

## Sectors and Associated Risks

Climate Change is happening and is projected to affect the infrastructure and services offered by local governments in their day-to-day operations. This will impact on communities and their livelihoods. The associated risks will have severe implications on sectors and services such as health, energy, livelihoods, transport and water.

Enclosed are some examples.

## Impact of Climate Change on Services:

### Rainfall and Precipitation:

#### 1. Flooding Affecting Health

##### Direct risks

- Drowning (young, elderly & sick most vulnerable)
- Erosion of infrastructure & buildings (i.e. medical facilities)

##### Indirect risks

- Waterborne diseases (malaria, cholera, meningitis, bilharzias)
- Community displacement into areas without adequate water & sanitation resulting in unhygienic conditions
- Electrocution through damaged live wires in flooded areas

**Case study:** During February & March 2010, hundreds of family's were evacuated in **Maputo**, Mozambique, due to intense downpours associated with seasonal rains, resulting in catastrophic flash floods which drowned six people. The resulting stagnant water, amplified a cholera outbreak killing 42 & infecting app. 2600 people. However the worst flood in recorded memory in Maputo was in February 2000 where app. 700 people were killed and a half a million were displaced.



#### 2. Drought Affecting Energy

- Insecurity** around hydropower as an electricity source
- Increased demand** for energy to pump & distribute water from ground water supplies (boreholes & aquifers)
- Dehydration** due to drought impacting on health & livelihoods

**Case study:** In the last decade, electricity cuts have become more frequent in **Dar es Salaam**, Tanzania, due to prolonged droughts and reduced water supply for generating hydro electricity. In 2003 & 2006, droughts caused negative economic impacts (reduction of agricultural produce) and disruptions of social services (competition for water & land). Since 2004, projects investigating and piloting sustainable energy methods and technologies have been established, to assist in the supply of sustainable energy during droughts. **Examples of sustainable energy projects:**



**Solar cookers, Solar fruit dryers, Solar stills & Solar power**

#### 3. Temperatures Affecting Sustainable Livelihoods

- **Exposure to extreme highs & lows**
  - Reduced comfort & use of public transport e.g. trains
  - Increased vulnerability i.e. informal housing often with no insulation (elderly, young & sick most vulnerable)
  - Reduced shelf life of fresh produce i.e. fruit & meats
- **Impacts on infrastructure**
  - Melting of bitumen road surfaces resulting in limited access to markets/work & school
- **Increasing electricity demands**
  - Overloading distribution networks (resulting in electricity blackouts)
  - Increased emissions (leading to respiratory issues)
- **Increase wildfires due to higher temperatures & longer dry spells**
  - Impact on health (smoke inhalation)
  - Evacuation/Displacement of communities
  - Work & school days lost

**Case study:** February & March 2009 was a scorcher for **Cape Town**, South Africa. Temperatures soared to 35-40 degrees Celsius (95-100°F). Dry conditions, often characterised by strong winds, sparked a fire on the banks of Table Mountain forcing many people to evacuate. Thick smoke was cast over the city resulting in cases of smoke inhalation and hospitalisation. Concurrent with this heat wave, there were sites that experienced melting of road surface bitumen affecting transportation routes and access to work & markets. These incidences cause discomfort in public transport and affect commuters quality of life.



#### 4. Wind Affecting Transport

Increased wind speeds & storms impact on transport systems:

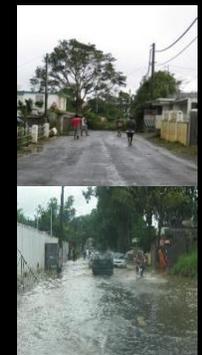
##### Direct risks:

- Wind damage to infrastructure
- Safety hazard for large vehicles carrying passengers & goods
- Air & sea transport

##### Indirect risks:

- Impact on fuel usage
- Increased blockage of roads from debris
- Waste clearing operations

**Case study:** In 2002 Mauritius experienced the most violent cyclone since 1994 with winds up to 200km per hour. Cyclone Dina caused widespread destruction of shelter and infrastructure, killing four people. Roads were cut off & electricity and water networks were severely damaged, implicating on the capital city of **Port Louis**. The total cost amounted to several million Euros and it took years for infrastructure to be repaired and rebuilt.



## 5. Sea Level Rise and Water & Sanitation

### • Erosion

- Coastal infrastructure & services
- Natural buffer zones (i.e. Coastal dune systems and wetlands)

### • Inundation (temporary & permanent, short & longer term respectively)

- Salt water intrusion into fresh water systems impacting on biodiversity, livestock & human populations (see case study)
- Flooding economic, industrial & residential areas

### • Knock-on impacts on other sectors

- Health: sanitation often leading to health concerns
- Transport: damage to infrastructure (i.e. roads)
- Energy: affecting distribution networks
- Livelihoods: loss of land fit for agriculture

Case study: **Walvis Bay**, Namibia, is a low lying economic port town which has been identified as being threatened by sea storm surges and rising mean sea levels. Coastal aquifers, which serve as the main source of fresh, potable water supplies to human populations along the Namibian coast are therefore susceptible to inundation by salt water and thus, salt water intrusion. Salt water intrusion into the main freshwater supplies may lead to saline water being pumped through the bulk-water infrastructure, rendering supplies that are saline and thus unsuitable for drinking, cooking and sanitation purposes. It is anticipated that poorer communities, due to their limited choices, will be the worst affected.



## What is ICLEI – Local Governments for Sustainability?

An **association** of local governments that represents the interests of local authorities within the United Nations and at international policy forums.

A **movement** driving positive change on a global scale through programs and campaigns on local sustainability. A **resource** centre offering information, tools, networking, training and consulting services.

## ICLEI – Local Governments for Sustainability - Africa

ICLEI Africa, the regional office for ICLEI, based in Cape Town, South Africa, collaborates closely with the ICLEI network and other regional offices around the world in sharing tools, materials, strategies and good practices, specifically designed and implemented at the local level.

## History of ICLEI – Local Governments for Sustainability

ICLEI was created in 1990, with the idea that a single municipality can have a significant impact. On a global scale, the cumulative effect of concerted local action can be profound! Over 1100 members in 68 countries prove that local governments worldwide take responsibility in creating a sustainable society.

*“The large part of the fight against climate change will be won through actions by citizens, businesses, and local governments in the towns and cities that you represent”*

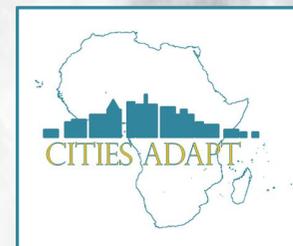
*Yvo de Boer: Executive Secretary, United Nations Framework Convention on Climate Change*

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## Sub-Saharan African Cities

A Five-City Network to Pioneer Climate Adaptation through Participatory Research and Local Action

## Risk Assessment



An initiative of ICLEI  
– Local Governments  
for Sustainability –  
Africa



Local Solutions to Global Challenges  
Connecting Leaders - Accelerating Action - Pioneering Solutions

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