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## VIHIGA COUNTY SUCCEEDS IN USING GIS DATA TO FACILITATE EQUITABLE COMMUNITY DEVELOPMENT PLANNING, IMPLEMENTATION AND MONITORING

County:	<b>Vihiga</b>		
Sector/s:	<b>All</b>	Sub-sector/Theme:	<b>Public Service</b>
Keywords: (for search on the online platform)	<b>GIS, Geospatial Information System, GTS, Geospatial Technologies Services, mapping, public participation, community development planning, monitoring, Vihiga County</b>		
Target Audience:	<b>County Governments</b>		
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Resource Persons (include their designations)	<b>Mr Washington Olando, Director, Vihiga Geospatial Technologies Services (GTS)</b>		
Acronyms	<b>CECM — County Executive Committee Member</b>		

### **Introduction (Context and Challenge):**

- Vihiga County was experiencing unequal development across the wards owing to the absence of a County-level formula to distribute resources.
- It was, thus, difficult to objectively determine gaps in each sector without favouring a particular area. Unequal distribution of resources rendered some areas less developed than others, affecting all Vihiga County residents.
- Due to skewed development, there was unequal service delivery, as facilities were mainly concentrated in a few areas. For example, in health, mothers in labour would die because of not being able to get to the hospital on time. The GIS Directorate



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mapped all health facilities, which at the time were 63 revealing a gap of 11 additional facilities which were built to ensure residents only travel a radius of 2km to the nearest facility.

- The same inequalities were found in other sectors like education, agriculture, etc.
- A solution to ensure equitable distribution of resources was necessary.

#### **Implementation of the practice (Solution Path):**

- The GTS Lab was initially started when the current Governor (H.E. Hon. Dr. Wilber Khasilwa Ottichilo ) was a Member of Parliament for the Emuhaya Constituency. It was set up to collect data within the constituency to enable the mapping and monitoring of all projects through the Geographic Information System (GIS) platform. The data was used to identify gaps in the constituency, and decisions on priority projects were made based on GIS-supported evidence/facts, e.g., type of project, number of beneficiaries, impact, etc.
- At the County, the GTS Lab was initially anchored in the County's Department of Lands to serve the needs of that Department alone.
- To better cater to the needs of the County through evidence-based data, the GTS Lab was placed under the Office of the Governor through Executive Order No. 1 to serve all departments and subsequently launched in May 2019. The Director of Vihiga GTS Lab, a trained GIS expert, runs the Lab operations under the direct supervision of the Chief Officer, Public Service) who in turn reports to the CECM (Public Service). The CECM (Public Service) reports to the Governor. Because the Lab is under the Governor's Office, departments, through their lead officers, are more than willing to provide data and information to the GTS Lab for processing.

#### **Key activities**

In 2017, when Governor Ottichilo took office. A GTS officer manned the GTS Lab under the Director of Lands. The Governor was informed that the GTS unit was responsible for land mapping. The County Governments Act, 2012, Clause 105(f) requires counties to establish a GIS-based database system. Since the Governor wanted to use GIS technology to map what was there in each sector and analyse it for gaps, he sought to establish it in his Office to serve the whole County Government rather than a department since one department cannot give reports to another department. The



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Governor presented the idea to County Executive Committee Members (CECMs), who supported it.

So, 2017 marked the beginning of the Geospatial Technology System (GTS) Directorate in the Governor's office when H.E. Hon. Dr. Ottichilo first took office. The Governor's office is the apex of information from all county departments. The GTS Directorate now gives reports to the whole County Government.

### ***Key implementers and collaborators and their roles***

The key implementer was the County Government of Vihiga through the GTS Directorate in the Office of the Governor. Other departmental lead officers provided information to the GTS Directorate and received analysis from the Directorate after mapping.

Later, the County Government received support from various development partners, including *Airbus*, *ESRI*, *LocateIT*, and *Food and Agriculture Organization*. Specifically, ESRI, an international GIS-mapping software, provided the GIS software at a subsidised price, while LocateIT provided GIS software setup at a subsidised price. Airbus helps get aerial images, and FAO provided an A0 map printer on 16<sup>th</sup> May 2019, two weeks before the GIS Lab commissioning. The printer is capable of printing, plotting and scanning maps. GIS functionalities require computers with 16GB RAM and 4TB hard disk.

### ***Resource implications***

- The Lab was set up at the cost of KSh.20 million and runs on a modest budget of KSh.17 million per year.

### ***Sustainability***

- The GTS Directorate receives an allocation from the County Government each financial year.
- By using the GIS platform, the County aims to become a model user of ICT and Geospatial Technologies in planning and decision-making processes in the country.



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Because of the accruing benefits so far, the community has embraced GIS in prioritising projects, which guarantees its continued use.

- GIS enables the equitable distribution of resources across all the Wards instead of implementing projects only where certain politicians come from. GIS runs a buffer, and a decision is made.

### **Results of the practice**

- Mapping of Sectoral projects per year is being done for equitable support.
- The first administration of Vihiga County at the beginning of devolution (2013–2017) constructed 12 ECDEs. Mapping of ECDEs has enabled Governor Ottichilo's administration (2017–2022) to construct 8 ECDEs per ward (there are 25 wards) but 9–10 ECDEs in wards that have many pre-primary school pupils.
- Distribution of scholarships is also mapped to enhance fairness. Scholarships mapping has brought on board 375 students on the Vihiga County Government scholarships.
- From the mapping of TVET institutions in the County, a gap of 2 more TVETs in Emuhaya and 1 in Hamisi was identified and will be addressed.
- Health facilities mapping is done to determine and bridge gaps.
- Mapping of pregnant mothers has reduced fatalities as more mothers deliver in hospitals. Initially, an average of 20 mothers per month would lose their lives due to non-skilled births/delivery, but at the time of capturing information for this story (June 2022), only 1 had passed on in the last 6 months. This is attributed to GIS which maps all pregnant mothers, and information is given to trained and equipped Community Health Volunteers stationed in each village and attached to health facilities. The CHVs visit the pregnant mothers at their homes, and through a Smart Health App on the CHVs' work smartphones, they capture essential bio-data and send it in real-time to the Sub-county database, which verifies it before sending it to the County. With the metadata created, the App generates information such as antenatal clinic appointments, CHV visits, etc. On each CHV visit to the home of the pregnant mother, more data is collected and relayed upwards. CHVs are trained and equipped to treat minor illnesses during their visits. They refer complex illnesses to the nearest health facility.



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- In February and March 2022 alone, pregnant mothers in Vihiga County totalled 2,635. This information is helpful to the Health Department for planning and decision-making. For example, through Ottichilo Care, pregnant mothers are given KSh.1,000 at every Ante-Natal Care (ANC) visit, and on delivery, they get a Mama Pack and free clinics for the baby for the next 6 months. The mothers' mapping helps identify the nearest health facilities to refer them for ANC and/or emergency medical attention. It also helps to allocate enough resources for Ottichilo Care and other services to the mothers.
- During the COVID-19 period, the County Government mapped the hotspots, entry points, isolation centres, screening centres, etc. This information helped in quick decision-making and response.
- To boost quality health provision, herbalists have been mapped to determine the types of patients and diseases they treat.
- Currently, AMREF is utilising the Vihiga GIS Lab to undertake disease surveillance in Vihiga, Kakamega, Bungoma and Trans Nzoia Counties.
- Water projects, including water tanks, metered households, water kiosks, and Maseno, Lunyenyerere, and Kaimosi Water Schemes, have been mapped to inform decisions on closing the water access gaps. Mapping rivers and water towers have helped establish their capabilities and life span to improve them.
- Aerial mapping of Vihiga County has established ongoing deforestation of Maragoli Hills. Reforestation plans are underway.
- The road network has been mapped to establish gaps in all-weather, murram and tarmac roads.
- To enhance security in markets, floodlight mapping was done.
- Businesses' mapping has enhanced revenue collection by distinguishing those that have paid and those that have not.
- Gap analysis for investor interest — the information gathered is shared with investors who show interest in investing in Vihiga.
- Agriculture mapping is done for funding support - smart agriculture, leaf vegetable agriculture, cooperative agriculture, and sector agriculture (livestock, livestock products, fisheries, fisheries products, etc.).
- Individual farmer registration for subsidy on farm inputs.



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- Google is piloting a digital addressing project in Kisumu and Vihiga Counties using the Vihiga GTS Lab human resource. Digital addressing gives digital and physical addresses of roads, schools, businesses, homes, etc., using longitudinal and latitudinal coordinates. This project aims to replace postal addresses (P.O. Box). The digital addressing project, which started in December 2021, was finalised in July 2022. Local youths were engaged in fixing the address plates on the walls of the mapped properties.
- Digital addresses are helpful in online ordering and delivery of goods and services ordered online.
- During emergencies such as a fire, the affected can send the digital address codes made up of longitudinal and latitudinal coordinates (e.g. 3PMC+GPJ Vihiga County) to the Fire Department for faster response.
- Health facilities can use digital addresses to deliver drugs to patients or to send ambulances to those in need, e.g. pregnant mothers in labour. They can also order drugs and blood to be supplied by drones to their precise locations, as in Rwanda using Zipline. The Lake Region Economic Bloc (LREB) is set to visit Rwanda for benchmarking.

*Key activities undertaken that ultimately led to positive results include:*

- Buy-in of top management.
- Information support from other departments.
- Use GIS data during public participation forums to determine project priorities in each sub-counties.

### **Lessons learnt**

A GIS lab may seem expensive to start but cost-effective in the long run. For Vihiga County, everything worked as planned.

### **Challenges**

Counties wishing to establish GIS labs must be cognisant of these common challenges.

- Insufficient Human Resources because of the few GIS professionals in the country. Currently, there are only 6 staff at the Vihiga GTS Lab, while the ideal number of staff



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required is 17. Local universities such as Maseno University, Dedan Kimathi University of Technology, Jomo Kenyatta University of Agriculture & Technology, and Moi University are training GIS specialists. The Vihiga County GTS Lab gives internship/attachment opportunities to these students.

- In the beginning, i.e., 2017, there was a lack of buy-in to the GIS initiative by County staff and politicians, as people preferred seeing tangible results. However, to change the perception, the County invested in sensitising the top management and the County Assembly on how GIS works. The GTS Lab prints maps which it uses for a demonstration to the residents during public participation on, say, determining priority projects. This aids their understanding and decision-making.
- Inadequate funding. The Vihiga County GTS Lab currently runs on an annual budget of KSh.17 million, while it requires KSh.30–40 million to function optimally. The County has been bridging the gap by approaching donors with sector proposals. For example, for *Ottichilo Care*, County Government put in three-quarters of the funds while UNICEF topped up the remaining quarter.

### **Recommendations**

GIS is a great platform to enhance the use of data and information in sustainable development, planning and decision-making processes. The Vihiga GTS Lab is ready to handhold other Counties seeking to replicate the model at a fee.

From its experience in using GIS and the gains so far, the County Government of Vihiga recommends the following:

- The country should have a fully-fledged GIS lab in the Office of the President under the Service Delivery Unit (SDU) to monitor all projects in the country.
- The CoG should have a *GIS Coordination Unit* to offer capacity support (finance, technical and infrastructural) to Counties to set up GIS labs.
- All County Governments should establish GIS labs to support planning and decision-making as outlined in the County Governments Act of 2012 (Clause 105(f)). So far, 25 County Governments have visited Vihiga County to benchmark, out of which 16 have shown interest in setting up GIS labs.



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- Counties should avoid anchoring the GIS Lab in the Department of Lands because it will only be helpful to that Department alone.

**Further reading:**

1. County Governments Act, No. 17 of 2012
2. County Government of Vihiga website <https://vihiga.go.ke/>
3. County Government of Vihiga <https://www.facebook.com/vihigacountygov/>



*H.E. Hon. Dr. Wilber Khasilwa Ottichilo, Governor of Vihiga County, accompanying dignitaries on a tour of the GTS Lab*





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Mr Washington Olando, the Director of Vihiga GTS Lab explaining a map to staff from other counties on a benchmarking tour



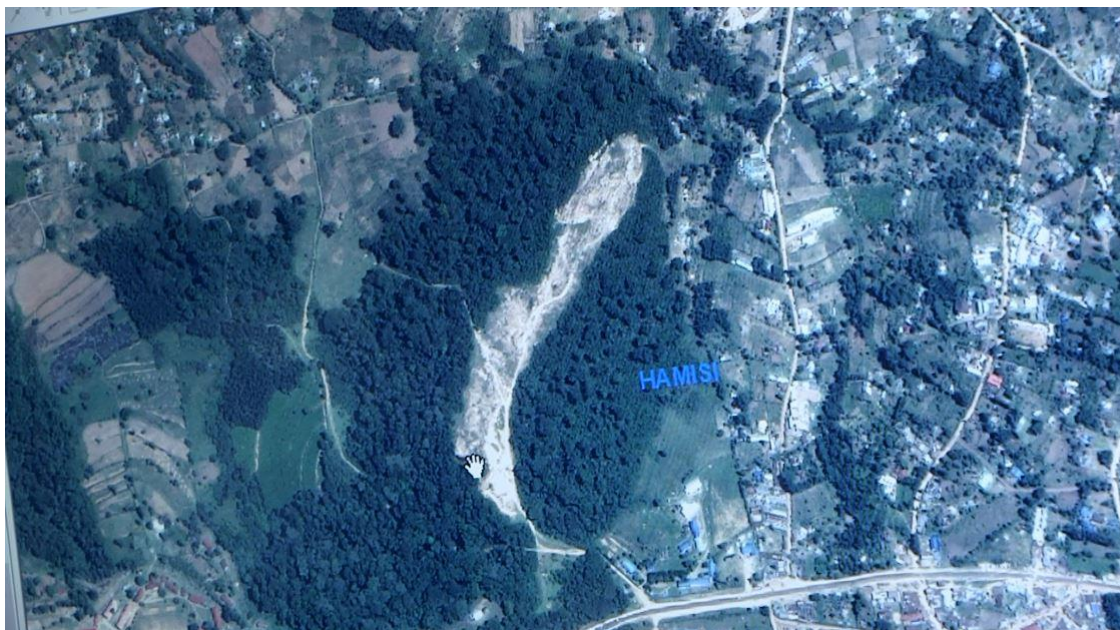
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*Director Olando explaining an aerial map of Vihiga County*



*An aerial view of Hamisi Sub-county showing deforestation concentration in the middle*



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*Director Olando holding a sample plate of a digital address while explaining the digital addressing project which will help the County Government reach all residences and businesses.*