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Abstract

Challenges faced by urban centres today often result from multiple social, economic and environmental issues, which act on multiple points of impact. As a result, successful urban interventions are increasingly geared towards tackling these multiple issues simultaneously. Using a neighbourhood management approach, this research presents an integrated solution in the form of the 'neighbourhood hotspot'. With a primary function as a small-scale energy generating biogas plant, the community infrastructure serves as a local hub which bridges the gap between challenge and opportunity. The research forms part of a wider project aimed at developing a community based sustainable urban regeneration plan.

Introduction: *Èkó ò ní bàjé*

Eko o ni baje; *Eko* is the indigenous *Yoruba* name for the city of Lagos, and this is the affectionate slogan of its people which can be loosely translated to mean 'Lagos shall never decline'. Lagosians love their city, troubled as it may be. Lagos, Nigeria is a 21st century African megapolis inhabited by approximately 20 million individuals and has a population density of 5,926 persons per square km.[1] With Nigeria named one of the 'MINT' nations, the country is predicted as one of the future economic power houses with an anticipated rise to become the world's 13th largest economy by 2050.[2] Nigeria's reality however is a juxtaposition of extremes, with the city of Lagos a living hyperbole of this unequivalence (Figure 1). While a proportion of the city lives in the lap of luxury with multi-million dollar properties and yacht clubs, a majority of the population lives far below the poverty line at less than 1.25 USD per day.[3] Lagos is located on the Atlantic coast in the West of the country and has a total area of 3,577.28 square km, approximately 22% of which is wetland.[4] This has made the city particularly vulnerable to the adverse effects of climate change and it has witnessed a series of environmental crises in recent years in the form of massive flooding. This intense combination of socio-economic issues (poverty and high population density) in the context of extremely polarised social conditions (the few 'have-alls' and the many 'have-nothings') set to the backdrop of increasingly acute climatic risks and shocks paints a picture of a city on the brink. Those closest to this precipice are the poor masses living in the slum communities of Lagos state.

One such community is the Makoko community; an ancestral water-top community of fishermen which lies on the shores of the Lagos Lagoon (Figures 2 - 6). Over the years large scale rural-urban migration and unregulated development have led to the devolution of the onetime coastal fishing village into an urban slum nestled in the bustling city. With a population of approximately 50,000 residents, it is one of the largest low-income communities in Lagos state. Historically the residents of the community have subsisted on marine based industry such as fishing, fish processing and boat making, however today a large number of its residents are economic migrants from other parts of the country and the neighbouring Republic of Benin (Figure 7). In the summer of 2012, the Lagos State Government in a bid to implement its urban renewal plan sought to roll out large scale demolitions across the Makoko community in order to prepare the site for new development. No accommodation was made for the resettlement or compensation of community members, which led to a backlash of with public outcry and eventually a court injunction to cease the demolitions. When the State Ministry of Physical Planning and Urban Development solicited the submission of an alternative development plan from the community, an international working group professionals and academics from a variety of backgrounds in urban planning, architecture, economic

development, social policy and the law came together to work with the community in order to meet this request.

Led by a local housing NGO, the multi disciplinary team worked in partnership with the people of Makoko to produce an alternative regeneration plan that addressed the concerns of the community while meeting the aspirations of the State Government. Adopting an action research approach, the group worked in close collaboration with members of the community in order to conduct an in-depth situational analysis and needs assessment. Utilising a range of methods including aerial mapping, workshops, surveys and focus group sessions the research identified a number of key factors which needed to be addressed within the community (Figures 8 & 9). These key areas of concern formed the basis upon which proposed solutions within the regeneration plan were structured. The regeneration plan was developed around six major themes namely:

- Infrastructure
- Land Tenure
- Housing
- Local Economic Development and Tourism
- Funding
- Neighbourhood Management

Integrated Solutions for Multifaceted Challenges

The needs analysis revealed a number of critical areas of concern which spanned environmental issues such as sanitation and infrastructure, through to socio-economic challenges such as job creation and healthcare (Figure 10). With next to no facilities provided for the disposal of organic and solid waste, water ways are clogged with litter and raw sewage is currently deposited directly into the open water which further exacerbates health related issues.[5] Energy provision in Nigeria remains extremely inadequate with the national grid generating approximately 4500MW of power annually while the city of Lagos alone has an estimated demand of 10,000MW.[6] In communities such as Makoko which are essentially off-grid, a majority of the electricity supply is obtained from dangerous unauthorised cable connections and low capacity generators. Existing healthcare facilities are grossly overstretched with each centre catering to approximately 5,000 residents, and unemployment remains above the average. An additional dimension to these issues is the disproportionate impact they have on women and children within the community.

As part of the plan, the team produced a portfolio of project ideas as stand-alone elements of the vision which could each be implemented as pilot projects. These were a combination of new innovative solutions as well as reframed indigenous solutions which seek to address the multiple challenges facing the community simultaneously. One such pilot project is the Neighbourhood Hotspot. The Neighbourhood Hotspot was developed with the intention of tackling some of the most acute risk factors facing *Makoko* such as waste, energy, employment and healthcare and turning one of these challenges in particular (waste) into a source of opportunity.

The Neighbourhood Hotspot

In recent years neighbourhood management has emerged as an effective model for the reversal of urban decline, particularly in areas such as *Makoko* where the issues are numerous, complex and intertwined.[7] The primary objective of neighbourhood management is to create effective service delivery within a particular geographic boundary that is tailored to address the unique issues faced by its local community; thereby improving the quality of life of its people. The approach aims to deliver renewal at a local level by bringing together integrated service provision, appropriate and therefore flexible infrastructure, community involvement and leadership within a framework compatible with existing community structures.[8] Furthermore, by viewing community regeneration holistically a neighbourhood management model of renewal affords development professionals and local citizens a vantage point from which to see the opportunities in amongst the challenges.

The Neighbourhood Hotspot is a structural embodiment of the principles of neighbourhood management. As an issue which presents environmental as well as social challenges but also potential economic benefits, waste management formed the seed on the neighbourhood hotspot concept. Serving primarily as a biogas plant generating energy from organic waste, the structure doubles as a community centre which acts as a nucleus for local services (Figures 11 & 12). In addition to a biogas plant and kiosk, each neighbourhood hotspot has the potential to incorporate a range of different activities providing space for urban gardening facilities, workshop facilities, cooking facilities, doctor's rooms, and reading rooms amongst others. The structure is therefore a business incubator, a place for social exchange, a knowledge centre for renewable energy production, waste management, urban gardening, and water harvesting at the same time – a truly public and social as well as community empowering infrastructure (Figures 13 - 17).

The construction of the structure is simple and based on sustainable local indigenous methods of building with wood on stilts. This not only creates the opportunity to showcase climate resilient construction techniques, but the use of traditional construction methods and local materials provides an opportunity to engage local artisans in the process thereby generating jobs and building capacity (Figures 18 - 20). This ability for the neighbourhood hotspot concept to embed waste-to-value philosophy, within a flexible, robust, easy to maintain, affordable, and low-technology infrastructure, which additionally creates jobs and delivers much needed services has earned it a place at both the 2014 International Architecture Biennale Rotterdam as well as the 2014 Venice Biennale.

Notes

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Figures and Captions

Figure 1. The Lagos divide: Skyscrapers and luxury of downtown Lagos, less than 20 minutes away from the low income community of Makoko. (Photo Credit: Nigerian Curiosity, 2009)

Figure 2. Map of Lagos

Figure 3. Location of Makoko on the Lagos Lagoon

Figure 4. Makoko life 1: The Urban-Scape of the Makoko Community.

Figure 5. MakokolLife 2: "Our life is on the water, we cannot live on land." This is a quote from one of the community leaders of Makoko. From a young age, residents learn to get around on water.

Figure 6. Makoko life 3: Woman prepares and sells fried snacks on water as she manoeuvres through the waterways.

Figure 7. Makoko demographic: Makoko is a multi-ethnic and mullti-cultural community with six main sub-communities, four main ethnic groups, three practiced religions and over five spoken languages.

Figure 8. Participatory methods: Community engagement and involvement played an integral part of the entire process.

Figure 9. Makoko from above: Aerial surveys were carried out to map the area.

Figure 10. Situational analysis: Risk factors were rated as red, amber or green.

Figure 11. The neighbourhood hotspot (visualisation): They will be able to provide electricity from the biogas production for the entire community on water as well as the badly needed human and organic waste management. The hotspots will work with four 20-meter biogas digester bags each (stored on boats) and create 28 jobs each, or 644 jobs in total.

Figure 12. Hotspot location map: In total 23 neighbourhood hotspots are intended for implementation in the masterplan, with a pilot location indicated.

Figure 13. Hotspot ground floor

Figure 14. Hotspot 1st floor

Figure 15. Linkages with other opportunities: With sustainable energy provision as a central feature, the neighbourhood hotspot has a ripple effect, generating other local opportunities.

Figure 16. Opportunity card: Waste upcycling workshops and social enterprise to be run by women within the community using Neighbourhood hotspot as meeting space.

Figure 17. Opportunity card: Urban gardening at the Neighbourhood Hotspot.

Figure 18. Construction: Straightforward, simple, and modular (three types of triangles that can freely and according to needs be combined).

Figure 19. Section of the Neighbourhood Hotspot: Flood resilient design with biogas floatation platforms responsive to rising and falling with water levels.

Figure 20. Existing Buildings in Makoko: Indigenous construction techniques of a people adapted to living on water.