Summary:

Main policy challenge facing developing countries like Kenya, as noted by various scholars and organizations is on how to formulate a regulatory and incentive urban planning and development policy framework which will strengthen the potential of the urban areas to grow and develop substantially and sustainably. Nairobi metropolitan plan is envisaged to address the problems such as poor housing, crime, traffic jam, infrastructure problems and environmental problems associated with urban areas. The plan is anchored on the country’s Vision 2030, which aim at enabling the country to be globally competitive and prosperous with high quality life. This spirit gives urban planners and other professionals an excellent opportunity to put climate change concerns and governance agendas to the fore when formulating Nairobi Metropolitan Region 2030 plan.

Key Words: Development, Planning, Metropolitan, Pollution and Climate Change
I. INTRODUCTION

Urbanization, a process which involves the spatial distribution of people and their concomitant economic and social activities have been and still remain an interesting and absorbing field of social scientists field of inquiry. For a very long time it has been noted to raise traditional peculiar problems ranging from physical, environmental, social, economic to political and governance issues in a country. With the advancement in technology and demand to adopt new technology so as to be relevant and competitive globally climate change has become a headache to urban planners and managers as it is really threatening many cities survival especially in the third world countries whose vulnerability is so high and resilience is weak and very basic to contain the effects of climate change.

Cities are hubs of national production and consumption – economic and social processes that generate wealth and opportunities, but the most worrying thing is that all of the world’s future population growth is predicted to take place in cities and their urban landscapes – the UN estimates a global increase from the current 2.9 billion urban residents to a staggering 5.0 billion by 2030. Most of this growth will occur in the developing countries of Africa and Asia, mainly in small and medium sized cities such as Nairobi, which lack development plan and strategy to contain the envisioned development and growth.

Kenya is rapidly urbanizing with an expected average growth rate of 3.9 per cent per year for the period 2005-2010. The population shows remarkable shifts in urbanization levels having increased from 8 per cent at independence to 19 per cent in 1989 and 19.4 per cent in 1999. Urbanization is estimated to have reached over 25 per cent in 2007 and is projected to account for about 32 per cent of the total population by the year 2012. This growth is largely due to a high level of rural-urban migration fuelled by rural poverty and a dwindling of the per capita ownership of farming and grazing land. The urbanization process in the country has also been uneven dominated by one primate city- Nairobi, with a population of about 2 million. This is about four times bigger than the next largest urban centre (Mombasa) with a population of 660,080 (GoK, 2008).

The population is likely to increase considerably if Nairobi city becomes a metropolis, this means that it will cover the population of the following local authorities;-(1) City Council of Nairobi; (2) Municipal Council of Kiambu; (3) Municipal Council of Limuru; (4) Municipal Council of Machakos; (5) Municipal Council of Mavoko; (6) Municipal Council of Ruiru; (7) Municipal Council of Thika; (8) Town Council of Kajiado; (9) Town Council of Karuri; (10) Town Council of Kikuyu; (11) Town Council of Tala/Kangundo; (12) County Council of Kiambu; (13) County Council of Masaku; (14) County Council of Olkejuado; (15) County
Council of Thika which offers both an opportunity and challenge to pan for and manage sustainable.

This paper will therefore explore the available opportunities of mainstreaming climate change in urban planning since it provides a perfect platform of engaging with policy makers and environmentalists on best way Nairobi Metropolitan area can be planned for, so as to fight climate change at low cost while improving the living standards of all the inhabitants but more so the poorest members of the society who are more vulnerable and susceptible given their asset base and generally their investments and welfare profiles. This is deemed to be important since planning is a multi-sectoral exercise which can accommodate integrated ideas which is needed for preservation of biodiversity and other ecosystem services.

1. Paper’s Conceptual Framework

A main policy challenge facing developing countries like Kenya, today as noted by various scholars such as Burra (2005), Manda et al (2007) and Satterthwaite (2007) and organizations such as UN Habitat (2007) is on how to formulate a regulatory and incentive urban planning and development policy framework which will eliminate or at least minimize the negative aspects of urbanization while strengthening the potential of the urban areas to grow and develop substantially.

Most urban development models especially in African countries such as Kenya have in common a legislation challenge, which has generally ignored the plights of the urban majority such as the informal settlement dwellers and urban informal economy operators. This mistake is also visible in the formulation of the global agendas and developmental models as shown in the focus of Millennium Development Goals (MDGs) where targets such as revitalization of informal economy is missing despite being a kingpin in providing work for the urban poor whose income need to be raised in order to meet basic needs. In the global scale also, the effort to curb climate change has always focused on the major generators of greenhouse gases at the expense of the victims who in most cases are the less developed countries, this makes it hard to contain the negativity associated with climate change since developing countries are continuing to embrace and adopt to technology and skills that are being phased out because of environmental threat they have been associated with over time.

These shortcomings call for development of an integrative and comprehensive urban planning and development framework at all levels that embrace progressive urban governance and empowerment of the institutions charged with the planning of urban areas and at the same time eliminate sustainably the negativity development associated with the third world cities. The Nairobi Metropolitan Region 2030 (NMR 2030) planning framework should ensure that problems associated with uncoordinated urban growth are handled amicably and also take into account the desires of the urban poor who form more than 60% of the Nairobi urban population and who will be worst affected by climate change due to nature of their activities and locations and characteristics of where they live, this is in realization that sustainable urban planning and governance is no longer a preserve domain of professionals and bureaucrats, but an inclusive
process, accommodating various facets of stakeholders.

The NMR 2030 planning effort will require participatory revision of repugnant by-laws, restrictive zoning regulations and building codes, capacity building of the city residents and stakeholders on the importance of respecting land use regulations. This is envisioned to lead to urban planning policy framework which take into account the reality facing urban areas, by facing the real challenges such as the worsening living and working conditions in Nairobi by linking metropolitan development with sustainable livelihood framework where issues such as slum upgrading, inner areas development (densification of both slums and inner areas) and supporting of urban informal economy become the pillars of Nairobi Metro 2030. This will be made easier when the policies are revised which envisages the increase in green technology, reduction of urban poverty, reduction of driving drastically and at the same time encourage pedestrianization and cycling, instead of prioritizing spreading/sprawling the ills associated with Nairobi to 12 other local authorities without addressing the previous causes of environmental quagmires. The main concern here is clarification of whether the focus of the proposed metro 2030 plan should be driven by need to contain urban sprawl or development pressure points the proposed region is experiencing or it is a genuine fore-thought and critical concern to coordinate urban growth and development leading to deterioration of the Nairobi urban environment?

2. Problem Statement

This paper proposes to examine the urban planning challenges and opportunities provided by the proposed Nairobi Metro 2030. This will be done through examining the previous planning efforts in Nairobi and their resultant impact on climate change and also analyzing the institutional capacity and preparedness to implement the vision with special reference to the 13 independent Local authorities mandated with the implementation of the vision. This is in realization that the local authorities have considerable authority over land-use planning and water management and thus plays a significant role on containing major contributors to urban climate imbalance such as transportation and energy sector all of which have implications for greenhouse gas (GHG) emissions. The paper’s main question is: Is the best strategy to “wait and see” given the previous experience which has brought us where we are or to adopt a more proactive and preemptive and accomodative policy position needed to guide Nairobi Metro 2030?

3. Paper’s Specific Objectives

a. Explore planning opportunities availed in preparation of Nairobi Metro 2030 in line with sustainable planning framework and urban governance principles
b. Examine institutional capacity to formulate and manage a sustainable Nairobi metropolitan

4. Methodology

The paper relies both on primary especially various studio data collected over time and secondary data. The paper make use of qualitative analytical skills and techniques in analyzing the previous Nairobi planning efforts and make use of the systems and urban governance
theories to demonstrate how metropolitan planning is interdependent with both local and global climate change. Consequently local planning efforts should no longer be viewed linearly and in isolation but in a wider context, since their implications are complex and felt beyond the borders.

5. Paper’s Significance and Shortcoming

This paper appreciate that planning is changing as new aspects and challenges such as climate change are emerging as a result of land use planning decisions. As a result the division of responsibilities and power in the planning process needs rethinking.

The paper thus aims at strengthening the competence of planners in dealing with complex issues. It bases its arguments on the historical planning mistakes for Nairobi by looking at the interplay between different actors and institutions in exploring adoption of governance perspective on the process of spatial planning of Nairobi Metro 2030 in order to achieve desired urban development and at the same time reduce greenhouse gas emissions in a bid to contain the emerging major global environmental virus the climate change.

The paper’s major shortcoming is that urban planning and urban governance solely are not panacea to urban environmental challenges and an instant treatment to climate change problems but a necessary ingredients needed to reduce emission of green house gases in our urban areas. The paper also heavily relies on qualitative analysis by using historical analysis of the previous planning attempts in the country as oppose to rigorous quantitative statistical analysis in discussions of the planning opportunities and challenges in Nairobi.

II. HISTORICAL DEVELOPMENT OF NAIROBI AND PLANNING EFFORTS

The history of Nairobi as a concentrated human settlement started with the construction of Uganda railway at Mombasa which started in 1896. The settlement was named after the river which meant a “place of cool waters”. When Nairobi was founded, its intended function was nothing more than a railway town (Morgan, 1967). The railway reached Nairobi in 1899 and in July the same year Nairobi experienced its first major centrality task and location attraction when the railway headquarters was moved from Mombasa to Nairobi.

The original growth and development of Nairobi revolved around the railway centre of the growth nuclei, one for the railway headquarters and the other for the colonial administrative centre, North of Nairobi River, at the present day Ngara estate. By the turn of the century, the railway nucleus through its numerous workers had created a stable market and attracted commercial activities fronting the present Tom Mboya Street. Here it seems that preceding land uses and activities dictated the shape and direction of growth of Nairobi.

The population of Nairobi grew rapidly and reached a total of 5,000 people in 1902, expanding further to 16,000 in 1910 and 23,000 in 1920. By 1948, Nairobi population had reached a total number of over 100,000 people (Elliot, 1975 and Kingoriah, 1980). Currently the population is being estimated to be 3.5 million people. This rapid population increase has consistently led to
doubts on sustainability of the original site for a larger settlement which has led to expansion and
growth of the city in an attempt to accommodate more people and at the same time struggle to
maintain sustainably the centrality and aesthetic image originally associated with Nairobi. This
rapid growth of population according to Maleche and Opiyo (2006) has led to several problems
such as poor standards of building and emergence of slums, inadequate water supply, poor
drainage and sanitation system, poor road conditions and traffic jams among others.

In 1919, Nairobi became a municipality with corporate powers. Its boundaries were extended to
include some residential areas such as parklands. The corporate embarked on public housing
schemes for the lowest income groups, in eastern parts of the city like Kaloleni and Pumwani. In
1928 the municipality extended its boundaries to residential areas of Muthaiga (Kingoriah,
1980). Up to this point in time, Nairobi’s growth and development seemed to respond to
immediate land use demands and development pressures and not really any critical analysis of
existing situation which would lead to forward planning of the urban area.

1.1. Planning Efforts

Up to early 1940s, Nairobi was left at hand of chance; it was developing under forces of racial
segregation. In 1945, competent planning group led by Professor Thornton White was founded
which later prepared a master plan for Nairobi outlining the physical planning guidelines for
Nairobi for functional arrangement (Maleche, 2004). In 1950, Nairobi was accorded the city
status, but there were no major changes. The Nairobi structure plan, just like other structure plans
was heavily reliant on the professionals and bureaucratic imaginations which was unpopular with
the perceptions and feelings of the locals who happened to be many in the city during this period
of structure plan. Though it is important to state that this was the first major attempt to create
some order in Nairobi, it encouraged segregation of Nairobi residential neighborhoods to
different racial units which led to some sort of social, geographic and economic stratification of
Nairobi.

According to Odera (1988) a major step towards development of Nairobi was undertaken in 1972
by Nairobi Urban study group. The development strategy that emerged was as follows:
- Policies related to major aspects of development (Employment, housing and transport)
- Broad physical structure within which policies could be realized (Indicating proposed
  spatial locations of various land uses)-This was to ensure that the policies and the
  structure are compatible.
- Guidelines for the expansion of Nairobi

These did not undo all the wrongs created by the structure plan, but for the fist time it was
critical of the problems faced in Nairobi and gave a clear directions and guides on how the city
was to be developed, it even came out clearly of protecting the fertile agricultural land/area such
as Kiambu district from any alternative development substituting agriculture and encouraged
industrial and residential development in the semi arid areas of Kajiado district and Machakos
district.
The major problems that faced the 1972-2000 Nairobi Development Strategy, was lack of political goodwill, enforcement of development control and implementation of the proposals such as road by-passes, which could have relieved most of the Nairobi Jam as shown in the figure 1 below along Mombasa Road in Nairobi.

![Traffic Jam in Nairobi-Mombasa Road](source: Field Survey, 2009)

From the above goals of the strategy also it is not clear whether the concerns of climate change were taken into consideration, the strategy proposed various bus routes which were not implemented and the layout also emphasized on the CBD and industrial area as core employment areas and this in itself encouraged motorization instead of pedestrianization, since apart for the railways staff who were housed near the work stations, people working in other sectors had to use vehicles to work. Non Motorized Transport routes were also not provided for.

Other planning and development efforts after the Nairobi Strategy Group in 1972 have been more of fire fighting and not really grounded on the nitty-gritty of sustainable urban planning and development, they are as follows:-

a. In 1993, the convention on “The Nairobi we want” prepared a report and recommendations titled “actions towards a better Nairobi”. This was out of the concern with the deteriorations of all the aspects of life in the city. This came as a result of democratic space created by the first era of political pluralism in the country. It did not achieve much as the thrust of the convention was driven by personality in the name of the city mayor at that particular time fondly referred to as “Magic Steve Mwangi” and not the institution he was serving which is the City council of Nairobi. In 1995 presidential commission on local authorities prepared its report which inter alia considered the city status of Nairobi into a metropolitan city and aim at decentralization into more effective and efficient local authority structure and system that can significantly increase active local community participation in the designing and implementation of urban development plans. The Nairobi we want and the presidential commission of 1995 did not come up with tangible plan of action which could be implemented to solve the problem the city was facing, it was envisaged that the efforts would lead to preparation of another structure plan which could guide development but this was not the case.
b. In 2006, the City Council of Nairobi, commissioned University of Nairobi, department of Urban and Regional Planning to help them revise zoning regulations for Zones 3, 4 and which mostly accommodates the high middle class cadres. This was due to fact that these areas were facing immense development pressures. The results therefore led to revision of the zoning regulations, by adjusting the ground coverage and plot ratio so as to accommodate more people, the issue of infrastructure challenges were not taken into account and the resultant effect of this was increased traffic jam due to increase in number of those driving to those neighborhoods, which means that a journey of 10 minutes was now taking more than 30 minutes which directly contribute to the volume of Greenhouse gas emitted in this urban environment.

In 2008, the president through the draft presidential circular No. 1 of April 2008, created a ministry of Nairobi Metropolitan Development (MoNMD). It mandated the ministry amongst other things to ensure: preparation and enforcement of an integrated spatial growth and development strategy and actualization of integrated strategic programmes for the provision of social, economic and infrastructure services among others.

From the historical analysis of Nairobi, it is clear that it is only recently in 2008 that the Central Government for the first time since independence in 1963, has exerted a critical influence on determining which urban entity or region will benefit most from public resources aimed at improving the status and growth of an urban region. The establishment of the Ministry of Nairobi Metropolitan Development can be thus be the first major opportunities for planners to scratch their heads and dream with city residents and stakeholders e.g. local authorities, Government departments, private sector, NGOs, CBOs etc for the sustainable growth of the region, especially in this era of urban century. At the regional and national level as compared to other urban areas Nairobi occupies an enviable position which can be tapped and connected to the global space of business and financial flows. This need to be done carefully so as not to sacrifice the region as a dumpsite by allowing land use activities which may lead to increased emissions of greenhouse gases to flourish in the region in the name of making the region global competitive. This is in realization that sustainability issues hardly seem to feature in the plans and visions of most city administrators in Africa as their aspiration is to attract new investments with insignificant regard to total environmental quality.

In terms of urban governance there is need to marry the ideas and thinking of the globalization theorists with moderate anti-globalization theorists in merging the ideas and dreams of globalists with the sustainable local thoughts. This is in realization that we are living in a purportedly borderless and politically uncontrollable forces of global integration but at the same time have to maintain our heritage by protecting our urban environment from suffering from environmental crisis as urban areas continue to consume the earth. This is due to the fact that chances of developing the metropolitan economically and at the same time follow environmental sound policies are very slim.
6. Nairobi Metropolitan Planning Challenges

The period after independence witnessed a rapid transformation in Nairobi occasioned by unprecedented urban growth. This growth emanated from poor regional development policies adopted by the post independent state which encouraged imbalanced developments consequently promoting rural-urban migration. This has accentuated influx into Nairobi resulting into an increased demand for residential and business opportunities among others. This boom has been accommodated through various ad hoc measures e.g. densification without proper infrastructural activities, proliferation and colonization of way-leaves and open spaces by informal sector traders and informal settlement dwellers, traffic congestions and snarl ups, poor waste management system which all have a negative impact on the environment and some such as traffic congestion and other land uses contribute significantly to global warming and ground level ozone.

Another challenge facing the planning for this region is institutional and policy gaps and hiccups. The capacity and the working relationship of the key institutions charged with the responsibility of implementing planning strategy historically have failed miserably. This is likely to continue if the Physical Planning Act and Nairobi Metropolitan Bill of 2008 are not amended and harmonized. The Physical Planning Act (Cap 265), section 166 states that planning of all areas
within the entire republic of Kenya is a preserve of the office of the director of physical planning and the work of local authorities is to implement plans and not to prepare any physical development plan and the proposed Nairobi Metropolitan Bill of 2008 gives enormous planning powers to the Minister in charge of metropolitan region which is likely to conflict with the existing planning statute.

Another related problem is coordination among key ministries and institutions, key institutions such as City Council of Nairobi, National Environmental Management Authority, Ministry of Transport, Roads and housing among others have not work in coordinated manner to ensure that the region gets its share of good service delivery and urban management, the figure below depicts some of the conditions the area is living under and the question is how, can this be corrected so as to come with a more sustainable and friendlier framework?

*Figure no. 3: Dandora Dumpsite (The Main Dumping site in Nairobi)*

Amidst the above events, the central government has taken back stage leaving the rest of the enforcement agencies moribund with residents reeling in the dysfunction and disorder. This annunciation underscores the need for understanding historical background and the development trend in the metropolitan towards evolving localised solution to the problems afflicting the area, especially in this era of climate change concerns. Indeed, institutional framework, governance and resource issues are fundamental in the pursuit of sustainable Nairobi metro 2030 development. These tenets include not only evolving a wonderful spatial planning framework but also keen on development control, growth coordination, evolution of a comprehensive land use framework and stakeholder popular participation as key components of the process.
In summary the major challenges which can be instrumental in reducing greenhouse gas emissions are land uses related to transportation sector, housing and other economic sectors such as energy and industrial. Other main challenge which will dictate the pace of overcoming these other challenges are the issues related to governance such as policies and rules and most importantly the institutional capacity to apply these rules and regulations for the betterment of the Nairobi Metropolitan region, which will need stringent but accomodative rules such as development control and carbon trading for those who are not ready to adhere to the rules.

Table one below shows that Nairobi will expand from 684 square Kilometers to 3,000 Kilometers which is higher than Kuala Lumpur but lower than most of the world renowned metropolis such as London, Toronto and closely home Cairo. The population was also expected to rise from 3 million to around 4.7 in 2007, this is according to Kasuku when undertaking Environmental and Social Impact Assessment of Nairobi Toll Roads project.

Table no. 1: International Comparison of the Nairobi Metropolitan Region

<table>
<thead>
<tr>
<th>Comparator</th>
<th>Nairobi</th>
<th>Lagos</th>
<th>Johannesburg</th>
<th>Cairo</th>
<th>Curitiba</th>
<th>Kuala Lumpur</th>
<th>London</th>
<th>Toronto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area City (In square km)</td>
<td>684</td>
<td>9</td>
<td>1645</td>
<td>214</td>
<td>431</td>
<td>244</td>
<td>1577</td>
<td>630</td>
</tr>
<tr>
<td>Area Metro (In square km)</td>
<td>3,000</td>
<td>1,000</td>
<td></td>
<td>5,360</td>
<td>15,417</td>
<td>1.9 (2007)</td>
<td>7.5 (2006)</td>
<td>7,125</td>
</tr>
<tr>
<td>Population density City (Inhabitant/sq.km)</td>
<td>4230</td>
<td>2364</td>
<td>35047</td>
<td>4160</td>
<td>3972</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population density Metro (Inhabitant/sq.km)</td>
<td>7941</td>
<td>3340</td>
<td>211</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City Branding Status (Ranking out of 60 in 2006)</td>
<td>60</td>
<td>59</td>
<td>49</td>
<td>55</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Adopted from Kasuku, 2008

7. Nairobi Metropolitan Planning Opportunities

The challenges can also be tapped to be opportunities, for instance improvement of road networks, by expanding new roads and repairing the existing road sis likely to reduce travel time and congestion hence reduction in vehicular gas emissions. Another way is introducing of reliable public transport either trams or modern light trains (mass transit) with higher loading
capacity and higher operating speeds. Another option is adoption of affordable green friendly building materials for upgrading of slum areas and densification of inner areas and new development areas so as to compact population in well planned area with adequate facilities and services, adoption and wide use of renewable energy since Nairobi is located in the tropics and this gives it undue advantage in terms of adoption to solar energy is concerned, efforts also should be made to do a feasibility studies on the potential of wind energy. Also related to energy there is need to explore ways of tapping methane for biogas which is emitted from dumpsite fumes, there will be also need of educating people on need to separate waste and also seek better ways of managing metropolis garbage which will definitely increase due to expansion and increase in population.

Another glaring but daunting opportunity is coordination of policies and institutions entrusted with the duty of planning and managing of the metropolis. The conflicting statutes should be harmonized so as to have a structured and value-adding approach to the management of the metropolis. The policies and institutions should also take serious the perceptions and aspirations of all cadres of urban dwellers all the way from the slum dwellers to the wealthy residents and all cadres of self-employed persons from street vendors to multi-billionaires enterprises, so as to come up with a spatial framework which is binding and at the same time cognizant of the need to protect the metropolis environment from being a major generator of pollution in the country or region. This will ensure that pictures like the one shown below where some people live in the riparian reserve as shown in the Figure 5 below are avoided.

Figure no. 4: Lunga-Lunga Slums (Some Buildings within Riparian Reserve)

Source: Field Survey, 2008
III. CONCLUSION

The paper concludes that there is a great opportunity to correct the previous planning mistakes in Nairobi by ensuring that Nairobi Metro 2030 planning is not purely economic and bureaucratic driven as witnessed in most of the previous efforts. It should be based on a real sustainable development framework which should be highly participatory and responsive to the needs and aspirations of the residents. It should be integrated with urban governance principles which enable people to appreciate the cost of promoting land use activities that lead to generation of greenhouse gases which catalyzes global poverty as the poor countries like Kenya will continue to suffer irrepairable losses which will be heavily shouldered by the next generation. The time to correct is now as it is never too late to correct a mistake.

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