Climate Change: an Urban Perspective

Study completed for Urban Landmark

By

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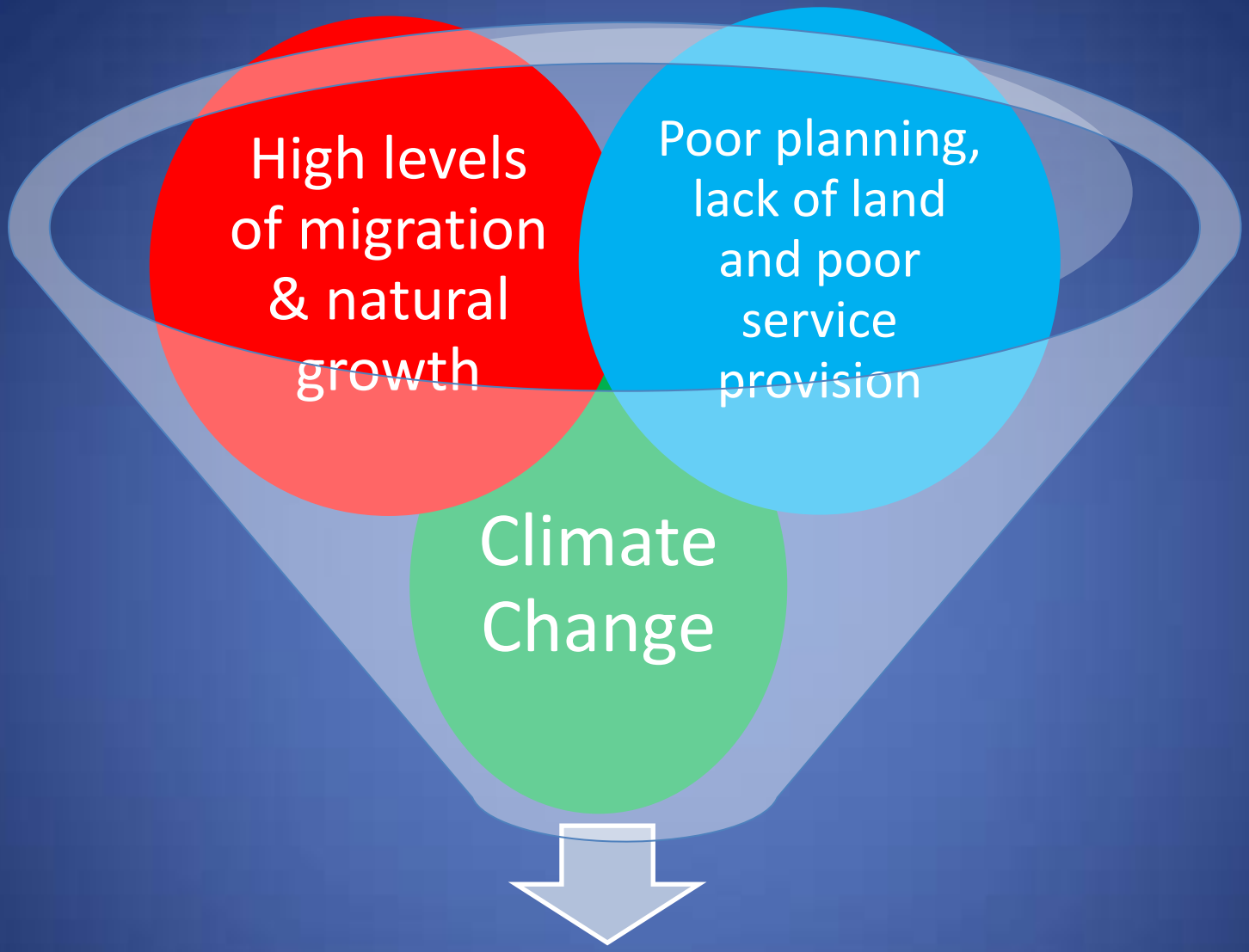
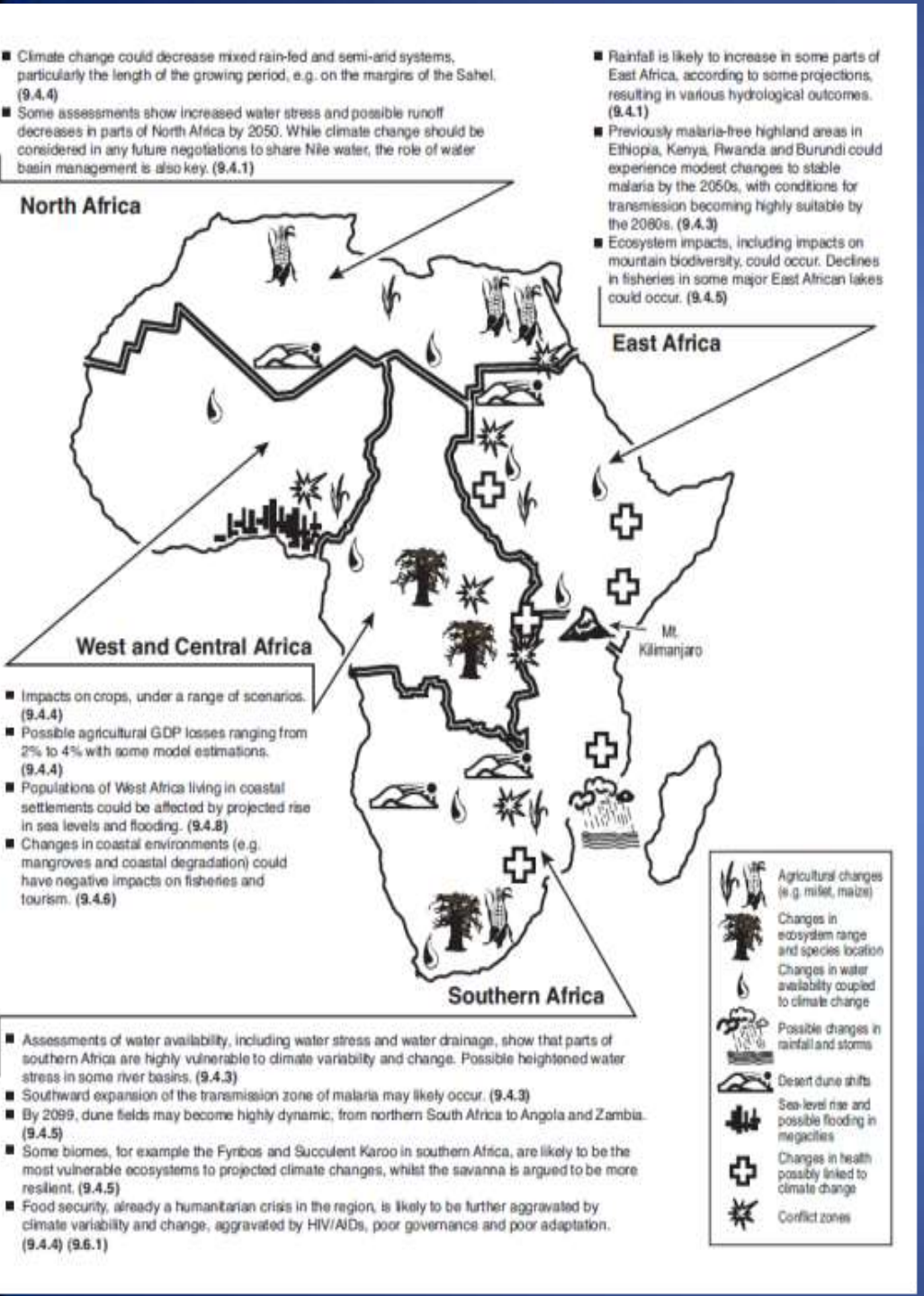


Further marginalisation and increased vulnerability of poorer and marginalised households

Climate Changes

- The average global surface temperature has increased by at least 2ºC to 2.4ºC since the Industrial Revolution.
- By the end of the century surface temperature will go up by 5.8ºC
- Sea levels will rise by an estimated 60cm, resulting in flooding and the salinisation of fresh water aquifers.
- Precipitation patterns will change so that some areas will receive large increases whilst other areas will become hotter and drier.
- Most importantly for urban areas, there will be an increase in the number and severity of certain types of “disasters”, such as tropical cyclones, storms, floods and heat waves



SADC:

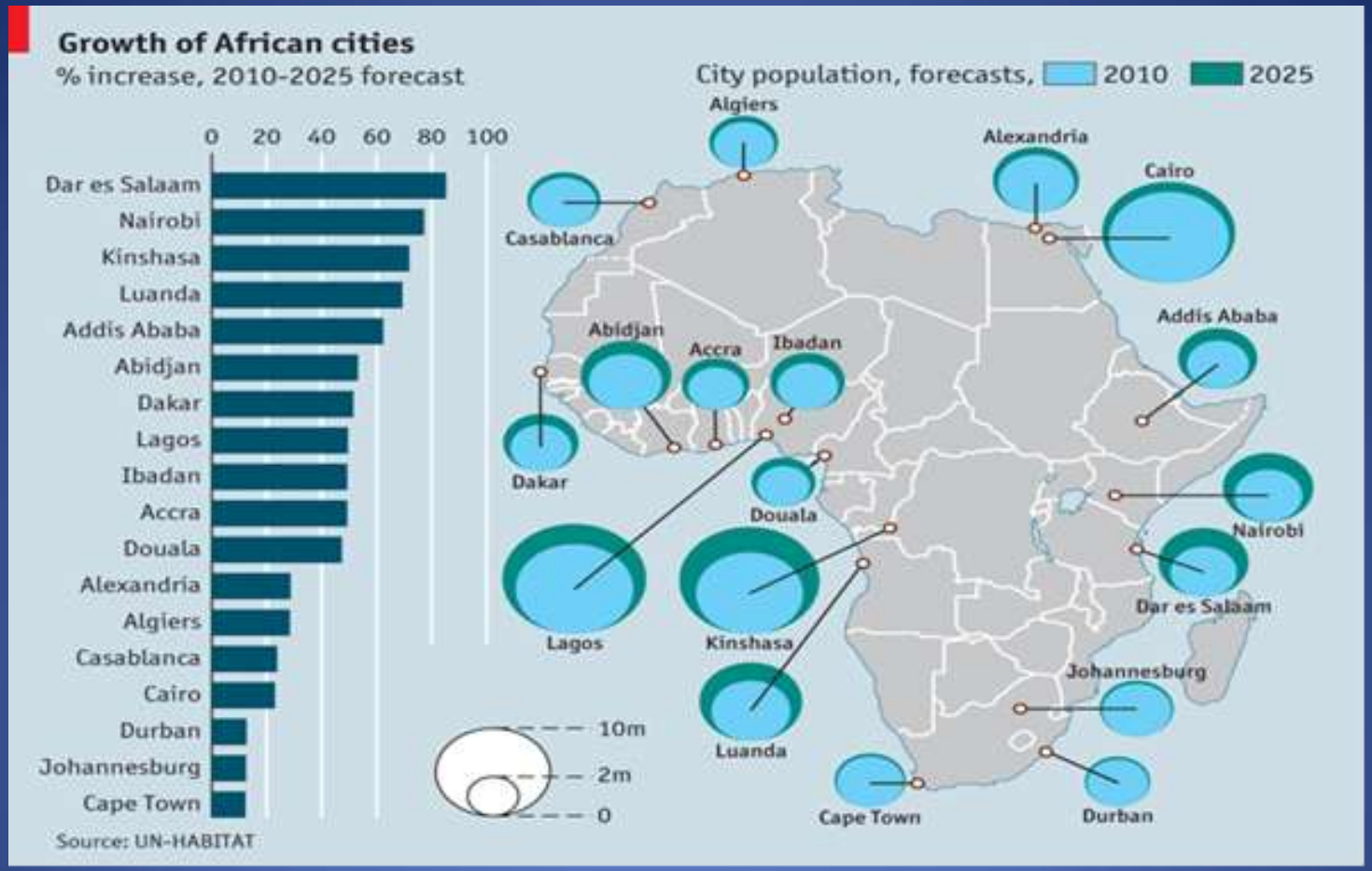
- Warmer during the summer and drier all year round.
- Changes in rain and temperature alter the distribution of disease vectors, e.g. malaria.
- Moderate increases in GHG concentrations by mid-century = coast warmer by around 1-2°C, & interior by 2-3°C.
- Precipitation patterns and rates more difficult to measure & there is uncertainty at present about these changes. This is significant as "*Water is arguably the primary medium through which climate change impacts will be felt... many of South African ecosystems are climate- and water-dependent*" (DoEA, 2011:v).

Urban Growth

2008 change in world population from majority rural to majority urban. It is estimated that the urban population in the developing world is growing daily by 180 000 people and by 2030 there will be 2 billion new urban dwellers in developing countries (GTZ, n.d.).

By 2030 Africa, the world's least urbanised continent, will have over half of its population living in cities (IPCC, 2007) most of whom will be living in small (less than half a million) and medium (between 1-5 million people) cities

	Percentage urban				Percent of the world's urban population living in the region				Percent of urban population in different size-class of urban centre, 2000				
Year	1950	1975	2000	2030*	1950	1975	2000	2030*	Under 0.5 m	0.5-1 m	1-5 m	5-10 m	10 m +
Northern America	63.9	73.9	79.1	86.7	15.0	11.9	8.8	7.1	37.4	11.0	34.3	5.4	11.9
Latin America and the Caribbean	42.0	61.2	75.4	84.3	9.6	13.0	13.9	12.4	49.8	9.0	21.7	4.9	14.7
Oceania	62.0	71.5	70.5	73.8	1.1	1.0	0.8	0.6	41.9	0	58.1	0	0
Europe	50.5	67.9	71.7	78.3	37.8	29.2	18.4	11.1	67.8	9.8	15.1	5.4	1.9
Asia	16.8	24.0	37.1	54.1	32.0	37.9	47.9	53.7	49.0	10.0	22.6	8.8	9.7
Africa	14.7	25.4	36.2	50.7	4.5	7.0	10.3	15.1	60.2	9.6	22.1	4.6	3.5
WORLD	29.0	37.2	46.8	59.9	100	100	100	100	52.6	9.8	22.4	6.8	8.4



Hyper-urbanisation is however predicted to eventually slow down and Un-Habitat (2010) projects that in sub-Saharan Africa, urbanisation rates will slow down, from 9 per cent rate in 2000/10 to 5.7 per cent during the 2040/50 decade.

Migration

- Multi-nodal households
- Circular Migration
- Non-linear Migration
- Social Safety net/Retirement/retrenchment/health
- “Environmental refugees”

Addressing urbanisation

- UN-Habitat (2010) estimates that 70% of the African urban population or approximately 330 million people are living in slums.
- 4/10 non-permanent houses in the developing world located in areas threatened by floods, landslides etc and close to noxious industries, sewerage farms or landfills.
- In 2005, an estimated 934-million people lived without secure tenure in informal settlements in developing countries, will increase to 1.5-billion by 2020

Contributors to Vulnerability

Well located Land

- High barriers to entry: high costs/lack of access to credit/ negotiating the system
- Marginal land is easier/cheaper to access

Lack of secure tenure

- Outside of the formal/official system
- Refusal of state to acknowledge legitimacy of these settlements

Lack of services

- Poorly planned/laid out
- Lack of infrastructure/amenities/facilities

Factors Increasing Vulnerability

Informal communities are not homogenous and there are factors which make some people more vulnerable:

- Age
- Gender
- Homelessness/vagrancy
- Migrants
- Poverty
- Assets

Urban Vulnerability/Climate change Nexus

Africa is the continent, which will suffer most from climate change, and its urban population is rated as amongst the most vulnerable in the world. This is due to the "multiple stresses" which the continent faces, including:

- Endemic poverty (45% of the population of SADC countries live in situations of monetary and resource scarcity),
- problematic governance and institutional issues and high rates of corruption;
- limited access to capital;
- Large numbers of disasters,
- epidemics and conflicts,
- and increasing urbanisation rates

- Not only across Africa but *within* the cities of Africa, there will be a highly differential impact, whereby the poorest will be least able to cope with the climate changes and the most affected

- Poor Quality housing
- Poor sanitation
- Lack of services i.e. water/electricity
- Lack of planning /layout
- Lack of secure tenure

- Infant and child mortality = 5-20 X worse
- Higher burden of infectious diseases
- Fires, accidents, poisonings, breathing problems
- Difficulty in access by emergency vehicles/services
- Inability to make certain claims on the state/easily relocated

CC exacerbates all vulnerabilities

Within cities, the effects will be greater for more vulnerable groups and individuals e.g.:

- Drier conditions increase environmental refugees, conflicts over water, access to water
- Increased temperature increase “heat island” effects making some parts of the city hotter and more polluted
- Decreased asset base
- Those already affected by HIV/Aids

Box 1: Why are Women More Vulnerable during Disasters?

A report on the circumstances of women during and after the 2004 Tsunami has shown the disproportionate impact that the event had on women in the affected countries. The reports states that:

"…**in Aceh, India and Sri Lanka more women died in the tsunami then men, almost 80% of the dead are women.** The tsunami has not only killed more women it has produced some very **gender-specific after shocks,** ranging from women giving birth in unsafe conditions to increased cases of rape and abuse. In Sri Lanka, dead bodies were sexually abused and **women were dragged out of the rushing water and raped as payment for being saved**. In Thailand, women are discriminated even in death: the government assistance for funerals provided twice as much money for a man's death than for a woman's". To a large extent the reasons such abuses occur during disasters and women have higher numbers of deaths are **due to the pre-existing conditions of women in these countries** i.e. lack of gender rights, access to safe settlements and their vastly prejudiced role within society that allows such treatment to take place.

Addressing Climate Change

Two key concepts

- **Mitigation** is underpinned by the idea that it is possible to take on measures and initiatives to reduce GHG emissions and enhance carbon and other GHG sinks
- **Adaptation** looks at what measures can be taken (both reactive and anticipatory) to reduce *vulnerability to the effects* of climate change (IPPCC Glossary, n.d.).
- In urban context often quite blurred.

Compact & Sustainable Cities

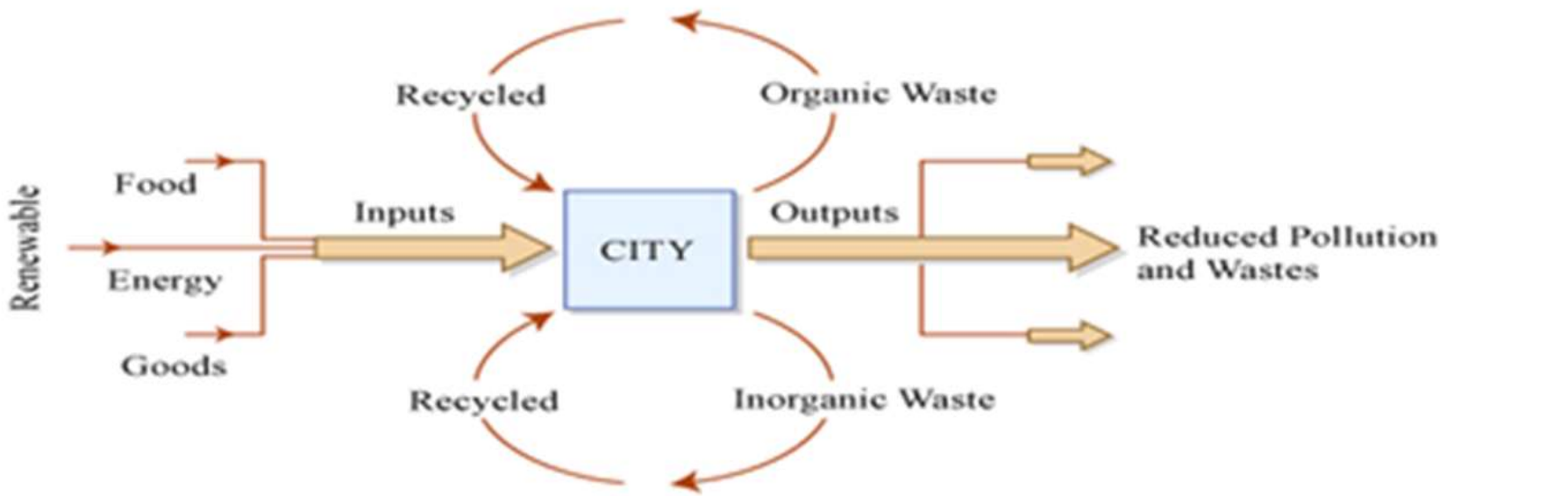
Global average for consumption is between 2.63 hectares per capita per year. The problem is that only 1.8 ha are realistic.

Sprawled cities:

- Consume large tracts of land,
- Have higher transport costs,
- Higher pollution,
- Greater waste of power and water.
- Urban systems become less and less efficient the further out they have to reach.
- The wide dispersion of a city has been directly attributed to the use of oil as a cheap energy source, which in turn significantly contributes to GHG production. ally available and sustainable

Solution: Linear v/s Circular Metabolisms

A) 'Linear metabolism' cities (consume and pollute at a high rate)



B) 'Circular metabolism' cities (minimise new inputs and maximise recycling)

Compact Cities

- Compact cities, promote higher densities, less travel, less land used for urban purposes, and greater efficiency, and are thus seen as the antidote to the dangers of sprawl and their associated lack of sustainability.
- UN-Habitat's 2009 Report on Human Settlements, "Planning Sustainable Cities", "Strategic spatial plans linked to infrastructure development can promote more compact forms of urban expansion focused around public transport. In this context, linking major infrastructure investment projects and mega-projects to strategic planning is crucial. An infrastructure plan is a key element of such strategic spatial plans. In this, transport–land-use links are the most important ones and should take precedence, while other forms of infrastructure, including water and sanitation trunk infrastructure, can follow" (Un-Habitat, 2009: vii).
- Or as Glaeser puts it:

"To save the planet build more skyscrapers".

Resilient City

- Is an integrated or eco-system approach, all aspects of the city, including governance, infrastructure development and maintenance, social relations and disaster management, are treated as inter-related and equally important
- So that a city or municipality has the capacity to maintain core functions, especially for vulnerable populations, in the face of hazards, threats and impacts.
- Require a capacity to anticipate climate change and plan necessary interventions.
- Has a range of spin-offs or co-benefits such as poverty alleviation and better governance.

The Resilient City Approach

Redundancy. When one system is disrupted, another system can provide similar services.

Flexibility. The failure of a single system causes a minimal impact to other systems.

Capacity to reorganize. Climate change will result in changing conditions – and resilient cities are able to introduce new structures, organizations and land-use measures in response to this.

Capacity to learn. This ensures that future decisions are made on the basis of relevant information and appropriate forethought (ISET, 2009)

Conclusions

- Climate change will make the worse off…far worse off.
- Africa will be hardest hit and under current conditions least able to resist.
- World is moving more and more towards an urban future and the urban poor may well feel the brunt of it.
- Need to understand nature of urbanisation and migration.
- Mitigation and adaptation strategies need to address existing or baseline urban vulnerabilities.
- Differential approaches are needed due to heterogeneous nature of urban vulnerability.
- Considerations of adaptation and mitigation for before, during, after and long after.

Many thanks!

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