

DARAJA

DEVELOPING RISK AWARENESS
THROUGH JOINT ACTION

31ST AUGUST 2018

DAR ES SALAAM, TANZANIA



What are the Challenges?

IN CLIMATE SERVICES SUPPORTING RESIDENTS OF INFORMAL SETTLEMENTS

Understanding Informal Settlements in Dar es Salaam and Nairobi



Kibera (Kipkemboi, P. 2015) (Top left), Huruma Estate (Softkenya, 2018) (left bottom), Maongo Juu, (Ohler, S. 2016) (Right top), Tandale Sokoni, (Misilanga, M. 2018) (Right bottom)

Basic Facts about Nairobi and Dar and Informal Settlements

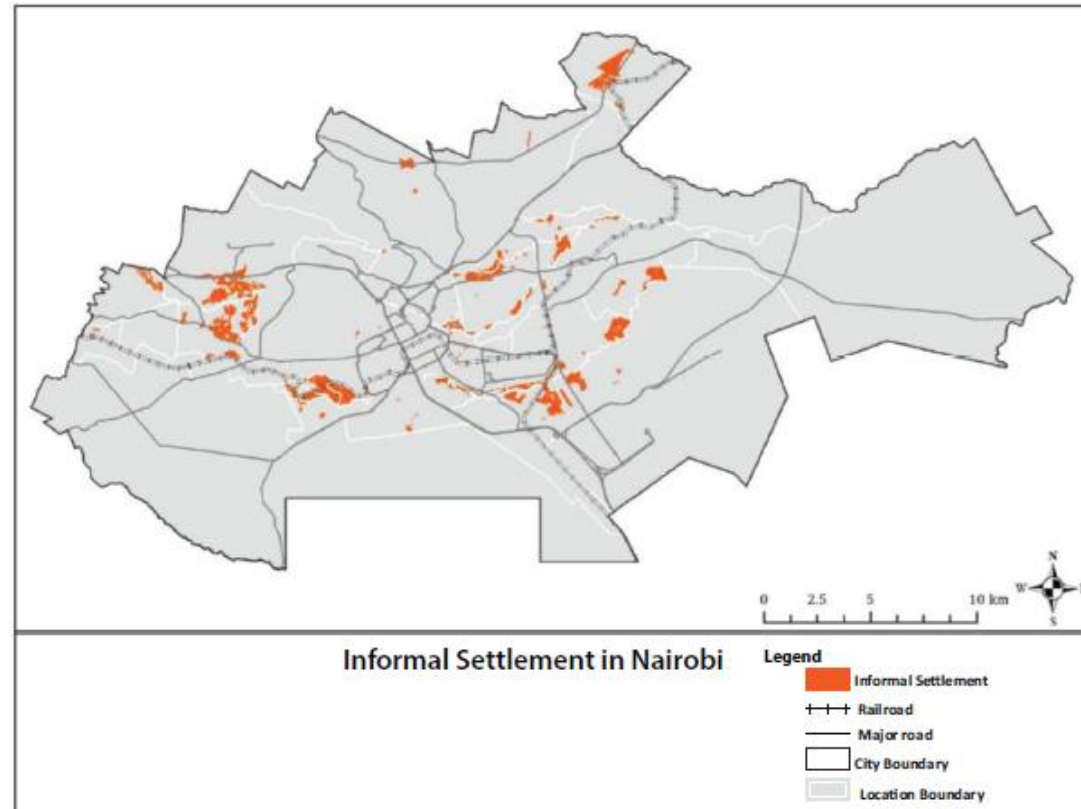
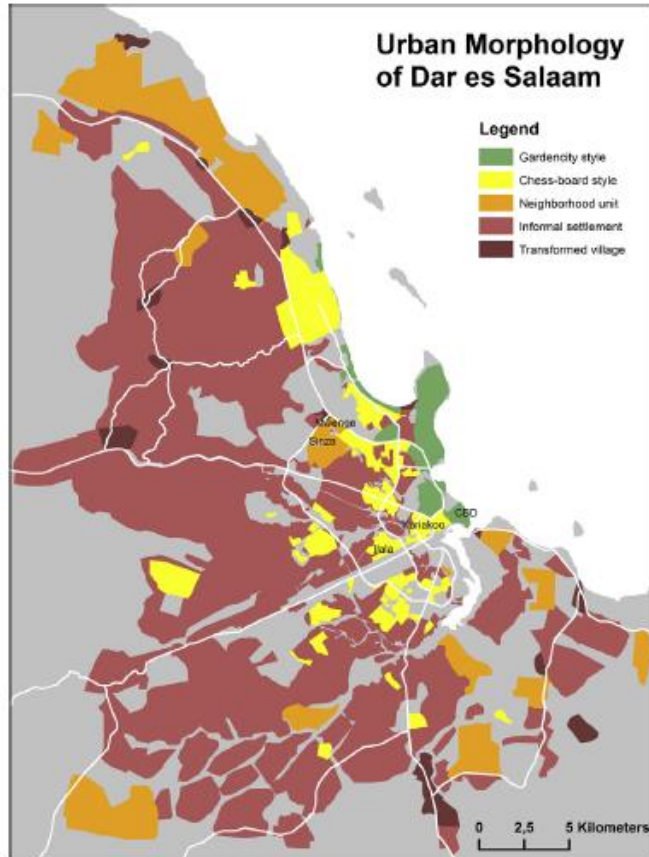
DAR ES SALAAM

- ▶ *Population*: projected to be 6 million (UN-World-Urbanisation prospects, 2018)
- ▶ *Population Growth*: The average population annual growth 4.39% (TNBS, 2017); Result of rural to urban migration + rapid natural population growth (IGC, 2015)
- ▶ *Population of informal settlements*: 70 per cent (Kombe, W.& Kreibich, V. 2000; Hossain et al., 2015)
- ▶ *Area occupied by Informal settlements*: 65 per cent of total area of the city (Kombe, W., 2006)

NAIROBI

- ▶ *Population*: Estimated 4 million; expected by 2030 6 million (World Bank, 2016)
- ▶ *Population Growth*: Result of rural to urban migration + rapid natural population growth (NCAPD, 2009)
- ▶ *Population of informal settlements*: 60 to 70 per cent (Lines, K., Makau, J., 2017)
- ▶ *Area occupied by Informal settlements*: 2 per cent of total area of the city (Ibid)
- ▶ *Number of informal settlements*: unclear, estimates are between 100 to 200
- ▶ 90 per cent of residents of informal settlements are renting (Gulyani et al., 2014)

Location and Area of Informal Settlements in Dar and Nairobi



Characteristics of Informal Urban Settlements in Dar and Nairobi

DAR ES SALAAM

- ▶ Varying population densities
- ▶ Housing Typologies: Single-storey buildings that follow the traditional Swahili design, building materials include cement and tiles for floors; concrete/cement/ stone for walls; and metal sheets, roof tiles and concrete for roofs.
- ▶ Income levels: low-income to medium/ high income households
- ▶ Infrastructures: limited access to water, poor sanitation, poor drainage and lacking solid waste management
- ▶ Land: Municipal land (occupancy license; 'perceived' security of tenure)
- ▶ Years of existence: 1960's – 1970's, 1980's, 2000's - today

NAIROBI

- ▶ High population densities (highest densities close to CBD)
- ▶ Housing Typologies: Galvanized iron sheets, wood and mud; Walls of stone, brick, or block; Multi-storey buildings
- ▶ Income levels: poor and non-poor slum dwellers (World Bank, 2006)
- ▶ Infrastructures: limited access to water, poor sanitation, poor drainage and lacking solid waste management
- ▶ Land: Government owned land, reserves, and privately owned land
- ▶ Years of existence: 1960's – 1970's, 1980's, 2000's - today

Housing and Settlement Typologies

Dar es Salaam and Nairobi

7



Kinyerezi 2015

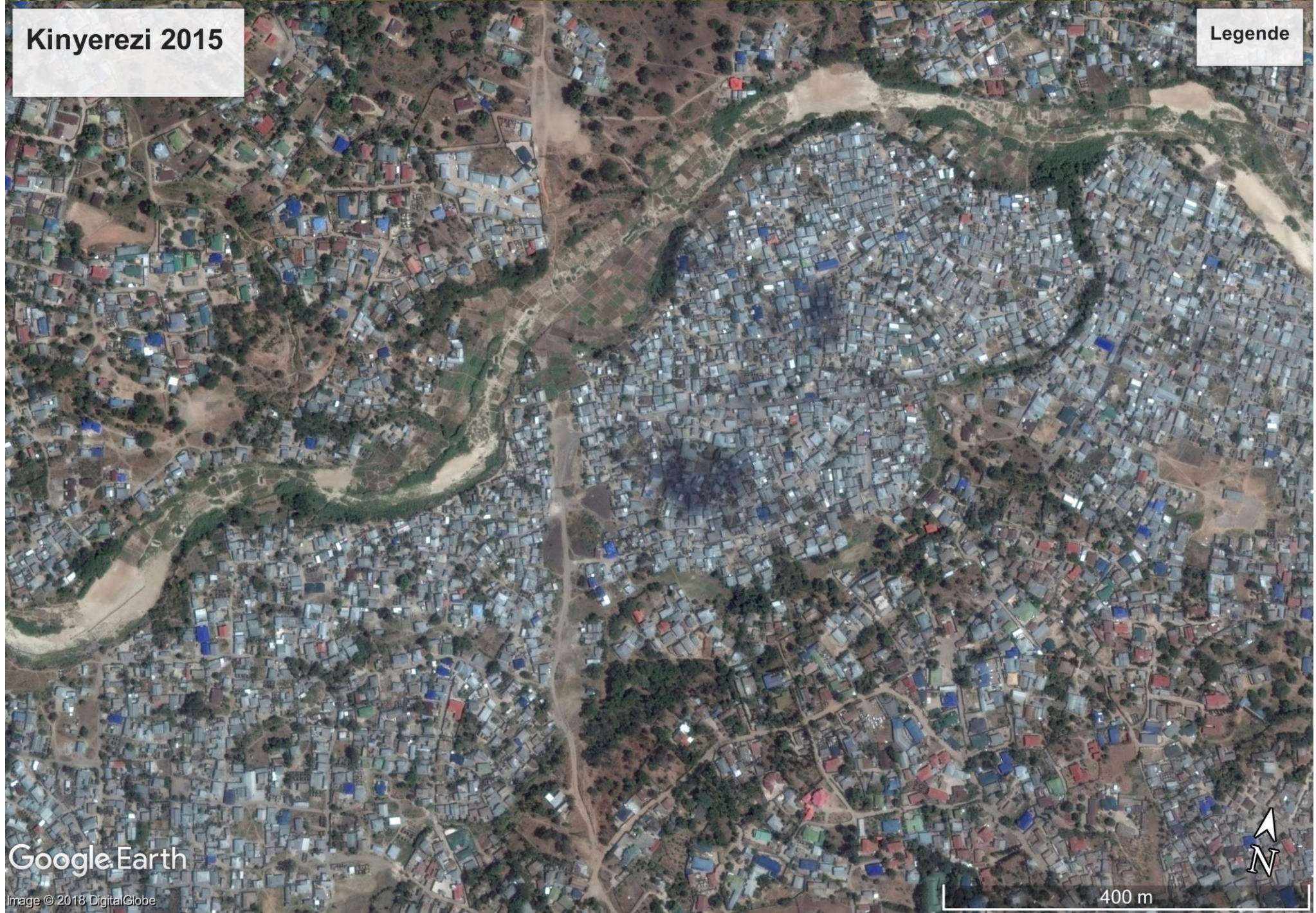
Legende

Google Earth

Image © 2018 DigitalGlobe



400 m



Mukuru 2017

Legende

• Merkmal 1

Kwa Njenga

Google Earth

Image © 2018 DigitalGlobe

Imara Daima Estate 900 m



Challenges in Informal Settlements in DAR and NAIROBI

DAR ES SALAAM

- ▶ Inadequate access to clean water
- ▶ Poor sanitation – 80% are using pit latrines
- ▶ Poor solid waste management
- ▶ High (youth) unemployment
- ▶ Insecurity, crime
- ▶ Flooding
- ▶ High disease incidences
- ▶ Inadequate infrastructures eg. Roads. drainage

NAIROBI

- ▶ Inadequate access to clean water
- ▶ Poor solid waste management
- ▶ Lack of access to adequate sanitation
- ▶ High cost of housing and inadequate housing (landlordism)
- ▶ Lack of public education and health facilities (or quality)
- ▶ High (youth) unemployment
- ▶ Insecurity, crime
- ▶ Ethnic conflicts
- ▶ Flooding
- ▶ High disease outbreaks
- ▶ Food insecurity during times of droughts

Weather and Climate Risks and Hazards in Dar es Salaam



Flooded houses at Jangwani area. (Source: Source tzaffairs.org/2012)

- ▶ **Flooding;** Extreme rainfall affects heavily people living in informal settlements which leads to destruction of properties, loss of life etc.
- ▶ **Rise of the sea level;** Global threat to many coastal areas. It will impact urban centres and ports such as Cape Town, Maputo and Dar es Salaam (UNFCCC, 2006). This leads to the destruction of residential areas ,beaches and ports, threat to coastal and marine ecosystem such as lagoons and mangrove forests.
- ▶ **Temperature;** There is expected rise of temperature especially in coastal areas. By 2100 the Tanzania temperature will rise to 1.7 Centigrade over the northern coast including Dar. (Matari, et al, 2008)
- ▶ **Drought:** The extreme was in 2006 which affected the availability of clean water, rise of food prices, effects to electricity generation.

Impacts of Extreme and Inconsistent Rainfall



Residents affected by flooding at Spenco area- Vingunguti Dar es salaam.
(Source: Source tzaffairs.org/2012)

- ▶ Loss of lives and properties
- ▶ Widespread of health risks for poor residents i.e. diseases like cholera, fungi and skin diseases
- ▶ Loss of social ties and the separation of families.
- ▶ Destruction of infrastructure i.e. roads, drainage systems
- ▶ Loss of income; due to destruction of business areas, opportunities around and more time spent on evacuating/ solving the challenge/ stuck in traffic jam rather than on income generating activities.
- ▶ Stress - (Emotional torture)

EXISTING WEATHER AND CLIMATE INFORMATION SERVICES IN DAR ES SALAAM

► Seasonal Forecasts

- Expected volume and timing of rainfall over Tanzania as a whole during the country's two main rainy seasons, and dry season period.

► Five-day forecasts

- A summary five-day forecast for different locations across the country include Dar es Salaam. Obtained at TMA website (<http://www.meteo.go.tz/>)

► National daily weather forecast

- TMA publishes a national daily weather forecast. The online version of the national daily forecast displayed on the TMA website offers more location-specific information.

► Multi-Hazard Early Warning Service (MHEWS)

- TMA has developed a daily bulletin that predicts high impact weather across the whole of Tanzania up to five days ahead. . --
*severe weather covered are: heavy rain, flooding, landslides, high temperatures, high wind and high waves at sea.

EXISTING WEATHER AND CLIMATE INFORMATION SERVICES IN NAIROBI

► Seasonal Forecasts

- Expected volume and timing (in general terms) in Kenya as a whole over two main rainy seasons – main target audience is the agricultural sector

► National seasonal forecasts

- Downscaled and localised by KMD county director of meteorology

► Seven-Day Forecasts

- Every Monday KMD issues a seven-day national forecast. This forecast is downscaled and localised at the CDM Nairobi County office
- The localised forecast includes some general recommendations and warnings around health, traffic conditions (e.g. visibility conditions) and air quality

► Daily Forecasts

- Every afternoon a national forecast is published the next 24hrs

► Ad-hoc severe weather warnings

- Bulletins providing warning of high impact weather (e.g. heavy rains), 24hrs in advance, include names of counties at risk
- They are shared with government disaster management, emergency responders & are disseminated to the media

Challenges with Weather and Climate Information Services in Informal Settlements – DAR and NAIROBI

DAR ES SALAAM

- ▶ Limited understanding of weather and climate
- ▶ Information by the community (Too technical)
- ▶ Lack of trust on the weather and climate information by the beneficiaries. (Herzog et al, 2007)
- ▶ Limited co-production of information, particularly with community in informal settlements
- ▶ Mode of communication used are not easily accessed by the community eg. Television (not everyone owns a television), website, newspapers

NAIROBI

- ▶ Limited understanding for weather and climate information and limited awareness of implications
- ▶ Residents are not considered as a major audience (ACCESS, ICCA, 2016)
- ▶ Location of existing weather stations (Scott, A., A., Misiani, H., Okoth, J., et al., 2017)
- ▶ KMD currently doesn't publish severe weather warnings that forecast accurately and in sufficient local detail the expected impacts of heavy rainfall or extreme heat on informal settlements in Nairobi

WHAT ARE THE **BARRIERS**
PREVENTING CLIMATE SERVICES
FROM **SUPPORTING RESIDENTS** OF
INFORMAL SETTLEMENTS?

WHO ARE CRITICAL
STAKEHOLDERS
TO THE FLOW AND UPTAKE OF
CLIMATE / EXTREME WEATHER
INFORMATION IN DAR ES SALAAM?

WHAT **EXISTING INITIATIVES** SHOULD
WE BUILD UPON THROUGH
INVOLVEMENT OF THE IDENTIFIED
STAKEHOLDERS AND THE DARAJA
PROJECT?

DARAJA

Developing Risk Awareness through
Joint Action

Join us for informal drinks
after the DARAJA Kick-off
workshop!

We would be delighted to have your thoughts on
the workshop, UR TZ week, and anything else on your
mind.

6 PM, 31ST AUGUST 2018

RAMADA ENCORE

DAR ES SALAAM, TANZANIA



