URBAN HEALTH AND WELFARE IN SUB-SAHARAN AFRICA: POPULATION GROWTH, URBANISATION, WATER/SANITATION SERVICES, SLUMISATION AND POVERTY

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ABSTRACT - Spatio-temporal analysis was applied on data representing urbanisation, slumisation, poverty, safe water/ sanitation in urban sub-Saharan Africa (SSA). The findings include: rapid rates of national population growth and urbanisation throughout SSA from 1980 to 2005, averaging 93.8% (range: 90.5% points), lowest and highest rates being 40% (Lesotho) and 130.5% (Niger), respectively; high national poverty rates, widespread in SSA: (>50% in about seven countries; it might have been similar in more countries if a large number of SSA countries had reported their 1993 poverty rates; high urban/rural poverty ratios (1.05-1.79 points range) between Nigeria and Benin Republics. High average rate (73%) of slumisation in SSA in 2001 (range: 96%), lowest and highest rates being in Zimbabwe (3%) and Chad/Ethiopia (99%), respectively. SSA's 2000 health adjusted life expectancy was generally low: 38.8 years (<40 years in 24 countries). Use of safe/improved water/sanitation services were poor almost throughout SSA: declined rapidly and ubiquitously from 72% (2000) to 55% (2002), minus 17% points decrease in three years within individual countries with alarming declines up to minus 69% points in Guinea. The policy implications of the findings include the urgent and imperative need to massively implement urban improvement programmes designed to provide health-inducing services/facilities across SSA.

Keywords: SSA, urbanisation, health, sanitation, water, population growth, poverty, economy, slumisation, region

INTRODUCTION

World Development Report's conclusion that urban centres stimulate and benefit from economic growth (World Bank, 2009) reinforces earlier hypothesis, highlights the significance of facilitation of increasing 'density' (concentration of people and agglomeration of economic activities/businesses) within cities of supplies/services related to safe water, sanitation, health, among other facilities promoting economic growth and social development that transform cities and diffuse such forces to their hinterlands and new/smaller towns (Deichmann, Gill, and Goh, 2011). However, it contradicts conventional wisdom in urban and regional planning/management, urban geography, and related disciplines, that rapid urbanisation of developing countries (DCs) has been associated with poverty contrasted to the reverse in developed countries. Phenomenal urbanisation of DCs is believed to challenge local, regional and national governments of poor DCs. Phenomenal urbanisation in sub-Saharan Africa raise the following questions: How could rapid urbanisation in DCs be managed in ways that DCs afflicted with phenomenal urbanisation of poverty could grow economically? Why has association of urbanisation with economic prosperity in developed countries failed to happen in DCs for so long? What links have been missing in relationships between rapid urbanisation of DCs and economic growth processes? What has been the nature of urbanisation and factors associated with it in sub-Saharan Africa (SSA)? While most of the foregoing questions are beyond the scope of this paper, they deserve listing here in order to define the breadth and depth of knowledge in regional (urban and

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rural) studies. They also indicate a compass for guiding our scholarly quest for answers, concepts, and methods for accomplishing the narrowly defined objectives of this study/paper. For example, Economists concerned with transitions in demography and epidemiology have profusely documented progression of developed countries through the first, second and third distinct phases of changes in population sizes and associated characteristics (age, structure, health condition, educational attainment and so forth).

The distinct stages that form the demographic transition include: an initial phase of high mortality; high fertility and slow increases in population; a second stage characterised by steady decline in mortality to low levels, and the persistence of high fertility results in overall more rapid increase in national/regional population; and the third phase presenting low mortality and low fertility resulting in overall lowering of national and regional population growth. It was suggested in the 1980s that developing countries had just emerged from the first stage of the demographic transition, while some Asian countries were at the time exhibiting signs that they were going to follow the same process. It was not known in the mid 1980s, whether African countries were going to follow the demographic transition. The characterisation of the second stage of the demographic transition by declining mortality is attributed to some causes marked by several aspects of economic and socio-cultural development comprising increasing incomes, improvements in public health, education, housing and food supply.

The low fertility that marks the third stage is attributed to behavioural shifts associated with dwindling of economic advantages that derive from possession of large families. In this regard, it is well known that parents abandon the quest for more children as insurance for old age care-giving, income generation for boosting household welfare or agricultural work (Baum and Tolbert, 1985:211-2). This paper examines the phenomenon from scholarly perspectives/hypotheses that all countries pass through two transitions: demographic and epidemiological. Could these transitions (demographic and epidemiological) have affected urbanisation in SSA?

DISOCIATION OF RAPID URBANISATION FROM ECONOMIC GROWTH IN SSA

This paper aims to contribute towards increasing understanding the nature of urbanisation and the quality of urban centres in terms of certain environmental health-inducing services in Africa (SSA) within a manageable temporal scale. The objectives are: to describe the rates of urbanisation and population growth by countries of SSA over a number of years for which data was available; to describe health-inducing services/supplies (safe water, sanitation, etc) and degree of slumisation (or conversion of sectors of the urban centres into places that present inadequate, thereby exhibiting qualities of unliveability or slums) by country in SSA over a number of years for which data was available; to show the extent of poverty affliction by country in SSA over a number of years for which data was available.

In the rest of the paper, I present: background concepts (the epidemiological and demographic transitions); experiences of some countries within those transitions, and consequences of the rapid demographic and epidemiological transitions on economic growth in DCs. Then, I comment on urbanisation of poverty globally and in developing countries and some vital history of the adversities posed by hazards, squalor and unhealthy physical environment of slums to human health and worsening mortality in London city, and present the context for understanding urban scenarios and human conditions in SSA. I proceed to describe the methods of spatio-temporal analysis used in the study. Afterwards, I present our findings, discuss them, conclude the paper and offer recommendations for policy making on improvement of bad conditions in urban SSA.

EPIDEMIOLOGICAL AND DEMOGRAPHIC TRANSITIONS

Explanation of the dynamics in the outstanding causes of mortality and illnesses preceding death forms the central point of the epidemiological transition. Based on the experience of the advanced countries until the 19th century and the current health problems that still plague some of the present developing countries; the first stages of the epidemiological transition present health profiles that are dominated by near ubiquity of infectious diseases traceable to poverty, malnutrition, poor

sanitation, unsafe water, and inadequacy of hygiene. High mortality of infants and children and low life expectancy also characterise the initial stage of the epidemiological transition. Childhood diseases such as measles, other diseases including influenza, pneumonia, tuberculosis, diarrhea, combine with poor nutrition form the major causes of the high mortality that afflict infants and children. The second stage of the transition is marked by increasing control/management of the epidemics associated with high incidence of the aforementioned diseases and other challenges such as the emergence of age-related diseases (cerebrovascular and cardiac ailments, cancer, arthritis, as well as chronic disorders (diabetes and mental derangement). The improved management of the foregoing problems leads to increases in life expectancy thereby making more people to live longer and up to a level that septuagenarians and octogenarians increasingly appear in the population. The third stage of the transitions identified by John R. Evans and colleagues around 1981 is characterised by supplementation of conventional thinking about diseases with increasing attention to health hazards arising from exposure of the population to disease-causing environments and social changes in the condition of the household, community, workplace, increasing absenteeism from work, alcoholism and drug abuse, violence (Baum and Tolbert, 1985:212).

Developing countries' experience with the epidemiological and demographic transitions

Scholars point out that the developing countries have been facing obstacles, which their developed countries counterparts did not face, in their demographic and epidemiological transitions. Declines in mortality (arising from advances in medicine generally and creation/use of vaccines in particular) and increases in life expectancy have occurred more rapidly in developing countries compared to the rates in the developed world and previously. This has engendered the prolongation of the period of population growth in some developing countries because of the simultaneous occurrence of slower decline in fertility and population growth arising from advancement in medicine and health care (i.e. the second stage of the demographic transition). Most developing countries have faced enormous challenges in their quest to manage the myriad of demands arising from the greater rapidity and simultaneity of population growth and declining mortality compared to their developed world counterparts. This is because the transitions (demographic and epidemiological) have occurred more rapidly recently than they did during the unfurling transitions previously in the developed countries of the present. Developing countries seem to present a Kaleidoscope-kind of mixture of transitions such as exhibition of features of the first stage of the transition in some areas, wherein rural and semi-urban poor strive to live out the transition from the first towards the second stage; and the manifestation of features of the second and third stages by urban populations. The budgetary and programme/project management systems of the health sector of most developing nations are therefore under immense pressure, if not overstretched, by increasing and unprecedented demands for services required to realise the more rapid epidemiological transition compared to (but occurring simultaneously with) the demographic transition. The supply of more sophisticated or advanced medical technologies, increased health consciousness fuelled by increasing information and communications technologies, seem to have heightened advocacy and demand for improved health care beyond the level of preparedness of available health, economic planning and management systems. These current and recent scenarios in developing countries contrast, almost sharply, with the situation in the developed countries during the hey-days of their demographic and epidemiological transitions (Baum & Tolbert, 1985).

Demographic-epidemiological transitions and economic growth in developing countries

It has been documented that high demographic rhythms and health care improvement in developing countries translated into increasing population of poor people who forfeit enjoyment of improved well-being but suffer low life quality. The socio-economic decline arising from rapid and prolonged population growth has been explained as follows:

i) Exacerbation of the hard choice between enjoying higher consumption (affluence) immediately and investing towards achieving higher consumption in the future. This refers to the large investments required for human capital and physical infrastructural development programmes that the increasing population demands.

ii) Dependence of developing economies on agriculture represents vulnerability and/or deficiency in economic development and poses challenges in terms of the appropriate kind of interaction between the burgeoning population and depleting natural resources. The rather rapid population growth frequently compels rural people to resort to crude agricultural systems/methods because of limited opportunities for transition into jobs in secondary (i.e. industrial and service establishments).

iii) Rapid population growth poses challenges to economic managements programmes aimed to adjust or transform existing systems. Developing countries experience of rapid urbanisation arising from rural-urban migration and natural increases has been well documented. The realisation of economic development is hampered by high incidence of diseases and malnutrition (i.e. features of some stages of the demographic and epidemiological transitions) lead to myriad of problems: low productivity of the workforce, impede learning and mental development (which in turn hamper the achievement of educational goals/objectives and productivity targets), usurp resources that could have been spent on health care; hamper cost-effective use of other resources (e.g. land, which are frequently rendered less profitable or productive because of diseases infestation). Social aspects of the rapid demographic epidemiological transitions (such as the perpetuation of the phenomena via traditional and cultural beliefs in and reverence of high fertility and the persistence of adverse consequences of high populations on scarce resources have been acknowledged) (Baum and Tolbert, 1985: 213-5). Some cultural practices and beliefs of households and communities (such as tolerance to unhygienic conditions) are held responsible for frequent spread of diseases such as epidemics of diseases arising from poor water and sanitation services (diarrhea, cholera and so forth) (Jenkins, 1999; Baum and Tolbert, 1985:214-5).

URBANISATION OF POVERTY GLOBALLY AND IN DEVELOPING COUNTRIES

What has become well documented as the "urbanisation of poverty" describes an observation by scholars concerning a global (but more severe in the developing world) increasing concentration of the poor in urban centres, and the intensifying negative externalities of the rather irreversible process of pauperisation of some strata of the urban population. Its irreversibility is illustrated by observations that millions of the urban poor have historically tended to get stuck or insist on continuing their quest for the opportunities usually thought to be promising in cities and towns irrespective of their painful failure to enjoy the "dream jobs" for prolonged periods. The increased consciousness of migrants of the wide disparity between the higher living standards in urban centres and the poverty usually afflicting their rural places of origins is held accountable for the insistence of the rural-urban migrants to remain in cities and towns. The globalisation of urban poverty or the view that the problem of urban poverty has become global and has surpassed the size and intensity of rural poverty in terms of the magnitude of the population afflicted by the scourge of poverty was traced to the declaration of the consummation of the phenomenon. Later studies reported that urban poverty surpassed that in rural areas of DCs (Ravallion, 2007; Piel, 1997). There has been increasing interest in scholarship aimed at understanding phenomenal urbanisation of poverty and formulation of methods of investigating the issues involved (Ravallion and Huppi, 1991).

Although recent reports on the urbanisation of global poverty provides new information on the magnitude of the problem within the context of globalisation, the persistence and prolonged history of poverty at national, and regional scales (i.e. including urban and rural areas) in SSA is so profusely documented and well known that the intensification of poverty in urban SSA must not be lost on the development policy makers by diverting attention to regions where the proportion of the poor is lesser. Additionally, most studies have been restricted to general investigations into a rather encompassing "welfare measures" (describing a bundle created from data on diverse attributes/variables of social and

economic conditions). Healthcare variables have largely been excluded from existing studies of welfare scenarios at global urban contexts (Ravallion, Chen and Sangraula, 2007).

HAZARDS, SQUALOR AND UNHEALTHY PHYSICAL ENVIRONMENT OF SLUMS

It has been shown that the residential and work environment of the urban poor is frequently hazardous, squalid and unhealthy. The abodes of the urban poor and their farmstead are mostly located on risky areas: steep, unstable hillsides, front sides of converted swamps or tidal flats. These problems have been/are being exacerbated by climate change – which is characterised by frequent extreme events (storms, flood, drought, etc.) that are disease-causing. In low latitude counters, vulnerability of the urban poor to flooding increases (Hardoy et. al., 2001; Stephens, Timaeus, Akerman, Avie, Mala, Campanerio, Doe, Lush, Tetteh, Harphan, 1994; Stephens, 1996). Increasing urban land surface modification from natural states which facilitate drainage of rain water via naturally occurring channels into natural reservoirs, into artificial and hard concrete/asphalted roads, pavements, corrugated iron roads and so forth have led to obstructions to both natural (streams and rivers) and constructed drains and culverts for conveying rain and flood waters out of heavily populated urban poor sectors (Soweto-on-Sea area near Port Elizabeth in South Africa and Alexandra in Johannesburg have been cited as illustrations of this urban poor environmental problem (Viljoen and Booysen, 2006). Based on ease studies of five African cities, Ian Douglas and four colleagues show how frequent flood waters transport various organic waste into residential areas of the urban poor in Lagos (Nigeria), Nairobi (Kenya), Maputo (Mozambique), Kampala (Uganda), and Accra (Ghana). (Douglas, Alam, Maghenda, McDonnel, McLean, Campbell, 2008:187-205).

ADVERSITIES OF LONDON CITY'S GREAT STINK (1850s)

The enormous damage arising from inadequacy of safe water and improved sanitation in urban centres leading to high disease burden and high mortality became publicly known about one and half centuries ago. Poor sanitation, use of contaminated water and failure to treat sewage that was discharged without treatment into River Thames caused the death of 30,000 people, who were afflicted with cholera epidemics in 1848 in London city and environs. The urban region was enveloped by malodorous air and filth that has been derisively described as "the great stink." Before John Snow discovered and explained the health problem of cholera epidemic in Broad Street, Soho sector of the city, medical orthodoxy during the tragic period attributed the scourge to the transmission of the disease through the air. Henry Whitehead, a clergyman undertook a campaign and advocacy to persuade the urban authorities to construct 1,240 – mile tunnels through which contaminated water was transported to treatment centres. These events and responses and measures led to drastic reductions in losses of lives as well as injuries arising from diseases affliction (Developments, 2009:25). Numerous diseases caused by inadequacy of improved water and sanitation have been documented. Joseph Jenkins shows that use of unsafe water and contact with places which are unsanitary and poor hygiene are closely associated with myriad of diseases that result from ingestion of pathogens by humans of faeces and urine. He showed that numerous (about 17 types) pathogens commonly contained in faeces and urine are classified into bacteria, worms, viruses and protozoa (Jenkins, 1999:147-174) citing Feachem et al. (1980).

CONTEXT FOR SUB-SAHARAN AFRICA'S URBAN SCENARIOS

Sub-Saharan Africa (SSA) has been widely known as one of the world's poorest regions in terms of the social, economic and environmental conditions it presents. SSA's gross domestic product (GDP) in 2002 was US$393,001 million (i.e. only 1.1% of the world's total US$35,065,010 million in 2002). The world's average GDP per capita PPP ($7,880) in 2002 by far exceeded that of SSA of only $1,779. SSA's poverty level was one of the most serious worldwide when its GDP per capita is compared to those of other regions: $35,138 for North America; $21,348 for Oceania; $18,097 for Europe; $5,934 for Middle East and North Africa; $4,684 for Asia (excluding Middle East); $7,347 for Central America-Caribbean; and $7,339 for South America. The proportion of the population of SSA living on less than $1/day and $2/day (based on surveys in 1987 – 2001) were 46.5 and 78.0%,

respectively, compared to 2.4 and 29.9% in the Middle East and North Africa. SSA also presented high and prevalent food insecurity, higher labour -workers/hectare- (1.02) compared to other regions (0.87 for the World). SSA received the largest quantity of cereals as food aid (3,145,000 metric tonnes) compared to other regions in 2002. Although most SSA did not report unemployment rates for 2000 – 2002, the only three that did presented some of the highest rates of unemployment world-wide (29.5 in the region's largest economy (South Africa) and 33.8 for (Namibia) were only equalled by Macedonia, FYR (31.9) while Algeria (one of the most prosperous African countries in North Africa) had 29.8. No other country in the world presented such alarming levels of unemployment (UNDP, 2005).

Figure 1. *Sub-Saharan Africa*
Source: Maps.com, 2003

Unemployment rates in SSA and elsewhere in Africa were likely to be the highest in the world due to low absorptive capacities of national economies, poor governance, prevalent injustice leading to conflicts and wars, poor employment information and management (including reporting) systems. Recent estimates show that between 1980 and 2000, urban population in SSA increased by nearly 4.7 per cent annually (United Nations, 2004) while the region's per capita gross domestic product (GDP) declined at the rate of 0.8 percent per annum (World Bank, 2003). Moreover, the region's total population has also been increasing at a rate higher than the economic growth rate.

METHODS AND DATA
To explain urban health and welfare in the wide regional ambit covering Sub-Saharan Africa (SSA), I analysed data from secondary sources because of the immensity of work required to generate data at such scale. The available secondary data on sanitation services and urban health indicators were mainly those usually reported by national agencies, researchers and published by international governmental and development organisations. Variables of the study include: urbanisation – represented by data on population increases within a quarter of a century (25 years) between 1980 and 2005; slumisation represented by data on the proportion (per cent of total national populations that

were living in urban centres in 2001). Poverty by national poverty rates were based on surveys in various years (between about 1990 and 2001) and ratios of urban/rural poverty lines for 1993; urban health-determining services by data on use of improved sanitation services by per cent of the population within the period 2000 and 2002 and use of improved water sources in 2002. Others are: health by adjusted life expectancy represented by years for 2000, welfare measures were as described by Ravallion et al.2007. We used data on malaria to show one out of several diseases afflicting urban Sub-Saharan Africa and to indicate the severity of the problem. Of course there are several other forms of related analysis which is beyond the scope of this study. Owing to the statutory allocation of public funding for such data/information production programmes, including recruitment and deployment of competent workers to implement them, the data take on qualities of reliability and suitability for analysis of the kind in this study. As noticeable from the foregoing, we did not adopt a uniform temporal scale in analysing data. Instead, we used a variable time scale because the specific temporal scale used was determined by availability of data.

SPATIO-TEMPORAL ANALYSIS

I applied the spatio-temporal analytical model in this study for several reasons. The progression of the phenomena of interest (urbanisation, slumisation, poverty, diseases affliction and so forth) are amenable to representation in geographic (spatial) and historical (or temporal) dimensions. The data on these variables were represented in national territorial (spatial) platforms and in years (time/temporal) units, which form two of the dimension of spatio-temporal analysis. The intensity (magnitude) of the phenomena as they vary over the spatial and temporal scales are also amenable to representation and analysis as the third dimension of the spatio-temporal analysis. Although formulated as separate concepts (i.e. time/history and space) by geographers and sociologists (Harvey, 1969), it has since been applied in combined form to analyse a wide range of problems by development and social science scholars. For example, it was recently applied to analyse offences perpetrated by ocean-going vessels (ships and barges) in Nigeria's territorial waters (Ingwe et al., 2009) while a variation of the method was used to expose defects in providing assistance for web-based (internet/information and communication technologies, ICT) educational services for secondary schools in Nigeria (Ingwe et al., 2008).

Principles of spatio-temporal analysis

Space is defined based on the Euclidean metric, i.e. using the Euclid as a measure of distance between two or more points on the Earth surface. Space has been profitably applied as a suitable "language" for describing the metrical characteristics of phenomena, events and objects since its inception or evolution. Its use involves the expression of various dimensions of phenomena, events and objects in space in the following axes: "x" and "y" as the distance separating two points, "z" as magnitude and "t" as time taken or duration (Harvey, 1969). Its use has facilitated description of the nature of empirical knowledge of things. The temporal/time concept provides a suitable framework for classifying empirical knowledge by assisting in explanation and understanding of nature's systems. Harvey argues that time facilitates the record and analysis of the history of things and the empirical knowledge of the things of interest to researchers and practitioners (Harvey, 1969, citing Hartshone, 1939). Time adds value, both on its own right or when used in combination with space, to form a good basis for creating social sciences theory. It accomplishes this by providing a basic framework on which variables of interest to the researcher can be analysed. Moreover, time provides the bound for delineating the variables for investigation. It forms a background against which shifting patterns of things (e.g. occurrence of events, human behavioural changes etc.) express over space and time. Temporal analysis has naturally been strongly connected to history (Harvey, 1969).

FINDINGS/DISCUSSION

Rapid rates of national population growth and urbanisation in Sub-Saharan Africa within a quarter of a century (1980-2005) were on average of 93.8% - range of population growth was 90.5 percentage points with the lowest and highest rates of change being: 40% (Lesotho) and 130.5%

(Niger), respectively. The proportion of national populations that lived in urban areas in SSA increased rapidly within ten years (1990-2000), from 28% of the total population in 1990 to 34% in 2000 - six percentage points increase during that decade. Nearly all SSA member States experienced urban population increases -1% (Gambia, Lesotho, and Uganda) to 14% (Mauritania) (range: 13% points). Only Zambia experienced urban population decline of minus four percent during the decade. The average slumisation rate (magnitude of urban populations dwelling in slums or urban sectors presenting squalor, inadequacy of infrastructure/services: improved water/sanitation, energy, and so forth) in SSA was as high (73%) in 2001 (range: 96%) with lowest and highest proportions being 3% (Zimbabwe) and 99% (Chad and Ethiopia).

Use of improved water and sanitation services in SSA was poor. Improved sanitation declined from 72% in 2000 to 55% in 2002: a decrease of 17 percentage points within three years! Nearly ubiquitously, individual countries experienced sudden declines in improved sanitation use. The decline was considerable (-69% points) in Guinea. It remained unchanged in Congo, Equatorial Guinea and Ghana. Improvements were rare; in order of magnitude, they were 44% in Rwanda (attributable to foreign aid following the genocide/ethnic cleansing of the 1990s), 20% in Mauritania, 12% in Benin and so forth. Use of improved water sources in SSA was of 80% in 2002. In individual countries, they were: 32% in Somalia, 45% (Equatorial Guinea), 100% (Botswana and Zimbabwe).

Table 1. *Demographic-economic characteristics in SSA*

Country	Total population estimates/ projections ('000s) 2005	Total population projections ('000s) 1980	Total population change (2005-1980)	Population change: 1980 and 2005 (%)	Urban/ rural poverty lines ratios (1993)
Angola	14,533	7,048	7,485	106.2%	-
Benin	7,103	3459	3644	105.3	1.79
Botswana	1,801	987	814	82.5	1.45
Burkina Faso	13,798	6820	6978	102.3	1.45
Burundi	7,319	4130	3189	77.2	1.45
Cameroon	16,564	8754	7810	89.2	1.45
Central African Republic	3,962	2306	1656	71.8	-
Chad	9,117	4505	4612	102.4	-
Congo	3,921	1804	2117	117.4	-
Congo, Democratic Republic	56,079	27,909	28170	100.9	-
Côte d'Ivoire	17,165	8427	8738	103.7	1.25
Equatorial Guinea	521	219	302	1379	-
Eritrea	4,456	2381	2075	87.1	-
Ethiopia	74,189	35,688	38501	107.9	1.46
Gabon	1,375	659	680	97.8	-
Gambia	1,499	652	847	129.9	1.26
Ghana	21,833	11,043	11790	97.7	1.35
Guinea	8,788	4688	4100	87.5	-
Guinea Bissau	1,584	793	791	99.7	-
Kenya	32,849	16,368	16481	100.7	1.45
Lesotho	1,797	1277	520	40.7	1.45
Liberia	3,603	18, 69	1734	92.8	-

Madagascar	18,409	9048	9361	103.5	1.14
Malawi	12,572	6183	6389	103.3	1.45
Mali	13,829	7044	6785	96.3	1.45
Mauritania	3,069	1609	1460	90.7	1.10
Mozambique	19,495	12084	7411	61.3	1.67
Namibia	2,032	1018	1014	99.6	-
Niger	12,873	5586	7287	130.5	1.50
Nigeria	130,236	64,325	65911	102.5	1.05
Rwanda	8,607	5157	3450	66.9	1.45
Senegal	10,587	5538	5049	91.2	1.63
Sierra Leone	5,340	3239	2101	64.9	-
Somalia	10,742	6487	4255	65.6	-
South Africa	45,323	29,140	16,183	55.5	1.45
Sudan	35,040	19387	15653	80.7	-
Tanzania, United Republic of	38,365	18,838	19527	103.7	1.21
Togo	5,129	2519	2610	103.6	-
Uganda	27,623	12,465	15158	121.6	1.10
Zambia	11,043	5,977	5066	84.8	1.45
Zimbabwe	12,963	7,226	5737	79.4	-
Cape Verde	NA	NA	NA	NA	1.45
Swaziland	NA	NA	NA	NA	1.45
SSA/Total	**732,512**	**377,926**	**354586**	**93.8**	**1.30**

Notes: Ratios of urban and rural poverty lines and total were computed as population weighted averages
1. Population estimates and projections were derived from the United Nations population division, UNCF, UNHCR, Global IDP project, and UNESCO and published by WRI, 2005:177.
2. Ravallion et al., 2007: for details on computation of Ratio of urban/rural poverty lines, 1993.

National poverty rates were high and widespread in SSA. The ratios of urban/rural poverty lines in 1993 ranged from 1.05 points in Nigeria to 1.79 in Benin Republic. The national poverty rate was higher than 50% in about seven countries and might have been so in more countries were it not for the large number of countries for which reports were not made. The health adjusted life expectancy for the region was rather low (38.8 years only in 2000). It was less than 40 years in as much as 24 Sub-Saharan African countries. This is probably followed by the rather high burden of disease affliction in SSA. Disease burden in SSA was ubiquitously high. Reported cases of malaria affliction per 100,000 inhabitants were higher than 10,000 in about eleven countries (Ravallion, 2007).

ACCOUNTING FOR SSA'S POOR URBAN HEALTH
The total spending on national health sectors in Sub-Saharan Africa both by governments and other sources (donations and so forth) have been low: with an average healthcare expenditure per capita (in US of 85 for total and 36 for government spending in the region, were the lowest worldwide) and a mere 1.8% and 1.7% of the life expectancy at birth for Sub-Saharan Africa in 2000-2005 was only 49 years compared to 77.3 years for North Americans, namely, that of the former was only 60% approximately of the latter's (UNDP, UNEP, World Bank and WRI, 2005:181).

Table 2: *Human health and welfare conditions in sub-Saharan Africa*

Country	Urban population (000 years) (%)	Urban population (% of total 2000/1990)	Health adjusted life expectancy (years) 2000	Access to improved sanitation (% of population 2002 (urban)	Access to improved sanitation (% of population) urban 2000	Change (% points) in access to improved sanitation: 2002-2000	Use of improved water source: urban (% of population)	National poverty rates (urban): % and survey year	% of urban population living in slum conditions 2001	Reported cases of malaria affliction per 100,000 population 1998-2001
Angola	7	33/26	36.9	70	56	-14	70	NA	83	6,594
Benin	7	42/35	42.5	46	58	12	79	NA	84	11,545
Botswana	8	50/42	37.3	88	57	-31	100	NA	61	2,836
Burkina Faso	3	17/14	34.8	39	45	6	82	16.5(1998)	77	619
Burundi	3	9/6	33.4	68	47	-21	90	43.0(1990)	66	43,505
Cameroon	9	49/40	40.4	92	63	-29	84	22.1(2001)	67	2,900
Central African Republic	3	41/38	34.1	38	47	9	93	-	92	-
Chad	3	24/21	39.3	81	30	-51	40	63.0(1995-96)	99	5,648
Congo	4	52/48	42.6	14	14	0	72	-NA	90	5880
Congo Democratic Republic	2	30/28	34.4	54	43	-11	83	-NA	50	14414
Côte d'Ivoire	4	44/40	39.0	71	61	-10		-NA	68	24496
Equatorial Guinea	10	45/35	44.8	60	60	0	45	-NA	87	
Eritrea	3	19/16	41.0	66	34	-32	72	-NA	70	55,48
Ethiopia	2	15/13	35.4	33	19	-14	81	37.0(1999-00)	99	1621
Gabon	13	81/68	46.6	55	37	-18	95	-NA	66	2148
Gambia	1	26/25	46.9	41	72	31	95	48.0(1998)	67	10,096
Ghana	7	44/37	46.7	74	74	0	93	18.6(1998)	70	17,143
Guinea	7	33/26	40.3	94	25	-69	78	NA	72	75,386
Guinea Bissau	8	32/24	36.6	95	57	-38	79	NA	93	2,421
Kenya	11	36/25	40.7	96	56	-40	89	49.0	71	545
Lesotho	1	18/17	35.3	72	61	-11	88	NA	57	-
Liberia	3	45/42	37.8	70	49	-21	72	NA	56	26,699

Madagascar	2	26/24	42.9	96	49	-47	75	52.1	93	-
Malawi	3	15/12	30.9	93	66	-27	96	54.9	91	20,080
Mali	6	30/24	34.5	44	59	15	76	30.1	93	741
Mauritania	14	58/44	41.5	44	64	20	63	25.4	94	9,724
Mozambique	9	32/23	31.3	68	51	-17	76	62.0	94	19,842
Namibia	4	31/27	35.6	96	66	-30	98	-NA	38	1,502
Niger	5	21/16	33.1	79	43	-36	80	52.0	96	1693
Nigeria	9	44/35	41.6	66	48	-18	72	30.4	79	30(?)
Rwanda	9	14/5	31.9	12	56	44	92	-NA	88	6510
Senegal	7	47/40	44.9	94	70	-24	90	-NA	76	11,925
Sierra Leone	7	37/30	29.5	88	53	-35	75	53.0	96	8,943
Somalia	4	33/29	35.1	-	47	47(NA)	32	-NA	97	118
South Africa	7	56/49	43.2	93	86	-7	98	-NA	33	61
Sudan	9	36/27	45.1	87	50	-37	78	-NA	86	12,530
Tanzania, United Republic	10	32/22	38.1	99	54	-45	92	-NA	92	1,207
Togo	4	33/29	42.7	69	71	2	80	-NA	81	9,273
Uganda	1	12/11	35/7	93	53	-40	87	-NA	93	46
Zambia	-4	35/39	33.0	99	68	-31	90	56.0	74	18,877
Zimbabwe	5	34/29	38.8	71	69	-2	100	7.9	3	1,410
Sub-Saharan Africa	**6**	**34/28**	**38.8**	**72**	**55**	**-17**	**82**	**-**	**73**	**-**

Notes/sources: WRI, UNDP, UNEP, & World Bank (2005: 177); (a) Health adjusted life expectancy (HALE) describes the number of years that a newborn can expect to live in full health based on current rates of ill-health and mortality (WRI,UNDP, UNEP, & World Bank, 2003:279); (b) from UN Population Division, WHO, UNCF, and Joint UN Programme on HIV/AIDS. Ratios of urban and rural poverty lines and total were computed as population-weighted averages; (c) Population estimates and projections (Ravalion, et al, 2007 citing UNHCR, Global IDP project, & WRI, 2005: 177).

Urban poverty in SSA and the rest of developing countries has been linked to the inability of urban managements to generate and apply innovative methods and strategies of taxing property owners, commercial establishments and generate income from multiple sources. However, abundant reports demonstrate how numerous urban/local governments have adopted/applied new robust technologies such as geographic information sciences/technologies to develop and apply cadastral mapping that is capable of representing various segments of urban sectors including the spectrum of different socio-economic zones by promoting transparency in assessing residential areas and landed property ownership structure by type/grade across particular urban landscapes, thereby improving taxation of urban dwellers and businesses. Several cadastral mapping programmes/projects in urban centres of both developing countries (e.g. Paraguayan municipalities), as well as developed countries have proven to be valuable in informing urban financial managers and other categories of functionaries in planning/managing revenue generation drives (Salinas, 1995: 13).

CONCLUSION

Health conditions in urban Sub-Saharan Africa has historically been poor within the past years as reports by the UNDPs human development indices (HDI) have always shown. This has been confirmed in this study as a consequence of poor social, economic and environmental factors: widespread, or nearly ubiquitous in the region have been serious and persistent poverty, gross inadequacy of improved water sources and sanitation services, and high proportion of slum living in the total population of people living in urban Sub-Saharan Africa. The consequence is poor urban health as reflected in the rather low health adjusted life expectancy and related factors. We conclude that the persistence of high mortality and low life expectancy and high burden of diseases in Sub-Saharan Africa is reminiscent of the dark era of the "great stink" of the 1850s in the London urban city region when and where the contamination of River Thames (one of the largest drainage basins of the urban region) by untreated sewage caused high disease burdens (especially cholera and others related to high content of faeces and urine). This unsanitary urban environment and cholera epidemic was discredit with causing the death of as much as 30,000 people in 1848.

RECOMMENDATIONS

I recommend governments at national, sub-national levels, especially local councils and municipalities in Sub-Saharan Africa to learn from and emulate the construction of tunnels for transporting untreated sewage away from London city to distant treatment depots, thereby reducing indices of diseases and mortality. This requirement deserves consideration as urgent and imperative. Moreover, the Sub-Saharan African urban management of today has more than the solutions of the 1840s and 1850s to learn from: there are currently available a wide range or innovations and technologies which have been implemented for improving urban environmental sanitation and safe water and sanitation services delivery in various parts of the world that could be adopted or implemented in urban centres of Sub-Saharan Africa. The financial circumstances of urban areas and Sub-Saharan Africa is the consequence of the failure of the urban managements to revolutionise internal revenue generation through rigorous application of geospatial information systems and technologies that have been applied to improve or increase urban revenue generation in the urban centres of the advanced countries. There is need to deal with the problem of discriminatory tax collection involving the exclusion of the power elite from tax payment by politicians in local council and municipalities as a way of securing their re-election into public offices. Improved revenue generation in urban areas represents a viable means of increasing investment into urban healthcare in Sub-Saharan Africa. Information and knowledge about relationships among urban revenue generation and urban healthcare in individual urban centres in the region are required for improving policy.

ACKNOWLEDGEMENT

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