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SMART CITIES CHALLENGES

SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

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Contents

TeMA Journal of Land Use, Mobility and Environment

LAND USE, MOBILITY AND ENVIRONMENT

UrbanisationPattern of Incipient Mega Region in India
Ramachandra T V, Bharath H Aithal, Beas Barik

The Effectiveness of Planning Regulation to Curb Urban Sprawl The Case of Striano (NA)
Laura Russo

Prediction of Mymensingh Town Future Using Space Syntax
Silvia Alam

TeMA
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LIMITS TO ECOLOGICAL-BASED PLANNING IN ZIMBABWE

THE CASE OF HARARE

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ABSTRACT

This paper explores the feasibility of adopting ecological based planning in low-income residential development. It explicates that in developing countries efforts by housing authorities have been on housing provision irrespective of the environmental threats to sustainability. As these houses are built, future of urban ecology is under threat. The questions regarding this phenomenon are several: how do low-income populations perceive environmental issues of urban settlements? How capable and willing are the local authorities to embrace and apply ecological based planning in residential development? What are the facilitating instruments of ecological-based planning? What are the prospects of integrating ecological based planning to low-income residential development? What are the restraining factors towards embracement of ecological based planning and how best can they be harnessed towards future ecological cities? The case study of Hatcliffe residential area in Harare shows that there are many challenges to overcome uncoordinated planning approaches, ineffective policies and legislative frameworks, weak institutional settings, financial constraints, outdated planning standards and regulations, poverty, lack of environmental stewardship and lack of political will among others. The study findings call for robust environmental conservation strategies, strong environmental stewardship, responsive institutional and funding mechanism backed by realistic legislative frameworks and robust policy rectification.

KEYWORDS:
Ecological-based planning, low-income residential areas, sustainability, urbanisation

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津巴布韦的生态规划限制

哈拉雷案例

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摘要

本文探讨了在低收入住宅区开发中采用生态规划的可行性。本文揭示发展中国家的房管部门一直以来只注重房屋供应，而忽略了环境给可持续发展带来的威胁。随着这些房屋的建成，城市生态的前景受到威胁。针对这种状况有如下几个问题：低收入群体如何认知城市居住区的环境问题？地方当局如何有能力并愿意在住宅开发中接受和应用生态规划？生态规划的促进手段有哪些？集成化生态规划在低收入住宅开发中的前景如何？对于生态规划的接受有哪些制约因素，以及对于未来的生态城市如何更好地驾驭这些制约因素？对哈拉雷Hatcliffe住宅区的案例研究表明，在克服僵化的规划方法、无效的政策和立法架构、薄弱的机构设置、财政制约、过时的规划标准和规定、贫穷、环境管理和政治意愿匮乏等方面，仍面临诸多挑战。研究结果表明亟需强大的环境保护战略、有力的环境管理工作、能够做出响应的机构和筹资机制，这些均需要有效的立法架构和稳健的政策调整来提供支持。

关键词
生态规划；低收入住宅区；可持续性；城市化

1 INTRODUCTION

In the time of rapid urbanisation process, residential development has been of critical concern to cater for expanding populace within the urban space. In efforts to accommodate the exploding population, nature has been 'designed out' of the residential development equation. As well, low-income residential areas constitute the largest space of the built environment in most cities of the developing countries. Departing from such a complexity, this paper makes a feasibility study on the applicability of Ecological Based Planning (EBP) to low-income residential development. Conceptually, EBP entails the sustainable marriage of the hard and soft space that is development of environmentally sensitive settlements. EBP constitutes components of green space enhancement, wildlife conservation, green architecture as well as green energy within urban settlements. These components holistically shape the syntax of urban environmental planning.

The study notes that there is inherent environmental crisis globally of rapid growth of the human population; the depletion of both non-renewable and renewable resources; and extensive and intensive damage caused to ecology. This is being exacerbated mainly by a generally huge influx of population in cities.

In the developed world, such a trend of huge population influx is explained by increasing exilic and Diaspora populations in urban territories (Mbiba, 2000). In the developing countries, rural-to-urban migration is rampant (Simone, 2003; Toriro, 2011). Overall, cities in developing countries are experiencing spontaneous expansion of low-income residential areas (Maphosa *et al*, 2008). Once they arrive in the cities, the migrants require somewhere 'to put their heads' hence the logic of low-income housing. Low-income residential areas have thus tended to occupy a critical space, normally reserved for 'nature'. In this regard, the 'invasion' of ecologically sensitive areas (ESA) has been inevitable and to the detriment of urban ecosystems. In cities of the developing world, little emphasis has been paid to low-income residential areas, which account for the largest proportion of the urban land. Likewise, policy makers have been reluctant, if not resisting, addressing facets of environmental sustainability of low-income residential areas (Muderere, 2011; Maphosa *et al,* 2008). Urban nature does not seem to be incorporated into urban planning. Thus, the hard and soft space appears as two rivers flowing parallel whilst eroding the banks of each other.

This paper relates ecological-based planning components to low-income residential areas with the methodological lens of Hatcliffe case study in Harare, Zimbabwe. The paper maps out the capacities, opportunities and constrains of adopting EBP in low-income residential development. The qualitative methodologies used to construct the discourse are the key informant interviews and observations. Key informants were local planning authorities, environmental boards and the local residents of Hatcliffe. The study provokes a discussion on capabilities of the local authorities to embrace the adoption of EBP as well as scrutiny of low-income residents as enemies of ecological sustainability, reasons for ecological exploitation. This leads to a discussion on the nature of residential development in Zimbabwe as well as the feasibility study of incorporating EBP as an environmental planning tool for sustainable human settlements. The paper concludes by suggesting possible policy options to be espoused for robust integration of EBP in low-income residential areas towards environmentally sensitive settlements.

2 CONCEPTUAL AND ANALYTICAL FRAMEWORK

The concept of Ecological-Based Planning has been a critical approach in the anthropocene epoch. EBP is an approach of creating environmentally sensitive human settlements, which means living in harmony with nature through use of its principles.

Contemporary urban environmental praxis has broadened intergenerational inequalities and there is need for moderation through robust planning intervention (Shu-Yang *et al,* 2004). EBP constitute the enhancement of green space of green, wildlife protection, green energy, wetland protection as well as green architecture (Gilbert *et al,* 1996).

Globally ecological based planning is practiced with cornerstones as green space enhancement, urban wildlife protection, sustainable construction, environmentally friendly energies and protection of environmentally sensitive areas (Said *et al,* 2009). The package of ecological based planning is multifaceted but for it to work effectively it requires integrated approach of applying them holistically. In conquest to conserve nature, these components seek to marry the built space with urban ecology. Within the realm of ecological based planning, green space enhancement is crucial.

Green space plays a vital role in enhancing the quality of urban life by creating attractive cityscapes; improve health, sustainable neighbourhood renewal and better community cohesion in deprived communities (House of Commons, 2009). It also offers environmental benefits, including pollution control, water management, wildlife havens and biodiversity. Naturalising urban ecosystems by increasing or maintaining the dominance of native species and their communities have been of great importance (Shu-Yang *et al,* 2004). Green space enhancement also encompasses the protection of ecologically sensitive areas (ESAs) such as wetland areas. Green architecture is another crucial component of ecological based planning. It entails the construction of buildings that are environmentally friendly throughout their life cycle from construction, use and demolition. Ecologically friendly houses facilitate more affordable living in the end, as they minimize energy costs (Said, *et al,* 2009).

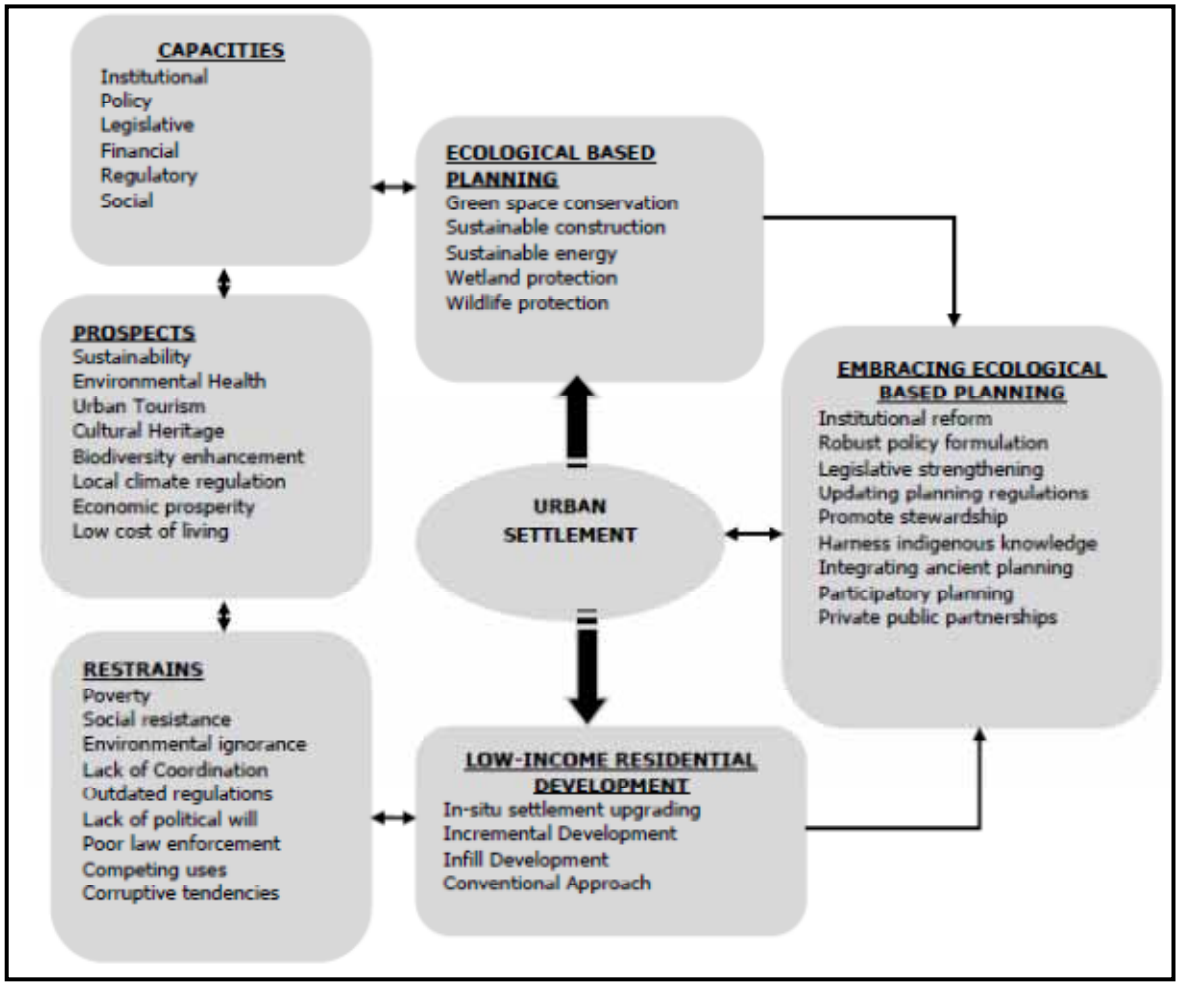

Fig. 1 Ecological-based planning conceptual framework

Nevertheless, neither the private nor the public housing providers have shown much interest in environmentally friendly housing provision and this has raised the eyebrows of environmentalists globally. Ecological construction is also contemplated in several traditional building designs where local materials are used in their construction in order to become more energy and resource efficient. The American architect

Frank Lloyd Wright who introduced “organic architecture” at the beginning of the twentieth century marked the revolution of green architecture within urban settlements (Hough, 1991). He initiated the design of houses constructed of local building materials, also known as vernacular architecture. Whilst made much progress, there is still need for more attention to energy and resource efficiency in the construction and operation of residential buildings as a crucial component of ecological based planning.

In addition, other components of ecological urbanism are the use of green energy, and sustainable waste management. Globally use of sustainable energies has become a crucial necessity in order to avoid the depletion of non-renewable energies. The concept of green energy constitutes use of energy with minimum or no negative impact on the natural environment. These include the use renewable clean energy such as solar, wind energy in substitution of fossil fuels, which have an adverse environmental damage. Waste management and waste reduction have been of great concern to environmentalists (Said *et al,* 2009). The mechanism of waste minimisation comes in three modes of Re-use, Reduce and Recycle (Beer, 2003). The reduction of the garbage has been a major global concern. Thus, there is continuous increase of their huge bulk, because of the modern society and the urban and one of modern societies' greater challenges. Also the increasing tendency of global consumption on secondary consumable (Pieterse, 2011), thus call for ecological based planning intervention in the realm of urban development with regard to waste management.

Whilst unpacking ecological based planning components, urban wildlife protection has been of great concern to urban planning as urban wildlife has been hastening towards extinction. Conservation of urban fauna has been of less attention in the discussion table of the developing world but its importance rang the bell of the global community (Hough, 1991). Muderere (2011) as well notes that, through ecological networks and nature sanctuaries, urban wildlife had been habituated in urban places either by natural existence or by confinement. Conceptually, ecological based planning comprises several principles which include meeting the needs of humans and the economy, sustaining ecosystem integrity, the use of renewable resources, natural debt elimination, nature conservation and biodiverstity enhancement (Shu-Yang *et al,* 2004). It also seeks to increase environmental literacy to build social support for sustainable development, resource conservation, and protection of ecology. These principles are fully espoused by enhancing the ecological based planning components (see Figure 1). The use of force field analysis realises the capacities, opportunities and constrains of ecological based planning - low-income residential areas conjugate.

Greening the environment for the planning of human settlements has been a continuous debate at international forums, but these debates are yet to be scaled down to low-income residential areas in cities of the developing world. Studies on the sustainability of residential development have been extensive, but the ecological development and operation of low-income residential areas lacked recognition (Maphosa, *et al,* 2009). The continuity of a dynamic balance between needs and demands of people for equity, prosperity as well as quality of life at the same time maintaining healthy ecologies are cornerstones of sustainable development (Castels, 2000). The housing realm is multi-faceted as it depletes natural resources as well as producing impact on the natural environment (Said, *et al* 2009). As the poor population is the most dependent on the environment, Low-income residential areas have become hubs of massive ecological destruction. While globally planning has acquired a more "ecological" conscience, in conquest to face the matters of environmental defects, the legislators in cities of the developing countries are still concerned with survival of the current generation regardless of compromising the needs of the future.

Ecological based planning has long history of praxis being practiced by early ancient societies. Regarding the population, they had considerable impact on the natural environment in comparison to contemporary urban settlements. Ecological based planning reflected in several traditional building designs that use local materials in their construction, situated and designed to achieve optimalities of heating and cooling. Examples of such sophisticated architecture include traditional buildings constructed using adobe, animal

hides, or living spaces excavated from soft rock (Van der Ryn and Cowan 1995 cited in Shu-Yang *et al,* 2004). Scaling down to the local scale, ancient African societies had sophisticated ecological conservation practices. The concept of sacred controls on forests *(rambokutemwa)* was a way of creating ecological networks devoid of human disturbances and a form of biodiversity enhancement.

In relation to the African societies, the concept of totems was a cultural filtration strategy to wildlife consumption where every tribe had an animal devoid of human consumption leading to conservation of wildlife with even national emblem of bird species (*Hungwe)* as sacred. Ancient societies had fascinating architectural concepts of sustainable construction. Use of biodegradable building materials such as timber, thatch grass and mud proved environmentally beneficial as their high rate of migration left no prints of environmental disturbance thus, all building materials returned to nature. In a complex world, where human populations cluster in densely populated settlements with exorbitant pressure on the urban environment the challenge is; how these ancient ideas can be harnessed in formulation of robust environmental conservation strategies? Applicability of such sophisticated ideas in contemporary cities has been controversial due to several reasons amongst others being incompatible with modern bylaws and planning regulations as well as cultural change.

3 LOW-INCOME RESIDENTIAL DEVELOPMENT IN ZIMBABWE

While not blanking out the memories of prohibitive colonial city regulations, independence in 1980 in Zimbabwe witnessed a huge influx of rural migrants to urban areas (Mbiba, 2000). A compounding of 'rural push' and 'urban pull' elements defined the urbanization trends. Housing delivery has been a burning issue since the 1950s and limited governmental involvement in housing provision, which occurred during the early post-colonial period in Zimbabwe, has been the exacerbating factor (Chaeruka and Munzwa, 2009; Maphosa *et al* 2007). Demographically urban population has exorbitantly expanded as the 2002 Census placed the urban population at 35% with nearly half (46%) living in Harare (Chaeruka and Munzwa, 2009). The harsh macro-economic conditions have been main cause of poor residential development in Zimbabwe. The legislative instruments: Housing Standard Act, Model Building Byelaws and the Regional, Town and Country Planning Act missed environmental concerns regarding housing development, which gradually deteriorated residential space. As Chaeruka and Munzwa (2009) argue, the rapid urbanisation that Zimbabwe witnessed after 1980 put a strain on the physical, economic and social fabric of most towns and cities; they missed out hardly the environmental impact of rapid urbanisation. This led to a situation whereby the low-income residential development has been done haphazardly to the deteriment of environmental quality. In fact, most of the recently developed housing in the peri-urban of most Zimbabwean cities qualify as substandard housing given the lack of water and sanitation, and paved roads.

Thus, nationwide there has been galloping of over a million of populace on housing backlog (Chaeruka and Munzwa, 2009). This has pushed the shape of residential space to informal and peri urban settlements, putting the urban ecological space at jeopardy. More often than not, the existing settlements have exceeded their carrying capacity stressing the environment they rest upon and occupying ESAs in the name of "land dearth". Currently the sustainability of low-income residential development consists of more questions than answers. Low-income residential AREAS have been neglected and rejected as hubs for urban ecological treasure. As such, there have been reluctant reactions on the adoption of sustainable residential development. This issue emanates from city legislators who regard ecological based planning as a bureaucratic hurdle to urban planning (Chaeruka and Munzwa, 2009).

3.1 FACILITATING FACTORS

Zimbabwe has a broad legislative framework positioned to govern environmental management. The section 4 of Environmental Management Act, chapter 20:27, 2002 enhanced environmental rights to Zimbabwean

citizens. This instrument promotes environmental stewardship among urban residents. Also in relation to nature conservation, the Forest Act of 1949 chapter 19:05 protects the urban flora, and the Parks and Wildlife Act of 1975, chapter 20:14 protects the exploitation of urban wildlife (fauna). These instruments have failed to promote the conservation of urban ecology in low-income residential areas since they have been calling for updating as they are now outdated in regard to incorporation of environmental sustainability, reform, and strengthening for their operation to be fully functional. This has been a result of the local planning authorities not using them in their full capacity. Additionally there are various institutional and administrative structures in charge of environmental management. The Ministry of Environment and Natural Resource Management (MENRM) plays a pivotal role in management of environmental resources. The National Environmental Council (NEC) alternatively supports as an advisory board to allied institutions on environmental management. There is also Environmental Management Agency (EMA), which fosters environmental policies such as Environmental Impact Assessment policy of 1997 and the National Environmental Policy of 2003. However, having various institutions in charge of the environmental management creates a situation where a lack of a clear-cut of responsibilities compromises their effectiveness. As diversity leads to generalization, these institutions have proved to be aseptic to their responsibilities regarding state of environmental sustainability in low-income residential areas.

3.2 RESTRAINING FACTORS

Enforcing environmental instruments remains difficult because of inherent weaknesses in law enforcement and development control mechanisms. The prevailing environmental policies act as edentulous bulldogs in guarding against environmental exploitation. There are often repellent reactions in the forms of abnegation, resistance, relativism, and aseptic regulatory responses (Maphosa *et al,* 2009). As regards to local practice, this hinders the initiation and implementation of environmental conservation strategies for low-income residential areas. No direct legislative instruments exist to govern environmental sustainability of low-income residential areas as several legislative instruments and institutions lack clear responsibility of the low-income residential areas, which consequently leads to reluctance in their commitment. The Regional, Town and Country Planning Act (1996), Environmental Management Act (2000) lack concerted effort to relate with other allied supporting instruments towards embracement of environmental sustainability in low-income residential areas. The institutional responses have been naïve to embrace ecological based planning in residential areas thus their multiplicity led to generalization in role-playing (Maphosa *et al,* 2009). Corruption exists within the phase of striking a balance between low-income residential areas and ecological based planning. The low-income housing developers play unscrupulous development practices, greasing the hands of environmental bodies and agencies to be granted development permits regardless of their adverse environmental impacts. Hence, there is need for interplay cooperation among responsible stakeholders. The goal to achieve sustainable development is the greatest challenge humankind has ever faced, demanding a concentrated articulated effort among consumers, the housing industry and government itself (Said *et al,* 2009). For the sake of resources mobilization to foster the ecological based planning initiatives, lack of political will holds back progress. Environmental initiatives have been regarded as bureaucratic red tape to development and housing provision having an extortionate size of housing backlog in Zimbabwe (Maphosa *et al,* 2009). Referring back to the origin of the case area Hatcliffe, it is full of political rebuttals on its existence and development. On the other hand, interventions by international organizations in the environmental management of local resources are being restrained by political connotations of illegitimacy. Drawing from the case study of Hatcliffe residential area, there are several areas calling for discourse. Planning regulations are super-annuated to govern environmental protection. The Regional Town and Country Planning Act is backdated to 1996 where environmental aspects had not provoked hot debates globally hence, it lacks environmental aspects as a backbone of urban planning. Several local development plans and the master

plan at large are as outdated as 1984 where environmental aspects are poorly expressed if not excluded in these statutes. In addition, the current planning area characterised by high degree of inflexibility where they poorly respond to dynamics of environmental change. This invokes planning failure to address environmental issues in modern urban planning. Currently there are reluctant efforts to update these planning regulatory frameworks with speculation of persistence if no robust measures have been adopted.

The scaling down of global environmental initiatives to local levels such as the concept of ecological based planning in low-income residential development is facing hindrances of local resistance and ignorance. The developing world on the environmental discussion tables tends to favour the initiator rather than the concept. That is a great question of legitimacy rather than effectiveness, which conclusively is blind obedience rather than rational discussion. Several global environmental initiatives are rejected because of lacking legitimacy to the third world community (Potts, 2009; Termorshuzein *et al,* 2007). Worldwide environmental scientists are being blamed for interpreting global environmental issues poorly and for being poor communicators, who present environmental issues overcautiously. The management of urban settlements raises the crucial issue of environmental democracy. However, it goes further beyond urban management, into transparency, accountability, and the rule of law, participation, reciprocity, and trust (Castels, 2000). What makes democratisation particularly relevant is the fact that by virtue of various forms of environmental management, urban centres have obtained increasing formal authority over their areas of jurisdiction, although often stopping short of a genuine devolution of decision-making power towards environmental sustainability (Gilbert *et al,* 1996).

There have been doubts over the financial feasibility of fostering ecological based planning within low-income residential areas and this has been stimulated by adoption of the techno-centrism approach rather than eco-centrism approach to environmental chastening. In addition, repellent exists as well as repudiate reactions towards initiation of densification approach to residential development pointing fingers on financial incapacities of local authorities and local communities themselves (Brand, 2006). The current horizontal approach to residential development is exacerbating urban sprawl (encroaching to agricultural land and forestry space) which in turn is compromising the ecological networks of the urban settlements. The dearth of land is being used as an alibi as to why there has been the exploitation of ESAs for residential expansion in cities of developing countries. Having the restraining factors overweighing the facilitating instruments low-income residential areas is left at jeopardy of environmental exploitation.

4 CHARACTERISING THE STUDY AREA: HATCLIFFE

Hatcliffe is a high-density residential area situated twenty-two kilometres to the north of Harare city centre (see Figure 2). It was established in 1984 at the outskirts of Harare as a holding camp of urban migrants coming from different places in Harare: some from Churu farm, some from squatter camp in Mbare and others from nearby farms (Dirwai, 2000). A range of low-income dwellers posing strains on the environment comprises it. Being located on the former peri-urban farm of red soils, it is surrounded by suburbs of high-income earners, Hodget Hill and Philadelphia.

The residential area was originally designed to meet the housing needs of a small population, but housing demand increased rapidly (Chirisa and Muchini, 2011; Dirwai, 2000). The remarkable increase in housing demand has exceeded the ecological carrying capacity of the residential settlement considering the stress on the ecological treasures by residential development. The residential area comprises of ecologically sensitive areas of wetland bands (see Figure 2).

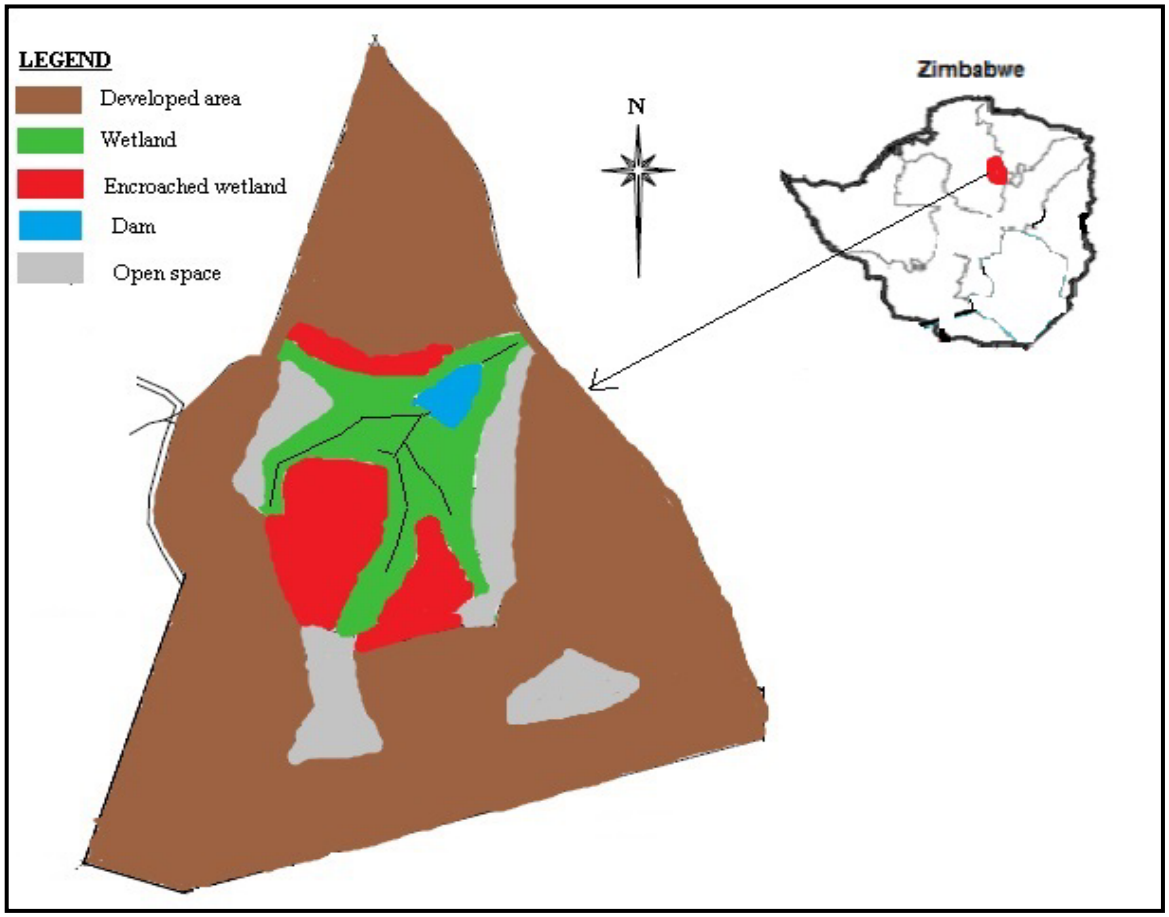

Fig. 2 Land-use simulation for Hatcliffe

Hatcliffe is characterised by several informal urban practices cross cutting urban agriculture, wildlife exploitation with negative implications on the urban environment. In terms of green space management, there has been exploitation of the major wetland area for urban agriculture by the local residents as a poverty eradication strategy. The local dam in Hatcliffe has majorly multifaceted with several indicators of environmental pollution such as water hyacinth (*Eichhornia crassipes*) as evidence of eutrophication from excessive use of agricultural chemicals in the practice of urban agriculture within wetland areas and idle pieces of land (see Figure 3). This depicts priority dilemma between environmentalism and urban poverty where there is need to strike a balance between the two poverty and environmentalism of which policy makers in the developing world prioritize poverty eradication for various rationalities.

Indiscriminate solid waste disposal has been remarkable on residential space due to inefficient and ineffective waste collection system; these wastes pose danger to aquatic lives and compromises environmental health for the local residents (see Figure 4). There are no waste recycling mechanisms in the residential area and lack of environmental stewardship cooked by inefficient municipal waste collection systems, which have led to dumping of waste haphazardly and aesthetically displeasing whilst compromising health of the community (see Figure 4). This problem has not received enough attention from local authorities.

The construction in the residential area rises certain environmental concerns since the manufacturing of commonly used farm bricks pose environmental defects emitting green house gases from firewood used on the manufacturing at the same time depleting forestry resources of the area (see Figure 5).

There is a pattern of gullied settlement landscape due to indiscriminate extraction of building materials for brick making and construction.

Fig 3: Eutrophication from urban agricultural chemicals

Fig 4: Indiscriminate Waste Dumping

Poverty has exacerbated environmental exploitation by the local residents, as they have no other option than exploiting the environment to subsist. Hatcliffe residential area is characterised by low density vegetation and high usage of firewood. Burning firewood is used as an alternative energy to compensate for electricity power cuts. This practice exacerbates the destruction of (ESAs) (see Figure 6). This also has been contributing to green house gases emissions posing adverse effects at both local and global scale. These practices have become the normal life of Hatcliffe inhabitants. Striking the status of the residential settlement as a hub of ecological treasure is perceived as towers of ivory.

The conscience of protecting the remaining ecological treasures among the local residents has been defused by such factors hence there need for tools of social mobilization towards environmental stewardship.

Wildlife seems to be non-existent in the residential areas, as the confined wildlife habitats have been exploited by agricultural practices and firewood harvesting (see Figure 7).

The local residents had no conscience of their extinction out of ignorance and lack of option to address urban poverty. There are no mechanisms in place to protect urban wildlife from human interference. The residential settlements are just conventional landscapes devoid of wildlife habitats, and the human species forget to incorporate what used to habitat there before artificial development due to agricultural practices (see Figure 7).

Fig. 5: Unsustainable conventional construction of houses

5 DISCUSSION

Priority dilemma subsists on whether to conserve urban nature, when the people are hungry in their stomachs and have a shortage of housing (Maphosa *et al,* 2009). This dilemma dilutes nature conservation priorities in an economy multifaceted with unaddressed problems that cut across economic, social and political realms. From the study area, one informant clarified that *"hatingachengete sora isu tichifa nenzara itsika yechitema kurima, zvakabva kumadzitateguru edu, varungu ndovanorimira mumasupermarket chete"* (we cannot conserve weeds while dying of hunger; it is our tradition to practice agriculture, only whites rely on food from supermarkets). When people lack financial resources, they often had a little choice but to take what they can from the environment as a survival strategy (Chenje and Johnson, 1994). It clarifies why the local populace exploit the wetland bands for agriculture and open space invasion in low-income residential areas.

Fig. 6 Brown landscapes in the residential space

Fig 7: Wetland exploitation for urban agriculture

This has led to a critical situation of "Farming houses, yielding exploited environment" which is detrimental to sustainability of urban space. At the same time ecological illiteracy has led to ecologically sensitive areas being regarded as waterlogged areas, unsuitable for development in the immediate and short-term, rather than areas rich in the flora and fauna species.

Social resistances are common where society perceives environmental conservation in a reluctant manner mimicking the parable of boiling frog. *If you take a frog and put it in hot water, it can quickly jump out with some injuries as a reaction to high temperatures, but if you put it in cool water and gradually heat, it you will get frog soup.* This is related to how the society react to challenges where instant (hot) problems receive quick attention and high priority whilst gradual problems such as environmental issues receive less concern. The society is blinded by short-term benefits of degrading the environment (*warmth*) until they are caught in the destruction of human life due to environmental destruction (*boiling water),* which will be too late.

5.1 POLICY ALTERNATIVES

For fruition of ecologically conscious low-income residential development, there is need to espouse the following measures into praxis:

- Incorporate traditional ecological conservation strategies into modern residential planning in Harare.
- Reform and revise town planning instruments towards ecological-based planning.
- Strengthen legislative frameworks that govern environmental management in low-income residential areas.
- Reform the building standards by-laws *vis-a-vis* residential development on environmental sustainability.
- Strengthen responsible institutions' proactive and reactive measures to environmental conservation.
- Promote ecological education awakening to enhance ecological literacy among local residents.
- Initiate and coordinate public, private partnerships in promoting environmental conservation to maximize financial and institutional capacities.

- Harness Indigenous knowledge of the development area in formulation of environmental conservation strategies.
- Adopt a participatory planning approach to environmental conservation to enhance public participation and environmental stewardship amongst environmental stakeholders.
- Formulate poverty eradication strategies devoid of ecological destruction in Hatcliffe residential area.

6 CONCLUSION

The paper explored the capacities, opportunities and constraints of implementing the principles of ecological-based planning into low-income residential development with the purpose of achieving sustainable settlements. It explores the existing legislative, policy and institutional approaches to the environmental planning of low-income residential settlements in Harare. Our study concludes that the restraints overweighed the capacities available, thus the development of low-income housing requires considerable planning intervention. The findings of this study call for a robust implementation of environmental conservation strategies, the propagation of a strong environmental stewardship, and the need for responsive institutional and funding mechanisms backed by realistic and updated legislative framework and robust policy rectification. The conjugate faces common urban challenges, which require uncommon treatment to celebrate the ecological cities' success story.

REFERENCES

Beer, Anne R; Tim Delshammar, and Peter Schildwacht. "A changing understanding of the role of greenspace in high-density housing - a european perspective." Built Environment, 29(2), 2003: 132 -143.

Brand, Partison. "Urban environmentalism: in the twilight between vice and virtue." Urban Design International, 1(4), 1996: 357-360.

Castels, Stephen. Ethnicity and globalisation: from migrant workers to translational citizen, London: Sage Publications, 2000.

Chaeruka, Joel, and Killan Munzwa. Assessing Regulatory Framework Bottlenecks for Low-cost Housing in Zimbabwe. Harare: UN-HABITAT and the Government of Zimbabwe, 2009.

Chenje, Munyaradzi, and Johnson Phyllis. State of the Environment in Southern Africa. Harare: IUCN-The World Conservation Union, 1994.

Chirisa, Innocent, and Muchini, Tawanda. "Youth, Unemployment and Peri-Urbanity in Zimbabwe: a snapshot of lessons from Hatcliffe." International Journal of Politics and Good Governance Volume 2, No 2.2, Quarter II (International Journal of Politics and Good Governance), 2011.

Dirwai, Charles. Demographic Study of a holding camp: The case of Hatcliffe Extension, Zimbabwe. Harare: Unpublished MSc thesis, Centre for Population Studies, University of Zimbabwe, 2000.

Gilbert, Richard; Stevenson Don; Girardet, Hebert; and Stren, Richard. Making cities work: The role of local authorities in the urban environment. London: Earth Scan publications, 1996.

Government of Zimbabwe. Statutory Instrument 7 of 2007, Environmental Management Regulations. Harare: Government Printers, 2007.

Government of Zimbabwe. Environmental Management Act (Chapter 20:27). Harare: Government Printers, 2000.

Government of Zimbabwe. The Regional Town and Country Planning Act Chapter 29:12. Harare: Government Printers, 1996.

Hough, Micheal. City Form and Natural Processes. London: Routledge, 1991.

House of Commons. Enhancing urban green Space: Fifty–eighth Report of Session 2005-06. London: The Stationery Office Limited, 2006.

Madanipour, Ali. Design of Urban Space: An Inquiry into a Socio-Spatial Process. New York: John Wiley and Sons, 1996.

Maphosa, France; Kujinga, Krasposy and Chingarande Sunungurai D. Zimbabwe's Development Experiences Since 1980: Challenges and Prospects for the Future. Addis Ababa: Organisation for Social Science Research in East Africa, 2008.

Mbiba, Beacon. “Beyond Abject Spaces: Enterprising Zimbabwean Disapora in Britian”, Africa Dispora 4 (2011), 50-75.

Muderere, Trymore. "Natural Co-Existence or Confinment:Challenges in integrating Bird Life Concerns into Urban Planning and Design in Zimbabwe." Journal of Sustainable Development in Africa (Volume 13, No.1, 2011) , 2011: 162-183.

O'Riordan, Timothy and Turner Kerry T. An Annoted Reader in Environmental Planning and Management. Oxford: Pergamon Press, 1983.

Pieterse, Edgar. "Recasting Urban Sustainability in the South." Society for International Development 1011-6370/11, 2011: 309–316.

Potts, Deborah. The slowing of sub-Saharan Africa's urbanization: evidence and implications for urban livelihoods. Environment and Urbanization 21(1), 2009: 253–259.

Said Ilias, Omar Osman, Mohd Wira, Mohd Shafiei, Arman Abd Razak, Tee Kuan Kooi. "Sustainability in the Housing Development Among Construction Industry Players in Malaysia". The Journal of Global Business Management Vol. 5, 15, 2009.

Simone, Abdou Maliq. “Moving Towards Uncertainty: Migration and the Turbulence of African Urban Life”. Paper prepared for Conference on African Migration in Comparative Perspective, Johannesburg, South Africa, 4-7, June, 2003. URL: http://time.dufe.edu.cn/wencong/africanmigration/2Simone. pdf.

Shu-Yang, Fan, Bill Freedman, and Raymond Cote. "Principles and practice of ecological design." Environ. Rev. Vol 12: , 2004: 97–112.

Termorshuizen, Jolande W, Paul Opdama, and Brink Adri van den. "Incorporating ecological sustainability into landscape planning." Landscape and Urban Planning 79, 2007: 374–384.

Toriro, Percy. “Town Planning in Zimbabwe: History, Challenges and the Urban Renewal Operation Murambatsvina”, Chapter 11 in Maphosa F, K Kujinga and S D Chingarande (eds.) Zimbabwe's Development Experiences since 1980: Challenges and Prospects for the Future, OSSREA: Addis Ababa 2007.

IMAGE SOURCES

Fig. 1: Authors' creation (2013)

Fig. 2: Adapted from Google Earth (2013)

Fig. 3: Field Surveys by authors (2013)

Fig. 4: Field Surveys by authors (2013)

Fig. 5: Field Surveys by authors (2013)

Fig. 6: Field Surveys by authors (2013)

Fig. 7: Field Surveys by authors (2013)

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