

## **KHARTOUM AND THE SUSTAINABLE URBAN RESTRUCTURING MARCH FOR ABSORPTION OF RAPID GROWTH AND URBAN CHANGES**

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### **Abstract**

The humanitarian priorities in development patterns has been an international concern, which makes environment and development issues cross-cutting and as a result of rapid urbanization phenomenon the concept of sustainable urban growth becomes urgent since cities are under constant physical and social changes. In addition, cities are made of different and often conflicting interests and landuses. They are therefore, in need of restructuring to contain these changes. Greater Khartoum is a typical example; it has been growing rapidly and is subjected to continual transformation. Khartoum started in the Independence Day(1/1/1956) by less than 3% of the total Sudanese population and this figure jumped to 16.8% in 2010 while the physical block grew beyond imagination.

This paper presents a comprehensive restructuring programme that Khartoum implemented to accommodate the changes, at first absorbed the huge influxes of the rural uprooted population and later improved the physical environment. This included treatment of squatter settlements to strengthen the urban fabric, reallocation of incompatible urban functions, revitalization of the CBDs and other urban renewal schemes. People mobility, a major objective of the restructuring programme received most attention. Transportation lines were extended for more coverage of the road network and higher population concentrations in congested settlements were diluted, particularly the filthy slums. Re-planning of old neighbourhoods, traditional villages, etc was performed and urban utilities were expanded. Popular physical development was encouraged to keep pace with the burgeoning demographic explosion.

Restructuring has also been employed for adoption of the appropriate local governance systems considering surplus population distribution, establishment of new local markets and other economic activities.

The restructuring programme made positive effects in protecting the environment, attaining socioeconomic benefits, particularly activation of the urban economy. The main difficulties encountered were the problems associated with the relocation processes but relocation made the regularization possible thus attaining social justice.

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## **1.0 Introduction**

### **1.1 Evolution of the Concept of Sustainable Development**

Many people had thought for a long time that environmental requirements were incompatible with the objectives of comprehensive development, but controversy about the environment as a key input to the developmental process has overcome the first stage which made the issues related to environment and development more obvious and evolved the concept of “sustainable development”. This was officially born in Rio in 1992 during the UN Conference on Environment and Development and then confirmed by World Summit in Johannesburg in 2002. It becomes a new doctrine and all nations agreed to adopt a pattern of development that integrates production, protection and conservation of resources which brought about a shift from the demand for pure economic growth to the demand for balanced development based on the use of resources with maturity and wisdom, and a robust economy with safe environmental and social cohesion. This gave birth to alternative visions focus on the humanitarian priorities in the development patterns, known as the model of human development. The school of the new visions claims that the previous development model has not trickled down the development benefits to the poor.

### **1.2 Cities' Dynamics**

The city reflects the arts, abilities, intelligence, genius, and temperament of humans and it also reflects their failures. Having to accommodate multiple urban functions and activities it provides a comprehensive life of a nation and represents the contents of its civilization, as reflected by the behaviour of society and its values, the life system and its various activities. Cities may witness throughout history, periods of prosperity, they may also be subject to periods of deterioration and the consequential changes in their physical structure. They may have different and often conflicting interests and landuses, and the larger the city the more complicated are these interests and their conflicts. As the city grows, so do the incompatibilities between landuses. Disparities exaggerate until time comes when conflicts cannot be resolved by any other way than reallocation; in urban forms it implies a start from scratch to make the required urban changes. This phenomenon of urban changes gives a city its dynamic and transformation nature. Experience shows that when a city is in a state of rapid urban transformation, its physical block expands fast and with different modes of growth activities dictated by the transitional characteristics of the city. Khartoum is a typical example of such growth, characterised by massive development of informal settlements and slums, inadequate coverage of public transport and other public goods, particularly employment opportunities, and the consequential increase in the percentage of the urban poor, environmental degradation, deterioration of city landscape, etc. To cope with the emerging situation infected cities are therefore in need to restructure and enhance their urban structures. There are a number of good examples that can be highlighted: Barcelona implemented a successful restructuring programme, the main focus of which was environmental improvement through dilution of development concentrations and

availing land for special uses. Tehran performed urban restructuring and absorbed huge influxes of migrants. Warsaw established a new city and adopted a new urban form creating a balanced spatial structure and evolving a pleasant townscape of a harmonized building form to attract investors. Some of the other restructuring successful stories are publicised by HABITAT and World Bank mainly on slum upgrading such as that undertaken by Dakar/Senegal UNCHS<sup>8</sup>, Medellin/Colombia and Santo André municipality, São Paulo, UNCHS<sup>6</sup>. Khartoum massive restructuring programme is described below.

### IGAD Map



## **2.0 Methodology and Objectives**

This paper summarises a practical study which benefited from a primary data gathered by the author and his associates from a number of field surveys conducted for different purposes in Greater Khartoum and IGAD Sub-African Region cities, Bannaga<sup>3,4</sup>, and a secondary data obtained from an in-depth literature review. The task of data collection was accomplished through different means: households surveys were carried out in selected Khartoum areas while visits were made to IGAD cities to gather the required data. The author observations and accumulated knowledge complement the discussions. He played a key role in the Khartoum restructuring programme when he was the responsible minister for 12 years.

This paper aims at:

- (1) throwing light on the extremely huge magnitude of Khartoum growth and the consequential urban degradation which was thought to be beyond repair,
- (2) documenting Khartoum successful experience and demonstrating how management reformation can be employed to correct urban distortions.

## **3.0 Khartoum and the Urban Transformation Process**

### **3.1 Greater Khartoum Profile**

Khartoum Capital, is a tri-city formation (Khartoum, Omdurman and Khartoum North), situated in central Sudan where the Blue Nile and White Nile meet and the River Nile originates. Its physical block is shaped by the three rivers; by creating the three distinct cities and an island in between; each city starts by the confluence of two of the three rivers. It exists at latitude 9-15 degrees and longitude 24-45 degrees and at altitude of 1353 feet in a hot and dry semi-desert climate with less than 150 mm, annual rainfall. Urban activities are clearly distributed between the three cities. Khartoum accommodates the business district, foreign trade and international economic activities. It is relatively young but surrounded by ancient villages providing it with agricultural products. Omdurman holds the Sudanese national and cultural heritage and local trade activities while Khartoum North accommodates the large industrial factories, the railway main station, the river transport facility and the government Mechanical Workshop.

Like many cities established by the European colonisers, old Khartoum is a Colonial-style city with a distinguished centre of a fortified core, surrounded by neglected indigenous native settlements. Its architectural style is mixed and the old colonial model of government and staff buildings gives the Nile Avenue its distinguished character. Omdurman's physical model highlights some of the Islamic traditions, such as Khaleefa's house and Mahdi's Dome. Khartoum North's old settlements are famous for their popular building forms exemplified by old tomb-like structures and traditional mud-brick dwelling units.

Unlike European colonisers' big cities, which centres undergo deterioration as their original owners move out to newer, more salubrious and more fashionable residential areas, Khartoum centre still suffers from low density development and it is nearly dead during off working hours. Now the majority of Khartoum new slums are found in the urban peripheries. Such slums provide cheap accommodation and

informal low-cost services, a place for essential economic contributions by lower income people, a reflection of unwanted aspects of urban life. Khartoum is overwhelmed by traditional settlements and villages in addition, to scattered expansions forming organic isolated blocks. The scattered expansions and similar urban formations are due to:

- (1) the nature granted by the Nile rivers where the streams form the main border lines of the main physical blocks because villages and other urban areas have been historically founded along the streams of the three rivers,
- (2) expansion encouraged by abundant and highly fertile land serviced with water,
- (3) natural urban-village style growth, and
- (4) viability of Khartoum for more development.

Thus, Khartoum faces the challenge of changing this prevalent village system of growth to a natural urban development system by integrating the villages into the city and forming a strong sequential urban fabric. This is why Khartoum always falls short of providing essential services, particularly extension of transportation networks.

### **3.2 Khartoum Urban Structure Development**

Greater Khartoum urban borders were not delineated, its centres and their role within these borders are also not defined. Khartoum started as a small cohesive and intact town with a solid core forming the CBD. It enjoyed a lullaby of peace, stability and was exemplary in cleanliness, lushness of greenery and ease of life precision. Traffic was easy, while the population density was in proportion and residential reserve was abundant. Greater Khartoum grew with diversified congregation of diversities reflected by ethnic mixture of Arab and African bloods and a variety of African and Nubian cultures, overwhelmed by Islamic faith but this diversification enriched its social fabric when it was well maintained. Khartoum however, lost its physical cohesion and social strong netting when the rural uprooted population began to pour heavily in the city. Since then, Greater Khartoum has been growing rapidly and its scale of growth was beyond belief despite the fact that rapid urban growth is an international phenomenon. The annual population growth in most developing cities was about 4%, Habitat<sup>7</sup>, but was about 6% in Greater Khartoum, the fastest developing metropolis where more than 50% of the total Sudanese urban population live. Greater Khartoum started in the Independence Day (1/1/1956) with 250000 inhabitants or less than 3% of the total Sudanese population and this figure jumped to 16.8% in 2010, totalling seven million, Table 1. This is primarily due to huge unexpected migration and the consequential uncalculated urban expansion through illegal encroachment upon lands. The accelerated growth evolved urban forms characterised by haphazard development of irregular endless expansions and sprawled growth lacking basic human services, refer to Fig 1. This is accompanied by changes in residents' traditions, behaviours and cultures. The Khartoum squatter population hurriedly built their adobes in open spaces and void areas inside the three cities and they indiscriminately occupied whatever vacant lands exist to the extent that nearly two thirds of the urban block had been turned into "makeshift shelters", creating huge subdivisions occupied by poor dwellers, the result was total urban

degradation, Bannaga<sup>1-3</sup>. Besides the dwellers' torrents, their shelters were subject to annihilation by rains which made the wet season a nightmare for them.

Khartoum development pattern is contrary to 'Compact City' model which retards urban sprawls and reduces energy and services cost. The table 1 shows a periodical population density decrease, primarily encouraged by lack of development control but reflects low-density traditional development. The sprawled paradigm disadvantage appears in the consumption of farmland, as reflected by Table 1, energy and loss of green space. The scattering of urban formations is due to the nature granted by the Nile Rivers, existence of natural village style that encourages urban-rural growth.

Khartoum Centre also deteriorated because it has not kept pace with the ongoing dramatic urban changes and continues to live in the past.

**Fig 1 Stretch of Greater Khartoum Physical Block**

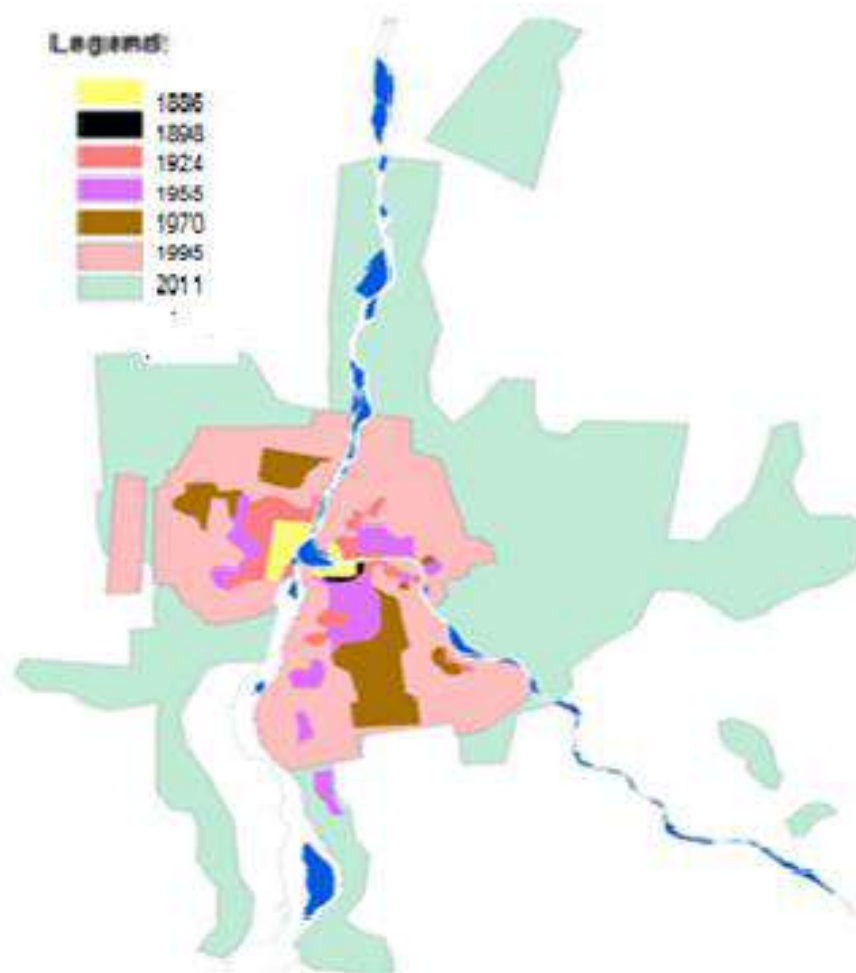


Table 1: Khartoum Physical Block Growth and Population Density

Year	1955	1970	1980	1998	2006	2010
Population in million	0.25	0.64	1.17	4.37	6.01	7.00
% of Sudan population	3.0	4.4	5.7	14.9	16.4	16.8
Total area in hectare	1680	3000	22840	80250	132300	165000
population density in person /ha	149	213	51	55	45	42

#### 4.0 The Khartoum Urban Restructuring Programme

##### 4.1 Why Urban Restructuring?

Urban restructuring adopted by Khartoum was not for reconstruction of dilapidated or ruined structures or building renovation, but for undertaking a complete urban reformation e.g. treating the deteriorated environment, correcting the distorted urban structures, maintaining the deplorable public utilities and generally enhancing the cityscape. These distortions led to loss of the urban entity and the citizens' civilized behaviours. Thus, restructuring must firstly, corrects the mistakes of the past and secondly accommodates the transformation needed to advance urban efficiency, build a sustainable city capacity and elevate the quality of urban life. This required installation of a better urban management scope to:

1. Bring justice between residents and reduce the physical forms variations between different settlements e.g. bridging the gap between two types of building patterns: full service regular neighbourhoods inhabited by affluent categories and dense, overcrowded shanties or slums, lacking basic services and mostly not recognized by authorities. This inequality feeling poses an barrier between the two distinct different groups and threatens the society, public security and social order. According to UNCHS<sup>7</sup>, city status report, (62 %) of urban residents live in slums in African.
2. Setup a base for government resolve to address the squatting phenomenon which is encouraged by complete absence of effort in the sphere of urban planning, housing

and basic services provision. The neglected burgeoning population continued their squatter practices, justified by genuine demand for shelter.

3. Correct all previous mistakes e.g. abandoning the colonizers' old urban model and containing change effects of rapid expansion.

4. Reorganise the urban space after re-evaluating all urban functions and activities to achieve environmental sustainability through landuse optimisation and to accommodate new desired functions that strengthens cohesion of the urban fabric.

5. Give urban residents the opportunity to rehabilitate the structures they live in.

6. Perform total urban reformation to accommodate the huge influxes of migrants, absorb the city surplus dwellers, improve the physical environment, strengthen the urban fabric and integrate all isolated scattered villages.

#### **4.2 Urban Management Reformation**

The first pivotal task for execution of the urban restructuring programme, reticulated above was installing a new effective management, equipped with knowledge and popular authorisation and able to pursue an integrated approach focussing on implementation of supportive legislations and polices and application of intensive sound spatial planning. Reformation was not difficult because Khartoum has great potentials. It is endowed with all kinds of natural resources encompassing land, water and energy and possesses vast stretches of fertile soils. Khartoum is a laboratory for education and training and it contains colourful inhabitants with different cultures, backgrounds and specialities thus, able to attract all kinds of investments and businesses but far away from adopting a knowledge-based economy.

As expected, the new management succeeded in replacing the prevailing legislations issued by central governments by legislations that belittled the role of the Federal State and weakened its grip on town planning and land management. The current Physical Planning and Land Disposal Act, 1994 was the first to be issued. The deficiency of the old acts was not primarily related to lack of accommodation to local requirements but the main aim of the legislation reform is to protect individual and group rights of the state residents, and to adhere to the principle of the local rule to solve conflicts that arise locally. The management then effectuated the Spatial Planning tool and performed wide-range planning processes. A change in the concept of planning paved the way for a shift from serving the rich minority to serving the poor which achieved justice among all urban society layers. A coordinated workable Ten Year Restructuring Plan was formulated in which treatment of the informal settlements and absorption of the surplus population were foremost tasks and spatial reorganisation was applied in a manner that strengthened urban fabric. This helped the poor to settle and become tools of development. And before embarking on remedial works, urban planning was employed to delineate new directions and areas for physical development to accommodate all populations whether new or original residents. Urban restructuring was also applied to balance landuse intensities to reduce the disparities among populations. The idea was to appropriate the use of space because Khartoum had large free spaces and some areas were less utilized compared to normal built-up area rates, Doxiades<sup>5</sup>. These vacant

areas were planned and certainly many benefits were harvested such as covering urgent needs of expansion but the main factor that necessitated free spaces planning was to control and protect the vacant lands from illicit use and invasion by squatters. Khartoum management took a step further by applying informatics in all land allocations and development activities. Use of GIS and space and computer technologies, and internet enabled Khartoum management to benefit from the geo-spatial data technology for allocation, processing and registration of lands. The most beneficial work gained is computerisation of the “Housing Plan” which was based on allocation of land plots (site and service system) for citizens. The land administration role was to choose the eligible people who apply for land plots after making an evaluation in accordance with a criteria. Currently, the information system performs the job by automatically identifying and nominating the eligible persons without human intervention.

To better their performance, authorities implemented a wide-range of urban policy reforms, particularly those govern land tenure, transfer transactions, acquisition and expropriation dealings. Accessibility of shelter for all people(UNCHS Agenda) was also promoted through the legalization of the status of squatter and unauthorized settlers and by encouraging all kinds of regular residential development and by lifting restrictions imposed by government financial institutions on real estate’s development and housing schemes. It was necessary firstly to apply prompt solutions to promote and encourage house development and return things to normal to prevent citizens from acting on an impromptu basis, which had previously led to the rolling of unauthorized settlements. However, by mobilising all people masses the processes of residential development was expedited and raised to a higher level and scarcely seeing a site without construction activities because popular construction was propagated. Upgrading of squatter and displaced settlements has also produced a development revolution and increased the housing stock allowing many marginal families to settle down. New towns have cropped up, dilapidated dwelling units were rebuilt and regular settlements have become overwhelming. Popular and official development proceeded to include construction of schools, water network, roads, etc and almost all urban activities .

To manage the city the management recognised the significance of being in close contact with the urban communities to effectuate a change of positive attitude that is necessary when seeking solutions for the urbanisation problems. Decentralisation of urban decisions, democratisation of local authorities and sharing of information were exercised and yielded positive results. Success was attained because the urban community was fully empowered and all stakeholders’ efforts were mobilised, and a decentralized system was fully operational.

### **4.3 Surplus Population Absorption Schemes**

Ambitious housing schemes, details of which are displayed in Table 2, were implemented but no option other than site and services model was at hand. They included huge housing plans, where 320,000 families received plots and other allocations through Alssalam townships(relocation sites) served 25000 families and allocations of built housing units benefited 40000 limited income families. Private

housing projects were also executed and a number of sites were allocated but were subjected to tight planning regulations to ensure validation of project by the authorities and as a result 30000 families were accommodated. Accordingly, new towns have been founded, becoming a real addition to the physical block. These included three Alssalam (Peace) townships, allocated for settlement of newly arrived homeless families. The described schemes availed large spaces for public utilities thus, releasing the pressure on open spaces, vacant lands and government reserves left for future expansion in old subdivisions. The new extensions, distributed evenly throughout the three cities, assimilated active and effective urban communities, refer to Fig 3. The total number of people served was 2.65 million and the number of plots allocated was 123% of the total number of the housing stock existed in Khartoum before programme commencement in 1990, which was 337400 units, as estimated by Doxidés<sup>5</sup>. To service these huge residential subdivisions land allocations for public utility development were made easy for all kinds of investments to provide services and employment opportunities for the population. The decentralisation system was reinforced by spatial redistribution to consolidate local rule, reduce traffic pressure and ease people mobility. Administrative districts, market centres and selected urban economic activities were redistributed to make them closer to dense population concentrations.

Table 2: Number of land Plots, Built Housing Units, Private Schemes and Alssalam Townships

City	Land plots (housing plans schemes)	Housing units (popular housing scheme)	Housing units (private investment schemes)	Land plots (Alssalam Townships)	Population served based on 6.4 P/family
Khartoum	95000		12577	10000	
Khartoum North	120000		15756	10000	
Omdurman	105000		1400	15000	
Total plots	320000	39400	29733	25000	
Grand total				414133 plots	2.65 million

## 4.4 Restructuring Operations

### 4.4.1. Aim

The aim of the restructuring operations programme was to transform Greater Khartoum into a metropolis of good urban style and dress while taking a life pattern

that adapts to the future and with special consideration to the presence of the Nile Rivers that give Khartoum its flavour and colour and its original urban form. Its implementation made sure of an inclusive involvement of city dwellers and their representative organizations while responding to local conditions and reducing the risks on poor people. Two of the important courses of actions pursued were clearance of worse physical distortions while the other was irregular settlements treatment.

#### **4.4.2 Treatment Processes Applied**

To regularise slums, villages, squatter and informal settlements, they were subjected to treatment processes to primarily improve their environments, correct their illegal status and improve their living conditions. Each irregular settlement was studied and three different approaches were considered for its treatment and this was accomplished either through settlement clearance/relocation or planning/replanning or incorporation into the urban fabric, accordingly Fig 2 was produced:

Clearance/Relocation: Worse physical distortions represented by filthy slums were cleared because they were insusceptible to improvement. Clearance of settlements was also applied to dilute the concentration of population in congested areas, as a prerequisite to environmental improvement. Relocation targeted recent settlements occupied by people who were not strongly attached to the land and their level of mobility was high so it was easier to relocate them to alternative sites. Other types of relocated settlements were those occupying areas which had been allocated for other uses as well as slums built in areas unsuitable for residential use or those which were a focus of human relegation.

Planning/Replanning: was applied in settlements more liable to improvement than relocation because e.g. their inhabitants constitute a permanent city population with strong attachment to the land they occupy though land ownership, level of permanency of buildings and planning requirements were major factors in deciding the planning option,

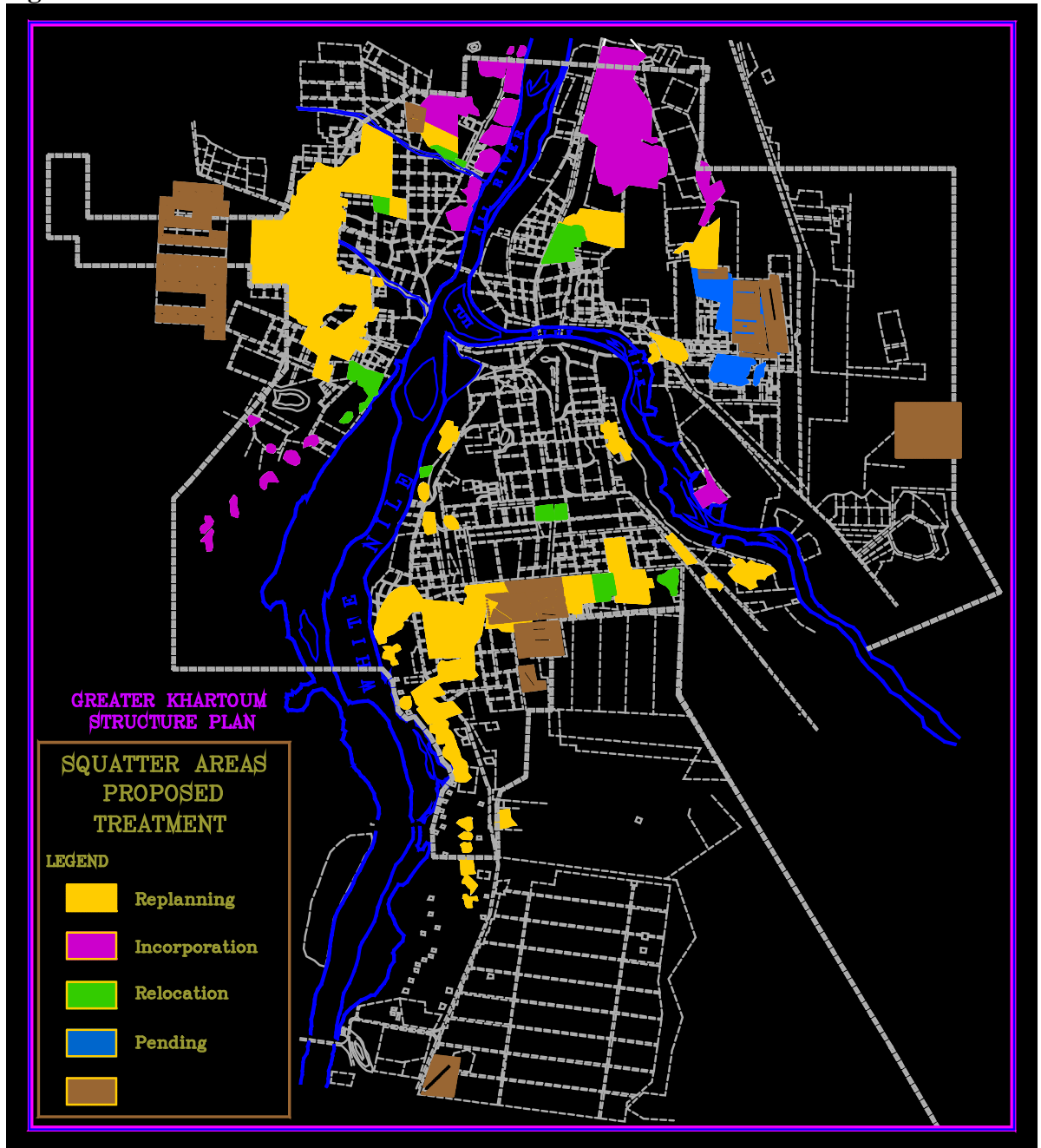
Incorporation: was applied in cases where the history of settlement/village establishment goes back several decades and their inhabitants lead a normal way of life i.e. settlements' planlayouts were acceptable and served with basic social services.

#### **4.4.3 Clearance of Worse Physical Distortions**

Though remediation means correcting thing but here correction can only be by returning to normal situation and clearing filthy settlements or those misplaced or their environments were seriously affected by awful malpractices, resulting into a drastic deterioration. Such settlements were highly unsecured and constituted real threats to public health. Some of them were built on natural water courses and were a principal cause of the 1988 flood catastrophe that devastated Khartoum and led to

collapse of tens of thousands of houses. More than fifty filthy settlements of the kind were cleared.

**Fig 2: Classification of Settlement Treatment**



#### **4.4.4 Treatment of Slums and Squatter and Informal Settlements**

Slums are settlements that are densely populated and their environments are filthy and unhygienic but still function to provide cheap accommodation, informal low-cost services, and places for essential economic contributions by lower income people. It is recognised that many of the squatters are genuine cases of lack of shelter and this provision gap is filled by encroachment on whatever available urban land. Land mafias are also operating with huge financial resources and they know the ways and means that are available to organise their crimes. UN-HABITAT considers housing as "Informal Housing" when it does not conform to the laws and regulatory frameworks set up in the city in which it occurs. It is not likely to conform to the enforced planning and building regulations, a good example, is the traditional villages established in areas outside Khartoum previous boundaries. Numerous villages were built facing the River Nile forming historic residences of indigenous people of Khartoum suburbs. Some of these residences may include high quality housing, occupied by rich and influential people.

Fig 3 shows the huge scale of the treatment operations carried out targeting villages, squatter and other informal settlements (represented by single oblique lines ///), while Table 3 exhibits details of the legalised number of plots. More than 160 slums and squatter settlements were regularised, benefiting more than 280000 dwellers while IDPs settled in more than 70000 plots.

#### **4.4.5 Village Organisation Programme**

Villages are traditional informal settlements scattering throughout Greater Khartoum. They were incorporated in the physical block of the metropolis after they were subjected to planning/replanning or incorporation processes. They possess vacant areas which were used to accommodate some of the surplus population thus they provide enormous opportunities to address the squatting problem and help in absorbing rapid growth. Village organisation processes were therefore, promoted and the majority of villages was regularised and incorporated in the physical block. Their environments were improved and they were linked with the main transportation and metropolis networks. Most of squatter settlers and IDPs who managed to live in the core of villages were absorbed and the surplus was resettled in relocation sites.

The village organization programme paved the way for village physical forms improvement through streets opening and open spaces allocation and for registering villagers' plots in land registers. According to Table 3, more than eighty thousands villagers possessed proper titles.



Table 3: Number of Plots Targeted by Treatment of Squatter and IDPs' Settlements, Village Organization, and Old Neighbourhoods' Replanning Programmes

City	Number of plots treated (squatter programme)	Number of plots legalised (village programme)	Number of plots replanned (old neighborhoods programme)	IDPs settled through (IDPs Programme)	Population served based on 6.4 P/family
Khartoum	50250	32550	6500	15500	
Khartoum. North	50290	30250	5560		
Omdurman	181236	20400	14050	61000	
Total plots	281776	83200	26110	76500	
Grand total				467586	3.0 million

#### 4.4.6 Replanning of Old Neighbourhoods Programme

Old traditional residential neighbourhoods underwent urban renewal to improve their quality of life and to facilitate the provision of services and public utilities and to ease traffic flows. These old quarters were developed at the time when man and motor were not separated. In this programme the number of families involved surpassed 26000.

In summary, the Khartoum Urban Restructuring Programme provided shelter through absorption and legalisation schemes for more than 5.5 million people or benefiting greater than 880000 families.

#### 4.4.7 Restructuring and Development of the Khartoum Centre:

##### 4.4.7.1 Development Authority:

It is known that management of capital cities always suffers from cross-cutting and conflicting forces exerted by all levels of governments especially if the central government is overruling and interfering in all aspects of local governance. Khartoum Capital is no exception.

Khartoum Centre Development Authority was established to supervise the execution of joint development projects between State and Federal governments in the Centre but has been given limited administrative authorities. Most importantly was the agreement on the Centre geographic boundaries. Two main issues were considered: (1) complete coordination between higher government executives(central-state-local) who possess constitutional authorities after identifying the role of each in the Centre management (2) resolving the professional conflicts between all levels of

government executive departments by formulating a workable procedure and specifying the tasks and responsibilities of each.

#### **4.4.7.2 Restructuring and Developmental Projects:**

To develop environmentally safe and prominent centre some reforms were made:

- Distortions were corrected targeted misplaced and substandard buildings but those of historical and cultural values and giving the Centre its Sudanese spirit and identity remained untouched while some of old government departments, including departments situated along the water frontage were reallocated for rearrangement of the Centre spaces.

- Some improvements in urban efficiency were made when:

- (1) incompatible functions were replaced by desired economic activities

- (2) reallocation of urban functions in central zones was inevitable due to strong functions expansion and urban dynamics particularly where functions consuming unnecessary large valuable spaces

- (3) new social, civic, commercial and recreation activities cropped up forming modern features of urbanisation

- Open spaces in the Centre Heart witnessed expansion and if made green will enhance the landscape, allow fresh air movement and dilute the concentration of development. Once this becomes a reality the Centre will be vivid and full of life. Enlargement of the Centre Heart open space helped in creating new pedestrians routes and passages and gave people easy access to the Centre surrounding areas but what hoped for is the complete evacuation of all types of motors out of the inner central spot represented by the UN square. The pedestrians movement to and from the square could then follow four axes, two in the north-south direction and the other two in the east-west direction. These axes when freed from motor movement pedestrians commercial and recreational spines will lead into marketing and leisure zones. The void areas and the Army garrisons in the eastern part of the Centre, beyond the railway tract, if developed will cover future investment demands.

- Some transportation lines were extended out of the Centre but, the Centre still falls short of essential transportation and other networks. However, the Centre population density is extremely low necessitating adoption of compact city development model.

#### **4.4.8 Reallocation of Selected Metropolis Functions**

To follow are some of the reallocated functions:

1. Many incompatibility-based urban functions relocation schemes have been executed in the last two decades to sustain growth, optimize spatial utilisation and attain urban efficiency. They were carried out for (a) landuse revitalization (b) landuse compatibility(c) Central Markets decentralisation, etc

2. Restructuring of metropolis transportation lines, municipal and other engineering networks. They were essential for serving the huge urban expansions. Restructuring included almost all existing urban networking e.g. water systems, electricity supply and other municipal services considering that transportation and traffic systems restructuring often result in spatial rearrangement. New passages to facilitate traffic

movement were opened and extended to serve the vast urban subdivisions and markets in an unprecedented manner and the lengths newly constructed roads exceeded several times of those constructed since Independence Day.

### **5.0 Lessons Learned from Khartoum Experience**

Urban restructuring is a fearful task to perform and the main difficulties encountered in executing the Khartoum restructuring programme is containing the problems associated with squatting and the consequential relocation processes.. The appropriate measure is to address its root causes together with lands distribution to the needy since use of force alone is a meaningless solution without strict controls and painful punishments of mafia land grabbers.

Relocation in its final form is uprooting and replanting in an alien and hostile environment. Therefore, it is a tough decision to make, justify, explain and carry out. On the face of it, looks like any other simple planning decision but most problems arise when relocation decisions involve the disadvantaged, the poor and the under privileged. Much resentment is precipitated if relocation is forced involuntarily. In fact some relocations are simple, popular and gratifying. Khartoum Experience shows that patient grassroots action preceded by elaborate and comprehensive consultations can produce miraculous results. Haste and high handed approach especially if accompanied by indecision and hesitant actions produces irreversible damage and nasty unnecessary confrontation. To set the process in motion the first issue to be addressed is guaranteeing support of higher executives followed by an elaborate process for securing public approval and support. The second issue is the proper contact with the citizens involved. Most important is dissemination of information, and media monitoring. Popular committees were best forums to float such action and employment of the civil judges helps a lot. Their presence abates citizens' fears, moderates committee members squabbling and infighting and adds respect and credibility to the committee's actions.

### **6.0 A Concluding Assessment**

Urban restructuring certainly satisfies the three pillars of sustainability; environmental protection, social elevation and economic growth. Khartoum gained real benefits from urban structure enhancement and provision of public goods, particularly housing and slum upgrading.

The socioeconomic benefits are evident when considering the large scale of house provision and the improvement of the poor's settlements conditions. Urban planning has forced social diffusion, effective stakeholders participation and created some sort of commercial and trade activities that sprout along the streets. The most important residue of urban restructuring is settlements regularisation which was exercised with fair and just procedures and all land allocations are completed mechanically and without human intervention. All stated benefits have been harvested by citizens and particularly the marginalised residents. In last visit made to one of the treated large settlements, namely Haj Yusuf East area, in April 2010 an enormous social and economic development was witnessed. To date, essential services such as, water,

health, education, electricity and other urban facilities have been completed. A number of Haj Yusuf dwellers who were subjected to the planning process and granted proper land titles together with those settled in absorptive cities were interviewed to know their opinion about their new living conditions. Their response was very positive and they were satisfied by the level of progress made. The interviewed people reacted by a warm welcome and recalled the days of their positive interaction with the planning process, and they are very pleased to harvest the fruits of the legalisation process. They remembered the previous awful conditions and their sufferings and the hardship they went through when residents were afraid to walk through their settlements in daylight, and when even police forces avoided chasing any criminal person who entered their slums for hide-out.

In conclusion, Khartoum deserves to be rewarded for the very useful work accomplished and other cities should learn from its experience because it is of a huge scale and unmet internationally. Khartoum has enormous urban potentials and can meet the future challenges without complications if it seizes these opportunities and continues to carry out more urban enhancement and developmental projects though it has not yet benefited from its unique site and genius loci. However, Khartoum would sustain its growth and move forward if the Restructuring Programme is accompanied landscape beautification and greenery programmes targeting the ample open spaces and void areas throughout the physical block. Intensive reforestation and trees plantation make the programme highly innovative and add a lot to Khartoum which is gifted by the three Nile Rivers.

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