

# Land Use Changes at Ezulwini Peri - Urban Area in Swaziland (1992-2012)

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## ABSTRACT

Swaziland is facing varying rates of urbanization and this directly affects lands use changes. This study was designed to investigate the land use changes at Ezulwini peri-urban area from 1992 to 2012 and to evaluate how the land use changes have affected the lives of the people in the area. Questionnaires and GIS techniques were used to conducting the study. Open and closed ended questionnaires were directed to residents of study area. Result shows that land use changes took place at the study area and settlements were swallowing agricultural land. The causes of land use changes were development of the local town, low agricultural returns and the construction of a major road. Land use changes brought affluent and educated people to the study area. Residents responded by selling their fields, building rental houses and seeking formal employment. The study concluded that land use changes affect livelihood and governance of peri-urban residents.

**Keywords:** Agricultural Land, Heads of Households, Land Use, Peri-Urban, Urbanization

## I. INTRODUCTION

The economically less developed countries like Swaziland are facing varying rates of urbanization. The rapid process of urbanization result to population growth, increase and development of human settlement and change from agricultural activities to non-agricultural activities. The results of urbanization directly affect peri-urban areas (Rakodi, 2007).

### 1.1 Peri-urban areas

Peri-urban areas refer to places outside formal urban boundaries and jurisdiction (MHUD, 2001). According to Mandere and Ness (2010), peri-urban areas refer to rural land surrounding cities. These areas are found within a commuting distance to the cities. For the purposes of this study, peri- areas refer to areas within the buffer zone of Ezulwini municipality. These areas include Mvutjini, Nyonyane, Gelekeceni, Somnjalose, Nshakabili Ebuka Longalaza and Elangeni. The peri-urban areas are direct recipients of urban growth and development. The development and growth of urban

areas entail encroachment into peri-urban areas. As a result many peri-urban areas have many characteristics of nearby cities (Adell, 1999).

Peri-urban areas in Swaziland are urbanized by a mixture of planned and unplanned buildings as well as densely populated. Most peri-urban areas in Swaziland are found between Ngwenya and Manzini corridor. Many Swazi people prefer to settle in peri-urban areas because land is affordable yet it is closer to places of employment. Another advantage of settling in peri-urban areas is that they may be incorporated into a nearby urban area (Dlamini and Masuku, 2011).

As peri-urban areas develop, land use changes. Agricultural land use may be replaced by residential, commercial, industrial and recreational land use. Land use change may affect land administration and land tenure (Rakodi, 2007).

The government of Swaziland defines peri-urban areas as those that are outside formal boundaries and urban jurisdictions, which are in a process of urbanization and

therefore assume many of the characteristics of urban areas. They are urbanizing through fast and unplanned growth resulting in environmental and health issues (MHUD, 2001).

## **1.2. Land tenure in peri-urban areas in Swaziland**

Land tenure may be defined as the terms and conditions on which land is held, used and transacted (Adams, Sibanda and Turner, 1999). There are two dominant land tenure systems in Swaziland. These are Swazi Nation Land (SNL) and Title Deed Land (TDL).

Swazi Nation Land is land held in trust by the king for the Swazi nation. It is governed by the chiefs and is acquired through *kukhonta*. *Kukhonta* is a traditional process through which an individual seeks residence in the chiefdom by approaching local authorities.

Title Deed Land (TDL) is private land owned by individuals, companies and government. This land can be sold to anyone who can afford it (IFAD, 2007). TDL is mostly found in urban areas.

Peri-urban areas are developing at a faster rate than expected in the last two decades (Mandere and Ness, 2010). The process of peri-urban development is most dominant in Africa and Asian cities. Swaziland is also facing challenges of peri-urban development. The fastest developing peri-urban area in Swaziland is Ezulwini. The main causes or drivers of peri-urban development vary from country to country and from town to town. They may include Foreign Direct Investment FDI or local investment, government policy or shortage of land in the nearby urban area or city. The investments may be used in the setting up of industries in peri-urban areas. As a result agricultural land will be converted to residential land.

As the peri-urban area develops, land uses change. Agricultural land is swallowed by other land uses such as industrial and residential. The change in land use may result in population growth. The growth of population will create pressure on basic services such as roads, water supply and recreational facilities. The provision of these services will also swallow agricultural land. The loss of agricultural land may cause problems for peri-urban people. This is because some of them depend on agriculture for livelihood.

The change of land use may cause governance problems. Land tenure may also be affected. Traditional and municipal authorities may be affected by the influx of people. Land use change in peri-urban areas poses several challenges (Webster, 2002). However, literature review reveals that there is no clear understanding of these challenges. The response by people to these challenges has also not been investigated (Buxton and Choy, 2012). This study will investigate the land use changes at Ezulwini peri-urban area in Swaziland from 1992-2012

## **1.3 Government's efforts to monitor and control peri-urban development in Swaziland**

The government of Swaziland has developed policies to regulate and monitor peri-urban development. The purpose of these policies is to mitigate the impacts of peri-urban development. These policies include National Land Policy (NLP), National Housing Policy (NHP) and Peri-Urban Growth Policy (PUGP).

### **1.3.1 National Housing Policy (NHP)**

Government in May 1993 in response to challenges of rapid population growth, rapid urbanization, urban growth and deepening poverty approved the national housing policy. The National Housing Policy focuses on:

- Improving the efficiency of the housing market in urban areas;
- Improving the efficiency of the housing market in urban areas;
- Incorporating peri-urban areas within Mbabane and Manzini so that all households acquire services of health, safety, water, sanitation and waste removal.

### **1.3.2 National Land Policy (NLP)**

The national land policy was developed to control land acquisition and management (Sihlongonyane, 2003). The objectives of the National Land Policy are to:

- Improve access to land and tenure;
- Encourage the rational and sustainable use of land;
- Improve productivity, income and living conditions and alleviate poverty;
- Reduce land related conflicts;
- Develop an efficient and effective system of land administration.

### 1.3.3 The Peri -Urban Growth Policy (PUGP)

The Peri-Urban Growth Policy (PUGP) was developed for better management of the urbanization process in peri-urban areas. The objectives of the Peri-Urban Growth Policy are to:

- Provide affordable infrastructure and safe services in order to ensure introduction and maintenance of minimum health standards;
- Direct and channel urban expansion and market forces towards urban amenity, including the retention of green belt areas; and
- Mitigate the problems related to spontaneous human settlements through policies and programmes that anticipate unplanned settlements.

The Peri-Urban Growth Policy proposes a gradual process of recognizing current land uses and incorporating them into urban areas. It calls for the formation of the Peri-Urban Authority (PUA) that will have responsibility for all structures in peri-urban areas. The peri-urban authority shall have jurisdiction on all land whether SNL or TDL.

### 1.4 Features of peri-urban areas

Peri-urban areas are places or land surrounding the urban boundary. Peri-urban areas have various characteristics according to the literature review. According to Browder, Bohland and Scarpadi (1995) peri-urban areas are urbanization by a diversity of land uses. The land uses are influenced by the nearby cities. If the nearby town is a tourist town the peri-urban residents will provide rental housing to hotel staff.

### 1.5 Land use change models

Land use change models such as California Urban Futures (CUF) Model developed in Northern California Bay region (EPA, 2000), Delta Model developed by David Simmonds in 1998, Land Use Change Analysis System (LUCAS) developed in 1994 and UPLAN Urban growth model developed by Robert Johnston in 1998 are used by researchers and professionals to study and monitor land use patterns. They are also used to study the effects of land use change on human activities and environment.

### 1.6 Land uses in Swaziland

Swaziland is experiencing a rapid population growth, rapid industrialization and urbanization, increasing agricultural demand and a declining economy. According to Mndzebele (2001) the major land use problems is land degradation due to overstocking and deterioration of grazing areas, soil erosion, deforestation, rapid urbanization and unplanned settlements in both urban and rural areas.

The ever-increasing human population in Swaziland has increased the demand for land for food production. Riverbanks and slopes above 14% have been cultivated with considerable loss of soil through erosion. Natural forests have also been cleared to make way for human settlements, pastures, arable land civil structures such as dams and roads (Mwendera, Manyatsi Mangwenzi and Dlamini, 2002). Moreover, people residing on Swazi Nation Land do not have secure property rights with regards to land. This means that it is very risky to engage in land improvement measures because the land does not actually belong to the inhabitants, hence there is no guarantee of ownership.

Another land use problem has been the indiscriminate shift from crop production to commercial crop farming. In the past, irrigated sugar cane was grown only in the lowveld of Swaziland especially around Simunye, Mhlume, Tshaneni and Big Bend. At the moment a considerable proportion of the total arable land in Swaziland has been turned into sugarcane plantations, even in the Middleveld, due to the crop's ability to generate profit within a short space of time (Manyatsi, 1997).

### 1.7 Ethical considerations of the study

According to Tevera and Peter (2008), ethics have an overriding implication for data collection, analysis and research output. Due to this reason, several ethical issues were raised in the study. It was explained to the respondents that this was an academic research. It will not directly benefit them but would help the researcher and other stakeholders to understand the impact of land use changes on peri-urban areas. Moreover, strict confidentiality was observed in the study. The respondents were informed of the voluntary nature of the study. Interviews were administered only to willing

participants who had granted their consent after the researcher had explained the purpose of the research.

## 2.0 Theoretical framework

The theoretical framework in this study was derived and modified from the Pressure-State-Impact-Response (DPSIR) scheme (Figure 1). The different causes and effects of land use change are explained. It is widely used as a tool to link several environmental and socio-economic factors by explaining causal relationships. The DPSIR model illustrates the effects of human actions on the environment in an easy way.

The DPSIR concept is the links of several components preliminary with 'drivers' such as investments, government policy and demand for land through 'pressures' such as accommodation, residential facilities, basic services to 'governance' central government, traditional and municipal authority and leading to 'impacts' change livelihood, job opportunity, population growth and loss of biodiversity.

### 2.1 Drivers

Drivers refer to the causes of peri-urbanization and can cause change in the systems. Land use change in peri-urban area is not only the change from non-urban to urban land but also exoduses in the competition between drivers and land use. The types of change include social, financial, and ecological and all can be either positive or negative. The drivers include foreign direct investment (FDI), for example, according to (Webster, 2002) foreign direct investment is a major cause of peri-urbanization approximately large African and Asian cities. Ezulwini town is increasingly proving to be the investors' center of attraction, among others. This can be illustrated by the influx of investors that are showing an interest of investing in the arguably fastest growing town in the kingdom. One of the investors that have plans to invest at the valley is Tibiyo Properties. The Tibiyo Taka Ngwane investee company will construct a multimillion commercial center at the town. In that commercial center, the mall construction was to complement the under construction International Convention Centre (ICC) and Five-Star hotel at the area. The commercial center will be located next to the MTN Swaziland. Other companies that are set to invest in

Ezulwini is the Swaziland Revenue Authority (SRA), which will be constructing head offices.

Domestic investment can also play a role in peri-urbanization and will create demand for land. Government policy of locating heavy industries on the outskirts of towns can also spark peri-urban growth. The introduction of manufacturing industries will cause land use change and it can create pressure. Drivers are the social, demographic and economic growths in societies and the consistent changes in life styles. Overall levels of consumption and production patterns to provide basic services such as food, shelter and health will have much impact in the area. These driving forces may originate and act locally regionally or globally.

### 2.2 Pressures

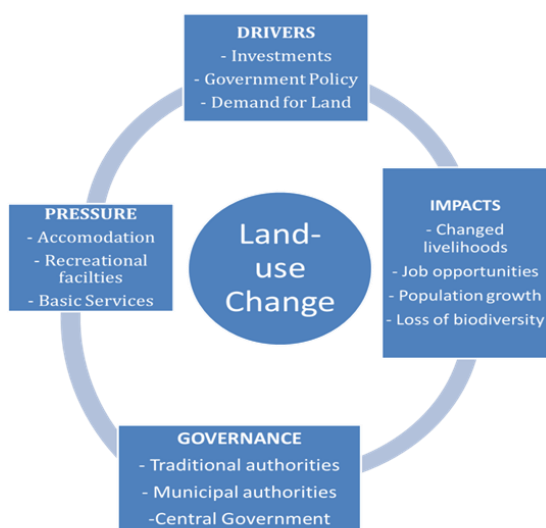
Drivers function through human activities, which may purposely or accidentally apply pressures on the environment. Pressures depend on the kind and level of expertise involved in different activities, and can vary across geographic regions. Usually these changes are unwanted and are seen as negative impact.

The pressure on the land clearly reflected on the development, agriculture and use of land. As a result of pressure on the land various indicators are affected, by the several spatial sections in different scales over a period of time. The pressures exerted by society may directly affect the ecosystem, such as harvesting or dredging, or may be transported and transformed through a variety of natural processes to indirectly cause changes in ecosystem conditions. Human activities caused by drivers will also increase the demand of accommodation, recreational facilities and basic services in the area.

### 2.3 Governance

Governance refers to anyone involved in the administration of land. These include traditional authorities (chiefs), municipal authorities and central government. As a peri-urban area develops, more people will approach the chiefs for land. Municipal authorities will be affected because the people will want municipal services such as water supply. The authorities will take agriculture land and use it for residential purposes hence land-related conflicts may arise.

The present governance system prevailing in Swaziland presents a number of challenges. For example, some cases, including those related to the industrial relations disputes, frequently find a forum before the traditional authorities rather than the industrial courts, where they rightly belong. Second, confusion may arise since the two systems of administration share the same territory and sometimes the same personnel. These arrangements not only lead to conflicting public policies and instructions but may also compromise or lead to abandonment of critical decisions. In the past, there have been instances whereby the Executive threatened the judicial independence where it conflicted with entrenched interest (African Development Bank, 2005). Chiefs-in-council constantly make and review land use decisions in their routine execution of land allocation duties. Chiefs also control the use of Nation Land for commercial purposes by agreeing to trading licenses. However, the Chiefs are often not guided by any overall zoning plans and have limited land use planning background. This situation has led to various development problems such as the notable ribbon development along main roads outside of all major border posts in the country, and the scattered nature of small commercial centers or marketplaces in rural areas (Matsebula, 2012).



**Figure 1.** Theoretical Framework modified adopted from Webster (2002)

## 2.4 Impacts

Impacts refer to the effects of land use changes. Land use changes are primarily driven by long - term product

prices and these changes may affect livelihood. For example, loss of agricultural land may force people to seek formal employment and agriculture is essential when considering the relationship between society and the environment. Industrialization may bring job opportunities and population growth but at the same time increase demand for basic services. Some people in peri-urban communities, who feel threatened by the replacement of farming with urban land uses cite detrimental environmental effects, such as widespread of wastes and pollutions. Adverse environmental effects are more likely to occur if land is used for a type of agriculture regarded as "marginal" for that land type. Population growth may lead to social problems such as crime and conflicts. For example, The Department of State has designated Swaziland as a "Critical" threat for crime. Although criminals considered Mbabane, Ezulwini and Manzini, prime grounds for operations due to the number of people, businesses, and affluent areas, the rate of crime (both violent and non-violent) reported in small towns and rural areas increased in 2012 (OSAC, 2013).

Land use changes are complex processes that arise from modification in land cover. Land use change is driven by the interaction in space and time between biophysical and human dimensions. Moreover there are potential impacts on physical and social dimensions (Minsua, 2012).

A large proportion of peri-urban households have access to some urban services like potable water and electricity supply in this area. However there is a general lack of sanitation systems like sewer systems and solid waste disposal mechanism. This results in the use of unsustainable methods to dispose waste. Other characteristics of the peri-urban area are high housing densities, communal land tenure that lacks security of tenure and poor road networks within the settlements and an ever-increasing population (Masina, 2003).

Therefore this study was designed to investigate the land use changes at Ezulwini peri-urban area in Swaziland from 1992-2012 and to evaluate how the land use changes have affected the lives of the people.

## II. METHODS AND MATERIAL

### 3.1 Country setting of the study area

Ezulwini is situated in Swaziland, a land locked country in the southeastern part of Africa. Swaziland has a total area of 17 364 km<sup>2</sup> (Vilakati, 2005). The general climate of Swaziland is sub-tropical, dry and cool winter, wet and hot in summer, approximately 75% of the rainfall is received during the months of September to March (Vilakati, 2005). Swaziland has a population of 1 184 936, growth rate of 1.5% and a population density of 67.9 per kilometer square (IFAD, 2009). It is estimated that 10% of the population own 40% of the country's resources, whilst 66% of the population survive on disposable income below us\$10 per month (Manyatsi, 2003).

#### 3.1.1 Location of the study area

Ezulwini is located in close proximity to two major odes in Swaziland, namely Mbabane the capital city of Swaziland, and Matsapha the industrial hub of Swaziland. In terms of longitude, it is found between 31°09'04'' and 31°15'22'' east. Latitudinally, it is found between 26°28'22'' and 31° 30'22'' South (Vilakati, 2005). The study area is found along the Mbabane- Manzini main road (Figure 2). According to the meteorological department (2013), Ezulwini is found in the upper middleveld with an average temperature of 19.1°C. Ezulwini experiences a total annual rainfall of about 9165mm per year with the highest rainfall during the month of January (Meteorological Department, 2013). The lowest rainfall is recorded during the months of June to July with an average of 14.1mm per month. According to the 2007 national population census Ezulwini had a population of about 23 351 people. Economically active aged groups (15-64 years old) dominated the population. The population was made up of mostly Swazi citizens and a small portion of foreign nationals.

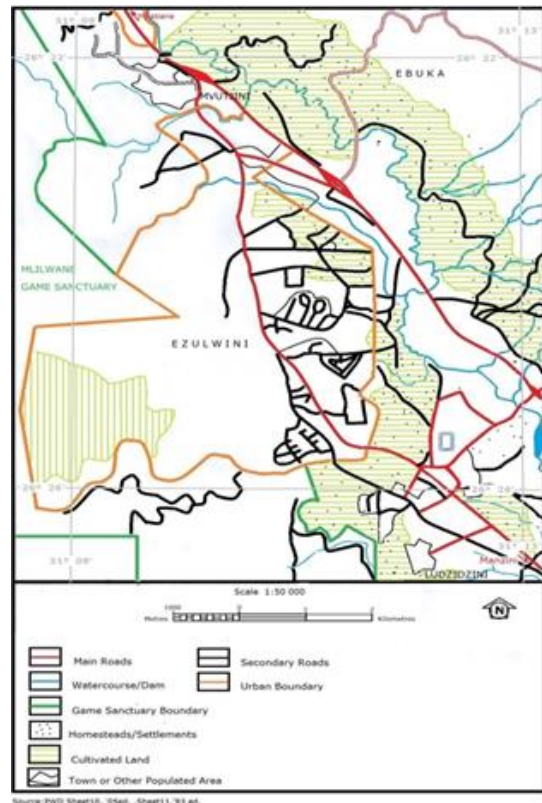


Figure 2. Map of Ezulwini

Source; Surveyor General's Department (2010)

#### 3.1.2 Land uses in Swaziland

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### 3.2 Method

The study adopted the "after only design". This design is used to assess an event after its occurrence (Tevera and Seyama 2008). Information required by the study includes the patterns of land use changes at Ezulwini peri-urban area between 1992, 2002 and 2012. In addition, information about divers or causes of land use change was required. Information about the impacts of the land use changes to the livelihood of the people was required. Moreover, information about the responses of the residents to the impacts of land use changes was required.

The study employed both primary and secondary data sources. Primary data was collected from heads of homestead including men, women and any individual from 18 years and above. Local authorities such as chiefs and royal councils were used as informants. The Ezulwini municipality town clerk was used as a resource person.

Additional information was sourced from central government departments. These include the Ministry of Housing and Urban Development (MHUD), ministry of Tinkhundla and Administration and the Land Management Board. Data on land use changes was sourced from aerial photographs and orthophoto maps from 1992, 2002 and 2012. The aerial photographs and orthophoto maps were obtained from the Surveyor Generals Department.

A sample or subset of the population of individuals was taken to provide information for the study. This technic is appropriate where the population to be studied is too large or where the collection of information for the whole area is impossible or costly in terms of time, effort and money (Tevera and Seyama 2008). The

sampling unit in this study were households. The study area is made up of 8 villages with a total of 2168 households (Table 1).

In this study stratified sampling was used. The households were stratified or grouped according to villages. The advantage of stratified sampling is to ensure a fair coverage of the population (Mciza, 2008).

Sample size refers to the total number of individuals who will be included in the study (Tevera and Seyama, 2008). After grouping the households 10% of the households were interviewed from each village. This means that 216 households were interviewed (Table 1). The respondents were selected using random sampling. Random sampling is where individuals to be interviewed are selected by chance. The advantage of random sampling is that it is simple and human bias is eliminated (Mciza, 2008).

**Table 1** Sample size of the study

Village	Number of households	Sample Size
Mvutjini	372	36
Nyonyane	180	18
Gelekeceeni	181	18
Somnjalose	261	28
Nshakabili	126	12
Buka	400	40
Longalaza	387	38
Elangeni	261	26
Total	2168	216

Source; Lobamba Inkhundla (2013)

Geographical Information Systems (GIS) are used today at several planning applications including land use planning, health care planning, and transportation planning. Data on land use changes was collected using GIS techniques. Aerial photographs and orthophoto maps for 1992, 2002 and 2012 were used. These materials were obtained from the surveyor general's office. The aerial photographs were scanned, geo-referenced and fed to ARC GIS for digitizing. Thereafter digital land use maps of the study area from 1992, 2002 and 2012 were produced. In establishing the land use changes the digital land use maps of 1992, 2002 and 2012 were compared.

Questionnaires administered by the researcher were used to collect socio-economic causes and impacts of land use change at Ezulwini peri-urban area. The questionnaires were directed to the heads of households. The questionnaires comprised both closed and open ended questions. Face to face, interviews were conducted. Residents were interviewed on causes and effects of land use changes. In addition the town clerk of Ezulwini Town Board was interviewed. A discussion was conducted with the inner counsel from Ezulwini umphakatsi. Moreover the senior housing officer in the Ministry of Housing and Urban Development was interviewed. Furthermore a focus group discussion was conducted with the Land Management Board.

The collected data was coded and analysed using Statistical Package for Social Sciences (SPSS). The data is presented using graphical techniques like bar graphs, tables and pie charts. The data on land use changes is presented using digital land use maps.

### III. RESULTS AND DISCUSSION

#### 4.1 Land use change at Ezulwini peri-urban areas

The data for 1992, 2002 and 2012 on land use changes and pattern is presented using figures and digital land use maps of Ezulwini peri-urban area.

##### 4.1.1 Land uses in 1992

The land use map of the study area in 1992 show that homesteads were dispersed. These homesteads were surrounded by vast amounts of arable or agricultural land. This means that most people had enough land to practise agriculture. The 1992 land use map further shows vast amounts of grasslands. This enabled people to keep livestock. Moreover in 1992, the recreational land use covered a small proportion of the study area. The recreational facilities included the Somhlolo National Stadium and Elangeni Sports Ground (Figure 3).

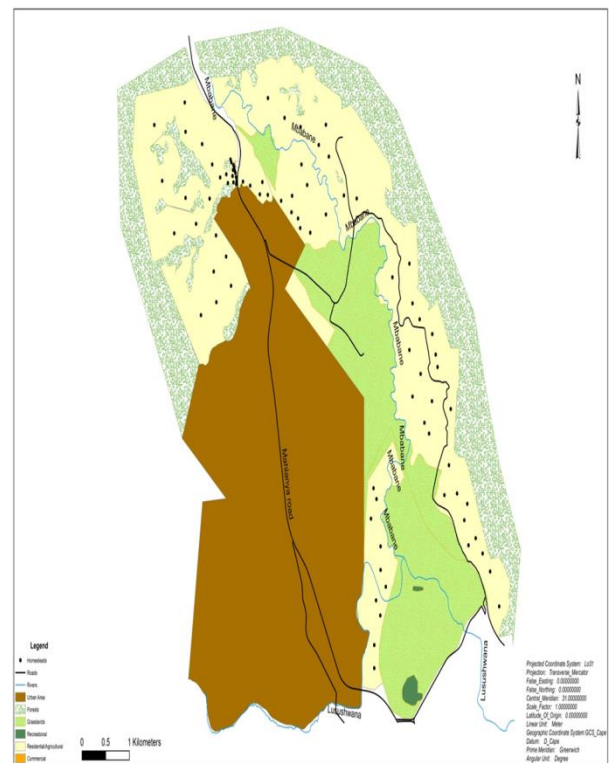


Figure 3. Land use map of Ezulwini peri-urban area in 1992

##### 4.1.2 Land uses in 2002

In 2002, figure 4 show that the number of homesteads increased drastically. The homesteads were nucleated especially at Nshakabili, Mvutjini and Ebuka. The increase in the number of homesteads swallows agricultural land. The reasons for the increase of settlements are due to various reasons. According to the Ezulwini Royal Council the increase of settlements in the study area was caused by inheritance. Siblings divided land parcels where agriculture was practised and built their homesteads. Secondly the residents started to sell their fields to people from different areas. The new settlers at Ezulwini peri-urban area were attracted by the area's proximity to towns such as Mbabane, Manzini, Ezulwini and Matsapha. Moreover in 2002 commercial land use was added. These included the shopping areas at Mvutjini and Mlindazwe.

The constant conversion of agricultural land to urban uses forces people to change occupations since it is difficult to get access to farmlands. According to Minsua (2012) small land size and poor land quality are some of the reasons that made individuals engage in non-agricultural activities. This is a survival strategy for vulnerable households and individuals in peri-urban areas. Furthermore, the exposure of the communities to



urban monetary economy attracts farmers to take advantage of urbanization (Abass and Afua, 2013).

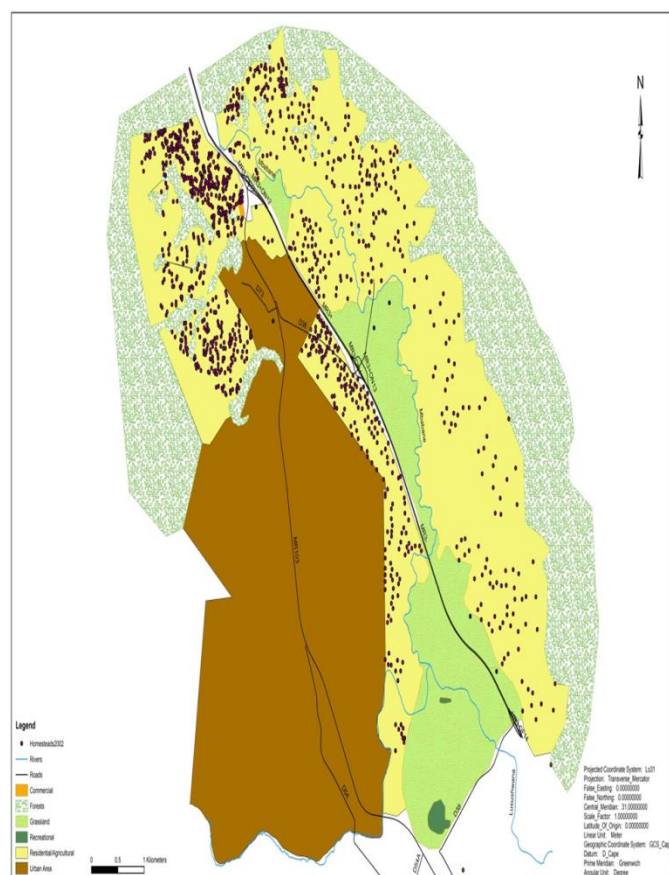


Figure 4. Land use map of Ezulwini peri-urban area in 2002

#### 4.1.3 Land Uses in 2012

In 2012 (Figure 5) shows that land uses such as recreation and commercial increased. The Olympic Centre and the Football Associations Technical Centre were built next to Somhlolo National stadium. More shopping facilities were built at Longalaza and Mvutjini. Furthermore, in 2012 two new land uses emerged. These include the waste treatment plant at Gelekeceni and the light industry in the same area. Homesteads continue to cluster agricultural land. Villages such as Somnjalose, Ebuka and Nshakabili are congested with homesteads. The use maps of Ezulwini peri-urban reflects a pattern of growth in areal extent with residential land use dominating.

Land use changes impact peri-urban areas environmentally, economically, infrastructurally and socially. The increasing pressure from urban expansion has compelled most people to diversify their income sources or secure alternative livelihood other than

agriculture. Infrastructural, urban expansion increases demand for roads, piped water, electricity, telephone lines and recreational facilities in peri-urban areas (Oduro, 2010). However, due to failure of local governments to plan and regulate development, the rate of residential development usually outpaces the provision of basic infrastructure. Table 2 shows the extent of land use change at Ezulwini.

Table 2 Extent of land use change in Hectares (ha)

Land Use Category	Area in (ha) 1992	Area in (ha) 2012	Change (%)
Forest	90	73	-18
Grassland	74	45	-39
Recreational	11	66	500
Residential/Agriculture	152	204	34
Commercial	1	5	500
Waste treatment plant	0	2	200
Industrial	0	2	200
Homesteads	97	2231	2200

Table 2 shows that there has been a change in land use at Ezulwini peri-urban area from 1992 to 2012. Forest decreased from 90 hectares to 73 hectares. This means that forestland use was reduced by 18 %. Grasslands decreased from 74 hectares to 45 hectares. This accounts for 39 % reduction.

Recreational land use increased from 11(ha) to 66(ha). This accounts for 500% change. The increase is caused by the construction of the Olimpia Africa Centre, Football Association technical centre and Elangeni Sports Ground. Residential land use increased from 152 (ha) to 204 (ha). This accounts for 34% increase. Forests and grasslands were cleared for residential and agriculture purposes. Commercial land use increased from 1 (ha) to 5 (ha). This accounts for 500%. This was caused by the development of shopping centres at Elangeni, Longalaza and Mvutjini. Moreover, waste treatment and industrial land use were not there in 1990.

#### 4.1.4 Demographic characteristics of respondents

The results of the study show that the study area has more male-headed homesteads than female-headed homesteads. Out of the 216 homesteads that were

sampled 132 were male headed whilst 84 were female headed. Male-headed homesteads account for 61 % whilst female-headed families account for 39 %.

#### 4.1.5 Highest Academic Qualification of the Respondents

The level of education of the respondents was established. This was done to show the socio-economic status of the respondents (Table 3).

**Table 3** Level of education of the respondents

Qualification	Female	Male	Total	%
Tertiary	35	49	84	39
Secondary	41	60	101	47
Primary	8	23	31	14
Total	84	142	216	100

The Ezulwini peri-urban area has educated residents. Table 3 indicates that 39 % of the residents have tertiary qualifications, 47 % have secondary education and 14 % have primary education. The sample population indicates that Ezulwini peri-urban area has a literate population.

#### 4.1.6 Year of settling at Ezulwini

The year of arrival at Ezulwini peri-urban area was established. This was done to determine the history of land use changes (table 4).

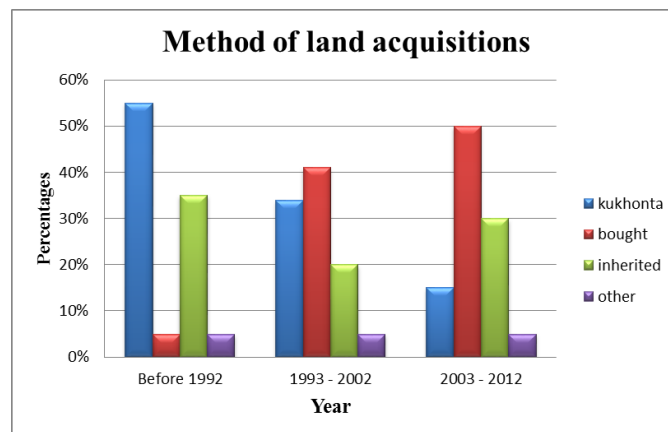
**Table 4** Year of arrival at Ezulwini

Year	No of arrivals	%
Before 1992	54	25
Between 1992 and 2002	70	32
Between 2002 and 2012	92	43
Total	216	100

The results indicate that new comers dominate the study area. Table 4 shows that 25% arrived before 1992, 32% settled between 1992 and 2002 and 43 % settled between 2002 and 2012.

#### 4.2 Method of land acquisition

The method of land acquisition was established to determine if the residents settled at Ezulwini legally. Figure 6 illustrates how residents acquired land at Ezulwini peri-urban area.



**Figure 6.** Method of land acquisition at Ezulwini peri-urban area

According to figure 6, there are 4 methods through which the residents acquired land at Ezulwini peri-urban area. These are kukhonta, buying, inheritance and others. Kukhonta is a traditional legal method of acquiring land on Swazi Nation Land. For the people who settled before 1992 the most dominant method of land acquisition was kukhonta. Kukhonta accounted for 55%. 5% bought the land from people who settled at Ezulwini peri-urban area earlier. Inheritance accounted for 35%. 5% acquired land through other means which include royal command.

Between 1993 and 2002 kukhonta accounted for 35%, buying accounted for 41%, inheritance accounted for 20% and others accounted for 5%. During this period kukhonta is decreasing whilst buying is increasing. The percentage of people who inherited land also decreased between in 1992 and 2002.

Between 2003 and 2012 land commodification was rife at Ezulwini peri-urban area. 50% of the residents claimed to have bought the land. See figure 12. Kukhonta dramatically declined to 15%. Residents who inherited the land accounted for 35 %.

The trend in the line graphs on figure 6 indicates that the method of kukhonta decreased constantly from 1992 to 2012 and the trend of buying the land increased drastically from 1992 to 2012.

### 4.3 Sources of Income

Sources of income of the respondents for 1992 and 2012 were established to determine the effects of land use changes on the livelihood of the people. The sources of income for 1992 are shown by figure 7.

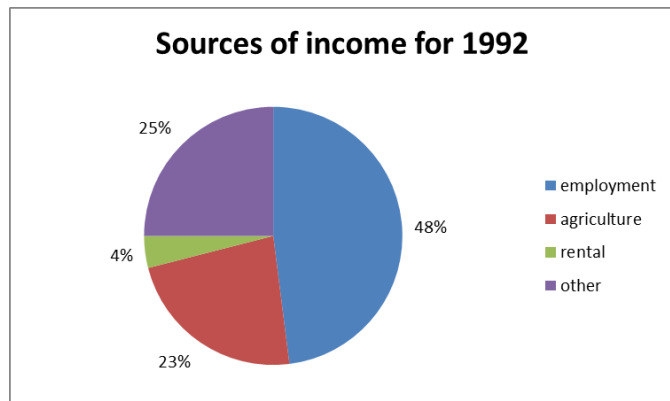


Figure 7. Sources of income for 1992

Figure 7 indicates that 48 % of the homesteads depended on employment for their source of income in 1992. The agriculture sector accounted for 25 %. Rental housing accounted for 4%. Other sources such as trading accounted for 23 %. The sources of income for 2012 are shown by figure 8.

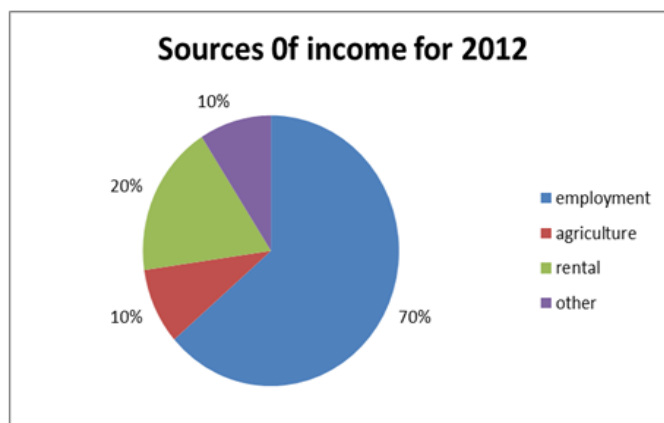


Figure 8. Sources of income for 2012

Figure 8 indicates that the employment sector was dominating at Ezulwini peri-urban in 2012 with 70%. It was followed by rental housing by with 20%. Agriculture accounted for 10% whilst other sources accounted for 10%.

### 4.4 Institutional Interviews

In addition to the questionnaires administered to the heads of homesteads, the researcher to balance the study

interviewed other stakeholders. These include the traditional authorities, senior housing officer in the Ministry of Housing and Urban Development, the Ezulwini municipality town clerk and the Land Management Board.

#### 4.4.1 Traditional authorities

The chairperson and secretary of Ezulwini Royal Council (bandlancane) were interviewed on behalf of the chief. The chief was interviewed because the study area falls under Swazi Nation Land. It is under the jurisdiction of the chief of Ezulwini. The council was if the Ezulwini peri-urban area was experiencing land use changes. They acknowledged the change in land use at Ezulwini peri-urban area.

The chairperson also indicated that the most dominant pattern is settlements swallowing or replacing agricultural land. The secretary said the land use changes became noticeable in the 1990s. During this period the Royal Council was flooded with application from people who wanted kukhonta at Ezulwini. She further highlighted that the applicants give various reasons for wanting to settle at Ezulwini. These include the area's accessibility to important towns in the kingdom, high rents of accommodation in cities and other environmental factors. Ezulwini peri-urban area is located in close proximity with important places in the kingdom. These include Mbabane the capital city of Swaziland, Manzini the commercial hub of Swaziland and Matsapha the industrial town of Swaziland. A large number of Ezulwini residents are employed in these areas (figure 9).

According to figure 9, 70 % of Ezulwini peri-urban area's residents are employed outside Ezulwini. For instance 30 % are employed in Mbabane, 20 % are employed in Manzini, and 10% are employed in Matsapha whilst 10% are employed in other places such as Malkerns and Ngwenya.

The traditional authorities blame the influx of people into the study area to 4 major developments. Firstly, the declaration of Ezulwini as a town in 1995 attracted a large number of people into the peri-urban area. People were hoping to get economic and social benefits from the town.

Secondly, the construction of the Lozitha highway attracted a large number of people into the Ezulwini peri-urban area. These included the road constructors who wanted rental accommodation. Some residents took advantage of this demand and built rental houses, which led to settlements replacing crop farming.

Thirdly, the absence of a chief between 2004 and 2009 saw more homesteads mushrooming in the study area particularly at Ebuka, Nshakabili, Gelekececi and Somnjalose. Some residents settled at Ezulwini on royal grounds. The people reside at Ezulwini and commute to various places of employment. According to the data, the Ezulwini residents are employed in Mbabane, Manzini, Matsapha and other areas.

The Ezulwini Royal Council revealed that the change in land use is affecting governance of the area. This is because it has increased the population of the area. The increase in population has created pressure to the authorities to provide basic services such as water supply, electricity supply, recreational facilities, schools and health facilities.

Moreover, the change in land use brought ungovernable people to the area. According to the council, the new settlers are educated, affluent and they do not respect traditional authorities. When the traditional authorities issue orders they do not comply. The number of courts cases involving the chief has increased recently.

In addition, the influx of settlements into the area has distorted the traditional way of acquiring land in Swazi Nation Land. It has led to commodification of Swazi Nation Land. The residents are selling land to the new settlers, which is against the dictates of Swazi culture. Land parcels are sold for as high as E 90 000 per hectare. This creates problems for the traditional authorities. The new settlers do not submit to the traditional authorities because they claim to have bought the land. In addition, the change in land use has created chieftaincy disputes. The Mtsetfwa clan of Zombodze is claiming jurisdiction over Ebuka. The Dube clan of Mpolonjeni is claiming jurisdiction over some parts of Mvutjini.

According to the traditional authorities, the change in land use has improved the lives of the residents. The residents are getting high returns from rental housing. It has also enabled people to diversify their income. Some

residents are involved in piggery, poultry farming and vegetable production, which they sell locally.

In dealing with the pressure of providing basic services, the chief has allocated land to build schools and clinics. The Ezulwini Community High School was built in 2003. A clinic was built in 2005. Moreover a police post was established at Egelekececi in 2005. This was done to curb crime in the area. In dealing with the problem of land commodification the council uses economic instruments to deter people from selling land. A resident who sells land is fined E 5 000. Moreover, a person who buys land is fined E 5000 before his application can be considered. If the application is successful the applicant is charged further E 5 000 as a cow.

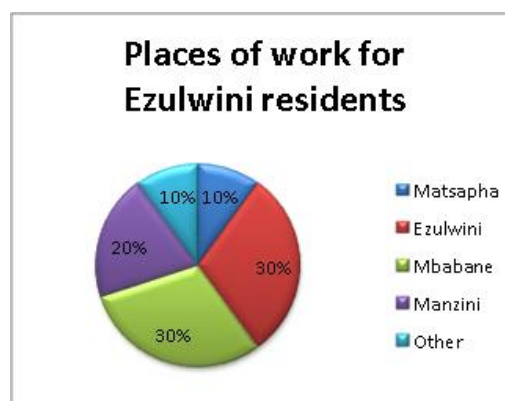


Figure 9. Places of work for Ezulwini residents

#### 4.4.2 Ministry of Housing and Urban Development (MHUD)

The Ministry of Housing and Urban Development is responsible for the development of settlements in the kingdom. The Ministry of Housing and Urban Development (MHUD) was approached because the land use changes involve development of settlements. The Senior Housing Officer in the ministry of Housing and Urban Development was interviewed in his office on the 3<sup>rd</sup> December 2013.

The senior housing officer acknowledged the change in land use at Ezulwini peri-urban area. He said settlements were swallowing agricultural land in an unplanned manner. He said the Ministry of Housing and Urban Development could not do anything to help the development of the study area because it is under Swazi Nation Land. However, they can offer technical advice if approached by the traditional authorities of Ezulwini.

#### **4.4.3 Land management board**

The Land Management Board was established in terms of section 212 subsection of The Constitution of Swaziland (2005). The board is responsible for the overall management and for the regulation of any right or interest in land whether urban or rural. The Land Management Board was interviewed on 23 January 2014 at the Ministry of Natural Resources. The chairperson of the board stated clearly that they are against what is happening at Ezulwini peri-urban area. He further mentioned that settlements are swallowing agriculture land in the study area. He said as a board they are currently lobbying for bills that would give them power to enforce their decisions. Currently they rely on policies, which make them toothless.

#### **4.4.4 Ezulwini town board**

The study area is in the periphery of the Ezulwini Municipality. Due to this reason, the town clerk of Ezulwini Town Board was interviewed on 16 January 2014 in his office. The town clerk acknowledged the change in land use in the peri-urban area with settlements swallowing agricultural land. He said that as a municipality they benefit from this process because the peri-urban area provides their employees with affordable accommodation. The urban residents are able to get affordable employees such as gardeners, house cleaners and shopkeepers from the peri-urban area.

On another note, the town clerk admitted that the influx of settlements in the peri-urban area give problems to the municipality. It harbors criminals. The peri-urban residents also use facilities of the municipality. He said as a municipality they have not done anything to control development of the peri-urban area because they do not have jurisdiction.

### **5.0 Discussion**

Throughout the discussion DPSIR model are able to help to find out the driving force behind the complex system of peri-urban area in Ezulwini. This was helpful when identifying where to target responses, such that they can be specifically linked to socio-economic sectors or human activities.

The local residence of the area losing their agricultural field very rapidly. The consequences of agricultural and forestland degradation has been the increasing emission of greenhouse gases (GHGs) with warming effects on local climate. This would affect subsistent rain-fed agriculture, which dominates the local area. In this study DPSIR approach can encourage and support decision-making, by pointing to clear steps in the causal chain where the chain can be broken by policy action.

#### **5.1 Drivers or causes of land use changes at Ezulwini peri-urban area**

The study established that land use took place at Ezulwini peri-urban area from 1992 to 2012. Agricultural land use was largely reduced and residential land use became dominant. The drivers or causes of land use changes were the construction of the Mbabane, Lozitha Matsapha highway. Moreover, the declaration of Ezulwini as a town in 1995 attracted many settlements into the peri-urban area. The residents began to sell their fields to people who wanted to settle at the study area. The rapid development of Ezulwini town attracted many people who wanted accommodation. The residents constructed rental houses to meet this demand. The results concur with other authors in the literature review as well as DPSIR model in this study. According to Webster (2002), the construction highways malls and industries may change land uses in peri-urban areas.

#### **5.2 Impact of land use changes on the governance of peri-urban areas**

The land use changes negatively affected the governance of Ezulwini peri-urban area. It brought affluent and educated people who do not respect traditional authorities. It also forced residents to sell their fields to newcomers. As a result, the traditional custom of kukhonta was distorted. Residents sold their fields for as high as E 90 000. Moreover, the land use changes caused chieftaincy disputes at Ezulwini peri-urban area. The Mtsetfwa clan of Zombodze is claiming jurisdiction over Ebuka. The Dube clan of Mpolonjeni is claiming jurisdiction over some parts of Mvutjini.



### **5.3 Impacts of land use changes on the livelihoods of the people**

The land use changes have affected the way of life of the residents of Ezulwini peri-urban area. They have changed their sources of income. They have abandoned agriculture in favor of formal employment and rental housing. Some have resorted to selling land parcels. The increasing pressure from urban expansion have compelled most people to diversify their income sources or secure alternative livelihood other than agriculture. According to Abass and Afua (2013), 8% of Kumasi's peri-urban populations diversify their income. "With the expansion of Kumasi, residents are left with no other alternative livelihood activity than to switch from land based livelihood activities to non-land based income generating activities" (Abass and Afua, 2013:7).

Infrastructurally, the land use changes have increased the demand for roads, piped water, electricity, telephone lines and recreational facilities at Ezulwini peri-urban area. Due to failure of local governments to plan and regulate development, the rate of residential development usually outpaces the provision of basic infrastructure (Oduro, 2010).

### **5.4 Response of the people towards the impacts of land use changes**

The people of Ezulwini peri-urban area have adopted several strategies in response to the land use changes. These include income diversification, intensification and migration. This was caused by the transformation of peri-urban economy from being agrarian to urban (Abbas and Kafua, 2013). The residents of Ezulwini peri-urban area have multiple sources of income. They are formally employed in Mbabane, Manzini, Matsapha and locally. They also practice rental housing.

## **IV. CONCLUSION**

The used model (DPSIR) in this study is simple and good tool to identify and conceptualize the possible factors for the land use change. Therefore, on one hand, the casual relation between the different indicators and drivers was determined and identified, and on the other hand, the sequence of change detection process was also explored in the study area. Based on the findings the study concludes that, land use changes are taking place

at peri-urban areas due to infrastructural development. Moreover, land use changes in peri-urban areas affect governance and livelihood of the people and put pressure on basic services. The people adopt several strategies to deal with the impacts of land use changes. Furthermore, land use change is a continuous process.

The construction of highway roads and malls in peri-urban areas attracts people into the area. Moreover, the proximity of peri-urban areas to towns attracts people. This is because they enjoy all the urban services at low costs. The influx of people into peri-urban areas cause land use changes. Agricultural land use is replaced by other land uses such as residential, industrial and recreational. The peri-urban residents sell land parcels to newcomers.

The loss of agricultural land prompt people to look for alternative livelihood strategies. These include rental housing and formal employment. The increase of population in the peri-urban areas causes pressure in basic services such as schools, clinics, water and electricity. The present policy environment acknowledges the wider economic, social and an environmental issue presented by land use change, and enables them to be addressed in a cohesive and coordinated framework.

## **V. RECOMMENDATIONS**

Based on the findings of the study, the following recommendations were made;

The development of peri-urban areas should be controlled. The Ministry of Housing and Urban Development and the Ministry of Agriculture can do this. These ministries should approve any residential development or structure in the peri-urban area. This will decrease the unplanned and haphazard development of peri-urban areas.

In addition, urban centers should be used as markets for peri-urban products. This will encourage urban residents to practice agriculture because returns will increase. The residents cited low agricultural cash returns as one of the reasons of land use changes. Creating local markets will increase return.

There is a need for a study that would investigate the livelihood strategies in the peri-urban areas of



Swaziland. There is a need for a study that would investigate the perception of peri-urban residents to peri-urbanization.

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### List of acronyms

EZDR	Ezulwini Development Report
LMB	Land Management Board
MHUD	Ministry of Housing and Urban Development
MOEPD	Ministry of Economic Planning and Development
NHP	National Housing Policy
PUGP	Peri-Urban Growth Policy
SNL	Swazi Nation Land
TDL	Title Deed Land