URBAN LAND USE PLANNING SCOPES IN POST-WAR CITY OF MONROVIA, REPUBLIC OF LIBERIA

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Abstract: Sustainable development is a significant concern in the 21st century around the world. The world is becoming a global village. The top most priority is to use available resources without compromising the need for the future generations with an emphasis on social, economic and environmental parameters. In the context of urban land use planning, the sustainable term means to address major aspects of a city inclusive of the urban sprawl, transportation network, socio-economic development, city expansion, various land uses, and so on. It all contributes to improving the standards of living and make an urban environment livable. This paper focuses on identification of the need for formal land use planning using GIS tools. The paper discusses the situation on urban land use planning for a case from Post-War City of Monrovia, Republic of Liberia, which was ravaged by 14 years in civil conflicts. In the decade of 1980, by the then planners attempted to formalize land use. However, in the duration of the war, haphazard development evolved which need to be addressed in the post-war condition of present time. At the stage, research reveals that the efforts are essential to treat from scratch. Monrovia habitats a population of about 1.2 million wherein the density of population is very low spreading over a large space. A compact and sustainable planning considering the land use is emphases in the paper. For identification of current land use and to address diverse issues in relation, GIS tools are extensively used for deriving interventions and interpretations.

Keywords: Civil conflict, GIS, Informal Settlement, Land use planning, Monrovia, Sustainable development

INTRODUCTION

Over 90% of urban growth is occurring in the developing world (Bank, 2011). The report estimated that 70 million new residents are added to cities each year. In the next two decades, the urban population of the world’s poorest regions, South Asia, and Sub-
Saharan Africa is expected to double. Approximately a quarter of the world’s urban population lives in slums (UN-Habitat, Prosperity of Cities, 2013). In the State of the World’s Cities 2012/2013, UN-Habitat estimated the number of residents in the slums of the world’s developing regions as 863 million, in contrast to 760 million in 2000 and 650 in 1990. On increasing urbanization scenario, this figure is likely to have increased by 2016. These estimates suggest that one-third of the developing world’s urban population is living in slums (Global Urban Observatory, 2012), representing 15% of all the inhabitants of those regions.

Over half of the urban population (61.7%) lives in slums in Africa (UN-Habitat, 2013). In Asia, 30% of the urban population also resides in slums (UN-Habitat, Prosperity of Cities, 2013), and half of the urban population of the world lives in Asia. In the Latin America and Caribbean region, an area where slum upgrading and housing strategies have historically contributed to providing housing solutions to its citizens, still the problem prevails with a 24% rate of urban slum-dwellers (UN-Habitat, Prosperity of Cities, 2013). Slums are instinctively evolving as a prevailing and distinct kind of settlement in urban areas of the developing world. According to the State of the World’s Cities Report (State of the World’s Cities, 2010), every year, 10 million more people are added to the urban population of Sub-Saharan Africa. Approximately one-third of these, or 3 million, move to ‘formal’ urban areas. They act both as agents and beneficiaries of formal urban and economic growth. The remaining two-thirds, or 7 million, move to informal settlements or slums. Of these, only 2 million can expect to lift themselves out of slum conditions and the other 5 million will remain confined on the wrong side of the urban divide. Improved global awareness is required to comprehend adequately and plan for the massive expansion of cities in developing countries. Local bodies and national governments, civic establishments, international groups, as well as concerned citizens will need to take maximum responsibilities to cope with the changing environments.

CHALLENGES FOR URBAN DEVELOPMENT IN DEVELOPING COUNTRIES

The latest Global Report on Human Settlements prepared by UN-HABITAT, entitled increasing synergy greater national ownership (UN-HABITAT, 2015) classifies seven current and future global urban challenges. These are: climate change and resilience of cities, the increase of inequalities in cities, emergence of new forms of urban poverty, risk and marginalization in developed countries, unemployment: the youth and social unrest, Demographic changes in cities: aging populations and the youth bulge, commodification of land and housing, amplification of different types of crises. Many scholarly articles and international publications have argued that urban planning in the 21st Century must take place with the basic understanding of these challenges and emerging factors which lead to a new urban spatial structure of large, multiple nuclei and polycentric regions.

DRIVERS OF LAND USE

Following the different land uses over time and space enable to understand a history of their development. The know of the dynamics and urban morphology of cities can be useful for future urban planning practices. Figure below depicts the factors that determine the land use patterns for an urban area, once get developed. These contributing factors are: Natural
environment, demographics changes, economic activities, transportation system, consumer preferences, land ownership and management, policy regulation and management. The governance of these factors determine the urbanization extent.

Figure 1 Factors that determine land use patterns

EXPERIENCE FROM THE CITY OF MONROVIA, REPUBLIC OF LIBERIA

The city of Monrovia is the capital of Africa’s oldest nation Liberia. As a result of the 14 years’ civil war, almost of the infrastructures facilities were destroyed. Apart from the destruction was also stagnation regarding maintenance of existing infrastructure and a rapid increase in the use of these infrastructures due to internal migration into Monrovia. The main sewage system, initially built for a population of 400 was destroyed during the civil war (Liberia Settlement and Shelter Rehabilitation Programme). Urban roads in Monrovia, power generation network, distribution facilities, water supply network and such were greatly affected due to this civil war. The population of Monrovia in 1984 was 421,053 people and 1,010,575 people in 2008. The first population census was executed in 1962, follow by 1974 and 1984. Nevertheless, the original drafts and data of the 1984 census were misplaced during the civil war and detail results were never revealed. For that reason, the population Census that was conducted in March 2008, the first time after 24 years, tremendously characterizes critical data for this study.

Table 1 Population Concentration in Montserrado hosting Monrovia

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<tbody>
<tr>
<td>1</td>
<td>New Kru Town</td>
<td>73379</td>
<td>46561</td>
<td>1.576</td>
<td>515</td>
<td>142.4</td>
</tr>
<tr>
<td>2</td>
<td>Logan Town</td>
<td>58168</td>
<td>40754</td>
<td>1.427</td>
<td>627</td>
<td>92.8</td>
</tr>
<tr>
<td>3</td>
<td>Clara Town</td>
<td>55,462</td>
<td>16,181</td>
<td>3.428</td>
<td>244</td>
<td>227.8</td>
</tr>
<tr>
<td>4</td>
<td>West Point</td>
<td>29,516</td>
<td>22,499</td>
<td>1.312</td>
<td>53</td>
<td>558</td>
</tr>
<tr>
<td>5</td>
<td>Central Monrovia A</td>
<td>42,139</td>
<td>39,562</td>
<td>1.065</td>
<td>246</td>
<td>171.4</td>
</tr>
<tr>
<td>6</td>
<td>Central Monrovia B</td>
<td>40,688</td>
<td>54,770</td>
<td>0.743</td>
<td>213</td>
<td>191.5</td>
</tr>
<tr>
<td>7</td>
<td>Sinkor</td>
<td>43,780</td>
<td></td>
<td></td>
<td>321</td>
<td>136.6</td>
</tr>
<tr>
<td>8</td>
<td>Lakpazee</td>
<td>42,045</td>
<td></td>
<td></td>
<td>441</td>
<td>95.4</td>
</tr>
<tr>
<td>9</td>
<td>Old Road</td>
<td>48,274</td>
<td></td>
<td></td>
<td>554</td>
<td>87.2</td>
</tr>
<tr>
<td>10</td>
<td>Congo Town</td>
<td>25,217</td>
<td></td>
<td></td>
<td>784</td>
<td>32.2</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td>159,316</td>
<td>95,426</td>
<td>1.67</td>
<td>2,099</td>
<td>75.9</td>
</tr>
<tr>
<td>11</td>
<td>Paynesville</td>
<td>350998</td>
<td>46,477</td>
<td>7.552</td>
<td>9,130</td>
<td>38.4</td>
</tr>
<tr>
<td>12</td>
<td>Gardneville</td>
<td>80,397</td>
<td>40,707</td>
<td>1.975</td>
<td>1,221</td>
<td>65.8</td>
</tr>
<tr>
<td>13</td>
<td>New Georgia</td>
<td>54,188</td>
<td>11,232</td>
<td>4.824</td>
<td>1,052</td>
<td>51.5</td>
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<tr>
<td>14</td>
<td>Barnesville</td>
<td>35,224</td>
<td>6,884</td>
<td>5.117</td>
<td>1,212</td>
<td>29.1</td>
</tr>
</tbody>
</table>
According to the findings of the Census in June 2008, the population of Liberia in 2008 is 3,489,072, demonstrating an increase of 1.66 times from the figure of 2,101,628 in 1984. This leads to an annual population growth rate of population 2.1% over this period. It is much smaller than the growth rate of 3.3% in 1974 and 3.4% in 1984 (see Table below). It is believed that the figure would have been similar to this if Liberia did not experience the civil conflicts.

<table>
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<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>1016443</td>
<td>1503368</td>
<td>2101628</td>
<td>3489072</td>
</tr>
<tr>
<td>Population Change</td>
<td>486925</td>
<td>598260</td>
<td>1387444</td>
<td>1387444</td>
</tr>
<tr>
<td>Average annual increase</td>
<td>40577</td>
<td>59826</td>
<td>57810</td>
<td>57810</td>
</tr>
<tr>
<td>Percentage increase</td>
<td>47.9</td>
<td>39.8</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Annual rate of growth</td>
<td>3.3</td>
<td>3.4</td>
<td>2.1</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: LIGISS (Census 2008)

Urban population growth rate is 5.65% (UN-Habitat 2009). Settlement comprising of 2000 or more people is referred to as an "urban" settlement in Liberia. These urbanization criteria propose that more than half of the population now live in distributed settlements showing rapid urbanization from "rural to urban" and from "urban to urban." Furthermore, urban description, functions, categorization and quality of human settlements in Liberia disclose broad limitations in the management of urban areas in the field of urban governance, urban policy formulation, and implementation, urban land management, finance, and administration. Current policies, regulatory and legal frameworks and mechanisms for human
settlements and urban related matters are disjointed and dissimilated among weakly harmonized ministries and agencies in Liberia.

Considerable urban issues have come out due to the rapid urbanization in Monrovia. The majority of the housing stocks (at least 80%) has been destroyed by the 14 years of civil unrest or a diverse situation of disrepair. Diversity of urban settlements in the ladder of human settlement (from the lowest to the highest settlements), poor urban policy and weak governance formation, inefficient decentralization policies, poor urban planning, lack of land for housing project and weak housing policies for shelter delivery to the urban poor and inadequate finance to undertake government schemes and policies are among the many other problems as the result of rapid urbanization. Additionally, slums are rapidly escalating, and there is little slum upgrading action being undertaken. More than 1.4 million inhabitants live on less than USD 0.50 cents per day (UN-Habitat 2008). Extensive urban poverty is an eminent attribute. Massive unemployment among urban population (especially youths) which put a serious heaviness on the poor. There are inadequate urban infrastructures facilities which pose a serious threat to the quality of life at all levels. Poor garbage collection mechanisms for the disposal of solid wastes in urban areas.

There are huge gaps between human settlements and urban policies in Liberia, which has led to rapid and haphazard urban sprawl settlements. When urban policies couple with governance function in collaboration with a central government structure, uncontrolled growth and improper management of urban land become controlled and planned. Liberia is in a state of post-conflict rehabilitation and reconstruction. With the long years of civil conflict Liberia have experienced, she has been gradually progressing for more than ten years of peace. With this progress being made, there are still urban governance, urban land management and policy formulation and implementation problems in Liberia. More than 50% of the population in Liberia now live in cities. More than 1.2 million of the population live in Monrovia. As a result of this rapid urbanization serious threat has been posed to the economy and infrastructures in Liberia with more emphasis on the lack of housing stock. In Monrovia, most of the population are prioritizing the periphery with the availability of land to meet their housing needs. This rapid urbanization has also lead to the creation of informal settlements in many parts of Monrovia.

Poor land management was part of the reasons why Liberia experienced the extended period of civil unrest. Land rights were poorly regulated in the past this led Liberia into a predicament and a period of long-suffering and backwardness. Agrarian reform has taken a shape in the administration of President Ellen Johnson Sirleaf because it has been given a high priority. Issues of land management and administration of urban land discussed at a national conference in 2009 in President Ellen Johnson Sirleaf emphasized on agrarian reform as a national priority for the growth and development of Liberia. Monrovia being the largest urban area in Liberia has experienced the most rapid urbanization. It has been characterized by the following problems:

- Weak Legal and regulatory framework for land use planning
- Poor urban local governance administration
- Lack of coordination between Agencies and Ministries responsible for urban planning in Monrovia
- Zoning Laws/regulations are out-dated
• Maximum increase in informal and unplanned settlements
• Damage infrastructures
• Rapid peri-urban growth
• Poor enforcement mechanisms

It has realized that the population is concentrated in Montserrado County which holds Monrovia. That is empirical as a result of rural to urban migration to the civil war which led people to seek a better life. According to the 2008 Census, the population of Montserrado accounts for about one-third of the national population. Since this ratio was just under one-quarter in 1984, it can be seen that population concentration into Montserrado is advancing. The same conclusion may also be strained from the county separate population growth rates.

Figure 4 Population Concentration in Montserrado hosting Monrovia

From the above figures, it is noted that majority of the urban population is concentrated in Montserrado County hosting Monrovia. Population density is moderately high in the CBD area and high in the Clara Town and West Points Communities that comprise of the highest slum populations in Monrovia.

A. Prospects in urban land use planning in Monrovia

The UN-Habitat and the Government of Liberia organized a National Urban Forum in Monrovia, Liberia June 24 and 25 2015 under the theme "Towards a National Urban Policy" to give advice on the roadmap towards sustainable urbanization in Liberia. The City Government of Monrovia, the Ministry of Internal Affairs, the Land Commission, Cities Alliance and the UN-Habitat organized the National Urban Forum. The population of Liberia is a little over 4 million people. 2.1 of these people in urban areas and a significant portion of 1.5 million live in Monrovia. Presently, secondary cities next to Monrovia characteristically have less than 100,000 people.

The National Urban Forum in Monrovia highlight that cities can be engines of growth and well- managed urbanization can increase human welfare and the creation of wealth (UN-Habitat, Country Programme Document, 2009). Globally cities produce about 70% of the National GDP though they host only 50% of the national population or even fewer in some Sub-Saharan African countries. Liberia has made progressive achievements towards sustainable urbanization including the drafting of the Housing Policy, Urban Land Inventories, Decentralisation and Deconcentration Policy and the political motivation to prioritize urban development through a National Urban Policy. About 70% of the urban population live in slums in Monrovia. After results gathered from slum profiling, availability of and better water, sanitation facilities, housing and secure tenure are all insufficient and
barely available in slum communities. Putting slum communities at the center of upgrading process and using participatory planning approaches for comprehensive urbanization is necessary to improve the quality of life. The prevention of new slums through satisfactory and affordable housing schemes improves the general prosperity of a city.

The National Urban Policy is the heart of sustainable urbanization as it forms a managerial organization that strengthens the urbanization process, coordinates the affairs of different sectors and the various levels of government, and establishes a more sustainable way to manage resources. The National Urban Policy provides a national vision, principles, and direction. An incorporated development policy connecting legal and regulatory frameworks, monetary and urban planning framework that developed with the participation of all involves stakeholders to change the approaches towards urbanization in Liberia. Slums and affordable housing are also at the center of the National Urban Policy to provide better life and shelter for the urban poor.

B. Land use Classification in Monrovia

Monrovia has experienced rapid urban growth most of which are done in a haphazard manner. The classification in the below image shows built-up areas, water bodies, mangrove swamp, open space (green space/vacant space). From the analysis of the geographical boundary of Monrovia, the total is area is approximately 247.5 km². Vacant land/open space is approximately 46.5 km², water bodies and mangroves are approximately 52.7 km².

Approximately 60% of the geographical area of Monrovia is built up (partly or wholly). Some areas have high population density and some low population density. The majority of the buildings in the low-density areas are scattered covering most of the built-up areas. Approximately 21% of the total area of Monrovia is covered with mangrove swamps and water body. Some mangrove swamp areas have been encroached upon by the construction of buildings due to the massive urban sprawl. Approximately 19% of the total area in Monrovia is vacant land (construction has not taken place yet).
Table 2 Planning problems in City of Monrovia

<table>
<thead>
<tr>
<th>Description</th>
<th>Present scenarios</th>
<th>Planning problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Sprawl</td>
<td>• Urban settlements and industries are sprawling in mangrove swamp affecting mostly Paynesville, Caldwell, Johnsonville, and Barnesville</td>
<td>Proper boundaries need to be decided by authorities to control the urban sprawl in Monrovia</td>
</tr>
<tr>
<td>Change in Land uses</td>
<td><strong>Central Business District</strong></td>
<td>There is a lack of adequate Urban Master Plan for Monrovia. The weak intuitional capacity of government agencies responsible planning, lack of trained staff, lack of equipment, and so on. Local and Annual action plans are needed to address this growing need</td>
</tr>
<tr>
<td></td>
<td>• Densely populated informal settlements due to high opportunities in Monrovia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Unused high rise buildings in CBD area</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Informal settlements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Approximately 90% of the settlements covering the built-up area are rented houses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electricity, water, road, utilities, and such has not been restored properly since the civil conflict, population inflow in Monrovia is also worsening the situation</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Large scale ongoing low rise settlements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of integrated Local Plans for road network, future sewerage and water supply systems not undertaken Future growth of urban center not established yet</td>
<td></td>
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</table>

C. Present Land Use Pattern in Monrovia

The land use pattern of Monrovia shows that most of the built up areas are cover by low and medium densities housing. It depicts that the built up areas will increase at a higher rate because most people and are not high-income earners. They can only afford to build low houses for the purpose of shelters.

Figure 6 Present Land Use Pattern in Monrovia
D. Road Transportation in Monrovia

Before the inauguration of the government in 2006, the transport management sector in Liberia was divided among numerous Ministries. The Ministry of Transport (MOT) was responsible for transport sector policy formulation, regulation, and implementation. Managing national road network was divided between the Ministry of Public Works (responsible for the primary and secondary roads) and the Ministry of Rural Development (responsible for feeder and farm-to-market roads).

Due to the Liberian civil conflict, these Ministries lost their capacities to manage their relevant functions. Major data and documents were lost. In past, the ministries relied on collective memory to establish road data. Ministries were unable to undertake regular road condition and traffic assessments and confirm that approximately no road maintenance was conducted between 1986 to 2006. As a result of this lack of maintenance, most roads are in destitute conditions up to now. Transportation networks link all the main economic areas to one another in Monrovia and also link the city to national highways in Liberia.

E. Existing Policies and Regulations

National Transportation Policy and Strategy (NTPS) The new National Transport Policy and Strategy (NTPS) was officially approved in November 2008 by Government of Liberia with technical and financial support from the World Bank. The NTPS defines the vision for transport in Liberia. It is a guide to decision making by the Government and its various agencies. It will provide a point of reference for local authorities, business, and communities. The objectives of the NTPS are to make transport financially and economically sustainable; accessible to all persons, including the physically challenged and elderly; affordable to all...
strata of society; safe to ensure high standards of health and personal security for all individuals, including users, workers, and operators; and environmentally sound.

F. Multi-Core Urban Corridor pattern

Monrovia comprises of Central Business District (CBD) which is located in Central Monrovia is shown in red in the below figure. Most of the traffic are directed towards the CBD area. There are also four core areas which have basic economic activities, and some of the traffic are oriented towards these regions. Core Area 1 (ELWA Junction) holds traffic from the Roberts International Airport, Central Monrovia, and Red light.

Core Area 2 (Red Light) holds major economic activities and has one of the largest markets in Monrovia. It connects traffic from ELWA Junction; Somalia drives road and the national highway to Kakata connecting most of the Liberia. Core Area 3 (Clara Town/Freeport Area) comprise of economic activities which are mostly industrial. It is around the Freeport of Monrovia and connects Central Monrovia, Red Light, and traffic from Logan Town. Core Area 4 (Logan Town) is a populated business area which has many informal markets activities. Along all the key roads, there are mixed-use (commercial and residential) land uses which indicate that businesses are highly taking place along transportation corridors in Monrovia.

**CONCLUSION**

Adequate urban planning and planning city expansion is of the most efficient ways to prevent the formation of slums and improve urban life as it deals with urban space for future growth and encouraging compact urban communities for sustainable development. To attain sustainable development, all national development policies should aim at achieving the
sustainable development goals. In Monrovia, little attention has been paid to attaining sustainable urban planning because the city was ravaged by 14 years’ civil conflicts which destroyed major infrastructures and diminished the economy of Liberia.

Absence of Urban Planning Guidelines, lack of Development Control Regulations, lack of coordination between Ministries and agencies responsible for urban planning in Monrovia, low government enforcement mechanism, low budgetary allocation for Municipalities and Agencies responsible for urban planning, lack of public awareness about zoning laws and municipal regulations are among major factors serving as hindrances to Urban Planning in Monrovia.

There have been recent policies framed by the government of Liberia and its International to restored and improved the quality of life in Monrovia towards sustainable development through the National Urban Policy. It will give way to improved planning mechanisms which will enable a planned growth.

REFERENCES


