



An Assessment of Infill Development Potentials in Depressed Communities: A Case Study of Ungwar Television of Kaduna Metropolis

Arinde Salisu Handan¹ & Lebana M. Daspan²

¹Department of Architecture, Kaduna Polytechnic Nigeria

²Department of Urban and Regional Planning, Kaduna Polytechnic Nigeria

Email: salisuarinde@gmail.com & lebanar962@gmail.org

ABSTRACT

Infill development, or infill, principles such as compact mixed-use and diversity have revitalized dysfunctional city-centres through the redevelopment of vacant and old-decrepit structures in such ways that make economic sense. These transformational powers have given patronage to infill in recent redevelopment endeavours of depressed neighbourhoods of US and European cities. In Nigeria, there is hardly any deliberate infill effort aimed at revamping inner urban communities. This paper assesses infill potential in depressed community of Ungwar Television Kaduna (UT) with the objectives which include review of concepts and theories of infill as well as those of depressed areas. It identified different physical supportive features of infill in UT and concludes that these features have the capacity to ensure connectivity and permeability; compact mixed-use development, diversity and walk-ability; streets' safety and civic engagement; local architectural character and accessibility in view of their high prevalence rates. Finally it proffered recommendations which include identifying and addressing concerns of people living in priority infill areas; provision of public incentives and investment; improvement of existing infrastructure; and creating enabling holistic land banking legislation.

Keywords: *Infill Development, Depressed Communities, Strategies, Potentials, New Urbanism*

INTRODUCTION

In recent times, evidence of increasing inability of government to revitalize distressed urban areas; failure of traditional remedial strategy of forced eviction and total clearance of these areas in Caracas (Venezuela), Jakarta (Indonesia), Lagos (Nigeria) etc on short notice (see Paul and Linda, 2005 for example); and the changing perception about the areas have led to the emergence of urban design movement called New Urbanism. Led by architects like Elizabeth Plater-Zyberk, Andres Duany and other urbanists, an assembly known as the Congress for the New Urbanism was formed in the 1990s to preach its ideals. The logic of New Urbanism which is smart growth thinking is built on the footings of infill development, or Infill, which emerged out of the need to stem the negative environmental consequences of conservative land use planning system that is widely considered unsustainable. Proponents of this smart thinking argue that traditional planning system emphasizes exclusive zoning which confines the low-income group in one enclave and breeds a spiral of poverty, economic deprivation and psychological stress because the group is locked out from residents stakeholders who usually have the economic and political muscles to insist on improvements to services etc in the community they live. While land use planning creates sprawls at cities' peripheries and other environmental consequences, infill principles such as compact mixed-use development aim to counter this by revitalizing dysfunctional city-centres through the redevelopment of old-decrepit structures in such ways that make economic sense. These transformational powers are certainly the driving spirit that has given patronage to infill in recent redevelopment endeavours of depressed neighbourhoods of



US and European cities, having realised that these areas are the hubs of creative urban entrepreneurialism. Depressed areas are the empire of informal and home-based workers, and the fastest incubators of business innovation; areas where informal jobs in the wider city go to sleep at night. (AHL, *ibid*).

Statement of Problem

In Nigeria, there is hardly any deliberate infill effort of the kind just stated given the fact that a number of US cities have leveraged on the principle to revamp many communities. See for example some Chicago's infill projects in Table (II).

Table (II): Some Chicago's infill projects.

S. No.	Year	Infill Examples	Size	Cost (US\$)
i.	1990	West Pullman Business Park site reuse.	160 acres	20million
ii.	1998	Lakefront Millennium park housing infill.	16.5 acres	150million
iii.	1998	N-Sacramento industrial track reuse	17acres	5.3million
iv.	2000	Kinzie industrial corridor revitalization.	70 acres	4.0million

Source: Culled from NMI-CNU (2001).

Ungwar Television, UT, is one of the depressed areas of Kaduna metropolis that desires infill throughout its breadth and length. Many communities like UT have used innovative public-private redevelopment strategies to improve their liveability and economic vitality (see Macionis and Parrillo, 2010). This desire coincides with private developers' keenness to partner with government in real estate markets to invest in this kind of development given its high returns particularly when they are built on smaller footprints. Identifying important infill priority sites and creating design guidelines for infill has been the architects' and planners' main challenge in infill efforts. He has a role in creating and nurturing the right climate that invites private investments (NMI-CNU, 2001). As no infill takes place without challenges, he certainly has a role in identifying them. As part of the strategy to achieving this, the paper will carry out inventories of underused and vacant lots, existing facilities and services as well as possible challenges in achieving successful infill in UT.

In U.S. whose urban policies have influenced those of other countries around the world (Allan, 2007), most studies on infill have tended to focus on what Christens (*ibid*) terms the evaluations of design impact of New Urbanism (the soubriquet for infill) against the competing conventional land use suburban planning model. According to him, much of the ongoing discourse on ID and New Urbanism has focused on evaluating which side of the argument has marshalled "the more objectively appealing theories and facts, rather than employing a research approach based on "theoretical-empirical objectivity". Other areas of infill where most urban studies have focused are "opportunities" and "strategies" for successful infill development (see NMI-CNU, 2001; Diane, 1998). In Nigeria, most studies on infill have focused on analyses and evaluation of what one will call hypothetical infill projects. In the early years of 2000, one of these authors analyzed the



pattern and implications of redevelopment by individual of mass carved-out plots that were created in the colonial GRAs of Kaduna metropolis which he tagged infill development in order to borrow theoretical support for the work (see Arinde, 2006).

Aim of the paper

The aim of this paper is to assess infill potentials in depressed community of Ungwar Television of Kaduna metropolis.

Objectives of the paper

In order to realize the set aim, the paper undertook the following as key objectives:

- i. Reviewed the concepts and theories of distressed communities and related issues;
- ii. Reviewed the concepts and principles of infill development as they relate to community revitalization;
- iii. Examined infill development potentials in Ungwar Television of Kaduna metropolis as a framework for upgrading distressed urban neighbourhoods or communities, and
- iv. Proffered recommendations towards effective infill policies in distressed communities of Nigerian urban areas.

Research Questions or Hypothesis

Being essentially an assessment of infill potentials in distressed community of Ungwar Television in Kaduna, the paper intends to address two fundamental questions:

- i. Can the logic of infill development revitalize distressed communities in Nigeria?
- ii. What are the levels of infrastructure necessary to make infill attractive to investors in Nigeria?

These questions define the focus of this research because they will guide the methodology, conclusion and the recommendations.

LITERATURE REVIEW

Theories, concepts and principles of infill development

The term infill has been defined from different perspectives. Schultz and Kassen (1986), for example, defined it as residential or non-residential development that occurs on vacant sites scattered throughout the more intensely developed areas of municipalities. While they see it as a product, some opinions express it as a process rather. The Municipal Research and Service Centre (MRSC, 1997), a Washington based non-profit and non partisan research organization, for example, sees infill as the process of developing vacant or under-used parcels within existing urban areas that are already largely developed. Another perspective to infill is that of a recycled product. Both Karen Anderson - Bitten Anderson (2001) and the Northeast-Midwest Institute and the Congress for the New Urbanism, NMI & CNU (2001), share this view. The former for example described infill as "the redevelopment of existing development", and the later likened it to "creative recycling of under-used properties such as historic buildings, shopping malls etc within the urban areas". Though with subtle differences, the concepts revolve around two broad issues: the nature of the properties and the intended action(s). While the property could be vacant land or underused land, aged or historic structure, the intended actions could be development

that will intensify and diversify the use and tenancy. The intention could also be actions that would upgrade or improve the quality of properties in such ways that they become more economically viable and cultivate communities' sense.

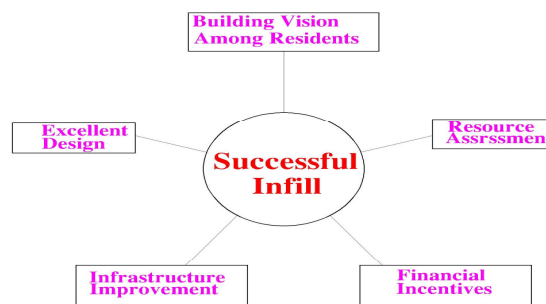
Importance of infill development in depressed communities

Infill benefits depressed communities in many ways relating to the economy, environment, equity, and quality of life and for that reason have found favour with municipal authorities in recent times in upgrading ailing areas. EPA (2015) summarized the benefits around four basic conversations: infrastructure and services, property tax base, reinvigoration of ailing areas and changing consumer preferences as follows.

- i. ***It saves cost;*** as it makes use of existing services instead of extending these services to outlying green areas, therefore reducing capital costs that would have burdened municipalities in the near term and maintenance costs in the long term.
- ii. ***It generates more revenue;*** in mix uses and compact form from property tax per acre than the traditional spread-out, single-use suburban development because of concentration of more businesses, tenants etc per a given area.
- iii. ***It is an alleviating agent for the poor;*** because its principle which emphasizes mix income housing [see design principles for infill in NM-CNU (2001)], can help stabilize impoverished or abandoned areas by introducing more diverse mix of households at different income levels and offering different choices to meet changing consumer preferences which are driven by demographic shifts (EPA, 2015).

As beautiful as the benefits are, they don't translate into success without the necessary framework to encourage it in the first place in view of the initial perception about it. In fact their success is the product of the interplay of several factors [see Figure (1) below].

Figure (1): Conceptual framework for successful infill.



Sourced: Inferred from NM-CNU (2001)].

Challenges to infill development in depressed communities

The popular axiom that says "nothing good comes easy" fits almost perfectly in revitalization of distressed communities. These communities face a number of



encumbrances to pull more infill because every common sense should expect low real estate prices and rents to come from weak market. Infill therefore is not financially feasible without public incentives or investments in infrastructure improvements (EPA, 2015). Most challenges of infill in these communities hinge on the market impasse, risks, and the state of infrastructure.

- i. **Market impasse or predicament;** arising sometimes when private developer is not able to garner enough profits from his or her investment to justify the risks he or she took and the challenges. This lost of profit emerges when market demand is more difficult to predict due to the presence of multiple uses and uncertainty about the presence of one use affecting demand for another (DVRPC, 2008).
- ii. **Risk gap or financing difficulties;** arising from banks and other projects financing institutions refusing to fund infill projects for reason that they see it riskier than conventional projects in more economically vibrant areas. This perceived risk stems from the fact that 99% infill are mixed use that “incorporates multiple land uses into a single project” which according to DVRPC (2008) “increases the possibility of unforeseen construction difficulties”. Sometimes banks decline to invest in it because developers sometimes don’t know how to build mixed use infill (NM-CNU, 2001).
- iii. **Infrastructure condition;** is critical in deciding the success or failure of infill in a given area. Developers avoid areas where they might need to make expensive infrastructure improvements (EPA, 2015). The costs of replacing infrastructure increases building costs and developers sometimes are unable to get good rents or sale prices to recoup their investment.
- iv. **Land assembly or pooling;** which helps to stabilize vacant or abandoned properties for infill faces many encumbrances due mostly to the problems and limitations of use of eminent domain (or police power as it is sometimes called) in acquiring land (see George E. Peterson, 2009). Stiff resistance to the use of this power in China and India and its limitation that government alone can take private property for economic development are some recent testimonies (see Azuela 2007; Bertaud 2007; Macionis & Parrillo, *ibid*, p. 96; and ICEIPC, 1988, p.27).). The principles of just compensation in the use of these powers to take private property for public use is another issue (see e.g. Thomas and Paul, 2007).

Concepts and Theories of “Depressed Areas”

Several terms are either included in the concept of depressed area, synonymous to it, or overlapped with it. According to Shultz and Karson (1986), depressed areas are areas that exhibit economic and physical deterioration, a stagnating or declining tax base, and a high rate of unemployment. These areas may also experience a high rate of out-migration, housing deterioration or building abandonment (Shultz and Karson, *ibid*). Although the phrase is relatively new, the logic is old and common. The terms slums, blighted areas, ghettos, distressed areas etc are often associated with distressed neighbourhoods or communities. The terms blend obnoxious urban environments with wide array of problems which range from physical deterioration of buildings to health, social and economic problems in a particular area.



In fact, there are hardly discernible features that distinguish it from the areas described by these terms. Both areas contain buildings that are old, unsafe and unhealthy to attract meaningful investments because of dilapidation or deterioration which is facilitated by defective design, violation of basic physical construction codes etc. The phrase “depressed area” is devoid of any serious academic efforts to characterise its features differently and conclusively from other closely related terms. However, some scholars have tried to identify some subtle differences that relate to spatial issues, public perception and the initial condition(s) of an area. Shultz and Kassen (ibid) tried to articulate fine spatial difference between distressed areas and the other terms. Whereas a depressed area can be a neighbourhood, a community or an entire region, a blighted area for example is a neighbourhood with a substantial portion of its building stock dilapidated (Shultz and Kassen, ibid). These days, the use of the phrase to describe any of these obnoxious urban environments is been preferred over others where one has to use any to describe an area that qualifies to be called “depressed area” or “blighted area” for example because of the harsh unfriendly remedial process that characterized the latter. Once an area was designated as blight, it qualifies as an area for eventual clearance which people see as dreaded gentrifying element that dispirits maintenance and investment. Thus the term “blighted area” which has also come to include any aspect of neighbourhood decline is often avoided now because it gives residents and prospective investor negative perception about an area.

The case of the study area- Ungwar Television Kaduna

Ungwar Television, or UT, was a suburban model of isolated patch of single use residential area before entangled with subsequent neighbourhoods development. It felled on hard ground not too long as the nation’s economic condition started to decline and job loss, poverty etc became pervasive in late 1980s. Covering a land area of about 588 acres (238 hectares), the area is bordered by three important roads as follows: two dual carriage roads that define the east-west and north-south axes or Sabon Tasha Bridge - Peugeot Junction axis and Peugeot Junction - Command Junction respectively. The third one is the road that defines the south-west axis which connects Sabon Tasha Flyover Bridge and the popular Peugeot Junction.





Figure (II): A typical street at Ungwar Television Kaduna.
 Source: fieldwork, 2018.

Although there is evidence of mixed income and mixed use planning in UT, it is dominated by retired low income factories' workers of Kaduna south with patches of commercial locales. The absence of political will to carry governance to the grassroots to provide or upgrade services has compounded the living conditions of the community. Apart from the psychological stress inflicted on those who relocated to UT as a result of recurring ethnic and religious crises for losing areas they had lived and became established, permanent relocations certainly wrecked excessive pressure on the infrastructural facilities and services which undoubtedly manifested in shortage of houses, and other dissatisfactions (see Stephen, 2003, pp.12-48).

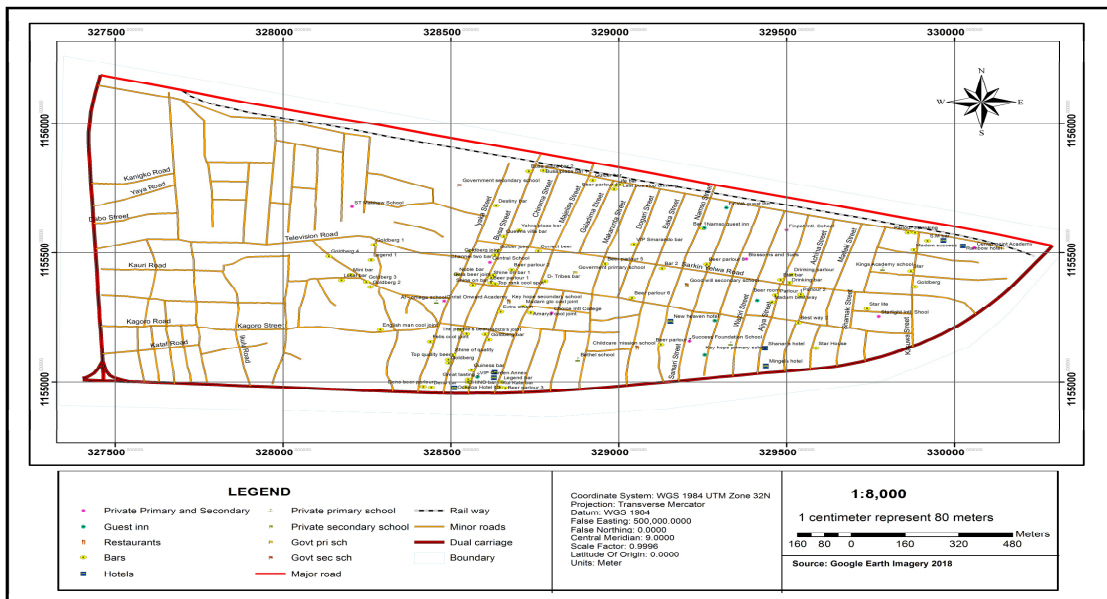


Figure (V): Layout plan of Ungwar Television showing major roads and streets.
 Source: Fieldwork, (2018)

Methodology

Developing infill analytical tools and methodology has become very imperative these days. The need for infill has grown tremendously in recent times and requires strategic methodology to help identify, analyse and estimate the potentials of prospective infill sites in meeting urban development endeavours (William and Bryan, 2010). In infill studies, both qualitative and quantitative research techniques are important considering its strategic and delicate nature. While the former is necessary because of the concerns often expressed by public officials and neighbours before, during and after the completion of infill projects (NMI-CNU, 2001), the latter is more pervasive and important because several physical elements and data need to be assembled in order to make infill projects successful. Whenever infill projects are contemplated, residents' opinions are sought to articulate their concerns; during execution opinions are sought to review their perception



of the project; and when completed and in use opinions are evaluated to ascertain their level of satisfaction. Because this research is an assessment of infill potentials, quantitative technique was basically employed to assemble the necessary physical data that will facilitate evidence-based private sector- led infill in the area. To make out the study area, Garmin 78CSX (handheld GPS, + or - 3m accuracy) Global Position System (GPS) receiver was used with the help of down loaded satellite imagery and field surveys. In this field survey, three activities stood out as follows:

- i. **Housing conditions and number:** were surveyed and analyzed as they matter most in infill housing projects. For each street or road the total number of houses were noted and assessed on the basis of their physical state which took into consideration the types of construction, materials etc. The ratios of particular type of structure to the total number were used to determine the prevalence.
- ii. **Roads or streets conditions:** of all the 47 roads and streets were identified and assessed including their drainage conditions
- iii. **Services:** such as schools, fire, police, electricity etc were assessed because their availability is the lure of infill.

RESULTS AND DISCUSSION

The field surveys undertaken in Ungwar Television Kaduna identified several levels of potentials as follows:

The supportive physical features of *IDs*; were analyzed and coded according to their prevalence [see Table (IV)]. These features are the design targets of planned infill projects. Depending on the quality of design and construction, their provisions make infill less costly and more appealing to investors and developers.

Table (VI): Physical characteristic of infill supportive features in UT

S/N	Physical Features	Prevalence		
		H	L	NAA
1	Street width between 6m and 10m	✓		
2	Lot size between 465 ≥698<930 metre square	✓		
3	Light industrial lots		✓	
4	Connectivity and permeability of street layout	✓		
5	Well designed and quality housing		✓	
7	Availability of road sidewalks			✓
8	Mixture of housing types		✓	
9	Street with trees and other street landscaping		✓	
9	Vacant lots		✓	
10	Underused buildings and sites.	✓		
11	Historic buildings available for reuse.			
12	Vehicular flow		✓	
13	On street parking		✓	

*H= High; L = Low; NAA = Not At All.

Source: Fieldwork, 2018.



Connectivity and permeability

The study showed that UT has an impressive level of streets connectivity and permeability [see Table (VI) and Figure (V)], a potential for infill. The interconnectivity of streets provides opportunities for recreation and appropriate settings for civic buildings (see MNI-CNU, *ibid*). Since the primary task of all urban architecture and landscape design is the physical definition of streets and public places, it is critical that neighbourhoods have interconnected network of streets and public spaces. Well-designed movement frameworks open up areas, connect locations, and permit people to move between them by the most direct route (David and Steve, 2013). Connectivity across a neighbourhood, community or entire city facilitates through movement and businesses. Although UT has irregular layout in some at Ungwar Kadara where the community started, the entire community has an overwhelming virtue of regular connectivity.

Compact mixed-use development, diversity and walk-ability

The high prevalence of dilapidated structures and underused properties suggests good opportunities for infill of different kinds, most especially residential. The location of Kaduna Polytechnic campus opposite UT provides an unrivalled market for compact mix of shops, apartments, and homes because they will attract patronage from the cream of staff and students as well as people from diverse income levels and cultures across the city. With compact infill here neighbourhoods will be walkable as auto use will reduce.

Streets, safety and civic engagement

Although paved sidewalks are hardly available in the community, streets are generally narrow, between 6m and 12m, creating the opportunity for traffic calming. And with average building setbacks of 1.8m from street edges, infill will enhance the neighbourhood safety as residents will be able to put more eyes on the streets at nights.

Local architectural character and accessibility

Since most developments are on footprints lots of the range $465 \geq 698 < 930$ metre square, the image and character of IDs will not overwhelm the neighbourhood. New development will tally with the traditions of residential and mixed-use architecture in UT. With a clear, simple and gridiron neighbourhood fabric, new infill will not only be accessible and visitable, but respect the traditional fabric.

Social services and facilities

Most social services and facilities like schools, hotels, guest inns, liquor joints etc are within a quarter ($\frac{1}{4}$) kilometre or five-minute walking distance or time from homes etc [see Tables (II) and (III)].

S. No.	Schools	Results
i.	Government primary schools	1
ii.	Government secondary schools	1
iii.	Private secondary schools	3
iv.	Private primary schools	4



v.	Private primary/secondary schools	9
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Table (II): List of social infrastructure at Ungwar Television
 Source: Fieldwork, (2018).

S. No.	Recreational facilities	Results
i.	Hotels	8
ii.	Guest inns	3
iii.	On/off licence joints	76

Table (III): List of social infrastructure at Ungwar Television
 Source: Fieldwork, (2018).

Transit systems and corridors

These systems and corridors which are important footings for successful infill were also examined to include the three bus transportation corridors and the rail line that juxtaposes the Sabon Tasha Bridge - Peugeot Junction road [see Table (IV)].

Infill in this area will build on these transit systems and corridors and increase their ridership in turn. According to established theory, when mixed use infill is developed to appreciable capacity, the total contribution of this transit, walk/bike, and internalized trips will reduce automobile trips by up to one-third (see NMI-CNU, 2001).

Table (IV): Transit corridors that defines UT.

S. No.	Transit corridor	Distance (Km)
i.	Sabon Tasha Bridge – Command Junction road	3.61
ii.	Command Junction road - Peugeot Automobile Nig. Ltd Junction road	3.24
iii.	Sabon Tasha Bridge - Peugeot Automobile Nig. Ltd Junction road	3.24
iv.	Sabon Tasha Bridge - Peugeot Automobile Nig. Ltd Junction rail line	0.72

Source: Fieldwork, (2018).

CONCLUSION

The paper identified Ungwar Television in Kaduna metropolis as one of the depressed areas in dare need of infill development in order to revitalize it and bring back its lost vitality and sense of glory. The paper has examined and assessed infill potentials in the depressed community of Ungwar television in Kaduna metropolis taking into consideration the various attributes of successful infill. In order to put the research in the right context, the paper reviewed the concepts, theories and principles of infill in great detail and articulated the benefits and challenges of infill in depressed communities. The concepts of “depressed area” and other related terms and phrases were also articulated. Although semantics have tried to give different connotations, the review re-established them as almost synonymous even with subtle difference that pertains to spatial issues, public perception etc. Finally it identified different physical supportive features of infill in UT and concludes that these features can ensure connectivity and permeability; compact mixed-use, development, diversity and walk-ability; streets, safety and civic engagement; local architectural character and accessibility in view of their high prevalence rates.



RECOMMENDATIONS

Infill of whatever scale and kind, whether publicly or privately executed, or undertaken in partnership of some kind, improves the economic, social and environmental landscape of the affected area. Because it has worked well in distressed communities of developed cities of US, it may and may not succeed in distressed communities of poor countries like Nigeria which are substantially informal, mostly self-built, and organized by informal residents themselves. Despite the potentials for infill in UT, its depressed state suggests that attracting infill projects will likely face difficulties. The recommendations below, which revolve around what EPA (ibid) classified as “foundation and funding”, aim to strategize infill in our type of depressed setting are as follows:

- i. **Identifying and addressing concerns of people living in priority infill areas;** as they develop policies and programs to attract new development and investment into these areas by giving residents the opportunity to participate in the infill decision-making and planning process.
- ii. **Provision of public incentives and investment;** to make infill projects attractive as distressed communities usually lack the financial resources to provide them.
- iii. **Improvement of existing infrastructure;** most especially roads, drainages etc will reduce the cost of infill and encourage developers to build new infill projects, and
- iv. **Creating enabling and holistic land banking legislation;** that will consider the informal nature of Nigerian distressed communities and the likely encumbrances that could frustrate land pooling and banking. This has worked in Flint, Michigan where the Genesee County runs a land bank that owns nearly 9,000 properties in the Flint area, including more than 4,400 homes and more than 4,000 vacant residential properties (you may visit this site for more details www.thelandbank.org/whatwedo.asp).

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