Data for the Global Goals & National Priorities

REPUBLIC OF KENYA

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@pthigo

PARIS21

Data Challenges

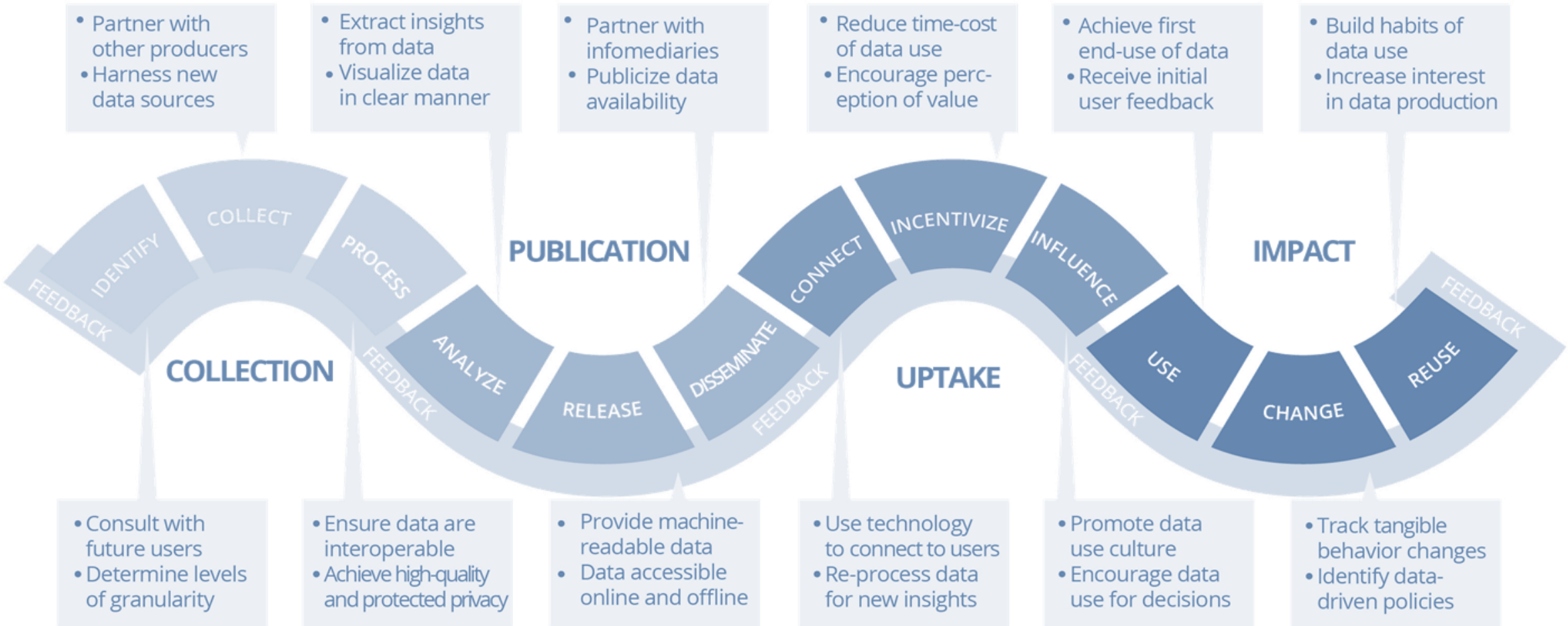
Two big global challenges for the current state of data:

1. **Invisibility** (gaps in what we know from data, and when we find out)

2. **Inequality** (gaps between those who with and without information, and what they need to know make their own decisions)

3. **Complexity**: **17 Goals, 169 Targets, 230 Indicators**

DATA VALUE CHAIN

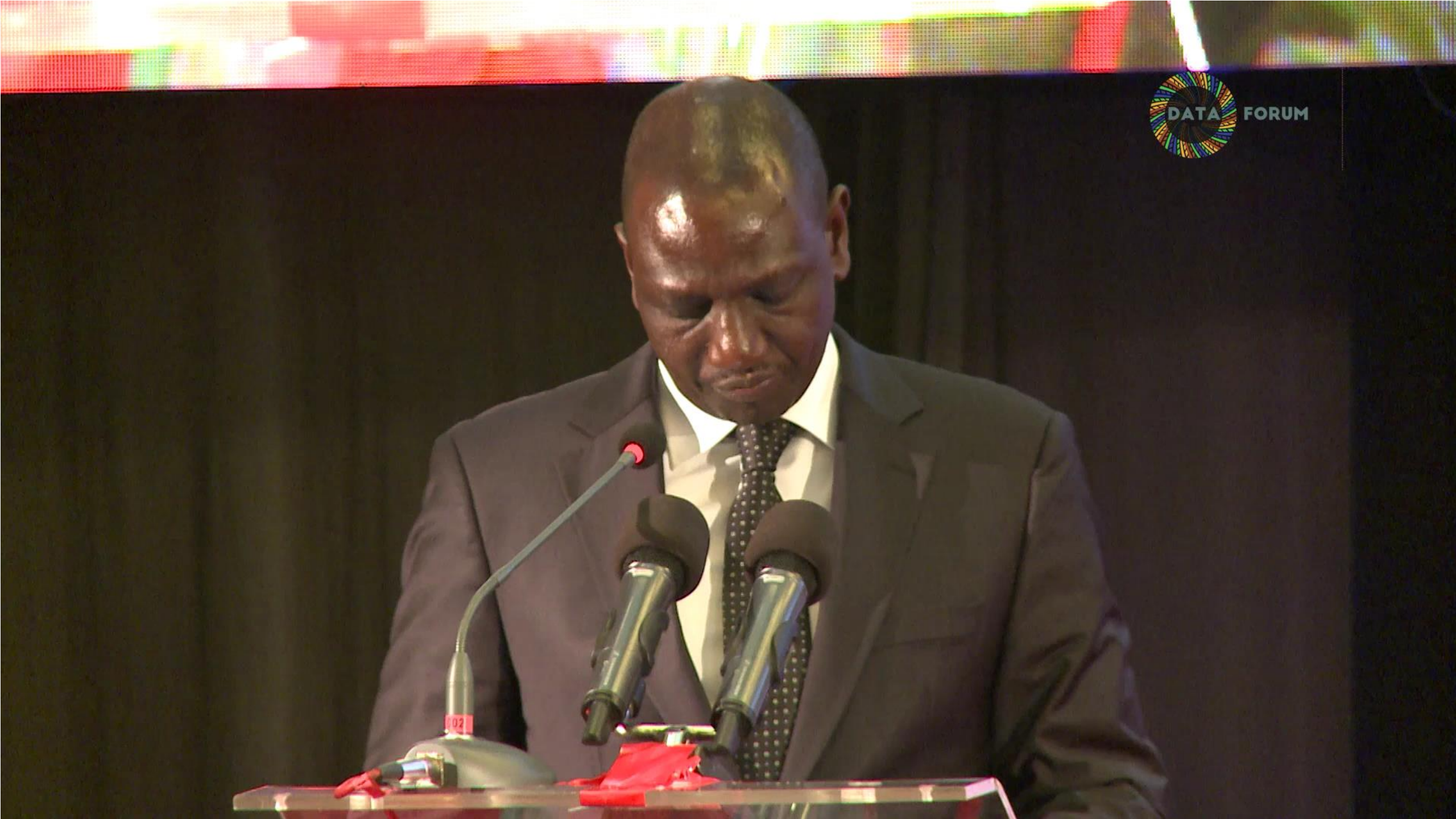


PRODUCTION **USE**

increasing value of data

data2x

OPEN DATA WATCH


DATA FORUM


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

The Big 4

"The future is now. It is about a healthy nation, built on equal opportunity, dignity and the pursuit of material prosperity for all. During the next 5 years, I will dedicate the energy, time and resources of my Administration to the Big Four."

- H. E. President Uhuru Kenyatta unveiling the Big Four,
- December 12, 2017.

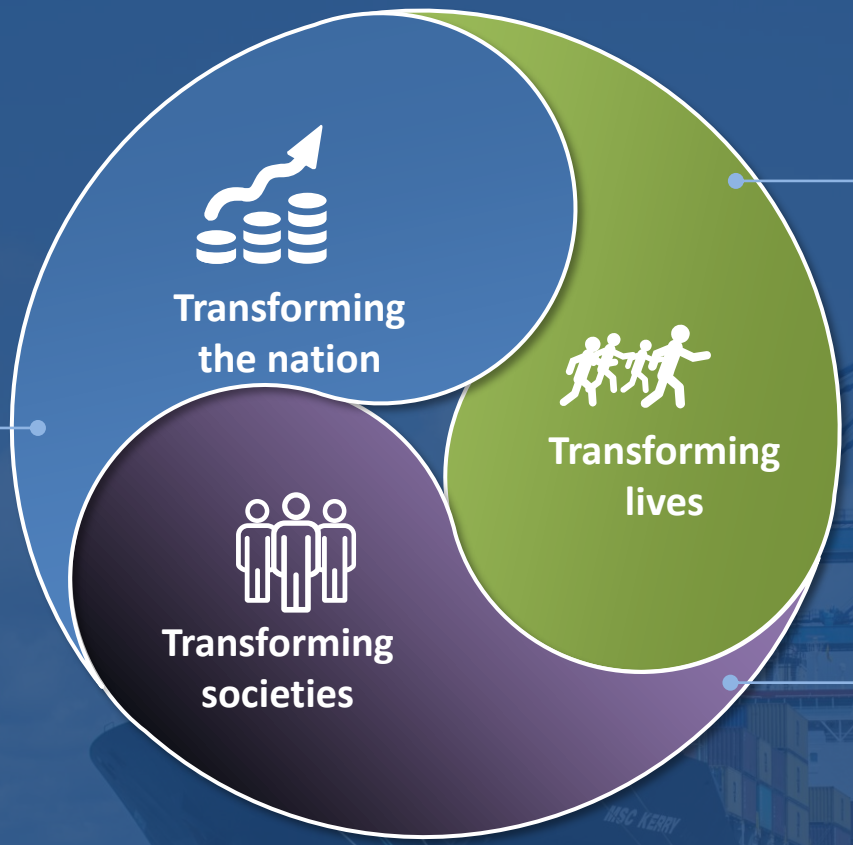
The Big 4

20%

of GDP from the manufacturing sector

100%

Food and Nutrition Security



1 million

affordable new houses for Kenyan families

100%

Universal Health Coverage (UHC)

Enabled by macro-economic stability

Youth in jobs through vocational training and education

Targeted infrastructure investments

Affordable & reliable Energy

Governance

Security

Technology innovation

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

- Buckminster Fuller

Our Design Mindset

Leadership in design to solve problems

Challenge and empower all levels of Government to adopt **a design mentality**

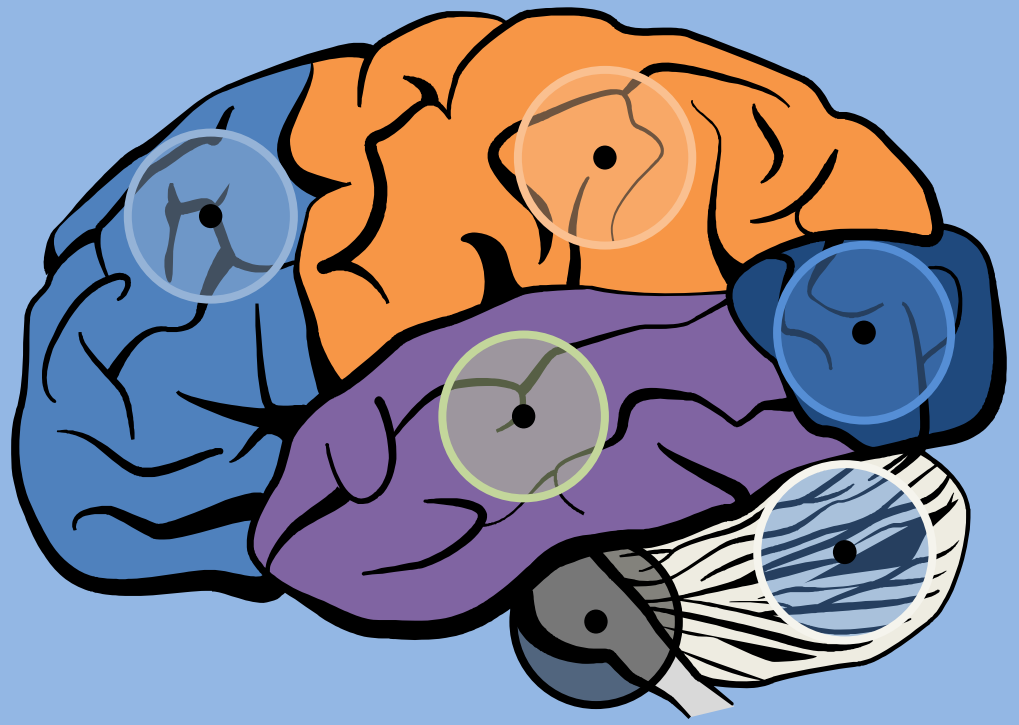
Keep a nimble pace focused on continuous improvement

Engage with ALL: university, private sector, innovators, civil society, communities

Take risks and use lessons to design new iterations

Welcome opportunities to be a full-service testing ground

Our Mission



"Make co-creation and collaboration the new normal, where public sector operates more like private sector and private sector more like innovators. Government as a Start-up."

"Things get done only if the data we gather can inform and inspire those in a position to make [a] difference."

~ Mike Schmoker, Author.

Earth Observations for SDGs

Earth Observations are contributing to SDG processes, more specifically 8 out of 17 and directly impact the Big 4 Agenda.

Credit: Steven Ramage, GEO

Food Systems Transformation in Kenya

2 ZERO HUNGER

Challenges that constrain output and productivity

Kenya's food security system faces several performance challenges…

1.5 mn Kenyans chronically food insecure	due to drought conditions primarily in ASALs. Increases to 3.4-3.7mn Kenyan's during severe droughts (e.g., 2008/9, 10/11, 16/17)
~30% lack sufficient income for food	of households surveyed in a 7 day period
2x price volatility	than rest of EAC peers[1] including Uganda, Tanzania, Rwanda, Burundi for key staples
~26% stunting rate	better than SSA average of 34% but some countries as bad as 40%
~37% Vit A supplements	available compared to 96% in Rwanda and 87% in Tanzania
KES 35-70bn domestic crop production lost	due to poor post-harvest handling (~5-10% of total crops production value, ~17-35x ministry spend on food security)[2]
~60% of calories from carb heavy staples	including cereals, pulses and starchy roots, higher than peers regional

…which are further under threat from issues of climate change and unsustainable resource use…

6 of 7 water catchment areas to be under severe stress[5]	by 2030, and therefore will not be able to match Vision 2030 proposed target for 1.2mn ha under irrigation target
~50% rainfall variability	Amongst the highest in Africa makes drought periods severe
9 of 10 major crops production and prices at risk	9 / 10 crops will experience reduced growth rates (10-20%) with dramatic price increases (45-90%) by 2030 in part to climate change[3]
~40% maize production at risk	up to 40% of maize production (~320k tonnes) is at risk for army worm in the coming decade. 2016 attacked ~7% of production
~7.4% yield reduction in maize	for every 7 degrees C of temperature increase (~3.2c anticipated by 2080)

1 Measured by standard deviation in consumer price food indices, Kenya is at 7, EAC is at 4 | 2 Average of 6% of ministry budget (~2.4 bn) for food security, but varies: as low as 1% in 2012/2013, as high as 28% in 2016/2017 | 3 Growth rates: price increase --> maize (12%;90%), Rice (23%;89%); wheat (13%; 75%), others (8%;83%) | 4 droughts that occured past 10yrs have had 3.4-3.7m food insecure populations. Need coverage just over food insecure population not full country for 3 months until can import | 5 OECD defines "under secure water stress" where ratio exceeds 40%. Only Lake Victoria North Catchment Areas) will have ratio of <40% at 2010 | 6 Sept 2015 Gazette for maize, beans, wheat, rice, powder, milk and fish

SOURCE: FAO; Kenyan demographic and health survey 2014; UMCES data Africa; IFPR; APHTACIS; Kenya market trust; PAO start; Regemeo; National water master plan

Interventions

Enhance large scale production

Drive Small holder productivity

Reduce Cost of Food

Prioritized interventions based on a three-pronged approach prioritized to achieve four key outcomes for 100% food security

BIG 4: 100% food security approach

- Increase small farm-holder incomes
- Increase agricultural output & value added
- Ensure 100% availability of food (including price & nutrition)

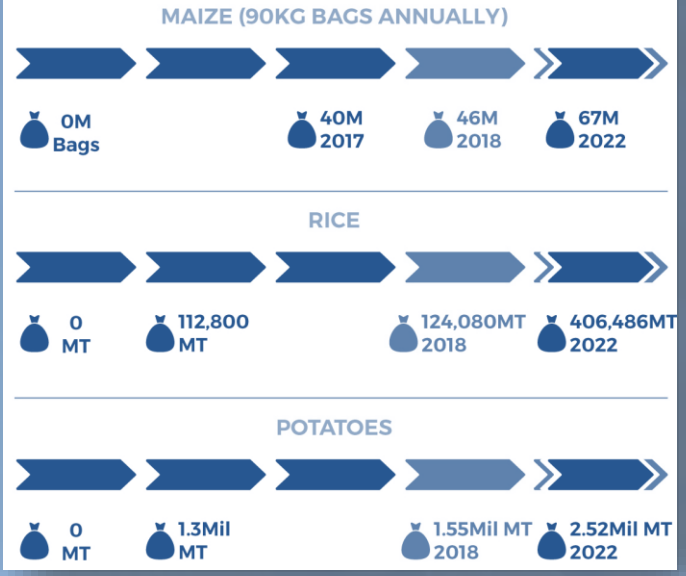
Key outcomes

Economic Growth (GDP)	We **increase national output; income share of value added exports**
Incomes	Small scale farmers achieve **higher incomes sustainably,** with higher output and productivity
Jobs	**Primary (on-farm) and secondary off-farm) jobs are created** with a focus on youth & women
Food & nutrition security	**Quality & nutritious food is always available and accessible to all Kenyans**, and food crisis are fully mitigated

Note: *5 key Ministries* including Agriculture and Irrigation; Industrialisation; Environment; Devolution; Lands given direct influence on emerging flagships. By comparison, *ASDSP included 10 sector ministries:* Agriculture, Livestock Development, Fisheries, Cooperative Development and Marketing, Land, Water and Irrigation, Regional Development, Environment and Mineral Resoures, Forestry & Wildlife, Development of Northern Kenya and other Arid Lands

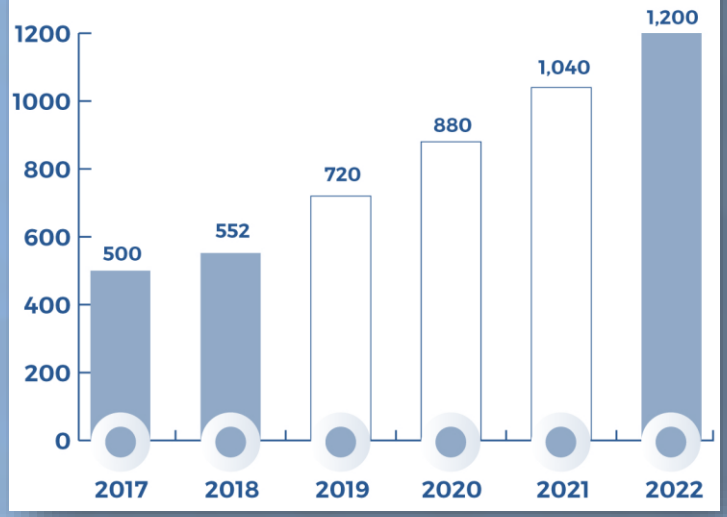
100% Food and Nutrition Security

Food Availability – Maize, Rice and Potatoes



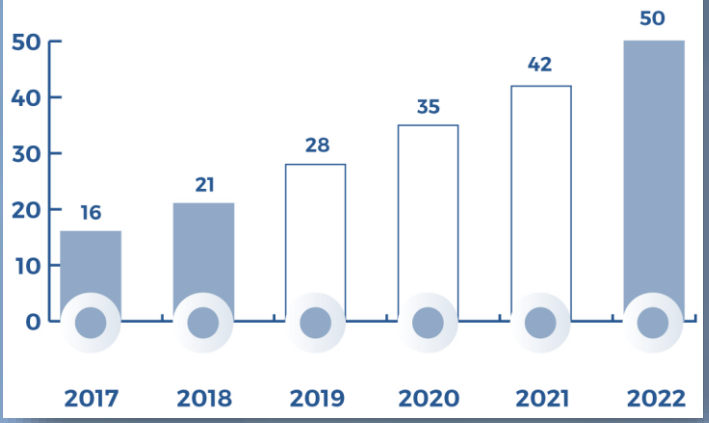
Large Scale Commercial Farming (Irrigation)

'000 Acres



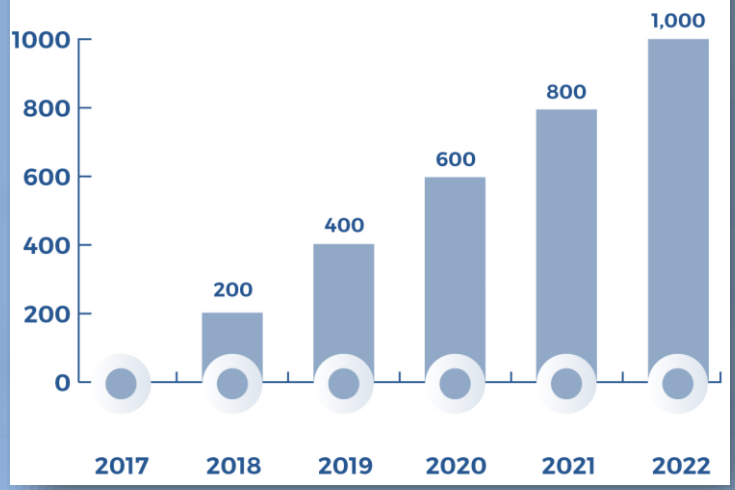
Small Holder Production & Value Addition

% of Agricultural Production and Exports



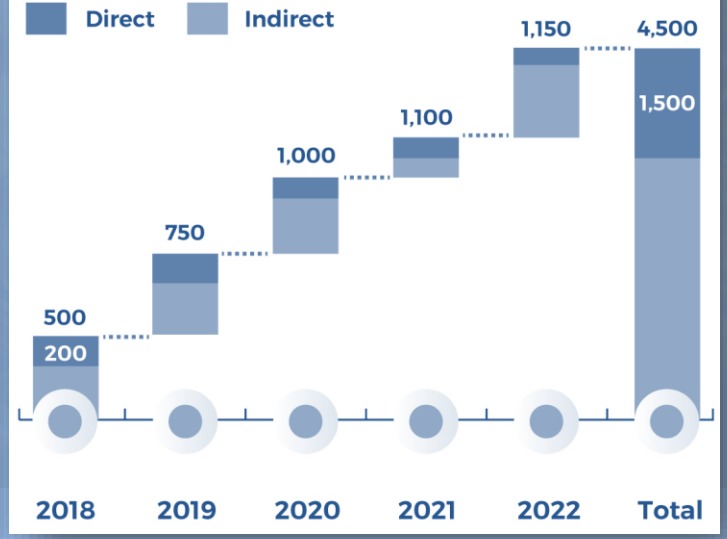
1000 Production SMEs

No. of Businesses



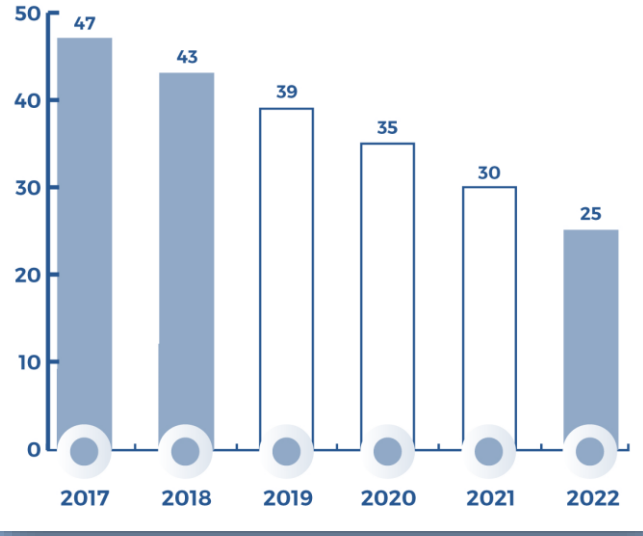
Jobs Created

'000



Affordability

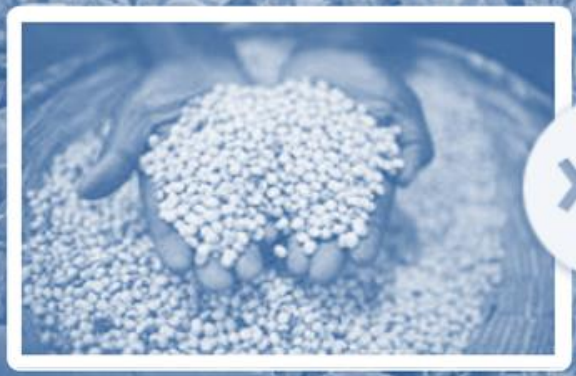
Cost of Food as a Percentage of Income



Dashboard

Current Drought Hotspots

Kenya land uses and slope



Maize production and food security K

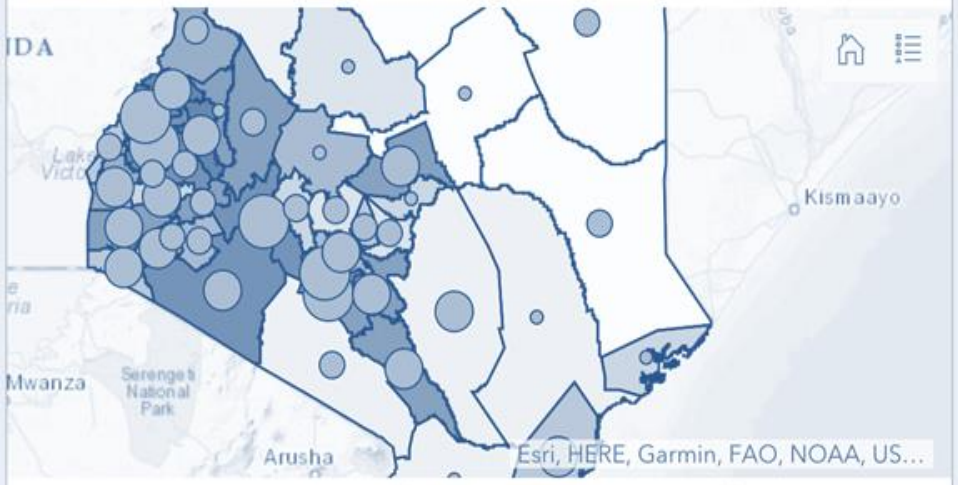
The Ministry of Agriculture, Livestock, and Fisheries has its fundamental goal and purpose of conserving, protecting and managing agricultural, livestock, and fisheries resources for socio-economic development

Dashboard

Kenya Population trend (2009-2014)

This graph shows the population trend in Kenya between 2009 and 2014. This indicates that there is a continous upward trend in population growth

Maize production per County in 2016 versus population



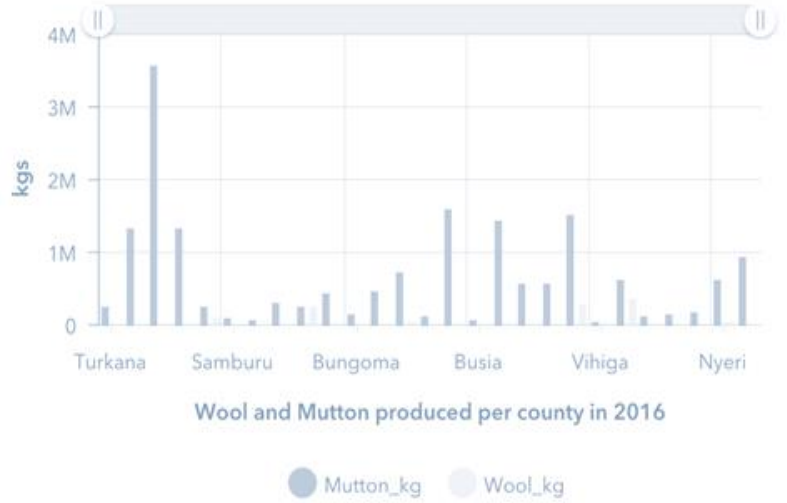
This map shows the production of maize in 2016 versus the different Counties population

Map Map

Current Drought Hotspots

This map shows drought status in the different Counties
Alarm Drougt status- These are high drought stress counties and are worsening. They include; Isiolo, Kajiado, Tana River, Garissa, Kilifi and Wajir Counties.
Alert Drought Status- These are medium drough stress areas and are also worsening. They include; Mandera, Marsabit,Taita Taveta,Kitui and Samburu East.
Normal Drought Status- Generally stable/ some localized drought stress. They include; Baringo, Embu, Kwale, Laikipia,Lamu, Meru(North), Narok, Nyeri(Kieni), Samburu, Tharaka Nithi, Turkana and west Pokot.
No Drought Status- these are areas that received

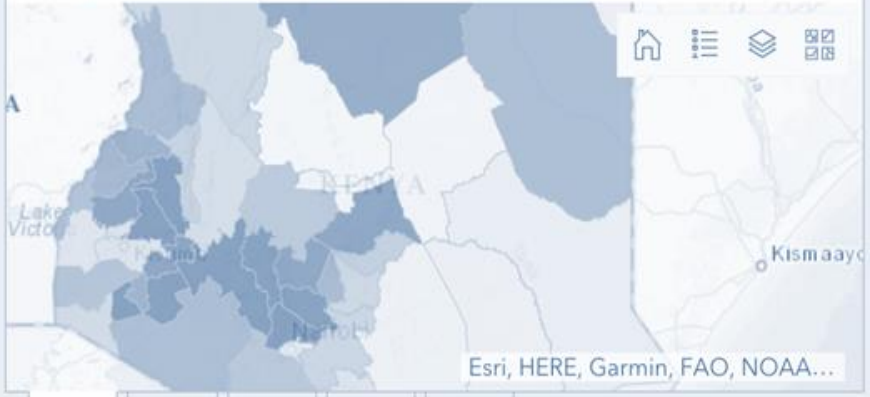
Wool and mutton production per County in 2016



This chart shows the wool and mutton production per county in 2016, the difference shows the lack of value addition for the wool by most of the Counties

Last update: a minute ago

Milk production per county



Map Map Map Map Map

Home ▾ Kenya land uses and slope

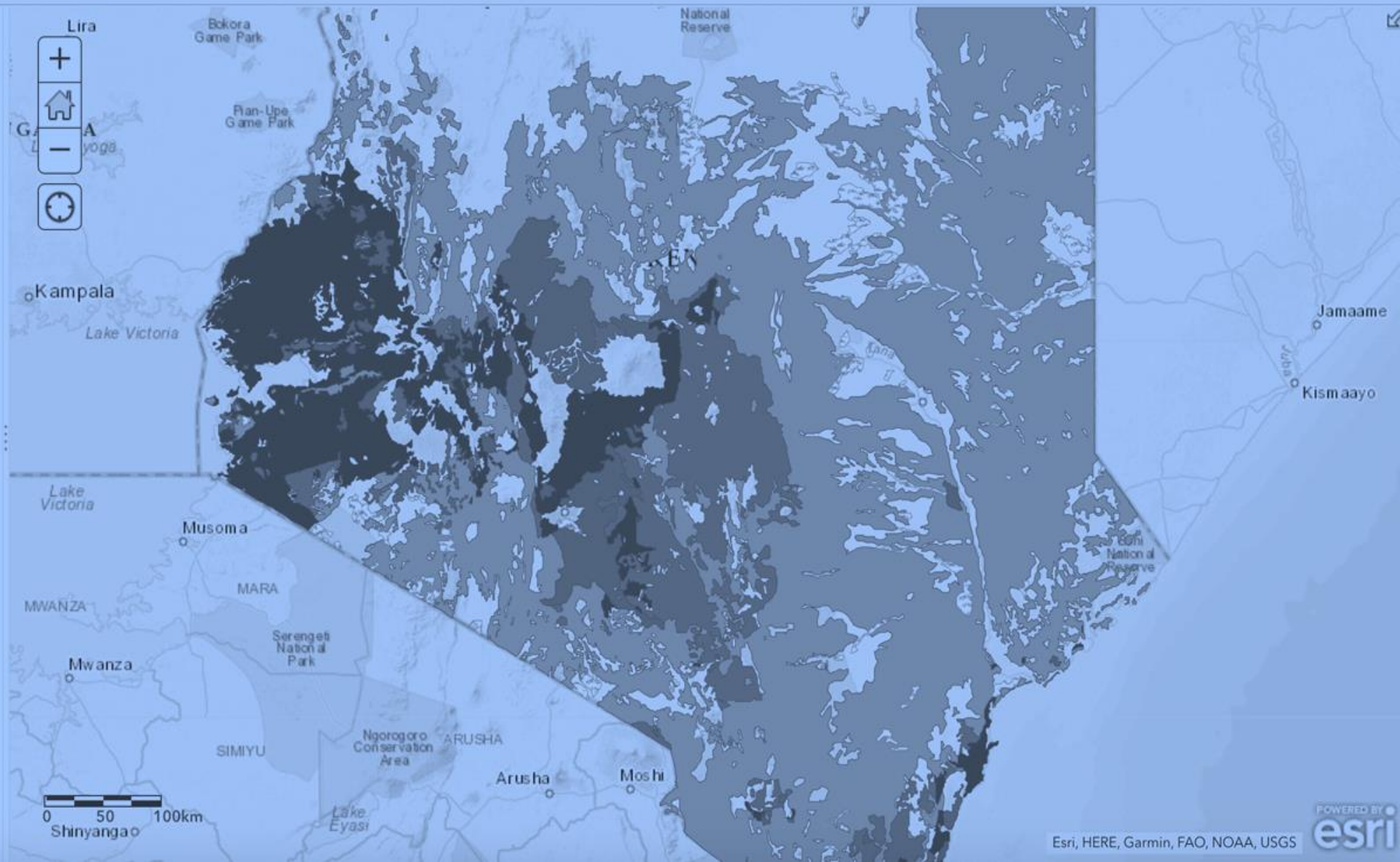
New Map Philip ▾

Details Add ▾ | Basemap | Analysis Save ▾ Share Print ▾ | Directions Measure Bookmarks Find address or place

Legend

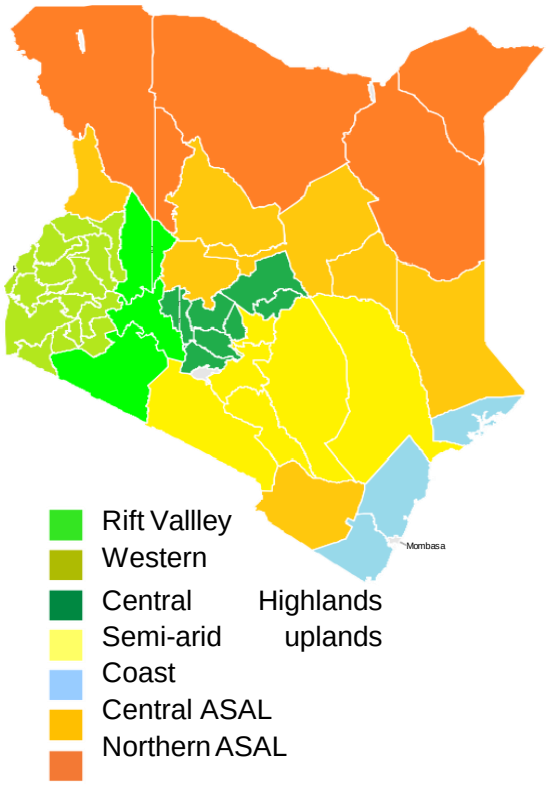
Elevation_slope - Select_Landuses

- agriculture (dense)
- agriculture (sparse)
- bushland (dense)
- grassland
- plantation

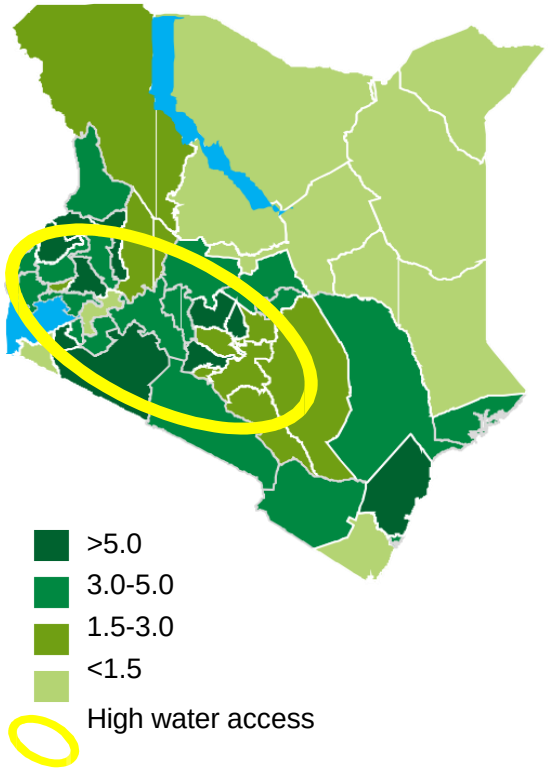


Kenya's highest productivity zones have notable access to water, roads, and high populations to support both demand and supply:

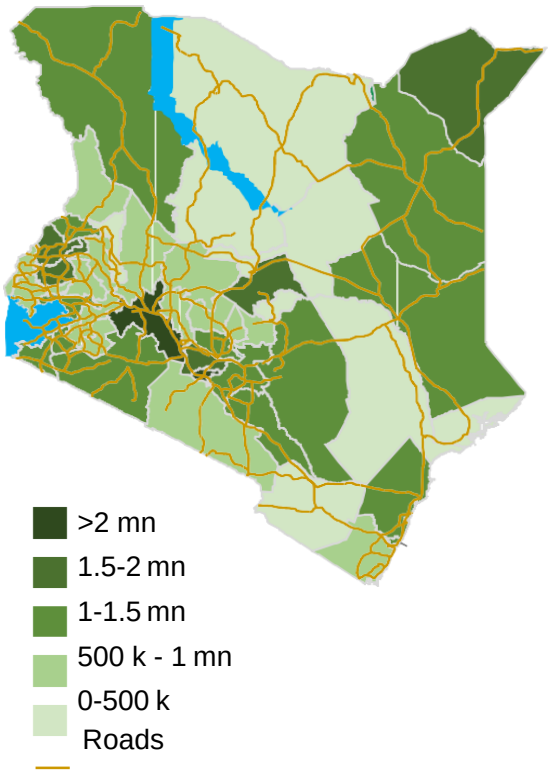
Farmer segments
Qualitative analysis



Crop yields, 2016
tonnes/ha



Population by county, 2016
mn



Highest crop yield areas (**bold >50 tonnes/ha)** are in Western, Central Highlands, Rift Valley and Coast

- *Western:* **Trans Nzoia, Bungoma, Kisii, Elgeyo Maraket, Nandi**, Busia, Kakamega, Vihiga, Kisumu, Bomet, Kericho
- *Central Highlands*: **Nyeri, Kiambu, Kirinyaga**, Nairobi, Nyandarua, Tharaka Nthi
- *Rift Valley:* **Narok,** Nakuru
- Coast: **Kilifi,** Lamu
- *Central ASAL:* West Pokot, Laikpia, Taita Taveta
- *Semi-arid uplands:* Kajiado, Tana River

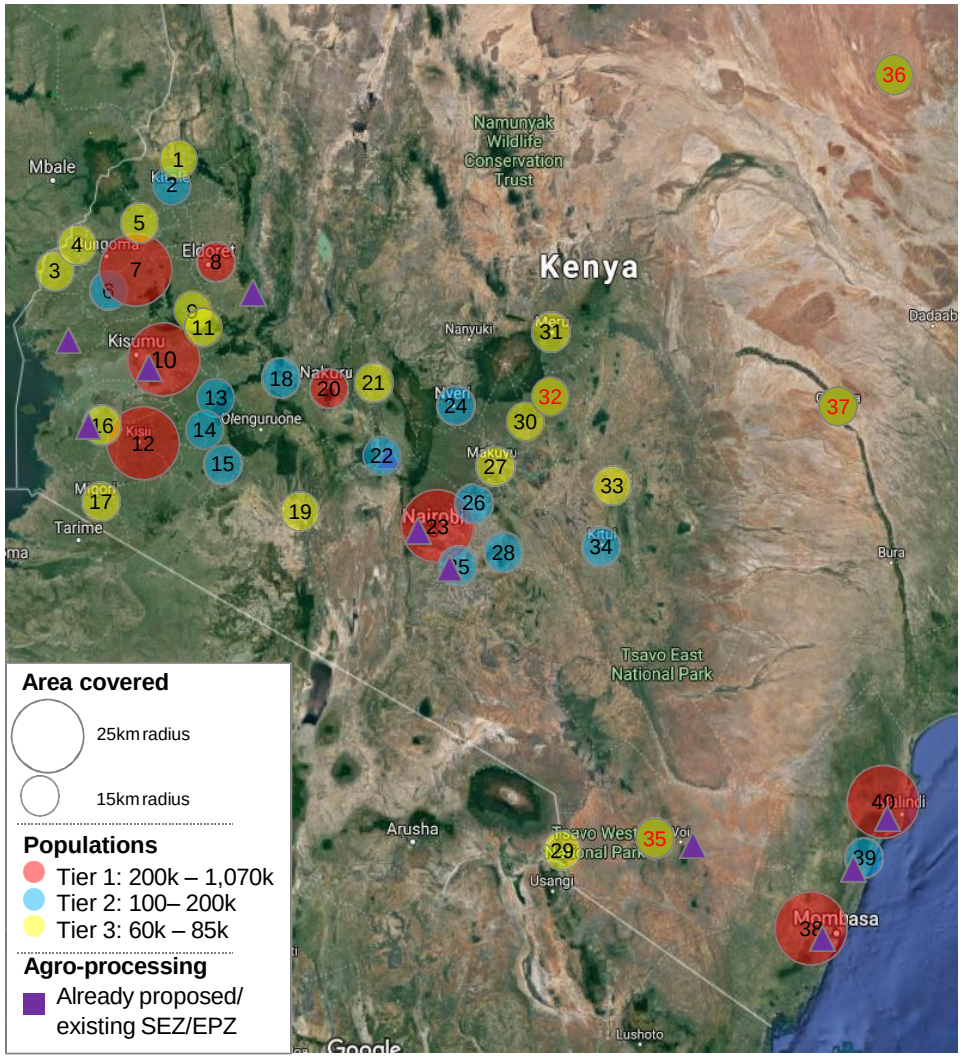
SMEs focused on ~40 high potential zones based that were identified based on demand and productivity

SMEs will be promoted in **3 phases**, in **40 high potential zones**[1] providing **improved market access** for ~**1-1.5mn farmers in these areas** once fully rolled out:

- Phase 1: in 8 Tier 1 locations, for 320,000 farmers
- Phase 2: in 13 Tier 2 locations, reaching a further 120,000 farmers
- Phase 3: in 19 Tier 3 locations, reaching a further 85,000 farmers
- *Timing TBD:* irrigation facilities reaching ~600,000 – 1mn farmers, overlap with above phases TBD

High potential zones for SMEs

1 Kapenguria	11 Nandi	21 Ol Kalou	31 Meru
2 Kitale	12 Kisii	22 Naivasha	32 Runyenjes
3 Busia	13 Kericho	23 Outer Nbi	33 Mwingi
4 Malaba	14 Litein	24 Nyeri	34 Kitui
5 Kimili	15 Bomet	25 Athi River	35 Wundanyi
6 Mumias	16 Homa Bay	26 Thika	36 Wajir
7 Bungoma	17 Migori	27 Makuyu	37 Garissa
8 Eldoret	18 Molo	28 Machakos	38 Mombasa
9 Kapsabet	19 Narok	29 Taveta	39 Kilifi
10 Kisumu	20 Nakuru	30 Embu	40 Malindi

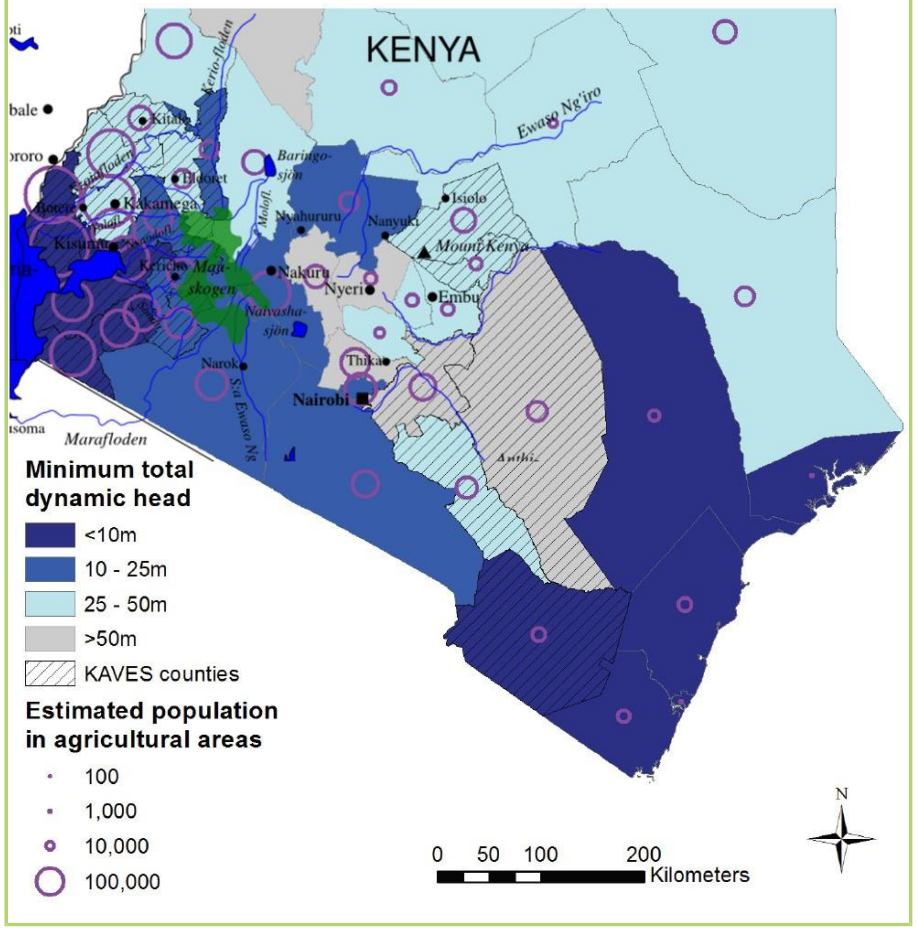


1 Methodology to find zones:: Use yield maps and farmer segments to identify the most productive farmer segments (proxy for supply) ;Identify Tier 1- Tier 3 secondary and tertiary cities based on population thresholds that capture ~65% of population (proxy for demand) ; Geolocate a 15km or 25km radius for each city, to identify sub-county level zones

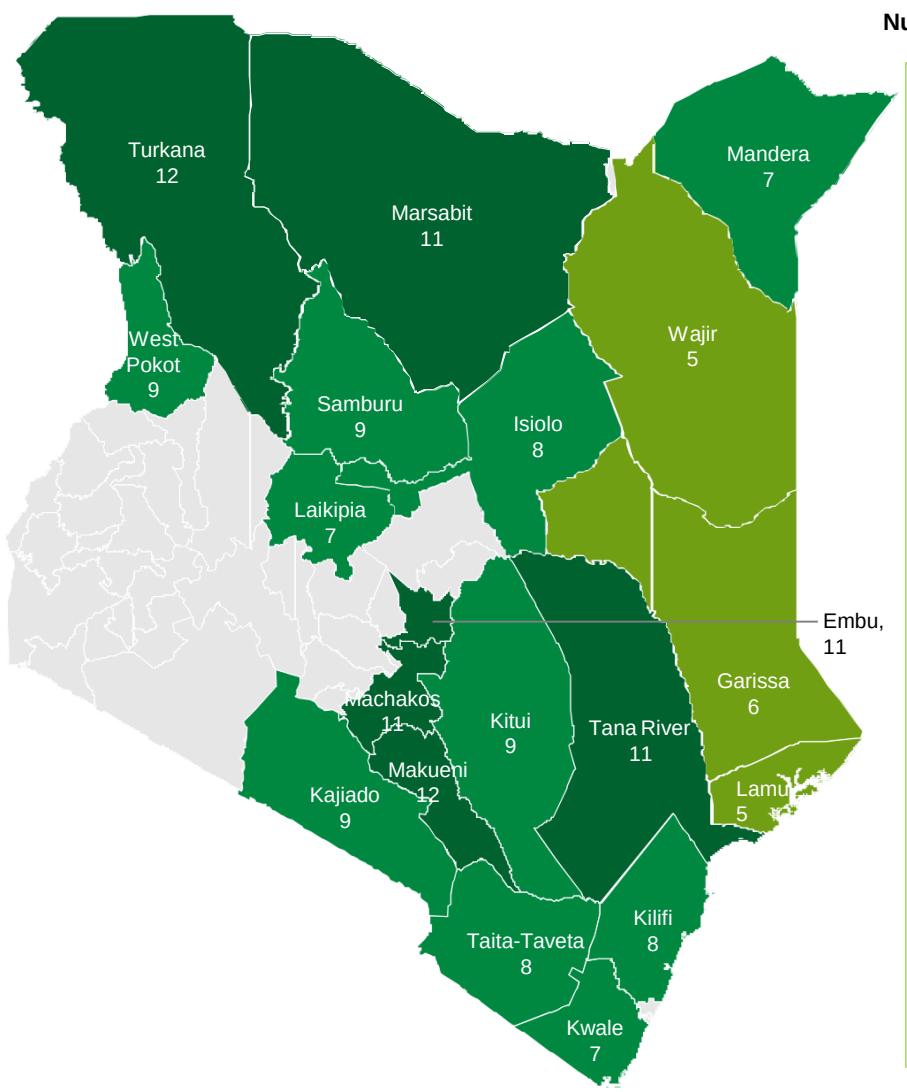
Regions should select infrastructure based on criteria, such as water table depth and population density, combined with predictive modelling

Intervention	Criteria	Region of focus
Canals	Access to surface water • High population density	Western Rift Central Semi-arid uplands
Rainwater harvesting & catchment dams	Applicable in all areas	Western Rift Central North ASALs Central ASALs Semi-arid uplands
Bore holes	Deep water table • Med population density • Low access to surface water	North ASALs Central ASALs Semi-arid uplands
Shallow wells (50:50 with small-holders)	High water table	Western Rift Coast

Rivers, depth of water resource and estimated population with access



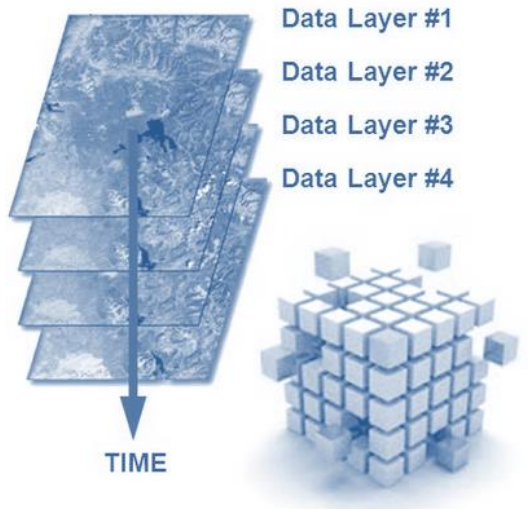
There is heavy concentration of donors in the ASAL regions – pointing to a need for coordination and sharing of information



No.	List of donors	$M 2009- to date
1	World bank	475.9
2	USAID	144.9
3	European union	132.8
4	JICA	127.6
5	Africa Development Bank	90.4
6	IFAD	70.1
7	kfw-Germany Government	57.6
8	GIZ	52.1
9	DFID	45.8
10	Netherlands Embassy	23.4
11	World Food Program	15.8
12	SIDA	3.6
13	Global Enviroment Facility (UNEP)	2.7
14	FAO	2.4
15	UNDP	2.0
16	UNOCHA	1.5
17	AFD_French dev agency	1.3
18	Government of Italy	0.9
19	ASTF	0.8
20	Switerland	0.7
21	ECHO	0.2
22	Belgium	0.1
	Total	**1,252.6**

Africa Regional Data Cube (ARDC)

A data cube provides analytically ready data across decades allowing for easily accessible geospatial analysis on key environmental issues. The initial focus for the data cube will be on algorithms to address agriculture and food security and will be implemented for Sierra Leone, Ghana, Senegal, Kenya and Tanzania. Launched in May 2018 in Kenya.



Global Partnership for Sustainable Development Data

GEO GROUP ON EARTH OBSERVATIONS

amazon web services

Strathmore UNIVERSITY

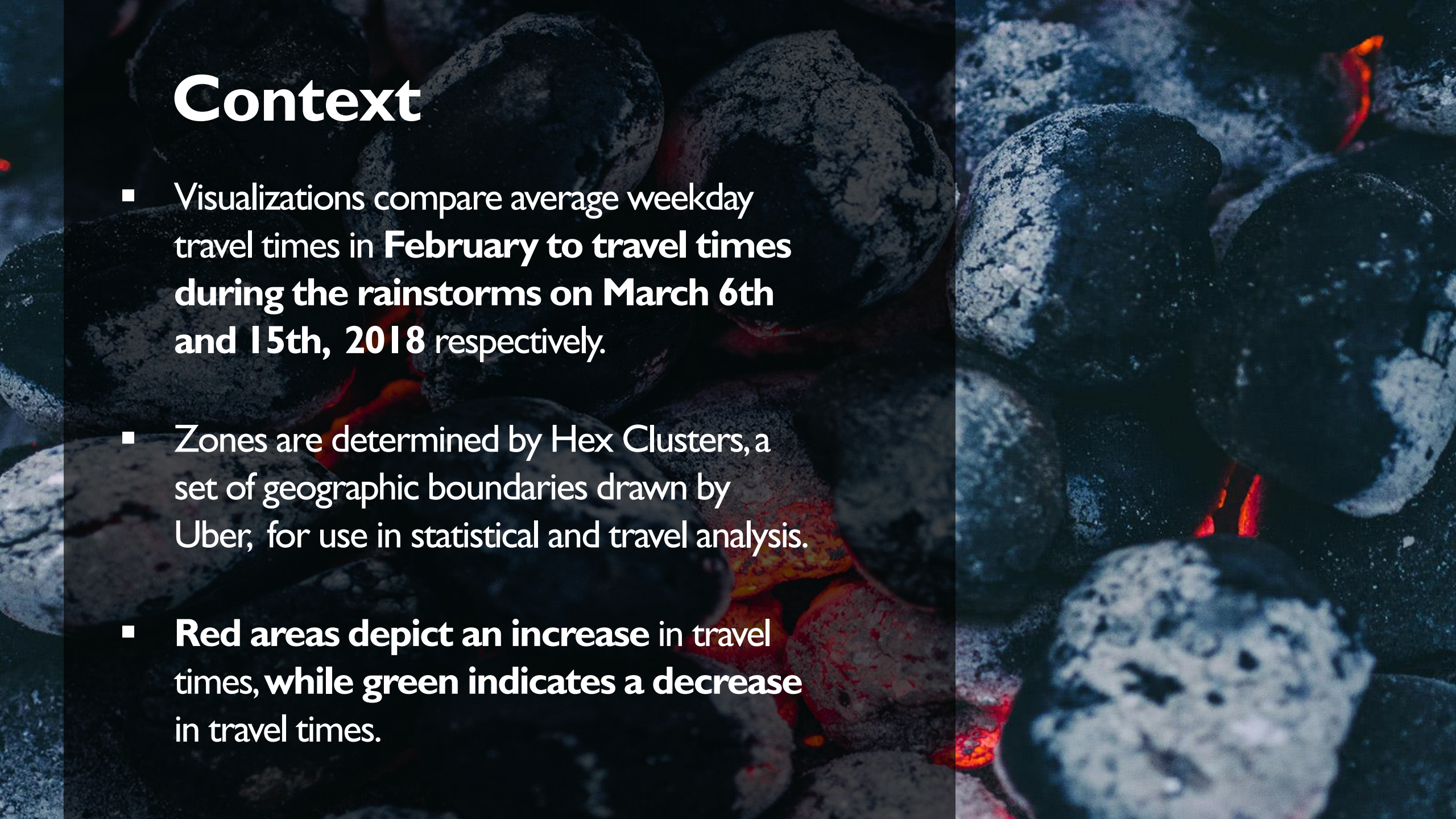
CEOS Committee on Earth Observation Satellites

Credit: Aditya Agrawal

Showcase Geo-Spatial Data & Mobility

HARAMBEE

Uber

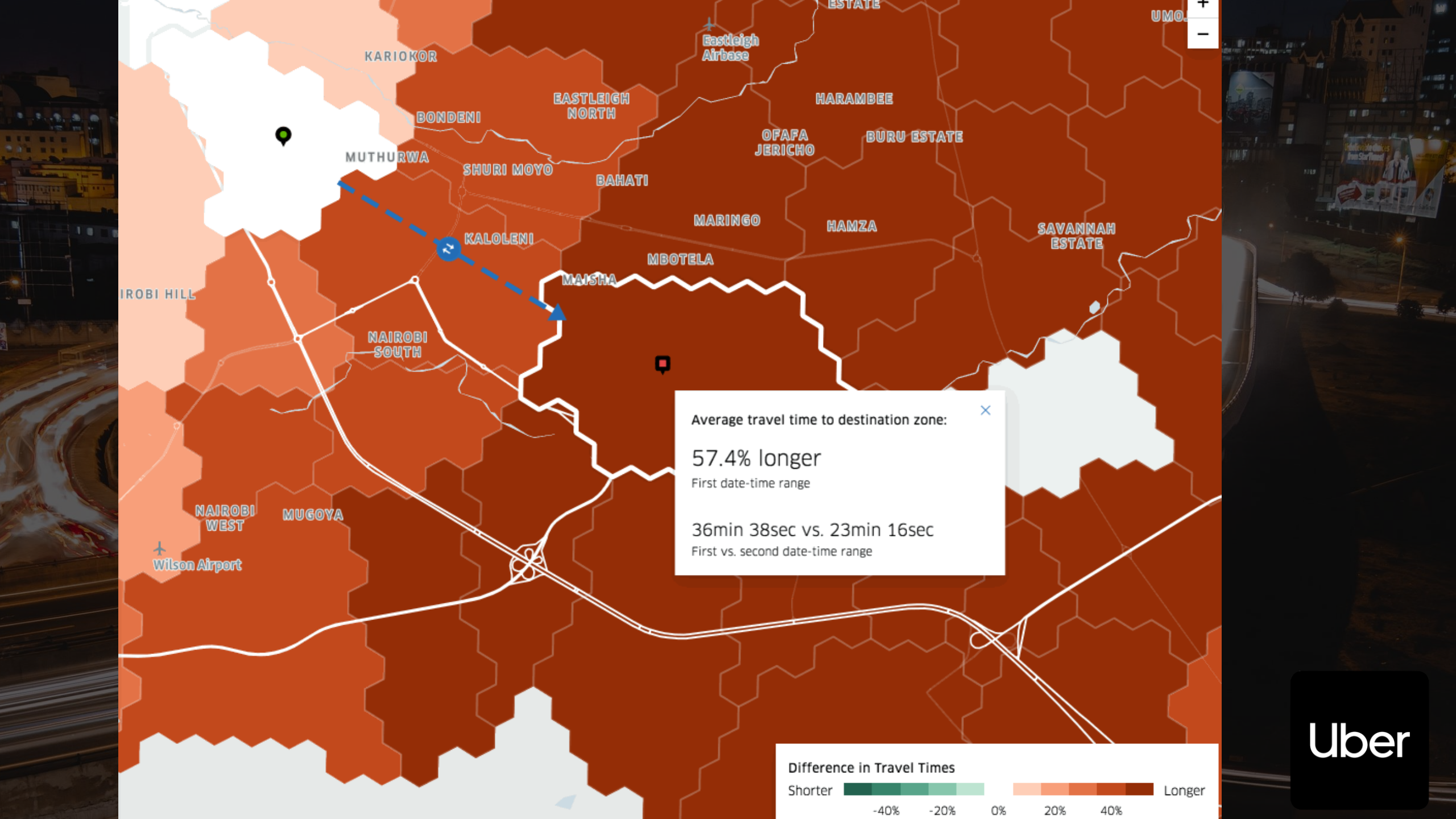


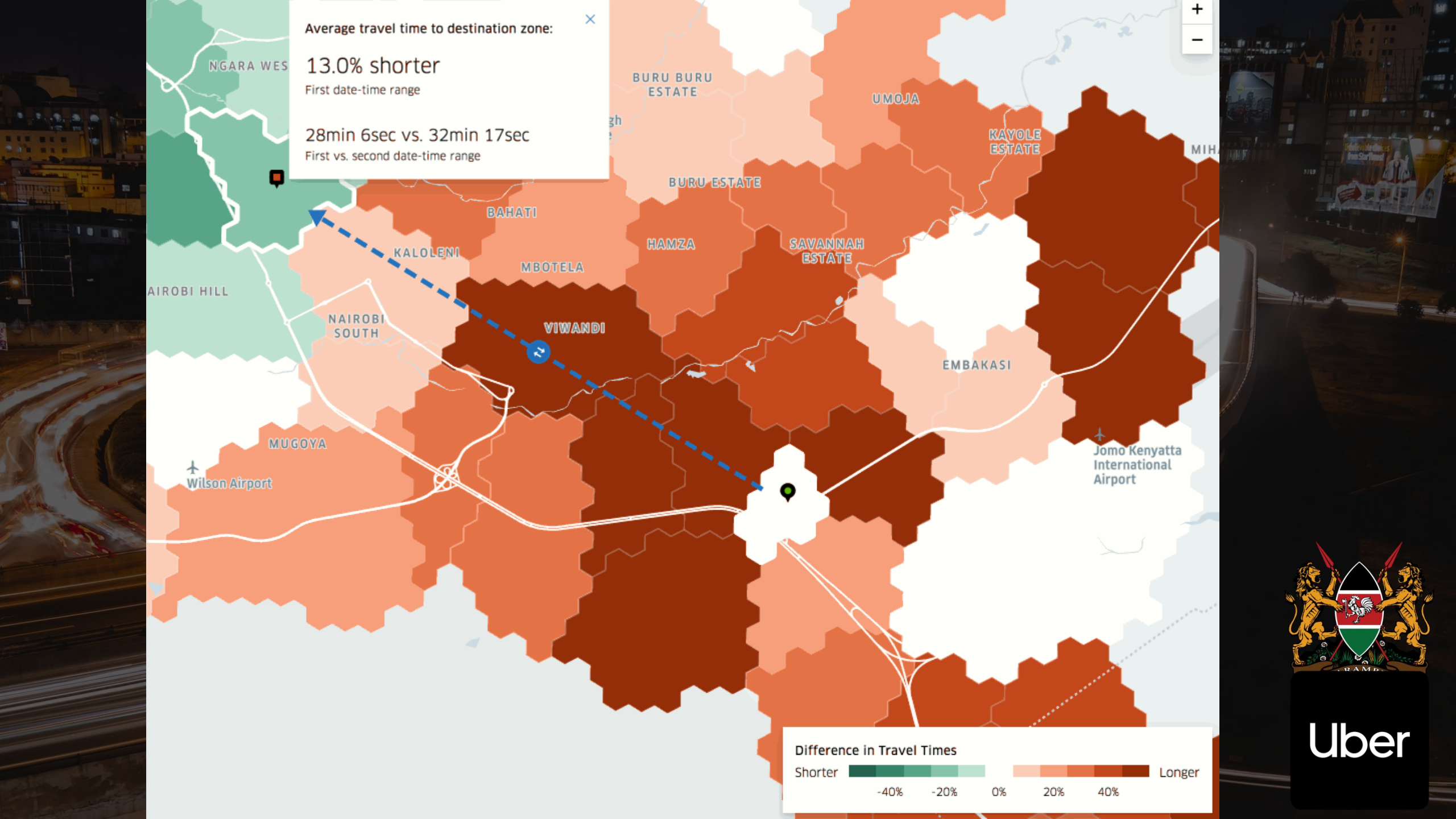
Context

- Visualizations compare average weekday travel times in **February to travel times during the rainstorms on March 6th and 15th, 2018** respectively.

- Zones are determined by Hex Clusters, a set of geographic boundaries drawn by Uber, for use in statistical and travel analysis.

- **Red areas depict an increase** in travel times, **while green indicates a decrease** in travel times.


KARIOKOR
Eastleigh Airbase
EASTLEIGH NORTH
BONDENI
HARAMBEE
OFAFA JERICHO
BURU ESTATE
MUTHURWA
SHURI MOYO
BAHATI
MARINGO
HAMZA
SAVANNAH ESTATE
KALOLENI
MBOTELA
MAISHA
NAIROBI SOUTH
NAIROBI WEST
MUGOYA
Wilson Airport
Average travel time to destination zone:
57.4% longer
First date-time range
36min 38sec vs. 23min 16sec
First vs. second date-time range
Difference in Travel Times
Shorter
Longer
-40%
-20%
0%
20%
40%


Average travel time to destination zone:
13.0% shorter
First date-time range
28min 6sec vs. 32min 17sec
First vs. second date-time range
NGARA WES
BURU BURU ESTATE
UMOJA
KAYOLE ESTATE
BURU ESTATE
BAHATI
HAMZA
SAVANNAH ESTATE
KALOLENI
MBOTELA
AIROBI HILL
NAIROBI SOUTH
VIWANDI
EMBAKASI
MUGOYA
Wilson Airport
Jomo Kenyatta International Airport
Difference in Travel Times
Shorter
Longer
-40%
-20%
0%
20%
40%
Uber

Map Kibera, GroundTruth


MAP KIBERA TRUST
SECURI
MAP
N. MAPKIBERA.ORG
@ MAPKIBERA.ORG
NJA RD JAMII PLAZA
FLOOR DOOR NO 14
ROADS
PATHS
RAILWAY
KARANJA
KIANDA
OLYMPIC
KISUMU
NDOGO
GATWEKERA
SOWETO WEST
RAILA
NGONG FOREST
GOLF COURSE
MASHIMO
LAINI SABA
SOWETO EAST
LINDI
SILANGA
NAIROBI DAM
0
250
500 m
SAFE SPACE
GBV SUPPORT
DANGEROUS PATHS
CHIEF'S CAMP & POLICE
STREET LIGHT OPERATIOAL
BLACK SPOT
ADOPT A LIGHT
NON - OPERATI
STREET LIG
NOT INSTALLE
VILLAGES
FOREST
BAR
BUILDINGS
By Al
07014645

Feedback Loops

KWALE COUNTY GOVERNMENT

HOMEPAGE ABOUT SAUTI YETU FACILITIES

Global Partnership for Sustainable Development Data

USING DATA TO JOIN UP DEVELOPMENT EFFORTS


NERVE

Takeaways

1. **Fostering and promoting innovation to fill data gaps.** New technologies offer new opportunities to improve data, if they are used for the common good.

2. **Mobilizing resources to overcome inequalities** between developed and developing countries and between data-poor and data-rich people.

3. **Leadership and interoperability** to enable the data revolution to play its full role in the realization of sustainable development.

4. **Design mindset** and readiness to fail-fast, learn-fast and continuous ideation. Good Enough, not Perfection.


Thank
you.