

INFORMAL SOLID WASTE MANAGEMENT AND LIVELIHOOD DIVERSIFICATION IN ZARIA, NIGERIA

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Abstract

Informal solid waste management is associated with the activities of scavengers, waste collectors and pickers, middlemen and processors of mixed waste in the urban areas. The operators engage in these activities to generate employment and income for sustenance. The paper examines the contributions of informal solid waste management to livelihoods of the urban poor in Zaria. Based on the examination of the structure and socioeconomic aspects of solid waste activities, the paper identifies the potentials and challenges of the operators. The paper utilised data collected using questionnaire survey on the operators to collect base line information in order to establish indicators for the study. The principal finding is that apart from the scavengers, all the operators earn income that compares favourably with wages for formal sector employees. As much as 81 percent of middlemen and 75 percent of the reuse and recycling operators earn more than ₦15 000 per month. In addition, the sector has potentials to absorbing low skilled labour as operators require little formal training to undertake the activities. Because of these, the paper advocated for intervention of governments, non-governmental and civil society organisations for raising the productivity of the operators, training and organising cooperative activities to enhance their income.

Keywords: Informal solid waste management, Livelihoods, Scavengers, Recycling, Reuse, Middlemen.

1. Introduction

Informal solid waste management (SWM) has been expanding in recent decades in Nigeria. According to Meagher and Yunusa (1996) and Ahonsi (2002) the economic downturn in Nigeria which followed the introduction of Structural Adjustment Programme (SAP) loosens state control over certain municipal services such as waste collection and others. This provided opportunities for a great number of urban dwellers to obtain livelihood opportunities by engaging in these areas underserved by government. In the context of municipal solid waste management (MSWM), the informal sector refers to the waste collection and recycling activities of scavengers, waste collectors and pickers, middlemen and the processors (Bernstein, 2004). These terms are used to describe those involved in the extraction of recyclable and reusable materials from mixed waste (Wilson, et al, 2005).

Generally, in developing countries, the rapid rates of urban growth experienced, increasing poverty, inadequate public services, and a generally low-skilled labour force have made urbanites to increasingly rely on informal means of income earning. With respect to SWM in Nigeria, unreliable services in waste collection and disposal make refuse to be readily available for the informal sector waste managers. For many people within the urban context it is a means of employment for the unemployed. Many authors have celebrated the role of this sector in the achievement of one of the inns of modern waste management-that is, to move up the waste hierarchy by reducing the reliance on disposal through recycling (Wilson et al, 2005; Ahmed and Ali, 2004).

The significance of these developments have generated advocacy by scholars and policy makers for adoption of informal SWM for poverty alleviation in urban areas and the integration of informal with the formal SWM system. This provides the perspective for this study. Given the potentials of the informal solid waste activities shown above, it is imperative to examine the ability of the sector to deliver a means of livelihood for the urban poor in Zaria. This paper seeks to establish the structure of informal SWM and its impact on income, the challenges the operators face and how this can be addressed.

Since the early 2000, increased attention is being paid to the livelihood of households, especially poor households in middle-and low-income countries. The position stem from the recognition that few rural or urban households in these countries rely on a single income generating activity to support themselves (Rakodi, 2002; Phillips, 2002). Drawing from Chambers and Conway (1992), a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living (Carney, 1998. p. 4). As Rakodi (2002) explains, households construct their livelihood both on the basis of the assets which are available to them and within a broader socio-economic and physical context.

Central to understanding the livelihood of the poor is the need to recognise that assets of the poor may not be in cash or other savings, but other materials or non-materials assets like their health, labour, knowledge and skill, friends and family and the natural resources around them (Rakodi, 2002; Moser, 1998). At the household, community and societal levels, the assets available are

said to constitute a stock of capital (Narayan and Pritchett, 1999). These capitals which could be human, social, political, physical, financial and natural can be put to work to generate a flow of income or other benefits. In this regard, waste materials become resources as they are scavenged, reused and recycled by urban dwellers.

The capitals or assets are influenced by the context which is related to the sources of insecurity to which poor people and their assets are vulnerable to (Rakodi, 2002; Meikle, 2002). Access to and uses of assets are said to be influenced by policies, organisations and relationships between individuals and organisations. The survival strategies which individuals and households adopt for support to overcome crisis or shock produce outcomes and protect their well-being (Rakodi, 2002; Moser, 1998). Solid waste management has thus become a part-time or full-time means of livelihood for many people in Zaria and the processes through which these are negotiated are the focus of this paper.

2. Materials and Methods

The data for this paper were based on both available literature on the informal SWM and the author's fieldwork conducted between 2010 and 2011. Detailed reports on participation of stakeholders in SWM, informal solid waste collection and recycling in Zaria have been discussed elsewhere (Ukoje, 2011; Ukoje, 2012). The survey involved administration of questionnaire on the three categories of informal SW operators from all the neighbourhoods in Zaria. To generate data for this study, purposive sampling of each category of informal solid waste activity was undertaken. From these, 25 percent of the population was sampled for adequate representation. Altogether, 320 respondents, constituting 224 scavengers, 64 junkshop/middlemen and 32 reuse and recycling operators were randomly selected as sample. The questionnaire included information on the activities of the informal SW operators, their capabilities, assets and strategies used to overcome factors which influence the operation of their enterprises. Government officials connected to SWM were also interviewed. The data were analysed using descriptive statistics (frequencies and percentages).

3. Results and discussion

3.1. Category and functions of participants in informal solid waste activities in Zaria

Several informal SW stakeholders are involved in waste collection, storage, recycling and processing chain in Zaria. These activities all fall neatly into three main categories, namely, waste picking (scavenging), waste storage/junkshops/ middlemen and, reuse and recycling industry. In several cases, there is more than one type of activities in one category (Table 1).

Waste picking category constitutes 70% of the operators. This is composed of itinerant waste buyers, waste pickers from the streets and dumps, and direct waste collectors, all who play important roles of selective waste collection and separation. This category of informal SW activities is associated with recovery of recyclable materials from streets, waste bins, containers, communal collection sites, vacant lots and final disposal sites. Recovered materials are usually sold to dealers, and thereby indirectly providing local industries with secondary raw materials.

Table 1: Functions of Informal Solid Waste Activities.

Activity	Number	Percentage	Functions
Waste Picking (Scavenging)	224	70	Recovery of materials. Provision of secondary raw materials.
Junk shops/middle men	64	20	Waste storage. Sorting and separation. Compacting.
Reuse and Recycling	32	10	Utilise recovered materials as feedstock.
Total	320	100	Provide cheap products.

Source: Field Survey 2011

The data also indicate that 20% of the sample is in the waste storage/middlemen category. These operate junkshops on small or large scale basis and undertake sorting, temporary storage and compacting of selected waste materials from waste pickers. Data obtained for this study indicates specialisation in the items collection by the junkshop owners who act as dealers for the materials. While some of the junkshops deal with plastics and bottles, the majority deal with metals which comprise aluminium, car parts, irons etc. In their operations, the dealers sort and separate waste into their component parts. By sorting and separation, junkshop owners add value to the waste. Some of the dealers compact the products to change the shape and reduce the volume of the materials for ease in handling and transportation. This category serves as intermediary between waste pickers and reuse and recycling industries.

Only 10% of the operators undertake reuse and recycling activities. This group utilise the materials of the first two categories for reuse trade and as feed stock for manufacturing. The recycled products from their activities are cheaper than the ones manufactured in modern industries. Their products include pots, buckets, cups, etc which are utilised in virtually every home in Zaria.

Generally, the activities of informal SWM provide clear economical and environmental benefits to the city through providing and recycling secondary raw materials. The widespread nature of informal SWM throughout urban areas of developing world provide livelihood to so many households (Medina, 2000). In addition, the sector performs important roles in the reduction of the cost of waste disposal and environmental problems of uncollected waste.

3.2. Socio-economic characteristics of participants in informal solid waste management

Informal SWM are undertaken by both the young and the old, but unlike the findings by Abdoul (2002) women do not operate in the last two categories in Zaria. This paper only considered those who are owners of the operation and does not take into account help from family members. In this survey however, 68 percent of the respondents in scavenging trade are children while 32 percent are above 18 years of age (Table 2). All the operators in the intermediate and recycling activities are adults. Here, a kernel of industrialisation exists in the hand-fabrication of pots, buckets, baking trays and so forth.

Table 2: Socio-economic Characteristics of Participants in Informal Solid Waste Activities in Zaria

Aspects	Characteristics	No of Respondents (n=320)			Percentage (100)		
		Scavenging	Intermediate Dealers	Reuse and Recycling	Scavenging	Intermediate Dealers	Reuse and Recycling
Age	< 18 years	152			68	-	-
	> 18 years	72	64	32	32	100	100
Educational Level	Primary	16	18	12	7	28	36
	Secondary	-	4	4	-	6	13
	Tertiary	-	-	-	-	-	-
	Not Literate	208	42	16	93	66	51
Average Monthly Income (₦)	< 7000	224	-	-	100	-	-
	7001-11000	-	4	2	-	6	7
	11001-15000	-	8	6	-	13	18
	15001-20000	-	19	11	-	30	33
	> 20000	-	33	13	-	51	42

Source: Field Survey (2010/2011)

One of the findings of this study is the low level of education of participants in the sector. The respondents in the waste picking category are the least educated as only 7 percent have primary education and 93 percent do not have formal education at all. The most educated groups are in the reuse and recycling operation with 36 percent and 13 percent having primary and secondary education respectively. To operate informal SW activities do not require much formal education (Wilson, et al 2005) except the recycling aspect, but all the operators need to acquire the skills for the activities they undertake. All the fabricators, foundries, etc were once apprentices in the activities they now undertake. This result does not suggest that formal training is useless but rather indicate its limited usability outside the formal sector, necessitating informal retraining for operators in the sector.

An important finding of this study is the level of income earned by informal SWM enterprises. Informal sector has generally been considered to earn marginal income compared to the income from the formal sector (Meagher and Yunusa, 1996; Abdoul, 2002). However, this study revealed that operators are able to make substantial amount of income from their activities. All the waste pickers earn less than ₦7,000 per month while 6 percent and 7 percent of the intermediate dealers and recyclers earn about ₦7,000 and ₦11,000 respectively. The highest levels of income are earned by the last two categories where 51% and 42% of the middlemen and reuse and recycling trade have incomes of more than ₦20,000. The income compare favourably with wages for formal sector employees at their level of training. For instance, the minimum monthly income in the civil service is ₦18,000. The incomes derived are considered to be adequate for meeting the needs of the family by most of the participants. The highlighted favourable level of income obtainable from informal SWM notwithstanding, the operators fare differently and undertake several activities to produce favourable outcome..

3.3. The structure of informal solid waste activities in Zaria

The structure of the informal SWM in Zaria portrays the drive for survival among the practitioners. Income earning abilities of the informal SW operators are not even, as there are differences in the level of income based on the type of activities undertaken. The way informal SW operators are organised has important consequences for income generation. The less organised the operation is, the less the people involved are capable of earning enough income, and more vulnerable to exploitation by intermediate dealers. The waste trade network takes the form of a hierarchy (Wilson, et al, 2005). The higher a secondary raw material is traded, the greater the added values it possesses.

Waste picking tend to occupy the base of the secondary raw material trade hierarchy (fig 1). Usually the collected materials by the waste pickers are traded locally to refuse shops, local industries, craftsmen and artisans through a chain of intermediate dealers. Possible end users are local industries including craftsmen and artisans. Scavengers and waste pickers are the most vulnerable category of the waste trade as they do not have an organised supportive network. They have limited capacity for processing or sorting materials and are easily exploited. Those involved are vulnerable individuals such as children, women and the elderly. From the findings of the study the price waste pickers get on a product is about half of the price traded by middlemen. To maximise profit, waste pickers tend to boycott intermediate dealers and sell directly to end users. In addition, value added activities through; sorting, cleaning, pre-processing and storage to obtain large volume of the raw materials enable the operators to increase their profit margin.

The middlemen and craftsmen occupy an intermediate position in the hierarchy and serves as linkage exist between scavengers and end-users. The category may contain dealers, recycling operators, junkshops, intermediate processors and wholesalers. This involve groups that undertake a range of value added activities like sorting, cleaning, pre-processing, changing shape of materials to facilitate ease of transport and storage to aggregate large volume of raw materials into commercially viable quantity. Junkshops are able to provide a steady supply of secondary

raw materials for the end users while craftsmen provide low cost, affordable products from recycled materials.

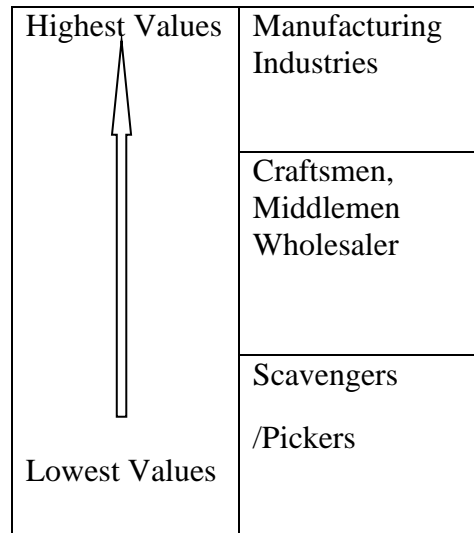


Fig 1. Hierarchy of Informal Solid Waste Management Operators

Source: Field Survey, 2012

At the top of the waste trade are the manufacturing industries with a strong dependency on secondary materials. These industries are essentially outside the study area and include such towns as Kano, Lagos, Aba and Ibadan. These are mainly formal industries which have direct link with the intermediate category. These converts the secondary materials into finished goods with high profit margin.

3.4. Challenges faced by informal solid waste management operators

Studies by Haan, et al (1998), Scheinberg (2001:525), ILO (2004:20) and Bernstien (2004:126) have indicated the problems that informal SWM operators encounter in their operational activities. The findings of this study seem to support this view. Operators have a set of the following difficulties which they struggle with to stay within the informal SWM.

3.4.1 Limited start-up capital and credit facilities

The cost of starting up an informal SWM operation, particularly, the intermediate junkshop and recycling industry is high. While the waste pickers require very little capital, the recyclers and middlemen claimed that between ₦50,000 and ₦100,000 is required to acquire basic equipment. Some of the junkshop owners pay about ₦20,000 per annum for renting of premises. The survey shows that the costs of starting up the operation are beyond the means of some of the respondents. Initial capital outlay by the respondents was obtained from personal savings, friends or relatives. In the sample, 63 percent of the operators claimed they got their start-up capital from

their personal savings, 31 percent from relatives and 6 percent from friends. None of the respondents got credit facilities from financial institutions.

Limited start-up capital and credit facilities explain why these activities are small scale and the activities are undertaken in the open and dilapidated buildings. In fact, the respondents are not willing to take up loan from financial institutions because of the conditionality for accessing loan from formal financial institutions.

3.4.2 Cost of inputs

Another challenge for the informal sector solid waste recycling industries is the capital to buy inputs. Locally inputs are bought in small quantities due to limited financial resources at their disposal of operators. The cost of raw materials in Kaduna and Abuja are relatively lower and cheaper in bulk purchase. As claimed by respondents, while scrap aluminium cost ₦150 per feet locally, buying in bulk from Kaduna, Abuja and southern part of Nigeria is cheaper by 25 percent. While 56% of the reuse and recycling operators identify input as a significant part of their cost of production, lack of access to credit facilities serve as a hindrance to their cutting down the cost of production and the ultimate potential profit margin that could accrue.

3.4.3 Erratic and insufficient physical infrastructure

High cost of urban utilities is frequently cited as constituting problems for informal activities (Kazimbaya-Senkwe, 2004). Even though middlemen and recyclers pay between ₦2,500-₦3,000 annually as taxes to local governments, urban utilities are increasingly been unable to maintain or expand physical infrastructure such as water and road to them. Respondents operating the junkshops complained of erratic water supply for their cleaning operation. They therefore resorted to water vendors to bring water for them from commercial wells and boreholes. Electricity bills and rents have risen and for most respondents, landlords now demand for 12 months payment in advance. To cope, operators resort to squatting on open spaces within self erected shades and ramshackle structures. This tends to create tension between the operators and local government officials who are concerned about maintaining aesthetic environment.

3.4.4 Limited Organisation

Membership of trade organisations are noted by Ahonsi (2002:145) and Adetula (2002:372) as coping strategies for informal sector which confer on members ability to adapt to social and institutional constraints (Abdoul, 2002). However, apart from junk shop owners and recyclers who are members of Yan Gwangwan and Yan Tinka organisations respectively, there is no evidence of trade organisations among the waste pickers. Throughout Zaria, none of the waste pickers sampled belonged to any union while 84% of the junkshop owners and 91% of the recyclers participate in trade organisations.

Even for the groups with trade organisation, the unions are not concerned with business-related issues such as buying raw materials in bulk, providing direct support such as funds and training programmes, instead the existing organisations only resolve conflicts and maintain peace among members. At the time the union of recyclers was given financial aid by the Government of Kaduna State under Governor Makarfi, the organisation was not able to utilise the fund for the

needs of members. Even though some respondents claimed to have received a loan advance from their union to upgrade their trade, about 21% of them confessed that the capital at the disposal of the union was too little to meet their needs.

Some of the older recyclers and their apprentices have expressed a strong willingness to work through their association to establish a waste recycling plant so as to reduce their dependence on middlemen and therefore expand their profit margins.

4. Recommendations

The paper examined the contributions of informal SWM to livelihoods of urban dwellers in Zaria, the income and employment generation and the functions towards raw materials provision for the manufacturing industries. The findings show adequate level of income generation for operators, significant potentials for employment of low skilled labour and children. However, the operators are found to encounter so many difficulties that need to be addressed.

To minimise some of these challenges and increase the benefits by extension means that governments, NGOs and others need to address the needs of the operators along many fronts. These will involve technical solutions to raise productivity of scavengers and waste pickers. This can be done through vocational and skill training to enhance their employment options, assistance to help them start and operate recycling enterprises and with organising cooperatives to strengthen their bargaining position with middlemen.

Also for the fact that middlemen and recyclers lack access to financial support necessitated the small scale nature of the operations. Unless they can access funds to invest in their operations, their businesses are not likely to expand. The importance of relaxing the conditionality for accessing credit facilities from formal banking institutions and organising viable unions to champion the course of members cannot be over-emphasised.

5. Conclusion

This study of the informal SWM in the livelihood of urban poor in Zaria has shown a combination of processes at work. The economic recession in Nigeria and a general low level of urban employment force a large number of the population to rely on informal means of income earning. The ready availability of SW associated with insufficient collection and disposal, present an opportunity to earn income for survival by the unemployed. Even though the sector has demonstrated great potentials for employment generation for low skilled labour and reduction in cost of waste disposal and environmental problems, urban planners and managers have not paid attention to the sector. Government is required to take necessary measures to address the needs of the operators as experiences in many African countries have shown it is easy to upgrade the income of operators. Several approaches are available that can be undertaken by governments, NGOs and civil society organisations to address the needs of the informal SWM. In Zaria this should involve measures to raise the productivity of the operators, provide

training opportunities to enhance their employment options outside the waste trade, relaxing difficulties to accessing credit facilities, and help with organising cooperatives.

References

- Abdoul, M (2002). 'The production of the city and urban informalities: the borough of Thiaroye-sur-mer in the city of Pikine, Senegal', In: O. Enwezor, C. Basualdo, U. M. Bauer, S. Ghez, S. Maharaj, M. Nash and O. Zaya (eds), *Under Siege: Four African Cities, Freetown, Johannesburg, Kinshasa, Lagos, March 16-20, 2002*. Documenta 11, Platform 4. p. 337-358.
- Adetula, V.A.O (2002). 'Welfare associations and the dynamics of city politics in Nigeria: Jos metropolis as case study', In: O. Enwezor, C. Basualdo, U. M. Bauer, S. Ghez, S. Maharaj, M. Nash and O. Zaya (eds), *Under Siege: Four African Cities, Freetown, Johannesburg, Kinshasa, Lagos, March 16-20, 2002*. Documenta 11, Platform 4. p. 359-379.
- Ahmed, A.S and C. Ali (2004), 'Partnerships for solid waste management in developing countries: Linking theories to realities'. *Habitat International*, vol. 28, No. 3, p. 467-479.
- Ahonsi, B. A. (2002). 'Popular shaping of metropolitan forms and processes in Nigeria; Glimpses and Interpretations from an Informed Legosian', In: O. Enwezor, C. Basualdo, U. M. Bauer, S. Ghez, S. Maharaj, M. Nash and O. Zaya (eds), *Under Siege: Four African Cities, Freetown, Johannesburg, Kinshasa, Lagos, March 16-20, 2002*. Documenta 11, Platform 4. p. 129-152.
- Bernstein, J (2004). *Social Assessment and Public Participation in Municipal Solid Waste Management: Toolkit*. Urban Environment Thematic Group. The World Bank, Washington D.C. National Academy Press.
- Carney, D (1998). "Implementing the sustainable rural livelihood approach", in Carney, D (ed) *Sustainable Rural Livelihood: What Contribution Can We Make?* Department for International Development, London. p. 3-13.
- Chambers, R and G, Conway (1992) 'Vulnerability, coping and policy', *IDS Bulletin*, vol. 20, no. 2, p. 1-7.

- Haan, H.C., A. Goad; I. Lardinois (1998) 'Municipal waste management: Involving micro-and small enterprises'. Guidelines for municipal managers. Turin, Italy: International Training Centre of the ILO, SKAT, WASTE. <http://www.skat-foundation.org/publications/waste.htm>.
- ILO (2004) *Addressing the Explanation of Children in Scavenging (Waste Picking): a Thematic Evaluation on Child Labour*. International Labour Office (ILO) Geneva, ISBN PDF: 92-2-1116662-7.
- Kazimbaya-Senkwe, B.W (2004), "Home-Based Enterprises in a Period of Economic Restructuring in Zambia", In K.T. Hansen and M. Vaa (eds.), *Reconsidering Informality: Perspectives from Urban Africa*. Nordiska Afrikainstitutet, 2004.
- Meagher, K. And M.B. Yunusa (1996) 'Passing the Buck: Structural Adjustment and Nigerian Urban Informal Sector'. *Discussion Paper No. 75*, United Nations Research Institute for Social Development, Geneva.
- Medina, M (2000). 'Scavengers' cooperatives in Asia and Latin America'. *Resources and Recycling*, vol. 31, no. 1, p. 51-69.
- Meikle, S (2002). "The urban context and poor people", in Rakodi, C and J. Lloyd-Jones (eds) *Urban Livelihoods: A People Centred Approach to Reducing Poverty*. Earthscan Publications Ltd, London, Sterling. p. 37-57.
- Moser, CON (1998) 'The asset vulnerability framework: reassessing urban poverty reduction strategies', *World Development*, vol. 26, No. 1 p. 1-19.
- Narayan, D and L. Pritchett (1999) 'Cents and sociability: household income and social capital in rural Tanzania', *Economic Development and Cultural Change*, vol. 47 no. 4, p. 871-897.
- Phillips, S (2002) "Social capital, local networks and community development", in Rakodi, C and J. Lloyd-Jones (eds) in Rakodi, C and J. Lloyd-Jones (eds) *Urban Livelihoods: A People Centred Approach to Reducing Poverty*. Earthscan Publications Ltd, London, Sterling. p. 133-149.
- Rakodi, C (2002) "A livelihood approach-conceptual issues and definitions", in Rakodi, C and J. Lloyd-Jones (eds). in Rakodi, C and J. Lloyd-Jones (eds) *Urban Livelihoods: A People Centred Approach to Reducing Poverty*. Earthscan Publications Ltd, London, Sterling. p. 3-21
- Scheinberg, A (2001) 'Micro-and small enterprises in integrated sustainable waste management'. The Netherlands: WASTE. <http://www.waste.nl/page/534>.
- Ukoje, J.E (2011). "Analysis of the Determinants of Participation of Stakeholders in Solid Waste Management in Zaria, Nigeria". Unpublished Ph.D Thesis, Department of Urban and Regional Planning, Ahmadu Bello University, Zaria.

- Ukoje, J.E (2012) 'Informal sector solid waste collection and recycling in Zaria, Nigeria', *Journal of Environmental Science and Engineering* vol. 1, No.5. 1 pp. 649-655.
- Urquhart, A.W (1970) "Morphology of Zaria" in, Mortimore, M.J (ed) *Zaria and Its Region*, Occasional Paper No. 4, Department of Geography Ahmadu Bello University.
- Wilson, D.C; C. Velis; C. Cheeseman (2005) 'Role of informal sector recycling in waste management in developing countries', *Habitat International* vol. 30, no. 4. p. 797-808.
- Yunusa, M.B (2002) "Environment and Inhabitants of an Unplanned area of Zaria, Nigeria". In O. Enwezor C. Basualdo, U. M. Bauer, S. Ghez, S. Maharaj, M. Nash and O. Zaya (eds), *Under Siege: Four African Cities, Freetown, Johannesburg, Kinshasa, Lagos, March 16-20, 2002*. Documenta 11, Platform 4. p. 417-430.