



Improving Urban and Peri-Urban Geographical Activities in Soweto Township, Gauteng for Sustainable Livelihood

Ilgar R¹, Nazira J.²

¹Assistance Prof. Dr. Rüştü ILGAR, Environmentalist and Geographer, Çanakkale Onsekiz Mart University, Turkey

²John Nazira, Landscape Design Technologist, Soweto-South Africa

ABSTRACT

This paper presents a need analysis on the establishment environmental and geographical conditions for Soweto Public. South Africa is one of the most geographically varied countries of the African continent, comprising territory that ranges from the rolling, fertile plains of the highveld and the wide open savanna. Soweto has a history of poverty, overcrowding, and limited water supply, resulting in lifestyle factors such as communal toilets, along with a record of producing leaders of the international movement for sociopolitical transition in SA (South Africa). This place in comparison with other countries reflects consistency in the incidence of illness encountered by the family practitioner and also contemporary trends in morbidity seen in general practice. Accordingly, any examination of the determinants, effects, prevention, and treatment of cardiovascular disease (CVD) must be framed within this sociopolitical context. Nowadays some regions which have advantage conditions for living are confronted with many problems such as population increase including natural and mechanical; decrease agricultural area; un-controlling growth in some industrial sectors. Studies conducted outside South Africa are similar to those conducted within the country. The main impression of Soweto is that of overcrowding and poverty, and still struggling in providing basic services including portable toilets to its poorer districts. As a result, the environment in those regions has been degraded and Soweto is not exceptional. Soweto presently has confronted with specific problems as: high population density, limited agricultural land use, low crop productivity and unsuitable crop composition, low efficiency in open land use, low crop diversity, rapid increase in incidence of people living with a hiv / aids and urban poverty, soil erosion, poor waste management, unsuitable management regulations, social and economic transformation. Statistics have likely increased in magnitude in the contemporary setting, highlighting the notion that population dynamics in Soweto will be greatly influenced by the rising problems. Result with regards to issues such as ameliorating environmental, social security and improving livelihood sustainability among vulnerable Soweto's people.

KEY WORDS: Soweto, GIS, Geography, Environmental, Urbanization.

1. INTRODUCTION

The focus of empowerment and liberation is on developing potentials, raising awareness and removal of barriers to integration in society and enjoyment of human rights. Disability is a general human rights issue in Africa [1]. South Africa problems directly affect the quality of life of the people in not only in Soweto Gauteng in part, but also in the whole country in general. In order to resolve the problems, the governments of all levels in Soweto have implemented many methods, including political but the outcomes of it seems to be quite modest. It is thought that there need to have a method which emphasizes on agricultural activities could be very useful in increasing living standards of the people in terms of both economy and environment. Therefore, this reinforces the urgent need for the project to lead coordinated efforts to halt and reverse the situation in order to initiate change for the better.

2. MATERIALS AND METHODS

Undoubtedly many people have known about the name "South Africa", however, not many people know exactly where the country locates and when it has got independence. South Africa has started its independence in 1994. The symbol of the country expresses by the flag with seven colors and each color has a meaning to the struggle of the people – the flag of South Africa has been illustrated in the figure below. Location: Southern Africa, at the southern tip of the

*Corresponding Author: Dr. Rüştü ILGAR, Assistance Prof. Environmentalist and Geographer, Çanakkale Onsekiz Mart University-Turkey

continent of Africa border countries: Botswana 1,840 km, Lesotho 909 km, Mozambique 491 km, Namibia 855 km, Swaziland 430 km, Zimbabwe 225 km.

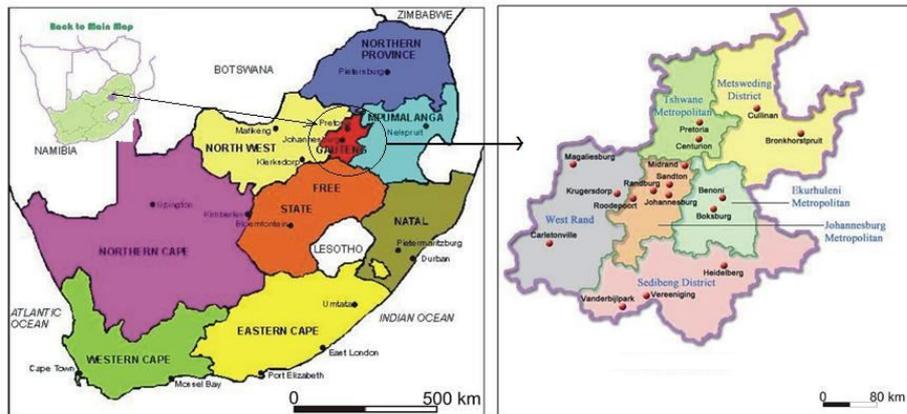


Figure 1: Map of South Africa's Provinces [2].

By the beginning of the twentieth century Black South Africans had been pushed into small areas of the country by the colonizers -both the Dutch and then the British. This racial discrimination influenced the issues of land use and agriculture amount others. Two major Land Acts passed early in the twentieth century, and these were the 1913 Land Act No.27 and the 1936 Trust and Land Act No. 18. These Acts effectively reserved 87 percent of the national surface of the country for Whites, Coloureds and Indians, but mostly for Whites. Black South Africans, probably about 75 percent of the population, were limited to 13 percent of the country's land. Black South Africans could only occupy or own 13 percent of South Africa Blacks were only allowed as 'temporary residents' in the cities and towns, which were designated for White, Colored's and Indian ownership which makes them difficulty to be involved in agriculture as a traditional norm. Little land was available for black occupation, Large informal settlements, sometimes known as Squatter settlements, developed in and around most cities and towns, Soweto, largest township of Johannesburg in Gauteng is established.

1903- 1924

Outbreak of bubonic plague: Authorities to establish a first black settlement (Soweto) on the outskirts of Johannesburg.

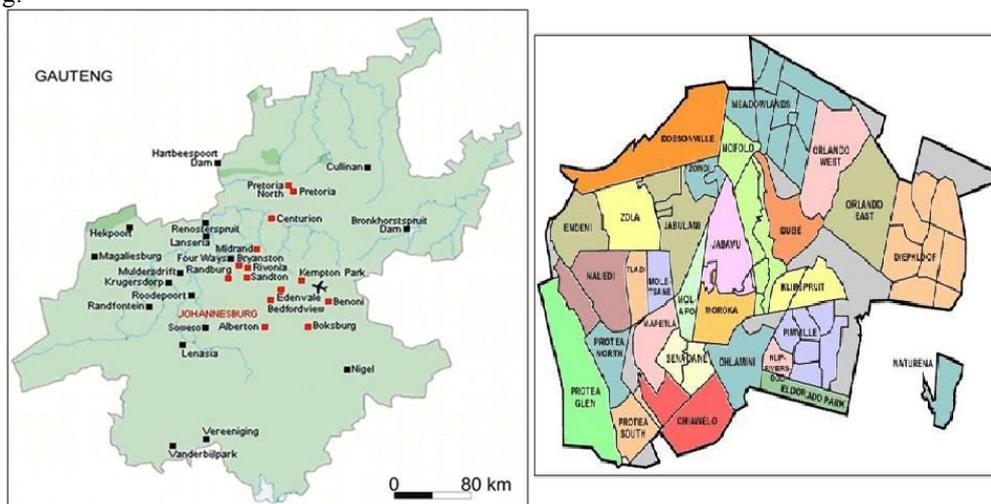


Figure 2: Map of Gauteng

1923-1944

- No other government infrastructures in Soweto apart from few houses
- Black population is increasing
- Open space are opened for squatter camps and agricultural activities.
- Native crops such as maize and sweet potatoes are grown using traditional methods.

1943-1964

- Some squatter camps and field crops are cleared by the authorities.

Community facilities are poor, such as lack of parks, sports facilities and few schools. The process of building hostels to accommodate male migrant workers accelerate the hostels were zoned along ethnic lines conflict increases and cultivation areas were limited.

1963 -1984

Political parties such as ANC are formed

The aligned student movement together with ANC protested against apartheid systems.

1983- 2004

Intensity political uprising in Soweto Councilors are attacked for colluding with the apartheid government. A State of Emergency is declared nationwide, signaling increased repression. Residents go on consumer boycotts and street committees are established to defend communities at local level. The pass laws are abolished, leading to a new wave of migration to the city.

3. SOWETO’S ENVIRONMENTAL STATUS

As South Africa entered into the political transition phase, the economy went into recession and the environment became unstable at the same time. However thousands of workers lost their jobs as companies went out of business or were forced to retrench workers as businesses shrank their production. Defaults on mortgages increased in tempo dramatically and banks started to re-possess on scale. 1994 South Africa entered into the new democratic era with the entire population able to participate in all aspects of political and social life for the first time in its history.

Land size for houses is 30sm to 250 sqm

New houses for people of Soweto are building

There is enough space to grow vegetables and trees

Trees may also be grown along the street

The inclusion of the disability community into project will enable us to reach a group from the poorest of the poor, who are usually forgotten [3]. The efforts of development project should be created in Soweto. But need global efforts to reduce rural poverty [4].

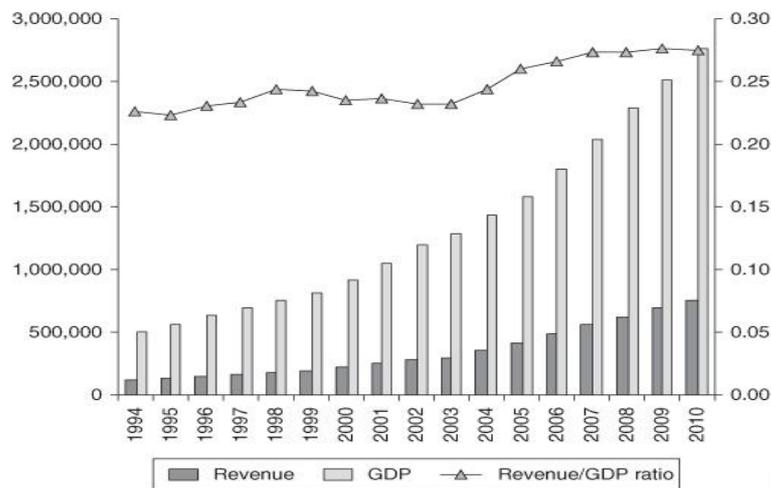


Figure 3: Tax/GDP ratio: South Africa 1994–2010.

[5].

Household income or consumption by percentage share: lowest %: 1.1% highest 10%: 45.9% (Climate: mostly semi-arid; sunny days, cool) [6].

Water Resources; The growing population and economic development in the province have increased the domestic and industrial demand for water. Added to this, the extraction and processing of mineral resources, and the agricultural activities in Gauteng, place pressures on the water resources. These pressures result in the need for additional water management infrastructure such as dam’s pipeline systems or additional treatment Works to ensure that water resources are available to meet the ever increasing demand.

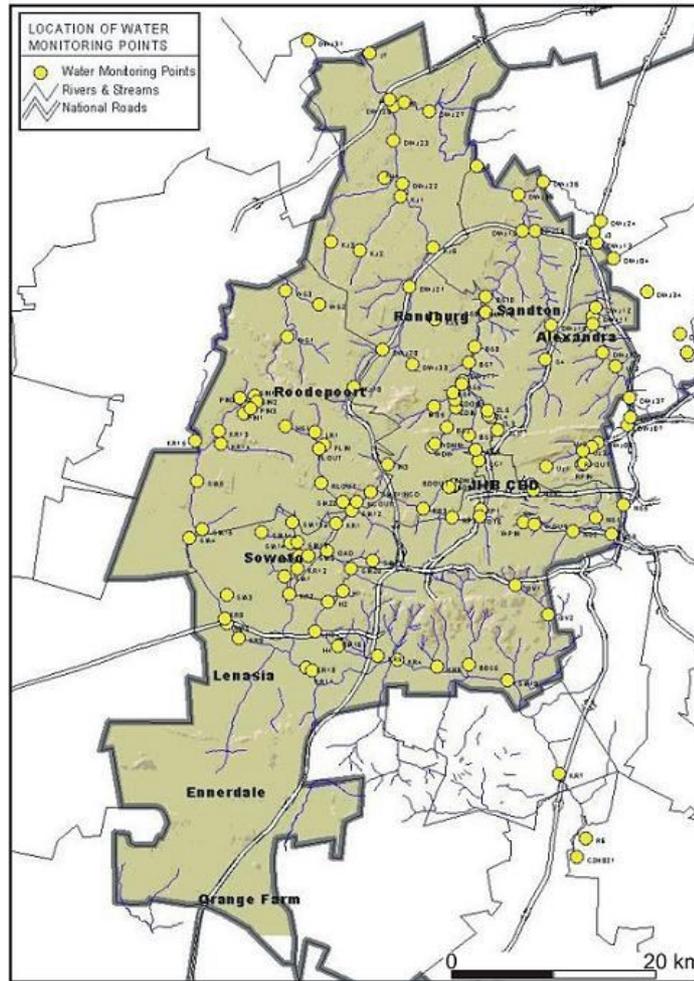


Figure 4: Location of Water Monitoring Points

As shown in the water monitoring map, water resource in Gauteng province is quite abundant, but it is spatial natural mis-distribution. This accentuates the problems for agriculture in the area as a direct effect of water resource availability and demands that attention needs to be focused on water and limitations imposed on agriculture. In addition, the availability of mineral deposits in the Gauteng province causes a lot of problems regarding agriculture and environment such as: Salts concentration in available water, low dissolved oxygen concentration, narrowing of water streams, effects on flora and fauna [7].

Land use status: open space cultivation and back is given bellow and Table 1.

Table 1: Land use categories and rates of Johannesburg

Land Use Category	Area (Hectare)	Percentage
Commercial	4,066	2.50%
Cultivated Land	7,844	4.80%
Forest, Woodland&Bush	6,728	4.10%
Improved Grassland	4,574	2.80%
Industrial/Transport	3,677	2.20%
Mines&Quarries	6,024	3.70%
Pans&Dams	361	0.20%
Residential	56,229	34.20%
Small Holdings	17,074	10.40%
Undeveloped Land	56,739	34.50%
Wetlands	1,137	0.70%
Total	164,453	100.00%

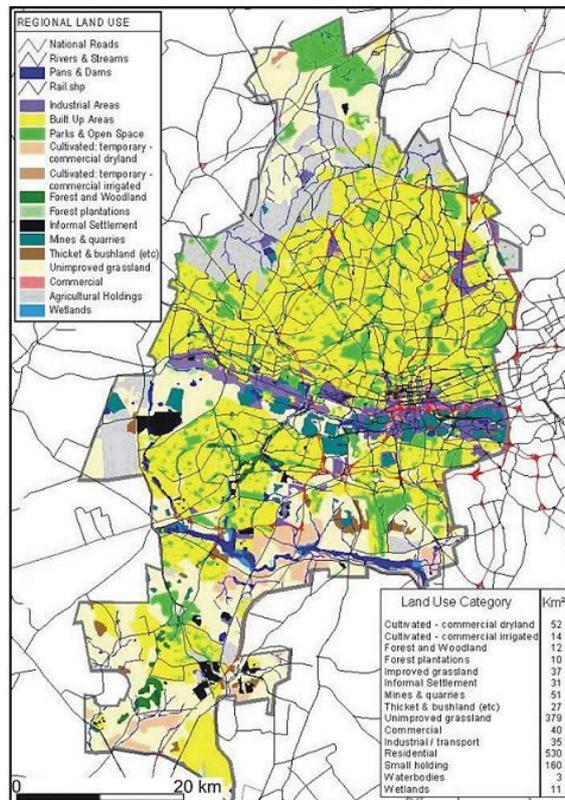


Figure 5: Regional Land Use Map of Johannesburg

Natural hazards, prolonged droughts; environment-current issues, water conservation and control measures; growth in water usage threatens to outpace supply; pollution of rivers from agricultural runoff and urban as Table 2.

Table 2: Average temperature and rainfall rates for Johannesburg

Month	Average Temperature(°C)	Average High Temperature(°C)	Average Low Temperature(°C)	Average Rainfall (mm)
January	20	25	15	124
February	20	23	15	96
March	18	23	14	83
April	16	20	11	53
May	13	18	8	17
June	10	15	5	7
July	11	16	5	5
August	13	18	7	5
September	16	21	10	27
October	17	22	12	73

South Africa's coastal regions are therefore warmest in winter. There is, however, a striking contrast between temperatures on the country's east and west coasts, due respectively to the warm Agulhas and cold Benguela Currents that sweep the coastlines. Gauteng Long term temperature and rainfall graphic show dry winter as bellow:

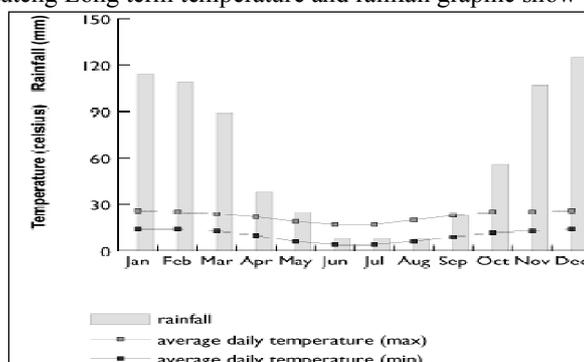


Figure 6: Graphical Show of Johannesburg Temperature and Rainfall

[8]

On the interior plateau the altitude - Johannesburg lies at 1 694 metres - keeps the average summer temperatures below 30 degrees Celsius. In winter, for the same reason, night-time temperatures can drop to freezing point, in some places lower.

The original rainforest has almost completely fallen prey to ruinous exploitation. Because the native forest was economically of little value and also very difficult to access and penetrate, early in the history of South Africa, the farmers have extinguished it ruthlessly. Only small patches have remained here and there. Soweto has also many wetlands and grassland like Table 3. Grasslands are disturbed discharge; air pollution, soil erosion as below;

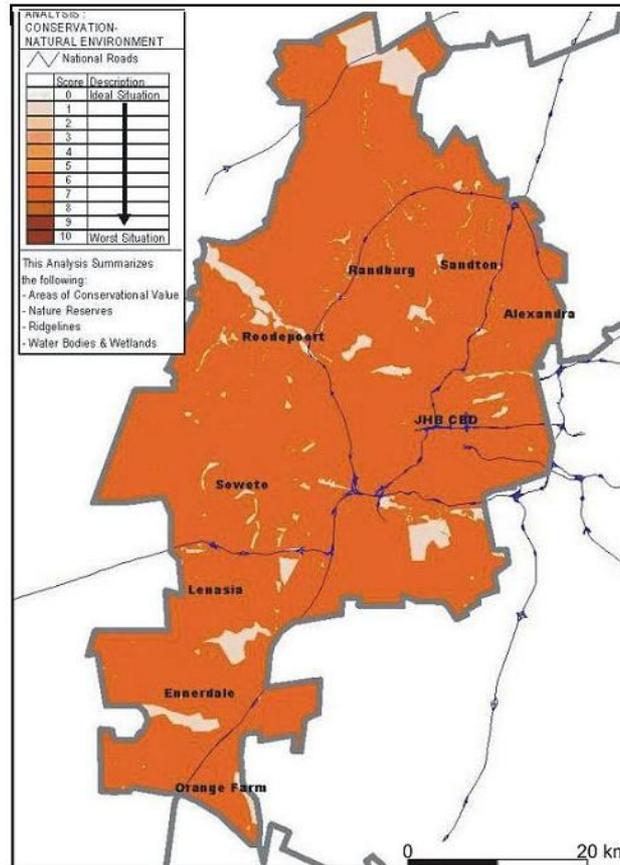


Figure 7: Conservation-Natural Environment Map of Johannesburg

Demography, Soweto is an urban area of the city of Johannesburg in Gauteng. As Soweto was counted as part of Johannesburg in South Africa's 2001 census, recent demographic statistics are not readily available. It has been estimated that 65% of Johannesburg's residents live in Soweto Table 4 [9]. The total population is estimated to be 2m. Starting about 15 km away from the centre of Johannesburg, it comprises some 65 sq. km. By the end of 2002, some 3000 families had been successfully relocated nationally in alternative houses meeting the governments' minimum norms and standards The houses were almost entirely the minimum free houses paid for out of the capital subsidy. Some 154 families in the Soweto area had been accommodated in terms of the rightsizing programme mainly to the Doornkop area in the west of Soweto. [10]. But not only Soweto population but also South Africa increases dangerous and uncontrolled go on.

Table 3: Total vegetation area for Johannesburg

VEGETATION	Hectare	Percentage
Bankenveld Grassland/Bush	619	0.40%
Cymbopogon-Themeda Grassland	17,648	10.70%
Disturbed Urban Grassland	35,485	21.60%
Dolomitic Mixed Grassland	15,247	9.30%
Englerophytum-Protea Caffra	9,845	6.00%
Euclea-Acacia Caffra	15,768	9.60%
Hyparrhenia Hirta	69,098	42.00%
Wetland	744	0.50%
TOTAL	164,453	100.00%

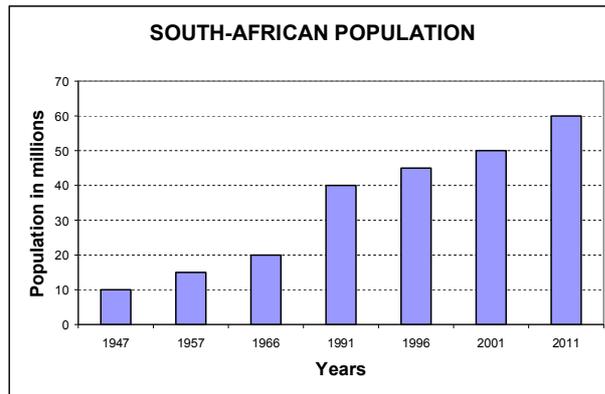


Figure 8: South Africa Population Status [9].

Sociology; Soweto has few major civic buildings. The Regina Mundi cathedral and a sports stadium act as meeting places. Apartheid restrictions precluded the development of large shopping centers or businesses in Soweto, but thousands of tiny, street corner stands scattered around the township handle residents' everyday needs including the basic agricultural needs. Most township housing consists of rows of identical, single-story matchbox houses, producing a monotonous urban landscape with few trees, gardens, parks, or playgrounds and back yard gardens. Other formal housing includes hostels for unmarried or migrant workers and small middle-class and upper-class housing areas largely developed since 1980. Informal housing includes extensive backyard squatting and squatter settlements that have developed on areas of previously open land. Houses and squatters obtain water from small water towers found throughout Soweto that each serve 200 or more people. Open fires are widely used for heating and cooking, producing a serious air pollution problem through the use of coal. Soweto has a relatively advanced electricity network by South African township standards. A majority of Soweto's formal houses have electricity, and electrification has progressed since the end of apartheid.

Table 4: Total population and percent rates of Johannesburg

Region (96)	Population	Percent
1	28,062	0.94%
2	127,808	4.29%
3	153,961	5.16%
4	198,029	6.64%
5	168,712	5.66%
6	593,476	19.90%
7	336,461	11.28%
8	406,825	13.64%
9	143,026	4.80%
10	563,293	18.89%
11	262,380	8.80%
Total	2,982,033	100.00%

From the statistics in table below it is evident that Soweto is one of the poorest regions in South Africa which needs viable sustainable development projects to alleviate poverty by creating much needed jobs, and empowering the community with skills to look after themselves and their families. These dwellings typically have running water, internal showers and external toilets, and house 12 to 15 people are presented Table 5. [11]. Government priorities include the following: * Stimulation of credit for low-income earners. * Social housing including cooperative housing, rental and rent to buy schemes. * Incremental housing-provision of a serviced stand and assistance to build a house under the peoples housing process (self-help schemes). * Special needs housing. The capital subsidy bands are as follows: Income 0-R1500pm R23100R1501-2500pm R14200R2591-3500pm R 7800. The minimum national standards include the following- size of unit 30 sq meters, size of stand 250 sq meters which gives limited space for cultivation. These may be varied by provincial governments in certain circumstances. The regions state the following as key problems Poverty, High Unemployment, Low Education and Housing like figure 9 and Table 6 [12].

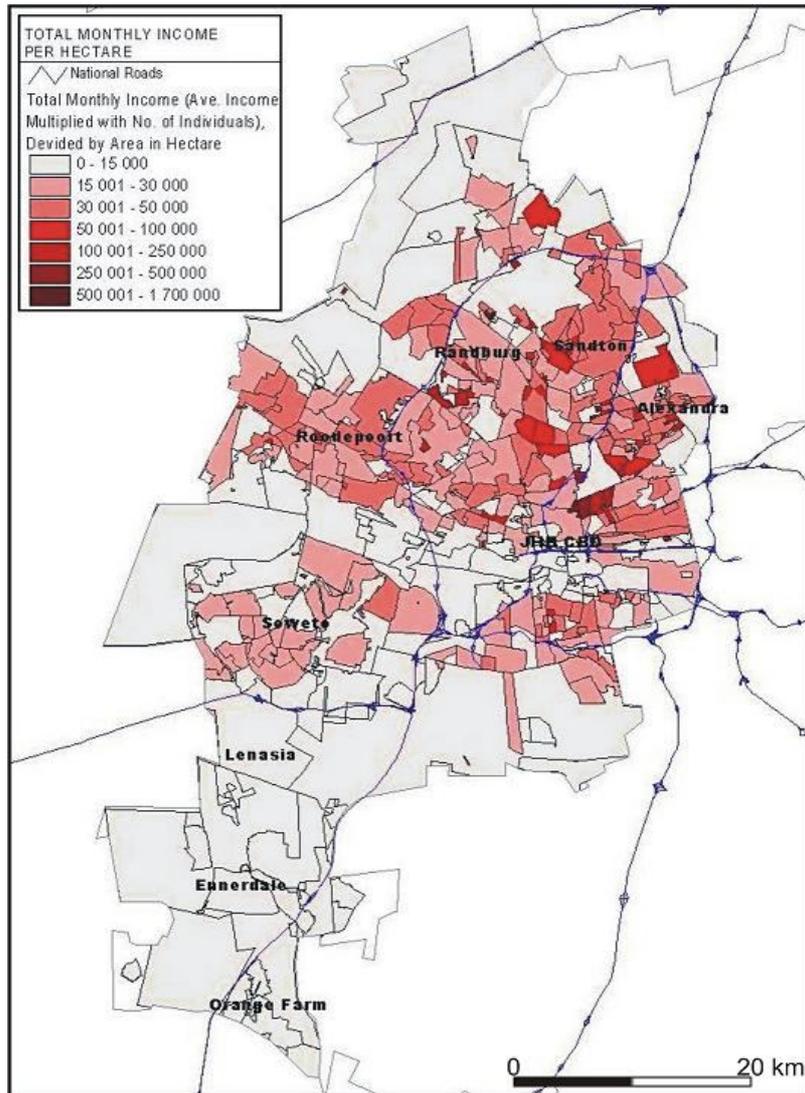


Figure 9: Total Monty Income for Soweto

Economy; South Africa's wealth has been built on the country's vast resources - nearly 90% of the platinum metals on Earth, 80% of the manganese, 73% of the chrome, 45% of the vanadium and 41% of the gold. Only crude oil and bauxite are not found here.

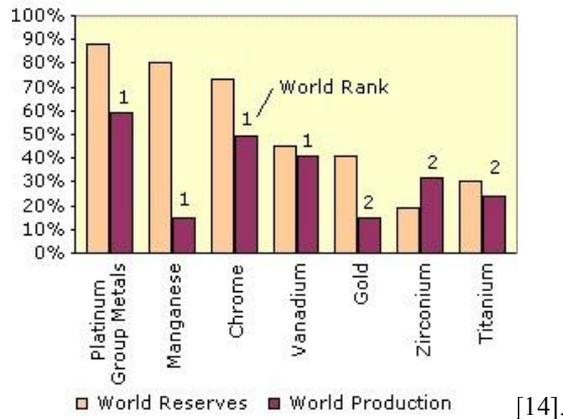


Figure 10: South Africa's world reserves & production [14].

Table 5: Social and economic statuses of people in Soweto

People living in homes with 3 rooms or less	80 %
People living in dwellings of only 1 room	39%
Average monthly household income if employed	R 1000,00 = \$ 167.00
Employment/unemployment rate	42% service industry 34% manual workers 18% in middle class occupations 21% of all adults unemployment 74.2 % youth between 16 and 25 unemployed Unemployed been looking for jobs for an average of 30 month
Education	11% of adults have no formal education at all
Socio-economic factor	53% believe that unemployment & poverty are the main cause of crime 1/3 believe that job creation will reduce crime

Table 6: Institutions of institutions features in Soweto

Institution	Contribution	Remarks
Gauteng Department of Agriculture, Conservation and Environment	Improved levels of food security Optimal use of agricultural land for primary production Policy formulation and developing plans in agricultural sector Sustainable employment in the agricultural sector Soil conservation strategies for farmers [13].	Broad based participatory planning Effective capacity building for farmers
Urban Foundation	Assist in urban planning technology	
Non Government Organization	Agricultural crops and tree planting specialist Support the groups farmers financially	
Department of Housing	Allocate funding for housing and vegetable production	
Development Bank	Loan the government and also technical assistants	
Land Bank	Give loan the farmers	
Johannesburg Municipality	Land distribution and use policy Policy reinforcement on land use management Developer of open space	
African National Congress	Political influential Guide people on their rights	
Urban Development	Technical urban planning for the stakeholders Advisers to community and government	
Department Water Affairs & Forestry	Management of water and forest Development of Policy guidelines for sustainable use Monitoring Awareness Advising Providing resources	
ARC-Institute for Tropical and Subtropical Crops (ARC-ITSC)	Supported, research for farmers tropical and subtropical crops Developed agricultural sector improved varieties. Improve wine grape cultivars as well as alternative temperate climate crops Identification and characterization of different fruit and wine production Genetic improvement of plants through plant biotechnology; Genetics of host-pathogen interactions Water and Soil management practices Nutritional management practices Environmental management Processing and process optimization of agricultural products Evaluation of post-harvest storage and processing techniques and fruit characteristics Integrated disease and pest management Technology marketing and transfer Research and advisory services Recognized role-player in the field of plant biotechnology	Transferring technologies to farmers
Department of Urban and Regional Planning	Involved in environmental planning, urbanization, development planning, and transportation planning and regional planning	

The country is a leading producer of precious metals such as gold and platinum, as well as of base metals and coal. It is the world's fourth-largest producer of diamonds. The other experts believe there is still considerable potential for the discovery of other world-class deposits in areas that have yet to be fully exploited. The kombi (minibus) taxi industry is the largest commercial activity in Soweto. Informal shops and services make up the bulk of other economic activities. Most Sowetans with jobs commute to Johannesburg by bus, train, or taxi. Soweto depends on Johannesburg for most of its communications outlets, including the popular Sowetan newspaper. In 1995 Soweto and Johannesburg were brought under a single Greater Johannesburg Transitional Metropolitan Council. The integration of Soweto and Johannesburg has allowed Soweto to share tax revenues from commercial and industrial businesses in the Greater Johannesburg area in Table 7.

Table 7: Using methods in agricultural activities in Soweto

Activities/Technology	Equipment/tools	Irrigation	Human resource	Fertilizers/pest control	Propagation	Harvesting	Post harvesting
Vegetable And Herbs production	Hand tools Mini-tractors	Drip Sprinklers Watering cans Hand Hosepipe	Agronomy Labourer	Compost Animal Manure Inorganic inputs	Seeds Pure breed Hybrid	Manual Mini- machinery	Drying Refrigeration Packaging
Fruit trees	Hand tools Mini-tractors	Drip Sprinklers Watering cans Hosepipe	Agronomy Labourer	Compost Animal Manure Inorganic inputs	Grafting Budding Pure breed Hybrid	Manual Mini- machinery	Drying Refrigeration Packaging

Table 8. Resource allocation

Institutions	Money	Legal	Knowledge	Political
Department of Agriculture	xx	x	xxx	
Agricultural Research Council			xxx	
Urban Development		x	xx	x
African National Congress		xx		xxx
Johannesburg Municipality	xx	xxx	xx	
Land Bank	xxx		x	
Development Bank	xxx		x	
Department of Water Affairs and Forestry	x	xx	xxx	
Department of Housing	x	xx	xx	x
Non Government Organization	xx	x	xxx	
Urban Foundation			xxx	xx

x: important
 xx: very important
 xxx: most important

Terms of references

- To identify the trend in the development of Urban and Peri Urban Agriculture (UPA) in the Gauteng province of South Africa particularly Soweto.
- To identify the stakeholders and their roles in the development of the UPA in Soweto, Gauteng province.
- To identify key developments in various sectors that affect UPA in Soweto and carries out the plan.
- To develop a framework for the accelerated development of UPA in the area.

4. CONCLUSION AND RECOMMENDATION

- Urban and Peri-Urban Agriculture (UPA)’s issues such as solution must be found in Soweto:
- HIV/aids have impacted negatively on population.
 - Long travels to farms from settlements are quite tasking
 - Simple gardening procedures involves less drudgery
 - Traditional vegetable, herbs and fruit crops have been quite amenable to simple procedures in UPA.
 - The UPA serves as source of employment and income for a growing number of urban dwellers.
 - Post apartheid policy reforms place a huge dependence on UPA partly as result of low capital outlay and simple technology requirements.
 - UPA serves as a simple way of producing traditional crops, mainly fruits, herbs and vegetables for sustenance of a growing number of urban dwellers

As a result it can be geographical activities summarized in Table 8. Future studies should be carried out taking into consideration the characteristics of the study mentioned on to Soweto for more benefit people’s livelihood sustainability.

5. REFERENCES

1. Ndeezi, A The Disability Movement in Uganda, Progress and Challenges, NUDIPU, Kampala, Uganda, 2004.
2. www.ebarnetbaptist.org.uk/soweto.htm

3. **World Bank Group** Andhra Pradesh Expands Efforts To Reduce Rural Poverty. Signing of World Bank's Credit Which Underpins Andhra's Own Program Of Rural Poverty Reduction, New Delhi, April, 2003:3.20-32
4. **Werner D** The Role of Disabled Persons in Overcoming Rural Poverty in Andhra Pradesh, *Newsletter from the Sierra Madre* No.48, Palo Alto, Healthwrights, 2002.
5. **Budlender, D., Skinner, C., Valodia, I.** Budgets and the Informal Economy: An Analysis of the Impact of the Budget on Informal Workers in South Africa. *School of Development Studies*, University of KZN, 2004
6. **De Coning E, Forbes G and Poolman E** Heavy precipitation and flooding on 12-14 February 1996 over the summer rainfall regions of South Africa: Synoptic and isentropic analyses. *Natl. Weather Dig.*, 1998: **22**. 25-36.
7. **Dyson LI, Van Heerden J and Marx H** Short-Term Forecasting Techniques for Heavy Rainfall. WRC Report No. 1011/1/02, *Water Research Commission*, Pretoria, South Africa, 2002
8. **Saws (South African Weather Service)** Climate of South Africa. Climate statistics 1961-1990. WB42., *South African Weather Service*, Pretoria, South Africa. 1998.
9. **Lehohla, P.J** Mid-Year Population Estimator 2006, South Africa, *Statistic South Africa* PO302, 2006.
10. **Gauteng Department of Housing** Gauteng Housing Annual Report 2006. Gauteng Department of Housing, Marshalltown. 2006.
11. www.cerol.net/.../html/nonjava/Poverty/State.htm
12. www.southafrica.info/about/people/population.htm-cjhin.myweb.absamail.co.za/ 26k
13. **Rogerson C.M** Urban Agriculture in South Africa: Scope, *Issues and Potential*, Springer Netherlands, 1993
14. **Department of Minerals and Energy** Standard Bank: Economic Profile: South Africa, <http://www.dme.gov.za/>, 2008