Supplement of

Spatial assessments of soil organic carbon for stakeholder decision-making – a case study from Kenya

Tor-Gunnar Vågen et al.

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EVIDENCE INTO DECISION MAKING FOR RESILIENCE PLANNING IN TURKANA COUNTY

TURKANA COUNTY RESILIENCE DIAGNOSTIC AND DECISION SUPPORT TOOL

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Current Modules for Turkana County. Select one by clicking here.

Click here to hide the menu and modules, and enter a full screen.

Turkana County Map

Zoom in (click +) and out (click -) of the map here. Alternatively double-click to zoom in, or use your mouse to pan (move) the map.

http://landscapeportal.org/turkanaSHARED/
Working with the Turkana County Government and the National Drought Management Authority (NDMA) ICRAF and UNICEF Kenya have partnered to build capacity and tools for evidence based decision-making. Using the ICRAF SHARED facilitation framework, scientific evidence and the capacity and information needs of Turkana County decision makers have been fundamental to the design of the diagnostic decision support tool.

The Turkana Resilience Dashboard is custom built by integrating multiple data sources on Turkana and a number of analytical processes to make data that is at varied scales meaningful through different visual forms. Thematic modules such as land health, security and education have been built to allow for easy visualization of the data to assist with decision making and resilience planning.

The diagnostic dashboard allows for robust management of data for Turkana County with all the data storied in a safe central server. The powerful analytical ‘engine’ behind the dashboard allows the for the decision maker to select the desired visualizations of the data and carry out various queries and subsequent capacity to download the required information.

Turkana County Government officials were guided through an interactive demonstration session to navigate through each of the modules of the tool. A team of GIS experts and lead by the ICRAF GeoScience Head Dr Tor Vagen who has developed the dashboard facilitated this demonstration session. The demonstration workshop allowed for detailed interrogation and trialing of the dashboard amongst all the workshop participants.
Demonstration of Dashboard to Turkana County Government during Capacity Building Workshop hosted in Nairobi
August 18 - 20 2015
DATA MANAGEMENT FOR TURKANA COUNTY

Data Management and Visualisation
For Evidence Based Decision Making and Monitoring and Evaluation

Shared Process Facilitation

Stakeholders + Decision Makers

Data Management System

Tailored Design

NDMA EDE-MTP Pillars

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DATABASE STORAGE
BUILDING THE DIAGNOSTIC AND DECISION SUPPORT DASHBOARD

Dashboard Process

Programming and Coding:
Operational data management

Integrating of Data:
Data processing
Data analysis
Data execution

Formatting:
Evidence generation for decision making

Data visualization through customised modules

Structured data Unstructured data

Structured data

Interactive analytics
Near-real-time structured database

Data streams
ASSEMBLING DATA SETS & MODULES

Data Gathering

Turkana Data Catalogue

Existing Data Sets

Social
- Population
- Number of households
- Disabled people
- Polygamy
- Social protection for elders
- Insecurity
- Refugees/Internally displaced people
- Health facilities
- Source of drinking water

Economic
- Poverty wealth results
- Household main provider
- Roof material
- Wall material
- Food security grants
- Distribution of mPESA
- Numbers of Livestock (donkeys, camels, shoats)

Biophysical
- Cultivated land
- Irrigation schemes
- Erosion potential
- pH
- Vegetative cover
- Vegetation condition
- Lighting fuel used

Formatting
Integrating
of Data

Programming
and Coding

Current Modules for Turkana County

Health
- Health centres
  - Distance to nearest health centre
  - Distance to nearest hospital
  - Number by sub-district

Hospitals
- Number per capita
- Number by sub-district
- Distance to nearest hospital
- Hospitals per capita

Children’s health
- Child malnutrition
- Child mortality

Location of schools
- Distance to population centres
- Number of schools per population
- Distance between schools

School enrolment
- Boys
- Girls
- Number of teachers

Types of schools
- Primary
- Secondary
- Advanced education

Population
- Relative increase in population
- Changes in population

Security
- Police / security presence
- Number of police
- Police officers per capita

Incidents
- Ethnic clashes
- Cattle rustling

Vegetation condition
- Vegetative cover trends
- Vegetation distribution
- Herbaceous cover

Vegetation
- pH and sanitisation
- Soil organic Carbon
- Land degradation risk
- Erosion prevalence
- Hydro-logic function
- Flood risk
- Runoff
- Infiltration capacity

Livestock
- Small irrigation scheme
- Proposed irrigation scheme

Insecurity
- Open defecation records
- District public health officers

Nutrition
- GAM
- SAM
- Wasting

Irrigation
- Open defecation records
- District public health officers

WASH
- Open defecation records
- District public health officers
# TURKANA COUNTY DATA CATALOGUE

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<td>Soil organic carbon for Turkana County at 500m resolution. Source: Vagen, T.-G., World Agroforestry Centre</td>
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**ADDITIONAL (BACKGROUND DATA USED AS SUPPORTING INFORMATION IN THE ABOVE):**

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<td>Infrastructure</td>
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**EDUCATION MODULE**

**EDUCATION DASHBOARD**

**STEP 1**
Select area of interest from the list here.

**STEP 2**
Click here to select variables for point size and colour from the drop down menu. See information reflected in tabs on the top right.

**STEP 3**
Click here to select which move between various data relevant to education.

Export, copy, print save this table of data here:

Search for area here:

Arrange data in ascending/descending order.

The blue highlight indicates the area is selected. The area selected will change data displayed in PLOT, ENROLLMENT BY GRADE and VIEW DATA.
Variable for point colour: Boys Grade 1 - 8 / Girls Grade 1 - 8 / Boys Total / Girls Total / Total.

Variable for point size: Boys Grade 1 - 8 / Girls Grade 1 - 8 / Boys Total / Girls Total / Total.

Variable for Aggregate to: Division / Zone / SCName.

See how the Aggregate to variables directly affects the data displayed.

See how the X-axis, Y-axis, and Aggregate to variables directly affects the data displayed.


The map shows all schools in the Turkana County. Hide the labels (school names) by unticking here. Location correlates with the selection in the table.

From the dropdown menu, select the region within Turkana County to view schools in that region. The map shows all schools in the Turkana County.

Zoom in (click +) and out (click -) of the map here. Alternatively double-click to zoom in, or use your mouse to pan (move) the map.

Arrange data in ascending/descending order. The blue highlight indicates the area is selected. The area selected will change data displayed in PLOT, ENROLLMENT BY GRADE and VIEW DATA.

The structure of the education dashboard
The below flow-chart shows the structure of the education dashboard. You can explore the data in the chart above, or view the data itself in the "View data" tab at the top of the page.
A key challenge for the Ministry is capturing data for ECD centres and progression to primary and secondary schools. A consultant is under procurement to get this data.

We also need to capture data on special needs children and children with disabilities.

The tool could help us with bursary allocation and be able to monitor how many and where bursaries have been given out.

The tool would be really useful to allow us to capture enrollment rates of ECD centres, and staffing of schools and where the gaps are and show this visually. The tool can also help show us the number of school age children not going to school.

PARTICIPANT FEEDBACK

Education is a basic human right. Like all human rights, it is universal and inalienable—everyone, regardless of gender, religion, ethnicity or economic status, is entitled to it (http://www.unicef.org/education/index_44870.html).

The benefits of education—for national development, individual prosperity, health and social stability—are well known, but for these benefits to accrue children in school have to be learning. Despite commitments and progress in improving access to education at the global level, including Millennium Development Goal (MDG) 2 on universal primary education and the Education for All (EFA) Goals, levels of learning are still too low (LMTF, 2014). In Kenya, nationally there has been an overall increase in the number of children and youth accessing education – as per EMIS 2014 the Net Enrolment Rate (NER) has increased from 80.3% in 2003, to 85.2% NER in 2014. However regional disparities remain, especially in the Arid and Semi-Arid areas (ASALs) and in refugee camps. Children and adolescents from these areas have the lowest enrolment numbers, particularly for girls, high dropout rates and poor infrastructural development, high pupil teacher ratio, high pupil textbook ratio. Children, adolescents and youth are leaving school without the minimum competencies and the necessary skills and knowledge. In Turkana, the NER stands at 59% with 119,494 (57% girls) school-aged children out of school. These statistics do not take into account disparities between urban and rural areas.
Data visualisation of security issues specific to the year and region selected from C & D. Circle size is indicative of scale of security issues.

Map and Data Visualisation for the selected year. Red indicating the origin/most intensive activity. Green indicating the least intensive.

**STEP 1**
Click and drag the slider to select the year of interest.

**STEP 2**
Click here to select location from the dropdown menu.

**STEP 3**
Click here to view data by district as a graph or to view all data pertaining to security from 1997 - 2014.

**STEP 4**
Click here to select your administrative level from the dropdown menu.
Refine data by entering key words in here

Variable for **area** where you would like the map to center on

The tool is based from an online source, therefore allowing for real-time updates of the data. The tool is programmed to automatically update itself.

Variable for **Administrative level**: ADMIN2/LOCATION.
The boxplot on the left shows a summary of livestock numbers aggregated to village level, based on the HSNP data. You can aggregate the data further by selecting administrative units from the dropdown menu. (Step 2 and 3).

**STEP 1**
Click here to select livestock type from the dropdown menu. See it reflected on the map above.

**STEP 2**
Click here to select variable from the dropdown menu for X-Axis and Y-Axis.

**STEP 3**
Click and slide here to select filter villages by animal numbers from the dropdown menu.
Variable for **Map**: Shoats / Camels.

Select variable for **X-axis**: Constituency_Name / Division_Name / Location_Name.

Select variable for **Y-axis**: Camels / Shoats

Variable for **X-Axis**: Constituency_Name / Division_Name / Location_Name

Variable for **Y-Axis**: Camels / Shoats

Data Visualisation for Constituency Name

Data Visualisation for Division Name

Data Visualisation for Location Name
The lighter the blue the more dense the number of shoats.

The larger the point the more dense the number of shoats.

Click and drag on the slider to select the number of shoats.

The lighter the blue the more dense the number of camels.

The larger the point the more dense the number of camels.

Click and drag on the slider to select the number of camels.
The concept of the tool is impressive; it can be very good for planning and deciding the feasibility of an action to be implemented that will reduce vulnerability to drought and climate change.

72% of Turkana is dependent on livestock – this needs to be factored into the livestock module. Data needs to be sourced and integrated into module.
Once you’ve selected an area of interest on the map, you can see an overview of indicators specific to the soil in the selected area.

For specific information on the Erosion, pH levels, soil organic carbon and vegetation condition, select the relevant tab here.

**STEP 1**
Click on area of interest on the map to get specific information on land health of that location.

**STEP 2**
For specific information on the Erosion, pH levels, soil organic carbon and vegetation condition, select the relevant tab here.

**STEP 3**
You can tailor how you view the map by checking and unchecking the options here.

### LAND HEALTH STATUS

- **Soil pH**
  - 7.8 (SOC low if red)
  - 7.8 (SOC critical if red)

- **Soil organic carbon (SOC)**
  - 7.6 (Soil if low)
  - 7.7 (Soil if critical)

- **% of area eroded**
  - 69%

- **% of area compacted**
  - 77%
Soil erosion is an important indicator of land health. It can be the result of a number of processes, including:

- cultivation
- over-grazing
- invasive species
- inherent soil properties (e.g., high pH)
- poor drainage or infiltration capacity

When erosion is severe, it leads to the loss of productive topsoil and also the loss of seed stocks in the soil, especially for grasses. The result is that the grasses do not grow back even when there are good rains.

**THE MAP**

Shows predictions of erosion for an area around the point you clicked on in the map (TOP). Red indicates erosion >75%, which is very high. Black indicates no/low erosion.

**THE GRAPH**

Shows the distribution of erosion values within the circle on the erosion map.

Soil pH is an important indicator of soil health. In the case of Turkana, soils have inherently high pH values. When pH values are higher than 7.5, the soil is generally considered alkaline. At values higher than 8 there is considerable risk of salinisation.

**THE MAP**

Shows predictions of pH for an area around the point you clicked on in the map (TOP). Red indicates low erosion (<5); green-blue between 5 and 7.5; purple higher than 7.5.

**THE GRAPH**

Shows the distribution of pH values within the circle on the soil pH map.
Soil organic carbon (SOC) is an important indicator of soil health, but also regulates a number of other ecosystem functions. These include hydrology (e.g. infiltration capacity). When SOC values are lower than 15 g/kg, this is generally considered low SOC, however it is when values drop below 5 g/kg that we have critically low SOC in the soil.

**THE MAP**

Shows predictions of SOC for an area around the point you clicked on in the map (TOP). Yellow indicates low SOC (<5) while brown shows higher SOC.

**THE GRAPH**

Shows the distribution of SOC values within the circle on the SOC map. The vertical red line shows the 15 g/kg threshold.

**PARTICIPANT FEEDBACK**

The Ministry has the responsibility to ensure Turkana is water and food secure, the tool has showed how important a knowledge of soils and water is in the region.

The main concern is management, as GIS projects in the past (e.g. FAO, OXFAM) have failed to capitalize on a huge investment. Need to be clear from the outset who is the custodian of the database and training and access on who has the right to enter into the system and upload information.

The tool is valuable to give evidence when trying to co-ordinate as this is such a big factor. One hundred plus NGOs operate in Turkana with low sustainability of projects as things such as water points are placed in locations not advised by evidence. The tool could help co-ordinate where there are missing water points and be able to help co-ordinate the water sector.

**MINISTRY OF WATER, IRRIGATION AND AGRICULTURE**
VEGETATION CONDITION - GRAPH AND VISUALISATION OF DATA SPECIFIC TO SELECTED AREA

0.93
Relative performance of vegetation

0.0052
Monthly vegetation cover trend

0.0032
Overall vegetation cover trend

Select smoothing period (24 = 3 year)

Select month to test monthly trend

Cumulative vegetation graph

Turkana Government Sector feedback on Diagnostic Dashboard Facilitated by Philip Aemun UNICEF
Orange points on the map indicate energy sources available. The visualisation allows you to quickly see the density of energy sources.

View the breakdown of various energy sources in various Turkana districts for COOKING PURPOSES. This graph will help identify the energy sources that is most prevalent to a specific area within Turkana County, and compare energy sources to other areas.
View the breakdown of various energy sources in various Turkana districts for LIGHTing PURPOSES. This graph will help identify the energy sources that is most prevalent to a specific area within Turkana County, and compare energy sources to other areas.

**PARTICIPANT FEEDBACK**

- **MINISTRY OF ENVIRONMENT, ENERGY AND NATURAL RESOURCES**

  - It would also allow us to map where access to energy is inadequate, and levels and locations of access to green energy and electricity.
  - The tool has great potential to reduce conflict between each Ministry and grow a spirit of solidarity and integration.
  - The ratio of girls and boys able to access education through lighting systems maybe one correlation we could perform with the tool.
  - Turkana has an active extractive industry with the discovery of crude oil. If we as the government could know how many wells have been drilled and our potential for crude oil production we could plan ahead of time. We have no mapping of minerals.
  - ‘Sexy’ way to show our data – we as the people of the Ministry have had our interest cultivated.
  - An issue is prosopis and how to use it to produce more sustainable energy, it would be very useful to map tree cover and location of prosopis.
IRRIGATION DASHBOARD

The blue highlight indicates the area is selected. The area selected will change data displayed in PLOT, ENROLLMENT BY GRADE and VIEW DATA.

Export, copy, print save this table of data here:

Search for area here:

Arrange data in ascending / descending order.
VIEW THE TURKANA COUNTY MAP WITHOUT THE SMALL IRRIGATION SCHEMES LABELS

VIEW THE TURKANA COUNTY MAP WITH THE SMALL IRRIGATION SCHEMES LABELS
HEALTH DASHBOARD

Select your preferred view of the Turkana County Health Map (see opposite page).

View graphs and tables to view health data relating to your selected variable (see overleaf).

STEP 1
Select Turkana County health variable from the drop down menu here.

STEP 2
Select your preferred view of the Turkana County Health Map (see opposite page).

STEP 3
View graphs and tables to view health data relating to your selected variable (see overleaf).
Variable for Map: Health facilities / Health facilities HIV / Children HIV / Children HIV Care / Children HIV ART / Adults HIV / Adults HIV Care / Adults HIV ART.

VIEW THE TURKANA COUNTY HEALTH MAP WITH STAMEN BACKGROUND
HIV / AIDS

The risk of becoming infected is disproportionately higher for girls and young women. In Kenya, HIV prevalence among young women aged 20 to 24 years is 4.6 percent, which is more than three times higher than among men of the same age (1.3%). Adequate information can change attitudes and behaviours related to HIV markedly. Evidence shows that adolescents and young people are less likely to be vulnerable to HIV when they are offered relevant gender-sensitive prevention information, skills and services in an enabling and protective environment. The lower HIV prevalence in girls 15-19 years (1.1% girls and 0.9% for boys) is a promising sign for prevention efforts. This age group provides a ‘window of opportunity’ for halting the spread of HIV infection if younger girls are empowered with life skills, HIV and other health services, and provided with a protective family and community environment. The proportion of young people aged 15 to 19 years with comprehensive knowledge of HIV prevention, however, is still low and stands according to the 2014 KDHS at 57.7 percent for young men and 49 percent for young women 15-19 years.

VIEW THE DATA OF YOUR SELECTED VARIABLE RELEVANT TO CONSTITUENCY.

Your variable selected from the drop down list will appear here.

VIEW DATA OF ALL VARIABLES IN TABLE FORMAT.

<table>
<thead>
<tr>
<th>Constituency_Name</th>
<th>Health_facilities</th>
<th>Health_facilities_HIV</th>
<th>Children_HIV</th>
<th>Children_HIV_Care</th>
<th>Children_HIV_ART</th>
<th>Adults_HIV</th>
<th>Adults_HIV_Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOMA</td>
<td>32</td>
<td>5</td>
<td>722</td>
<td>39</td>
<td>29</td>
<td>3590</td>
<td>159</td>
</tr>
<tr>
<td>TURKANA CENTRAL</td>
<td>54</td>
<td>10</td>
<td>811</td>
<td>302</td>
<td>289</td>
<td>6266</td>
<td>2597</td>
</tr>
<tr>
<td>TURKANA EAST</td>
<td>17</td>
<td>4</td>
<td>545</td>
<td>24</td>
<td>20</td>
<td>4209</td>
<td>179</td>
</tr>
<tr>
<td>TURKANA NORTH</td>
<td>23</td>
<td>6</td>
<td>414</td>
<td>88</td>
<td>60</td>
<td>3588</td>
<td>279</td>
</tr>
<tr>
<td>TURKANA SOUTH</td>
<td>33</td>
<td>8</td>
<td>818</td>
<td>62</td>
<td>54</td>
<td>6324</td>
<td>423</td>
</tr>
<tr>
<td>TURKANA WEST</td>
<td>51</td>
<td>10</td>
<td>1477</td>
<td>137</td>
<td>132</td>
<td>11415</td>
<td>3499</td>
</tr>
</tbody>
</table>

Showing 1 to 7 of 7 entries

Arrange data in ascending / descending order.

Search for area here:

Export, copy, print save this table of data here:
### STEP 1
Find your **division of interest** by scrolling through the list here.

### STEP 2
Find the **relevant data** to that division here.

### STEP 3
Select **Variable** from the graph on the right (see opposite.)

---

**TURKANA COUNTY**

<table>
<thead>
<tr>
<th>VILLAGES_N</th>
<th>DIVISION</th>
<th>CLTS. Facilitators</th>
<th>CHEW. Facilitators</th>
<th>Trained. Facilitators</th>
<th>Triggere</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>NANAM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>OROPOI</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>LOKICHOGIO</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>KAKUMA</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>LOKITAUNG</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>KATABOI</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>KAALENG</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>143</td>
<td>TURKYEL</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>132</td>
<td>LOIMA</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>LAPUR</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>KAKOR</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Showing 1 to 20 of 20 entries
Inadequate and unsafe water, poor sanitation, and unsafe hygiene practices are the main causes of diarrhoea, and lead to 361,000 under-5 child deaths annually. Poor sanitation, water and hygiene have many other serious repercussions. Children – and particularly girls – are denied their right to education because their schools lack private and decent sanitation facilities. Women are forced to spend large parts of their day fetching water. In Kenya access to improved drinking water in 2015 is 63%, but with marked disparities between rural and urban populations; many counties in the Arid and Semi-Arid Areas having significantly lower access than the national average. The sanitation situation is considerably worse with just 30% of the population having access to improved sanitation, and with limited progress made during the MDG era[1]. However, following the introduction of the new constitution has established the right of all citizens to sanitation and safe water and set a target of universal access by 2030. The process of devolution provides an exciting opportunity to address many of the sector challenges by bringing decision-making closer to the users. UNICEF has played a key role in supporting counties through the development of micro plans for Community Led Total Sanitation, which facilitate the incorporation of equity analysis into planning and realization of targets. UNICEF has also been working closely with county governments to develop models for sustainable rural drinking water supply services, and making the case for increased budget allocation towards operation and maintenance costs. (http://www.unicef.org/wash/)

[1] WHO/UNICEF Progress on Sanitation and Drinking Water – 2015 Update and MDG Assessment
NUTRITION MODULE

Use the colour codes for Turkana County divisions here, to understand information data in the graph.

STEP 1
Select your variable from the dropdown menu here (see below).

STEP 2
Use the colour codes for Turkana County divisions here, to understand information data in the graph.

STEP 3
See information in graph form (refer to below).

Variable to map: Wasting_N / GAM_mean / GAM_lower / GAM_upper / SAM_mean / SAM_lower / SAM_upper / Stunting_M
Proper nutrition is every child’s right: well-nourished children are generally healthier, more active, learn better in school and have a greater chance of fulfilling their potential. The nutrition sector in Kenya has realised key achievements especially in terms of improved nutrition indicators in recent years with data from the most recent Kenya Demographic Health Survey (KDHS) 2014 indicate an overall improvement in the nutritional status of children in Kenya over the last 5 years[1]. Between 2008 and 2014, stunting has decreased from 35% to 26%, wasting from 7% to 4%, and the proportion of underweight children declined from 16% to 11% as shown in the graph below. Kenya has also attained the Millennium Development Goal, 2015 target for proportion of underweight children which stands at 11%. The 2014 KDHS has shown a significant increase in exclusive breastfeeding rates for children up to 6 months from 32% in 2008 to 61% in 2014. According to the latest Global Nutrition Report 2015, out of the 74 countries for which data exist, Kenya is the only country that is on course to meet all five of the World Health Assembly maternal and child nutrition targets. This is based on the improved rates of exclusive breastfeeding, declining rates of stunting, wasting, underweight, and overweight and anemia in women 15-49 years. This breadth of performance is good news. However, a lot more needs to be done as the national levels figures mask the large inequities across the country, most noted in the arid and semi-arid lands where nutrition and health outcomes for children are far below the national average. Efforts are ongoing at national and county levels led by the MoH and supported by the UN, Development Partner and CSO, which focus on creating an enabling policy environment for good nutrition; scaling up evidence-based nutrition-specific interventions at community and facility level; strengthening coordination within and outside the nutrition sector; increasing collaboration with Agriculture, Health, Livestock, Education WASH and Trade; increasing responsiveness to crisis; supporting enhanced supply chain management and monitoring of the nutrition situation and subsequent programme response.
### DATA SOURCES IDENTIFIED TO INPUT INTO THE TOOL AT THE WORKSHOP

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCHA</td>
<td>Investment mapping tool for ASALs</td>
</tr>
<tr>
<td>DEVELOPMENT PARTNER MAPPING</td>
<td>ASAL Stakeholder forum</td>
</tr>
<tr>
<td>POPULATION DATA</td>
<td>Sex, age, cohorts</td>
</tr>
<tr>
<td>OXFAM</td>
<td>Water points data</td>
</tr>
<tr>
<td>IEBC</td>
<td>County &amp; sub-counties admin and political</td>
</tr>
<tr>
<td>MOBILE DATA EMS</td>
<td>Head teachers update on enrollment and dropouts and transition</td>
</tr>
<tr>
<td>NDMA</td>
<td>Long and short rains assessment</td>
</tr>
<tr>
<td>TURKANA COUNTY INCIDENCE DATA</td>
<td>Security Directorate</td>
</tr>
</tbody>
</table>
PARTICIPANT FEEDBACK

MINISTRY OF ROADS, TRANSPORT AND INFRASTRUCTURE

The concept behind the tool is very sound, it’s useful for us at home. The data is very useful for planning aspects and allow us as a government across the sectors to be able to use data and plan more effectively.

Module on roads is currently missing.

Data integrity and accuracy is critical, to allow better-informed decisions and to roll out something beneficial in the long term.

The tool allows us to enjoy the synergies that are supposed to be there in a government between departments.

MINISTRY OF FINANCE AND PLANNING - DATA MANAGEMENT UNIT

As planners population data needs to be a baseline. Our work is based on demography so we want to see age cohorts etc. so when we do an intervention we know who we are reaching and where

The tool has very good visual demonstration.

Module on roads is currently missing

A big concern in the County is the need to establish baselines to measure the impact of large economic activities – if we can do the baseline before oil exploration, quarries and sand harvesting begins we have a spatial baseline to track and quantify these activities.

Data management and security are a key issue, the levels of access and how to manage storage and analysis are also key areas for training and capacity.

For the roll out we can pilot one or two departments and how to feed data to them, and gather data as well as identify gaps.

SUGGESTIONS FOR ADDITIONAL MODULES

Fisheries

Trade
## DATA GAPS FOR THE DASHBOARD

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence of cattle rustling</td>
<td></td>
</tr>
<tr>
<td>Pastoralist migratory patterns; where are the kraals and where do they settle per season</td>
<td></td>
</tr>
<tr>
<td>Sanitation coverage and rates of ODF</td>
<td></td>
</tr>
<tr>
<td>Number of latrines available</td>
<td></td>
</tr>
<tr>
<td>Precipitation predictions</td>
<td></td>
</tr>
<tr>
<td>Public institutions e.g. schools able to access solar and green energy</td>
<td></td>
</tr>
<tr>
<td>In the education module – enrollment and retention – this would be very powerful to show a governor there is a drop in enrollment and tie it to a shock like a drought by tying it back to the Land Health Module</td>
<td></td>
</tr>
<tr>
<td>Seasonal rainfall and malnutrition</td>
<td></td>
</tr>
<tr>
<td>Children with disabilities</td>
<td></td>
</tr>
<tr>
<td>School bursaries</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td></td>
</tr>
<tr>
<td>Economic extraction activities (quarry, sand harvesting, oil exploration)</td>
<td></td>
</tr>
<tr>
<td>Number of ECDs and location</td>
<td></td>
</tr>
<tr>
<td>Access to green energy</td>
<td></td>
</tr>
<tr>
<td>Migratory patterns of pastoralists</td>
<td></td>
</tr>
</tbody>
</table>

The dream is to have Turkana as one of the model counties. We are moving to that direction, as a County government we are engaging with many partners, for example a UN partnership on performance management and revenue collection gaps.

If a trade module could be added to the tool it would be very useful, so we can visualize trade volume, livestock sales, milk production etc., and have access to a monthly figure.

The tool is so informative and its just the beginning, we can put data, we can correct data and various areas, Turkana has a map that the national government has, doesn’t show the extreme end of Turkana.

There is a 12% dependence on fisheries by Turkana, a module on this to allow us to plan ahead for 100 years and ensure sustainability of the lake would be great.

We will share with the Governor and show him how to move with the map which is very interactive ‘be assured you have an agent here’.

In the education module – enrollment and retention – this would be very powerful to show a governor there is a drop in enrollment and tie it back to the Land Health Module.

ECONOMIC ADVISOR TO THE GOVERNOR
We need to innovate on the way we collect data for example the monthly report bulletins currently done on paper.

The beauty of the tool is factual information and recent real time data for future planning especially for drought e.g. soil pH and soil erosion.

Security is one of key disasters in the county. The tool shows the type of aggression and the trends and is a very strong source of information for advocacy with national government to put investments in specific areas.

Future development of the tool to look at interventions, to understand what investments are happening and what are the results e.g. food security assessment, what has happened since the intervention and progress overtime.

The use of information is what is important to better our situation in the county. We propose we need a focal point person to demand information from all the stakeholders to update “the diary” and they can lead in looking at trends and plan ahead of times. Part of their ToR would be leading planning sectors with different sectors and pushing us to implement – this person will be given due respect.

NDMA’s role is to co-ordinate stakeholders with drought information. Many people come asking for background information to direct investments, which can be timeous on staff. We now have a tool to direct people to get a background on the area.

The tool can assist with the Hunger Safety Net establishment. We now have good information to upscale (vegetation cover index) and a Kenya resource to make our decisions. During a recent drought we were challenged by the community – why pick Kibish to assist – we now would have a way to get evidence as a justification to show the map what the situation is like, so we are not challenged.

We need to innovate on the way we collect data for example the monthly report bulletins currently done on paper.

This tool will replace so many paper notebooks and diaries we carry – e.g. a notebook on health and education that is kept on the shelves making it difficult to share and store information. We now have one notebook for Turkana county and its up to us to make a good use it and to update information.

NDMA’s role is to co-ordinate stakeholders with drought information. Many people come asking for background information to direct investments, which can be timeous on staff. We now have a tool to direct people to get a background on the area.

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FUTURE IDEAS FOR THE DASHBOARD AND ADDITIONAL FEEDBACK

- Technical ward – water and agriculture for mobile information (could be other themes / sectors)

- Farm census

- Issue of synergy of planning and seeing the effects of that – significant different dimension to the tool to develop in a second phase. To help understand and explore the expected results of the investment and importantly integration and inter-departmental investments and their impact on the landscape

- Being able to print and export a summary of working session

- Change the data displays as some of the scatter plots are too complicated to interpret and other options such as a histogram would be easier

- Integrate with the NDMA Management Information System for comprehensive and accurate for data collection

His Excellency Honorable Josaphat Nanok, Governor of Turkana County reviews the SHARED materials
PARTICIPANT FEEDBACK

The support we are already witnessing, thank you to the team for the energy and knowledge and the kind of organization that has been put into the tool. Yes this will be our baby – so be it!

The Ministry has funds and resources to put into the tool and capacity development.

The Health Ministry needs to think of the linkages with the Health MIS, to understand where future investments are needed and where surveillance is required.

The budget circular is start of the budget cycle and preparation for the Annual Development Plan (ADP) needs to be informed by the tool. We will organize and fund a two-week workshop for users in making those decisions. Then further the tool can assist with the County budget and outlook paper.

The Ministry has been grappling with budget ceilings. If these can be factual by using evidence based arguments to the budget and appropriation committee this is a good way to make this presentation to put out argument across and the key priorities we need to achieve. This is our tool!

We need to prepare ourselves and engage in evidence-based information. During the last Budget estimate review it took a lot of time to convince the committee on allocations as we did not have facts or data and we just based argument on supply. If we had data it would have been the correct way to make the decision.

A key issue is integration for example between health, pastoral economies and education, instead of criticizing why there is less investment into pastoral economies in comparison to the education and health sectors the evidence needs to show us how they are integrated. This is the type of discussion we need to have.

MINISTRY OF FINANCE AND ECONOMICPLANNING
SHARED
The Stakeholder Approach to Risk Informed and Evidence Based Decision Making