

2.3.3.7.2 Greater Tzaneen Local Municipality Ward 1

In Greater Tzaneen, each enumerator was given three questionnaires to test their application capability after the fourth day of training. The village representatives were not accompanied by CBMS students from University of Venda enumerators during the pre-test exercise. Weaknesses were noticed during the assessment of completed questionnaires and a decision was made to bring back University of Venda Students enumerators for two days to mentor Village representative enumerators during December, 2012 holidays to work with the enumerators from the villages. Sampled assessment of the questionnaires revealed improvement and therefore a decision was made to continue with data collection. It was also resolved that one staff member form Tzaneen office would work with the village representative on the ground. The staff member had attended all the training sessions on Community-based monitoring [CBMS].
Like in the case of Mutale, some enumerators reported that the questionnaire was too long and others said that it was not possible to get the head of the household. Others said that some questions were considered sensitive and members were not comfortable to undertake the interviews.

2.4. Implementation

2.4.1 Actual data collection in pilot sites

2.4.1.1 Mutale Local municipality

The survey operation started in Mutale in mid-March 2012 after the trainings. The survey operations took two months because of the area in which the enumerators had to cover. Some enumerators tried to bypass some households. The total number of households provided by the local municipalities, and that from the ward councilors and the traditional leaders were quite different. This caused a challenge during data collection exercise.

The research team was composed of several players. The mayor, ward councilor, the village ward committee members, the traditional leaders, the student enumerator, and the village representative enumerators. The mayor was a crucial person in informing the ward leadership on the exercise and soliciting their support during the interviews. The ward councilor was crucial in informing the communities on the exercise and to solicit their cooperation. The village committee members and traditional leaders were crucial in provision of household listings for data collection exercise. Once the household listing exercise was completed, the enumerators embarked on the actual data collection exercise. The Mutale pilot site had one supervisor and a support team who issued the questionnaires, edited them, and made field visits to ensure quality control.

Enumerators were required to return completed questionnaires on a weekly basis, which were checked by the supervisors, and if found incomplete, the responsible enumerator was called upon to make call backs and complete the questionnaire(s). The enumerators were required to complete 50 questionnaires per week.

2.4.1.2 Greater Tzaneen Local Municipality Ward 1

The operation started in Tzaneen in December, 2012 after the trainings. The survey took two months because of the December holidays. Like in the case of Mutale, the total number of households provided by the local municipality, the village listings and Community based
monitoring system [CBMS] varied. This caused somereconciliation challenge during data collection exercise.

The research team was composed of the local economic development team from Tzaneen office, the Ward councilor, the Ward committee members, the traditional leaders, the university of Venda student enumerator, and the village representative enumerators. The local economic development team provided orientation to the Ward leadership structures on the exercise and solicited for their cooperation during the interviews. The Ward councilor and the Greater Tzaneen officials did an orientation with communities on the exercise to solicit their cooperation and organized a Community based Monitoring (CBMS) launch that was officiated by the mayor prior to the commencement of the exercise. The village committee members and traditional leaders provided updated household listings for data collection exercise.

As in the case of Mutale, enumerators were required to return completed questionnaires on a weekly basis, which were checked by the Local economic development [LED] official for incompleteness and forwarded the same to CBMS South Africa field supervisor to further check. The enumerators were required to complete 50 questionnaires per week. Questionnaires that did not meet the quality requirements were retuned back to the enumerators to make call backs and complete the questionnaire(s).

2.4.1.4 Data and indicators Generated from CBMS.

Table 1: Data Generated from CBMS

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</tr>
<tr>
<td>4 Unemployment</td>
<td>Proportion of unemployed head of households</td>
</tr>
<tr>
<td>5 Access to safe water</td>
<td>Proportion of households without safe water/distance</td>
</tr>
<tr>
<td>6 Access to Sanitary sanitation</td>
<td>Proportion of households without access to sanitary sanitation</td>
</tr>
<tr>
<td>7 Access to Waste disposal system</td>
<td>Proportion of households without access to sanitary sanitation</td>
</tr>
<tr>
<td></td>
<td>Access to electricity</td>
</tr>
<tr>
<td>---</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>access to RDP housing</td>
</tr>
<tr>
<td>10</td>
<td>Agricultural land</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Draught, flood, calamity</td>
</tr>
<tr>
<td>12</td>
<td>Robbery, theft, assaults</td>
</tr>
<tr>
<td>13</td>
<td>Illiteracy</td>
</tr>
</tbody>
</table>

### 2.4.1.5. Processing of data sets

Raw datasets was compiled based on selected computed indicators. The data was then consolidated and processed based on the number of households affected and the total households per village. The proportion of the affected households was then calculated as a proportion of total households. The following formula was used to come up with proportions:

\[ \text{e.g. proportions without access to safe water} = \frac{\text{Number of HH without access to safe water}}{\text{Total number of HH}} \]

\[ \text{Proportion educational institution attendance} = \frac{\text{Education institutional attendance}}{\text{Total number of age group allegeable}} \]

Processed Data sets generated from CBMS included:

- Households without access to water
- Households with distance to water source < 1Km
- Households without adequate sanitary sanitation
- Households without municipal garbage collection facilities
- Households using firewood for cooking
- Total number of illiterate heads of households
- Unemployed heads of households
- Households with land under traditional authority
- Households with agricultural land < 1 hectares
- Educational institutional attendance age 6-18 years
- Educational institutional attendance age <5 years
- Educational institutional attendance 19-35 years old

2.4.1.6 Datasets proportions originated for Mutale

<table>
<thead>
<tr>
<th>Villages</th>
<th>hh_nt_sws_p_prop</th>
<th>hh_watcersource_prop</th>
<th>hh_nt_sff_pr_prop</th>
<th>hh_garbcol_prop</th>
<th>hh_firewood_prop</th>
<th>illiterate_head_prop</th>
<th>unemph_head_prop</th>
<th>hh_land_trad_prop</th>
<th>hh_agriland_prop</th>
<th>educatt618_prop</th>
<th>educatt05_prop</th>
<th>educatt1935_prop</th>
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<td>66.1</td>
<td>74.8</td>
<td>86.6</td>
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<td>68.5</td>
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<td>73.1</td>
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2.4.1.7 Datasets proportions originated for Tzaneen

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<th>Villages</th>
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<th>hh_ntsff_prop</th>
<th>hh_garbcol_prop</th>
<th>hh_firewood_prop</th>
<th>illiterate_head_prop</th>
<th>unemph_head_prop</th>
<th>hh_land_trad_prop</th>
<th>hh_agriland_prop</th>
<th>educatt618_prop</th>
<th>educatt05_prop</th>
<th>educatt1935_prop</th>
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<td>0.8</td>
<td>1.0</td>
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<tr>
<td>Morapal ala</td>
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<tr>
<td>Matipane e</td>
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<td>0.3</td>
<td>0.3</td>
<td>0.7</td>
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<td>Patamed i</td>
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<td>0.9</td>
<td>0.6</td>
<td>0.2</td>
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</tr>
</tbody>
</table>
Prepared in excel the encoded dataset for Mutale and Tzaneen local municipalities were then import them in NRDB software.

2.5 CBMS Poverty Mapping

Attributes were added one by one using NRDB software that was processed for South Africa by variable names listed in the excel file. To view the maps, village CBMS indicators were added one by one only map those indicators with _prop were mapped because we only wanted to map proportions. This step was done for Mutale and Tzaneen local municipalities separately. Various colour ranges were used to indicate the villages. To determine the ranges of proportions, the excel file Data sets for Mutale and Tzaneen including the formula and the resulting ranges for the indicators. 4 standard ranges were used for this purpose (green, light green, pink and red. The colours made it easier to see which areas are priority ones for example red and pink areas.

The formula used to determine colour ranges:

Example Household without access to safe water in Mutale

1st range minimum value: 0 (always 0 since the percentages ranges from 0-100)
1st range maximum value: ( (ward 1 value [47.8] - minimum value of all villages [0] ) / 2 ) + minimum value of all villages [0]
2nd range minimum value: = 1st range maximum value
2nd range maximum value = ward 1 Mutale data [47.8]
3rd range minimum value: = 2nd range maximum value
3rd range maximum value: ( maximum value of all villages [100] - ward1 data ( [47.8] ) / 2 + ward1 data [47.8]
4th range minimum value: = 3rd range maximum value
4th range maximum value: 100 (always 100 since the percentages ranges from 0-100)

Following these ranges and formula:

1st range: 0-23.9
2nd range: 23.9-47.8
3rd range: 47.8-73.9
4th range: 73.9-100

The ranges were then entered in the NRDB map layer properties of hh_ntsws_prop. Each colourbox was next, double-clicked on beside the colour ranges as follows:

1st range: 0-23.9 (green: 3rd column, 4th row)
2nd range: 23.9-47.8 (light green: 3rd column, 1st row)
The above process was done for all the ranges and properties for both Mutale and Tzaneen. The next process map layer properties was used to add village feature, followed by style tab and selecting none style for both the Mutale and Tzaneen.

The process was done by online instructions support from the CBMSPhilippines office and the manual.

2.6 Ethical Considerations

The researcher communicated the aims and purpose of the study, the implications, and possible risks for involvement in the study to the respondents. This was done in order to uphold research ethics, ensure conformity to the ethical requirements and secure informed consent. Approval to undertake the study was sought and granted from the Local municipalities and the community structures. Permission for conducting the study was sought from the leaders of the District including the Executive Mayors.

The researchers communicated to the respondents that their participation will not predispose them to any foreseeable forms of harm or danger. Even though the full participation was required during the exercise the respondents were informed of the fact that they have the right to withdraw from the study at any time. Doing so would not expose them to any form of prejudice or criticism. In addition, honesty and professionalism was adhered to throughout the research process.
3. Village Spot maps In Tzaneen Ward 1

During the data collection exercise in Tzaneen it was not possible to get GIS maps therefore manual spot maps were drawn which were later converted to electronic version by a designer. The maps show location of key areas, roads, water sources churches etc. The maps are not to scale.

Spot Map 1
Sport map 2
Sport map 5

KEY

- Church
- Petrol Station
- High School
- RIP House
- Cemetery
- Village Meeting Area

PELANE VILLAGE MAP
REFERENCES:


Landman, T., Hausermann, J. (2003), Map-Making and Analysis of the Main International Initiatives on Developing Indicators on Democracy and Good Governance, Colchester: University of Essex UK


