

DATA *for* BETTER FUTURE *of* CHILDREN

2021

Tanga City Council
Readiness Assessment

Omar Bakari



DATA FOR BETTER FUTURE OF CHILDREN

Tanga City Council - Readiness Assessment

Standard Disclaimer

This product was developed by Tanzania Data lab under the consultant agreement with Fondation Botnar to Conduct Data Readiness Assessment in Tanga City Council. The findings, insights, interpretations, recommendations and conclusions were derived from the workshop, face to face interviews, observations, questionnaire, desk reviews and focus group discussions.

They do not necessarily represent the views of the Fondation Botnar. This document represents the reality on the ground as of January 2021 and we do take note that the situation might change based on the ongoing initiatives.

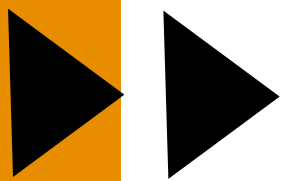


TABLE OF CONTENTS

Acknowledgement	iv
About	v
List of Abbreviations	vi
List of Figures	viii
Executive Summary	01
Chapter 1: Introduction	03
Chapter 2: Structure and Business Processes - Tanga City Council	07
Chapter 3: Data readiness framework	13
Chapter 4: Methodology	17
Chapter 5: Insights from the Field	19
Conclusions & Recommendations	41
Shareback Session	47
References	49
Appendices	51

⬇ Acknowledgment:

Development of this work is part of the long-term plan of the Fondation Botnar support in Tanzania specifically to make Tanga City a better place for the future of children. The author appreciates the commitment and support of the City Director towards this work. His dedicated time and support are highly appreciated.

Special thanks to Dr. Ntuli Kapologwe, the Director of Health, Social Welfare and Nutrition Services at the President Office Regional Administration and Local Government for his presentation and contribution during the workshop sessions. His insight helps us to synchronize and complement well with the government on ongoing initiatives. We also appreciate the participation of representatives from NIDA and RITA, their contributions in relation to data challenges, opportunities was extremely useful to this work. The constructive inputs from the Ex- minister of Health Dr. Seif Rashid his experience helped us to strengthen our work better. We also appreciate the inputs from Dr. Henry Mwanyika and Mr. Sadiki Masomhe during the preliminary results discussion and their vision in digital transformation.

Thanks to all City employees including head of units, departments and ward and mtaa executives for their responses and support during our face to face meetings and discussion. Specific appreciation to Mr. Juma Mkombozi, the Tanga City statistician for his wonderful coordination to make this work possible.

Tanzania Data Lab would like to thank the Fondation Botnar for the commitment and support to this work. Last but not least all other stakeholders for their inputs to strengthen this work.





About:

Tanzania Datalab (dLab) is a local non-government organization that was established by Tanzanians to support enhancing data revolution. The organization is working with different stakeholders including private sector, central and local government, community, non-government organizations and Civil Service Organizations. It is hosted at the University of Dar es Salaam, College of Information and Communication Technology. It has worked with the university to establish a Master program in Data Science which started in 2018. dLab role is to support practicum program. The program enhances students with practical experience from the industry by working on the real problem.

Currently dLab in collaboration with IREX from Washington DC is conducting Data Readiness Assessment in Health facility in Kyela District to support Direct Health Facility Financing (DHFF). Apart from that, the organisation has different programs that engage and empower girls and women in the field of data science. For example, dLab is working with Vodacom – Tanzania to run Code Like a Girl Program which its main objective is to engage and empower girls in Information and Communication Technology field at the earlier stage. The organization has been promoting the Innovation that use data to address community problems by providing Innovation grants, mentoring and coaching. For more information please visit www.dLab.or.tz





List of Abbreviations:

AGR OFF	Agriculture Officer
BEMIS	Basic Education Management Information System
CD	City Director
CD OFF	City Director Officer
CDO	Community Development Officer
CHMT	Council Health Management Team
CHW	Community Health Worker
CSO	Civil Service Organization
DAS	District Administrative Secretary
DC	District Commissioner
DHFF	Direct Health Facility Financing
DHIS	District Health Information System
dLab	Tanzania Data Lab
DMO	District Medical Officer
DPT	Department
FFARS	Facility Financial Accounting and Reporting System
GePG	Government electronic Payment Gateway
GoTHoMIS	Government of Tanzania Health Operation Management Information System
HCMIS	Human Capital Management Information System
HEAL OFF	Health Officer
HFGC	Health Facility Government Committee
HGB	Health Governing Board
ICT	Information and Communication Technology
IDSR	Integrated Disease Surveillance and Response
IHI	Ifakara Health Institute
ILS	Integrated Logistic System
IREX	International Research and Exchange Board
LGA	Local Government Authority
LGRCIS	Local Government Revenue Collection Information System
MCC	Millennium Challenge Cooperation
MEO	Mtaa Executive Officer
MSD	Medical Store Department
NGO	Non-Government Organization
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund



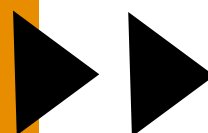
NIMR	National Institute for Medical Research
O&OD	Opportunity and Obstacle for Development
ODI	Open Data Initiative
ODK	Open Data Kit
OECD	Organisation for Economic Co-operation and Development
PEPFAR	President's Emergency Plan For AIDS Relief
PLANREP	Planning and Reporting System
PO RALG	President's Office Regional Administration and Local Government
PREM	Primary Record Manager
RAS	Regional Administration and Local Government
RC	Regional Commissioner
SDG	Sustainable Development Goal
SIS	School Information System
STEM	Science, Technology, Education and Mathematics
UN	United Nation
WDC	World Development Committee
WEO	Ward Executive Officer
WHO	Ward Health Officer





List of Figures:

- Figure 1:** Tanga City Council Organogram.
- Figure 2:** Local Government Administrative Structure.
- Figure 3:** Data Readiness Framework.
- Figure 4:** Frequency of Data use beyond budget and Planning mentioned by Ward Executives.
- Figure 5:** Frequency of Data Source mentioned by Ward Executives.
- Figure 6:** CHW Potential data use case visualiztion.
- Figure 7:** Overview of Education Data Flow at the council level.
- Figure 8:** Data collection challenges mentioned by ward executives strucutre.
- Figure 9:** General Overview of the Council data flow.
- Figure 10:** General Overview of the Health data flow.
- Figure 11:** Access to internet at the health facility level.
- Figure 12:** Access to internet at Ward level.
- Figure 13:** Status of Human Resource Gap at the Health Facility.
- Figure 14:** Human Resource Gap at the Ward level.
- Figure 15:** Interoperability Vision of PORALG.





Executive Summary:

In 2015, more than 193 UN member states agreed to address poverty, hunger, climate change, gender equity and other global issues. It is expected that by 2030 major progress should be achieved in each country. This member states commitment is broad enough to align with national priorities development plans of each country and for the case of Tanzania is mainly a Second Five Year Development plan which is coming to an end (The development of the Third Five Year plan has started).

In each country Data is essential to enhance the achievement of the 2030 expectations. It helps to track the indicators both at the national level plans at the same time the SDG goals.

Beyond SDG tracking, data is the new factor of production as it has been recognized by Most Developed Countries. Some business and research communities believe that data is the new oil.

Based on its importance, as recommended by the 2017 OECD Development cooperation report, data need to become a strategic cross-cutting priority for developing countries and donors alike.

In Tanzania, different programs have been implemented to support Data Revolution both at Joint level and Sub-national level. For example; partnership between PEPFAR and MCC supported implementation of Data Collaborative for Local Impact (<http:dcli.com>). Fondation Botnar supported Tanzania Data lab to conduct this Data Readiness Assessment. The main objective is to inform stakeholders on the areas that need to focus on in order to enhance availability and use of relevant data to make informed decisions.

Based on the insights collected, it was recommended to invest on data collection and data infrastructure including council saver and support practical data skills training program. Enhance collection and use of

Community Health Worker data and citizen generated data to address citizen problems such as child and maternal mortality. Further to that it was recommended to establish data technical team led by the council statistic officer and recruit data clerk in health facilities at the same time support real time data collection from the facility, ward office and school. Last but not least, to enhance the use of spatial data in all departments and units.

All the recommendations were shared during the share back session on 29th December 2020 where all stakeholders did have an opportunity to provide their inputs which were included in this final report.

It was concluded that Tanga City Digitalization process should be faster to enhance data flow, use and cope with 4th Industrial Revolution.

It was also agreed that the top priority is to support the lowest level of the council where all departments and units rely on their data. The executive Director assured the stakeholders for his support to make use of data to realize the dream of making Tanga City Council a better place for the future of Children.



⬇ Chapter One: Introduction

Fondation Botnar

is among the few Philanthropic organizations that focus on the future of children and adolescence. The organisation is based in Basel, Switzerland and has a number of programs in developing countries which aligned with government plans, strategy and global commitment such as achievement of the Sustainable Development Goals by 2030. The organisation believes that with an existence of emerging technologies such as Artificial Intelligence and quality data, it is absolutely critical and possible to create the future of children. This is why the "Future now for children worldwide" is the vision of the organisation. The organisation is committed to work and engage diverse players and invest in sustainable digital solutions and ecosystem strengthening.

In Tanzania mainland, since November 2018 the organisation in collaboration with Tanga City council has started to engage different stakeholders to identify different opportunities for partnership to support the future of children. Through the consultative meetings and workshops conducted, seven key areas were agreed to be the focus to make the city **'A place where a child is healthy and, appropriately educated, who, at 19 years of age having lived in a safe, secure and supportive environment is prepared to contribute socially and economically to her/his society'**. These areas include economic empowerment (skills, income, jobs), data, information and innovation, resilient city system, infrastructure (mobility, safety and open space), availability and accessibility of service (wash, education, health care) and governance and accountability.

Tanga City Council:

Is one of the eleven councils that exist in Tanga region. The council has 27 wards with 181 Mtaa which fall into four divisions i.e. Chumbageni, Ngamiani Kaskazini, Ngamiani Kati and Pongwe. According to the national census conducted in 2012, the council population is 273,332 whereby 52.1% are female. The council population is contributing to 13.36 percent of the Tanga region total population. The sensor also shows that the council has approximately 127,798 children aged between 0 and 19 years and under 5 years of age are 39,675.

The average annual population growth rate is 2.18% and this is due to natural population increase and sustained rural-urban migration following privatization of manufacturing industries and construction of new settlements. There are 24 unplanned settlements in the city which accommodate

23% of urban population i.e. 47, 639 people while 77% of the urban population is living in planned areas.

The council strategy is aligned with national priorities as stipulated in the national development plans such as the Second Five-year development plan and also supports achievement of Sustainable Development Goals target by 2030. As part of the implementation of decentralization by the devolution, the council positions itself to continue responding to local needs while empowering its community to fully participate in their own development.

A place where a child is healthy and, appropriately educated, who, at 19 years of age having lived in a safe, secure and supportive environment is prepared to contribute socially and economically to her/his society.





Why Data readiness assessment:

In November 2018, stakeholders agreed a vision to make Tanga City a place where a child is healthy and, appropriately educated, who, at 19 years of age having lived in a safe, secure and supportive environment is prepared to contribute socially and economically to her/his society.

This multi-stakeholder vision was agreed after several consultative meetings and workshops. This vision is in line with Tanga City's vision of making sure ***'Population well-being improved with access to sustainable social and economic services within values of good Governance'*** and other national plans, strategy such as National Five-Year Development Plan II (2016/17 – 2020/21) and Tanzania Development Vision 2025. It also supports country commitment in the

achievement of Sustainable Development Goals by 2030. Commitment from Fondation Botnar is a unique opportunity for Tanga City to have a high contribution to the above-mentioned plans, strategy and agreed vision.

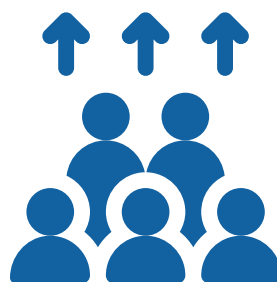
Data is an essential component to inform where the service coverage may be lagging and where to invest to address the inequalities. It helps the local government and other stakeholders to have informed plans and decisions. It provides insights on current status, and Recommendation. It informs where are the children, what are they doing, their health status and how they perform in school. The power of data can help us to put everyone on the map and save life especially in this era where adoption of emerging technology such as Artificial intelligence and machine learning is increasing. The only way Tanga City will take advantage of these emerging technologies is when data is

available, in good quality, relevance and can be accessed.

The government has developed strategy and put investment in building the foundation for adoption and diffusion of Information and Communication Technology as a result more data has been generated and will continue to be generated. Enhancing availability, access and use of data is one of the seven agreed focus areas for the commitment of the Fondation Botnar.

Data readiness assessment is a tool developed to support identification of key areas that need intervention to enhance data availability and use.

In order to have better understanding of the data flow within an organization, the next chapter highlight the structure of the Tanga City Council and business processes.

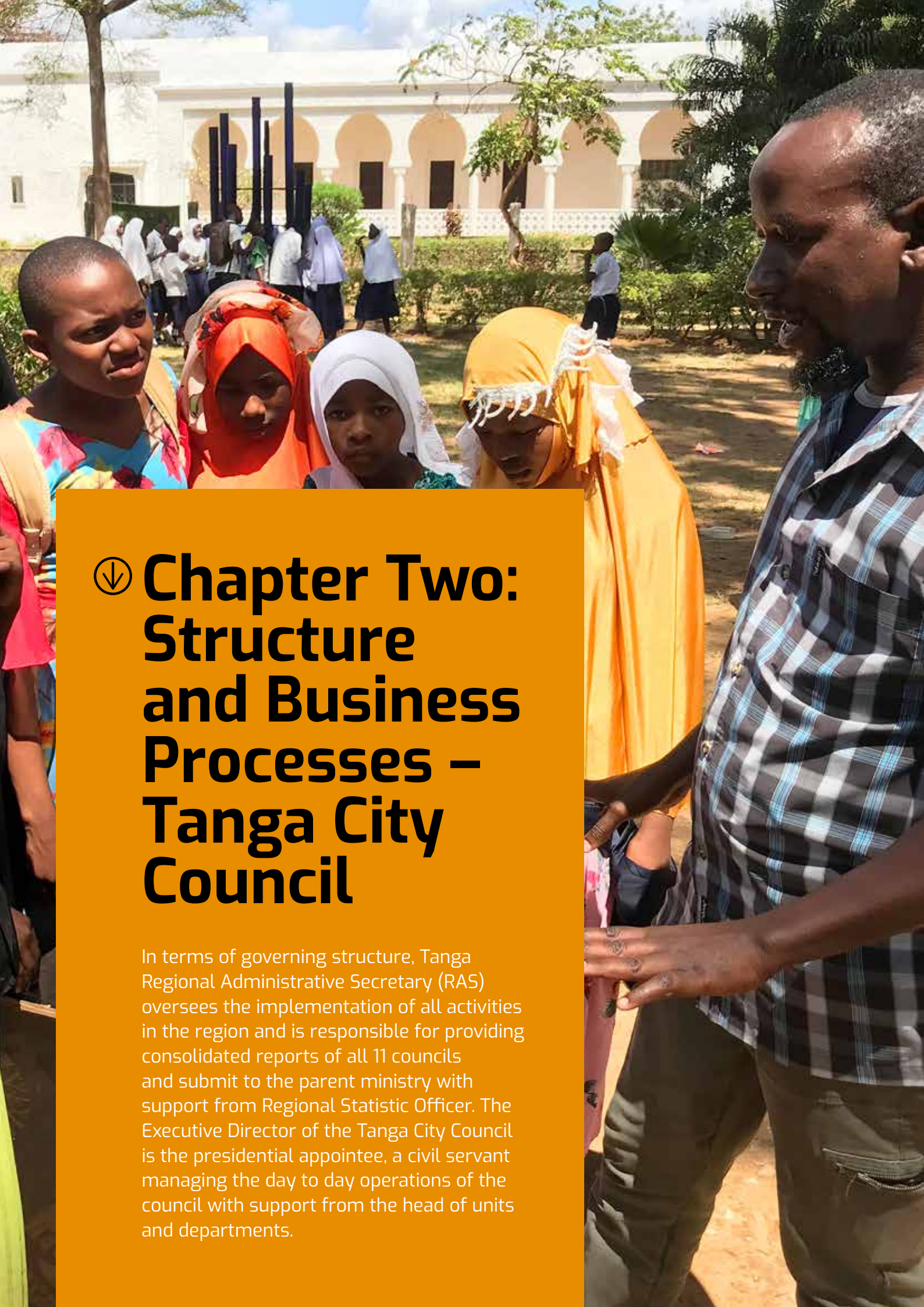


**Annual
Population
growth rate is
2.18%**

**There are 24
unplanned
settlements**



**23% Urban
Population**



Ⓣ Chapter Two: Structure and Business Processes – Tanga City Council

In terms of governing structure, Tanga Regional Administrative Secretary (RAS) oversees the implementation of all activities in the region and is responsible for providing consolidated reports of all 11 councils and submit to the parent ministry with support from Regional Statistic Officer. The Executive Director of the Tanga City Council is the presidential appointee, a civil servant managing the day to day operations of the council with support from the head of units and departments.

He has a responsibility to report all plans, budget and implementation progress to the councilors' meetings and submit it to the Regional Administrative Secretary for further processing. However, there are also existing reporting mechanisms to respective sector ministries and District Commissioners as required during the day to day operations.

Councilors

Are politicians representing citizens and have the role to advise, approve and recommend council plans and progress reports for further processing within the government. The council meeting is chaired by the Tanga City Mayor who is elected by his fellow councilors for a period of five years.

As per the structure, the council has 13 departments and 6 units that support implementation of its strategic plan. These departments include Human Resource and Administration, Health, Primary education, Secondary education, Finance and Trade, Urban Planning Land and Natural Resource, Sanitation and Environment, Livestock and Fishing, Planning, Statistic and Monitoring, Water, Community Development Social Welfare and Youth, Agriculture Irrigation and Cooperatives and Works Fire and Rescue.

There is head in each department who is supported by technical team members. Each department has its own responsibilities. For example, Primary School department is responsible to make sure children who are supposed to be enrolled each year are known, how many have enrolled and those who have not where are they, location school, existing infrastructures, number of teachers available per subject, those in training, long-term sick, attendance of children and teacher every day, performance of each student and teacher, school dropout, overall performance

of school in relation to other school at the council, regional and national level etc.

Health department

Is responsible to make sure people of Tanga City council are healthy. From the health facility team members to District Medical Officer they should be able to know among other things, the top ten disease affecting the majority of community, needs of medicine, who have received treatment and treatment outcome, birth and death information both at the facility and community level, immunization and malnutrition status of children etc. This data is critical to inform the bases of items to be included in the plan.

Agriculture department

Is responsible to make sure the contribution of agriculture in the economy increased. It facilitates productivity increase and access to market. To achieve that, the department is required to understand the area for potential farming, who is farming, what is there productivity and challenges exist, what are they growing, the land for irrigation and its performance, challenges of the farmers, agriculture inputs suppliers where are they, new knowledge and technology in agriculture, ongoing agriculture programs and its impact, potential market just to mention a few.

Finance and Trade department

Is responsible to make sure all financial matters are managed and dealt with effectively and efficiently as per the government rules and regulations. Also, responsible to make sure Tanga City become the best place to do business and increase

contribution to the Regional economy. Some of the things that the department is supposed to know apart from the internal financial matter includes profile and location of the existing businesses, allocated investment areas, informal businesses, marketplaces, financial institutions. This department is responsible to make sure local government tax collections are done effectively and efficiently and should work closely with other departments

Community Development Social Welfare and Youth:

This is the department that has huge responsibility to make sure the local government knows their citizens, understands their needs and design interventions based on those needs. It also facilitates the engagement of citizens in the design, implementation and monitoring of different programs that address their own problems as per the Opportunity and Obstacle for Development Guide (O&OD). It leads the economic empowerment programs by making sure women and youth are organised in groups and registered. These groups have an opportunity to apply for LGA funds. This is 10 percent of the revenue collection of the local government whereby its 4% goes to women, 4% goes to youth and 2% goes to people who need special support. This is also the unit that is expected to know all Non-government, paralegals, Religious and Civil Service Organisations operate in each ward, what are they doing and its impact. It also supports availability of gender disaggregated data. In collaboration with other departments such as health, it is also responsible to coordinate development of children especially

on parenting and prevention and awareness of Gender-Based Violence. Implementation of O&OD as a process to engage the citizens in development programs and understand their needs is also coordinated by this unit. As per the government structure, the unit also participates in crosscut issues such as HIV, Nutrition and Environment especially in the prevention side.

Ward Executive:

A government employee who is the overall in charge representing the Executive Director in a particular ward and responding to all departments and units data requirements. Oversee both peace and security of the citizens and their properties as the chairman of the Peace and security committee whereby Ward police officer is the secretary. He is also oversee all other development activities as the secretary to the **Ward Development Committee** where the Councilor is the chairperson. He is required to prepare a ward development plan and submit it to the Executive Director through the division officer. Other responsibilities include;

- Lead the community engagement and promote production activities to address poverty and food shortage. Coordinate all community development plans and supervise its implementation.
- Support establishment and growth of cooperative union.
- Prepare and recommend any by-laws or regulation that enhance effectiveness and efficiency to respective authorities.
- Translate and supervise

implementation of government policies, regulations and guides at the ward level.

- Oversee the performance of the Mtaa and Village Executives and technical officers such as Health officer, education officer, Agriculture officer, Community Development officer.
- Chair all technical meetings organised by the technical team members. Coordinate and prepare implementation reports of all development activities.
- Supervise and coordinate all data collection activities done in the ward.
- Receive and deal with all community problems and design plans and programs that address food shortage at the ward level.
- Responsible to Division officers for all development issues.
- Promote all crosscut issues such as Gender, Disability, HIV at the ward level.

To achieve all of the above, WEO get support from Mtaa Executives Officer and ward technical staffs members in health, agriculture, livestock, community development and education sector. Mtaa Executive Officer is a civil servant who has a similar role as the ward executive at the mtaa level. As per Tanga City structure he/she is the government employee existing at the lowest administrative level as a point of contact to citizens supported by the five elected members who are not civil servants.

In terms of administrative matter, all ward and mtaa executives' reports are submitted to the head of human resource department who extract issues raised and communicates to the respective department or unit.

The next chapter present the framework used to conduct the data readiness assessment in Tanga City.

LGA Fund 10% of Revenue



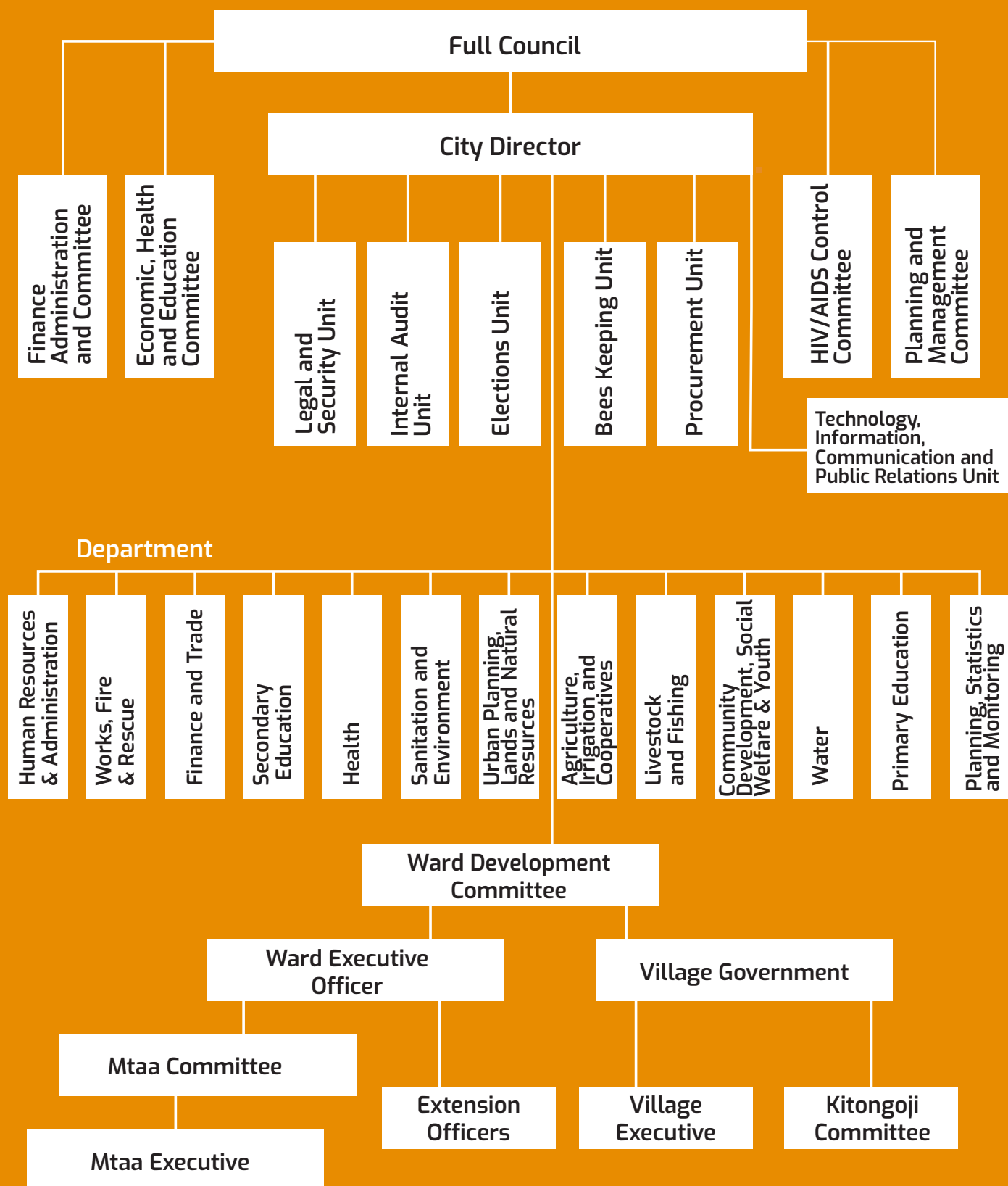


Figure 1: Tanga City Council Organogram

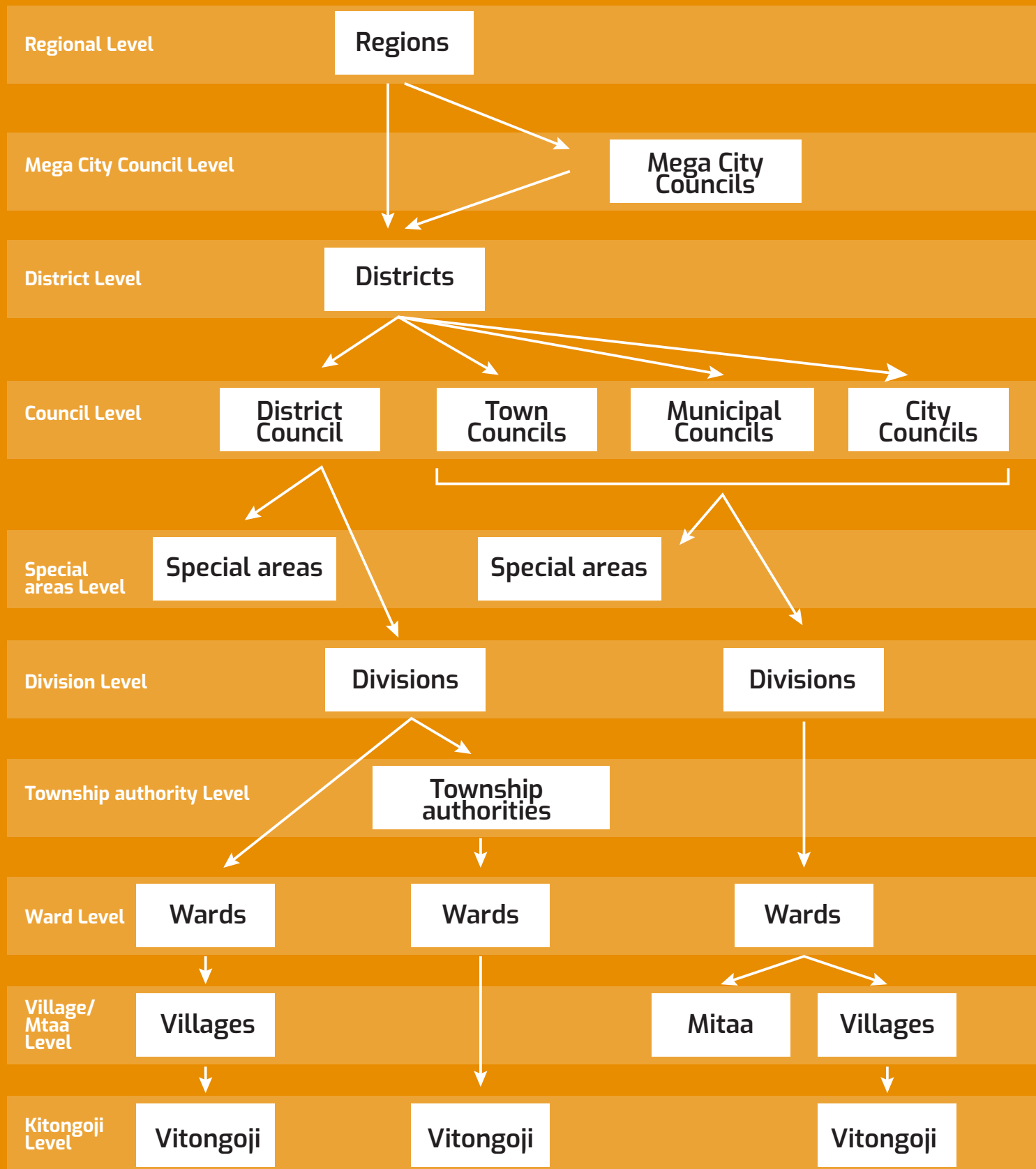
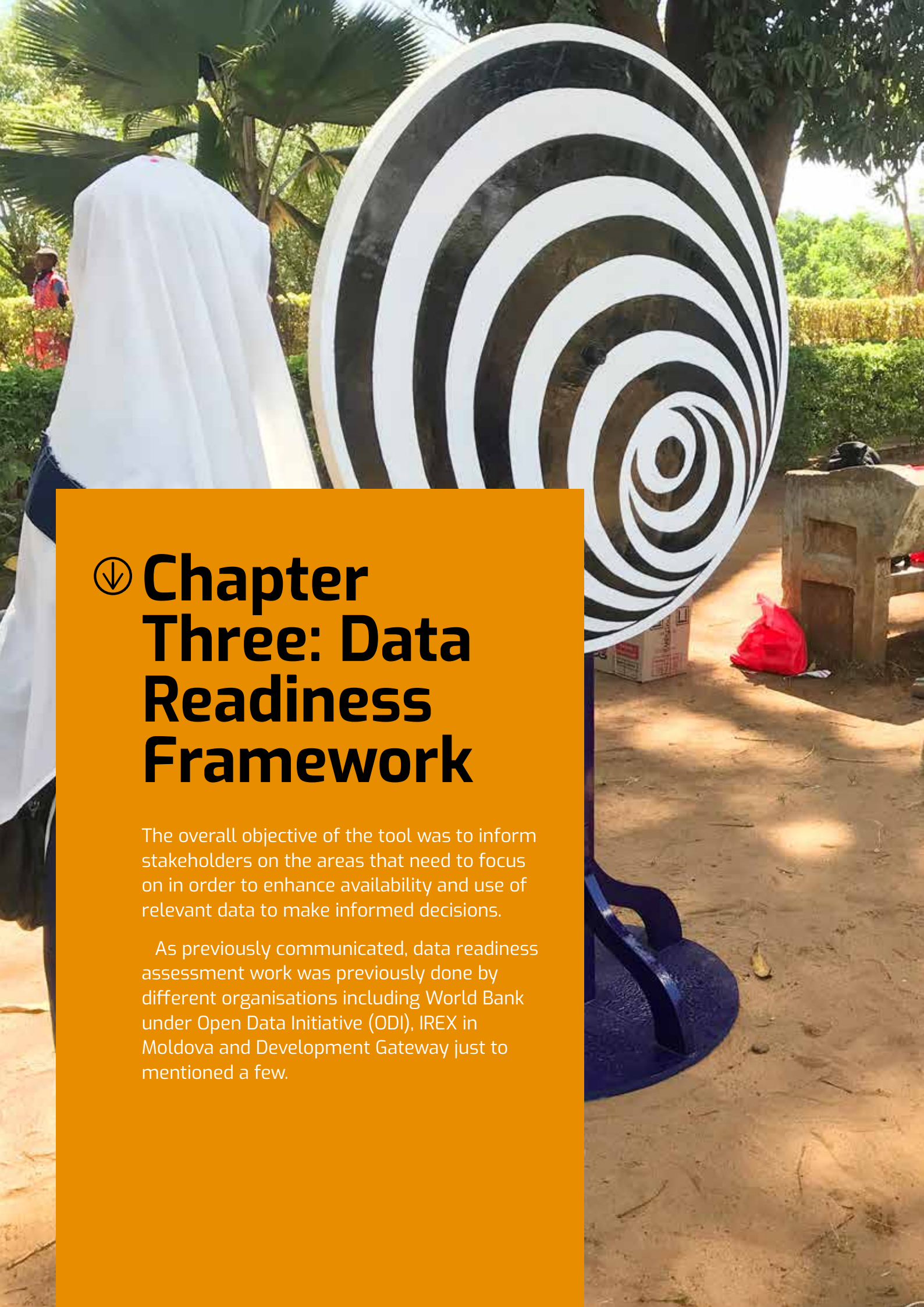


Figure 2: Local Government Administrative Structure



⬇ Chapter Three: Data Readiness Framework

The overall objective of the tool was to inform stakeholders on the areas that need to focus on in order to enhance availability and use of relevant data to make informed decisions.

As previously communicated, data readiness assessment work was previously done by different organisations including World Bank under Open Data Initiative (ODI), IREX in Moldova and Development Gateway just to mentioned a few.

Institutional Data Readiness assessment focused on the three dimensions i.e. The People dimension which refers to the expertise, receptivity, and commitment to using data. The Process dimension explores the interactions among people and guidelines necessary to ensure that data are shared widely and processes are in place to produce information that the institution can use. Data Management refers to storing and retrieving information and how information that is critical to the institution becomes transparent with good management. An improved version of the previous work was developed by IREX who came up with 8 dimensions areas that the assessment should focus on. Tanzania Data lab came up with four-dimensions that captures most of the relevant staff and avoid repetition and redundancies. It enhances the complementarity of the dimensions and capture relevant insights. The four dimensions are as follows;

i. Data use:

In this dimension, the main focus was to understand the institution efforts on making sure relevant data is available and accessible to be used for the intended purpose. It also helps to confirm if the organisation explore all sort of data sources and make use beyond planning and budgeting. Individual perception of data was also captured in this dimension.

Understanding the knowledge on making sure data are stored properly is also covered in this dimension. It went further and explore what is the existing

framework on sharing data within and outside the organization. Further to that, it captures insights on how data has been collected and challenges exists.

ii. Data Literacy:

This dimension focused on understanding the capability of the technical team to work and manipulate data to come up with meaningful insight. It also provides insight in their capability to develop data collection tools, awareness of data collection systems such as ODK. It went further and explore their capability to clean the data using different software tools and development of visualization. Their capability to communicate with insight from the data is the last part that this dimension analysed.

iii. Infrastructure:

In this dimension, the focus is to understand both hardware and software part of the infrastructure. In terms of the hardware, the dimension will provide insight on the availability of working tools such as computer, saver, availability of internet and electricity. For the software part, it provides insights on the data collection and analysis systems that are in place. It explores the existing challenges and opportunity that can be tapped.

iv. Data Policies:

While we do believe data is important to inform decision making, data is also a risk factor if not managed well especially now with 4th Industrial Revolution wave. Availability of policy and guide that facilitates the data flow and use at

the same time prevent the security and privacy of the community members is a prerequisite.

This dimension explored what policies and Processes are in place or might be needed in order to enhance data use at all levels.

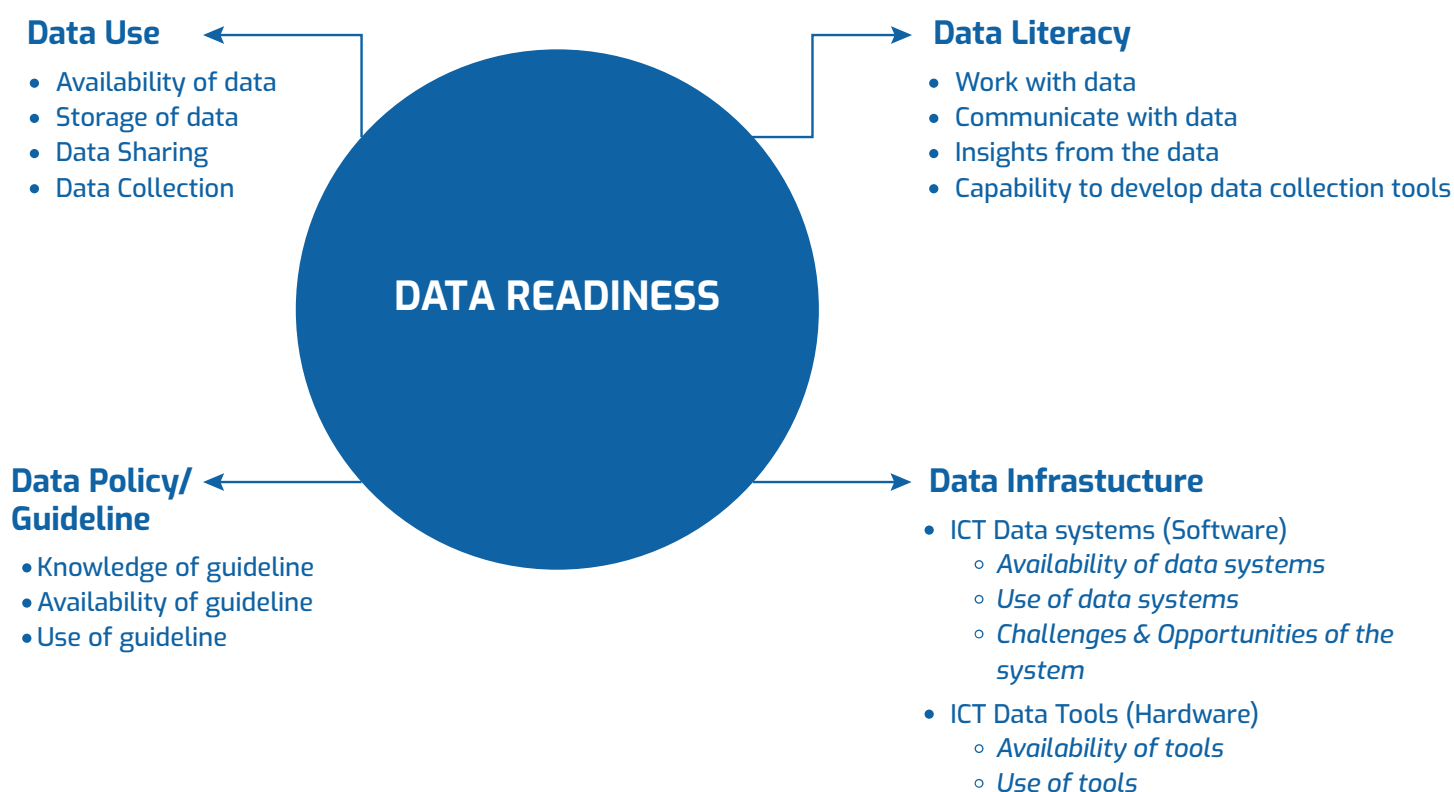


Figure 3: Data Readiness Framework



Data Readiness is a living document for stakeholders to use and update accordingly.

“

- Omar Bakari

A photograph showing three people in a meeting. On the left, a man in a light blue patterned shirt sits in a black office chair. In the center, a young boy in a red and black striped shirt sits on the same chair, looking towards the right. On the right, a man with a beard and glasses, wearing a purple striped shirt, sits in another black office chair, looking towards the boy. The setting appears to be an indoor space with a tiled floor and large windows in the background.

Ⓣ Chapter Four: Methodology

The study adopted qualitative research methodology by triangulating between key informants' interviews, focus group discussions, structured questionnaires, documents review and observation.

Focus Group Discussions

Were conducted at all levels (i.e from Mtaa to Council) separately. There was one focus group discussion which included management members, health facility in charges, ward executives and mtaa executives. There was also Focus Group Discussion that involved all Wards & Health Facilities. The goal of the focus group discussion was to gather participants' opinion, feelings, experience and recommendations based on what was shared during the workshop sessions by key presenters.

It also provided an opportunity for participants to share their data use stories and identify the opportunity that was missed as part of the day to day operation in enhancing data use.

The discussion was preceded by a session on “what does the data mean to you” to enable participants to provide valuable inputs during the discussion.

Structured Questionnaires

There were two types of structured questionnaires designed for data collection. The objective of the first type was to get insights at the ward level and the second one was to get insight at the health facility level as per the data readiness framework mentioned above. The respondents were the facility in charges and ward executive officers. For the health facility in charges at the dispensary level, response rate was 84% of the total population and for the ward executive response rate was 89% of the total population. More detailed of the questionnaires is covered in **Appendix ii** and **Appendix iii**

Key Informant Interviews:

Were conducted at the ward level and at the council level. At the ward level it involved ward executive officers, mtaa executive officers, technical officers such as Ward Health officer, Agricultural Development officer, Ward Education officer. Ward selection was based on the location of the ward i.e. Urban, Semi -urban and Rural. At the council level, key informants included a

Council statistic officer who is under Planning, Statistics & Monitoring department, Education Statistic Officer, Head of Community Development, Head of Information and Communication and in charge of DHIS system. The main objective was to gather more detailed insight on the key areas of interest to this tool and validate the response from the filled structured questionnaire

Document Review

Was conducted throughout the process to make sure all relevant information was gathered accordingly. It helps to understand the initiatives that were going on and validate some of the information collected during the key informants' interviews and focus group discussions. It helped the team to provide recommendations that complement existing initiatives and avoid duplication of efforts. Document reviewed includes council data collection tools that exist at the ward level, school and health facilities. Also, data template that exist in the council department and units. Further, documents such as policy guide, City strategic plan and data revolution initiatives such as Digital Health Investment road map, Data collaborative program and other strategies and plans.

Observation

Was done to some of the ward executive offices, health facilities and school to watch the data processes and validate some of the responses.



Ⓣ Chapter Five: Insights from the Field

This chapter share interesting insights that were identified during the engagement processes. These insights are shared to inform the stakeholders on the existing challenges and opportunities that if tapped will enhance data revolution in Tanga City Council. The insights were derived from the respondents' feedback, face to face interview, workshops and observations that were coordinated by the dLab team in partnership with Tanga City Council Statistic officer on behalf of City Director. The insights are presented based on the four key dimensions mentioned in the framework;

Data Use:

Perception of data

It was noted that all respondents believes data is essential component for planning processes. For example, one Ward Executive officer said, **"Data helps us to execute our responsibility effectively and efficiently."** Similarly, more than 90 percent of the Ward Executives responded believes that data could help them to design development programs and engage citizen to take their part. Regardless of that positive attitude towards data, it was difficult for the respondents to share data use cases to substantiate their responses.

Apart from using data for planning and budget, we found out that data use for

development project design was mentioned the highest by Ward Executive Officer (WEO) and Data use to conduct need assessment was the second to be mentioned frequently. Other areas mentioned frequently includes data use for community engagement, quality assurance of service delivery and land use.

Understanding the sources of data at the ward level, we noted that, citizens are the major source of data. It shows the closeness of the ward executive offices with citizens in day to day operations. However, we noted that more effort is needed to strengthen the share back of these data to citizens.

It is unfortunate private sector and NGOs are the lowest source of data mentioned by Ward Executives.

Frequency of Data use beyond budget and Planning mentioned by Ward Executives

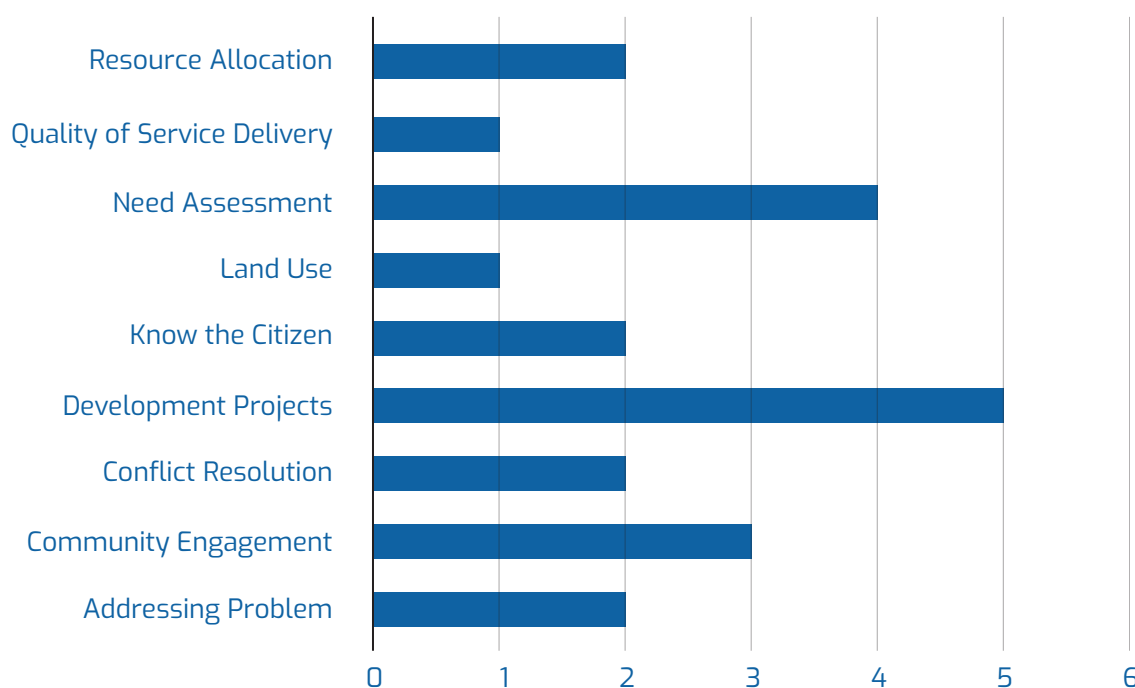


Figure 4: Frequency of Data use beyond budget and Planning mentioned by Ward Executives.

Frequency of Data Source mentioned by Ward Executives

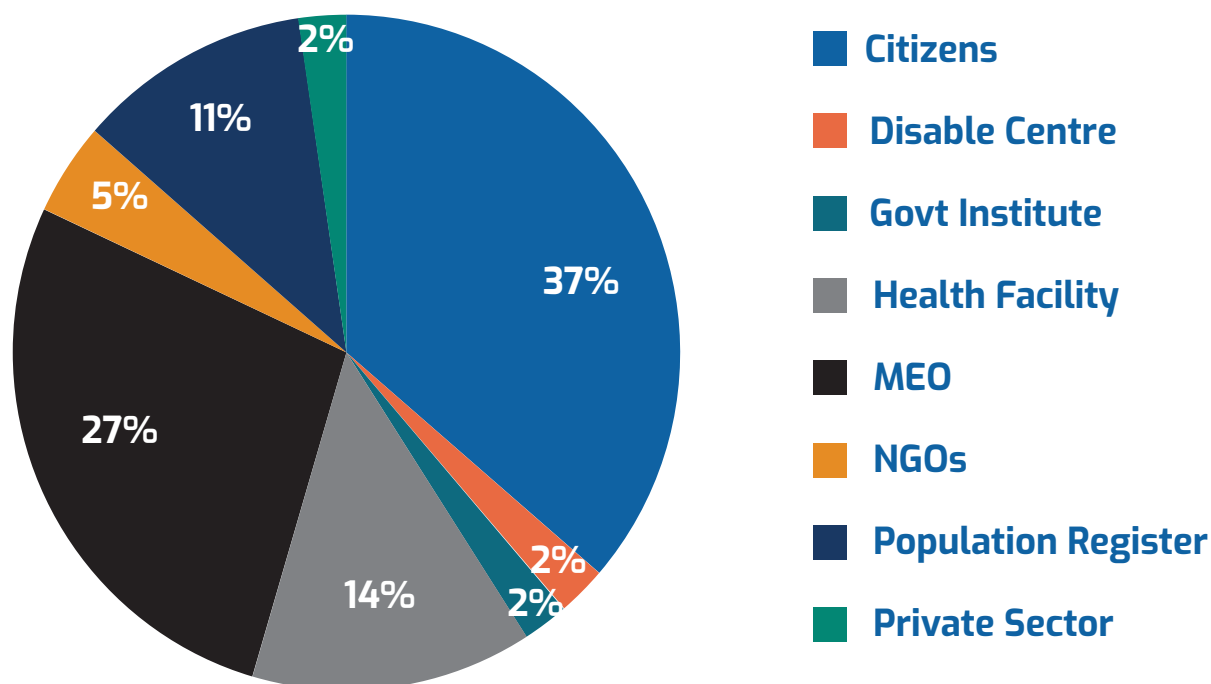


Figure 5: Frequency of Data Source mentioned by Ward Executives

Data availability

Level of Disaggregation:

It was noted that, there are a lot of data that Tanga City Council collect at different levels however they vary from one sector to another. For example, in the health sector, all health facilities have the framework to collect service delivery, financial and plan data through established systems. Unfortunately, most of the collected data are kept in the paper and it is only aggregated data that are filled in the relevant systems. It is mainly financial and immunization data that is collected and stored at the point of service. Each facility was provided with ICT hardware which supports data collection. GOTHOMIS has similar potential if upgraded, networked and installed in all the health facilities. Similar situation was observed in primary school where PREM system collect and store disaggregate data for students enrolled.

Population data:

Mtaa register is the most important source of data that inform different stakeholders about the demography of the population exist up to the household level. Due to various reasons most of the wards they either don't have the register or its content is outdated. Some of the registers are not filled properly and most of the data are missing to correctly informs the ward and other stakeholders. Having outdated register miss inform the planner and decision maker which might have resulted in poor decision maker and wastage of resource. As per the job description, Mtaa executive is the custodian of data at Mtaa level and his/ her register needs to have updated data that cover all the data that are needed to make informed decisions by the ward executive and other stakeholders. From the existing register, we noted that there is

a divergence in the types of data that are collected among the wards. Apart from that, there is no standard guide to collect those data which resulted in difficult comparisons among the wards.

In the current setting, the latest number of people in each ward is based on 2012 national survey conducted by National Bureau of Statistics (NBS). Most of the ward executives are using this information in their plan and also advise other stakeholders especially when it comes to understanding the number of people, their age, gender, economic status and so on. Due to some factors such as death, birth, marriage, work transfer etc., these data always change and unfortunately not updated. During focus group discussion, different examples were shared on how the existing data influence poor planning and frustration to citizens and the public servants.

“When we planned for the National ID registration, we based on the population data that was shared to us. We allocated the number of officers and equipment based on the shared total number of people who are 18 years and above. The turnout was high, and it took us longer time than expected to save all the citizens which ended frustrating the citizens unnecessary”. This is due to the fact that the baseline data shared and used for planning was lower than the reality. NIDA representative.

A similar situation was shared in relation to immunization program as one of the participants said. ***“Based on our performance target on immunization, we claimed to achieve above 100 percent. However, after a period of time, we realized that, the baseline data used to set the target was very far from the reality.”***

“We are highly depends on the data from ward level, unfortunately for different

reasons, the data they have is outdated and affects our planning and budgeting. Enhancing data collection system at the ward level must be our priority.” District Medical Officer.

Based on our performance target on immunization, we claimed to achieve above 100 percent. However, after a period of time, we realized that, the baseline data used to set the target was very far from the reality.



Community pain points data:

At the ward level, as part of the governance process, local government established different committees to provide advice, inform the citizens and collect any other citizen pain points.

Example of these committees include Security and Peace committee, health committee, children committee and ward development committee. For example, in the Security and Peace Committee where the Ward Executive Officer is the Chairman and Ward Police Officer is the secretary, data showing the status of crime incidents should be available. It is unfortunate, very little data is shared to most of these committee meetings organised either by the mtaa executive or ward executive. There is no any standard template of what to share in each committee and become difficult to do comparison at the Ward or Mtaa level.

Community pain points collected during the structured meetings are kept in the minutes file which the copy is sent to council for action. We have learnt that, most of these data sets are dropped out in the minutes prior to the action taken by the respective organ. For example, in one ward; citizens have raised the problem of drainage systems when it rains. While the issue still in progress, it has already been dropped in the minutes and hence not included as a matter arising. Training on how to write minutes will address this gap.

Data from NGOs and CSOs:

We noted that NGOs and CSOs operate in Tanga City with approval from the City Director. All these organisations generate and collect data that might be very important to enhance council operations. When we asked ward executives regarding those data sets, we noted that there is no framework in place to capture these data sets not only to ward executive officers but also to the Community Development department and the council. Considering NGOs and CSOs role is to support the government, it is important to enhance complementarity and make sure council is

the custodian of all data collected and make use of it.

Spatial Data:

With emerging technology such as the Geographical Information System, the use of geospatial data is critical to enhance service delivery and performance to the data point. The spatial data helps other departments and units to be able to answer the '**where**' question. For example, the health nutrition officer will know exactly where the clients are and plan the visit accordingly, Finance and trade department will know where the businesses are and collect the tax. Similar advantage to the education planner and head of schools. They can know exactly where their students are coming from. It helps to answer where specifically the problem has occurred and minimizes the generalization. From the urban planning and development perspective, the geospatial data is critical to enhance their effectiveness and efficiency. At the moment we noted that there are a lot of data sets in the urban planning unit however more efforts are needed to enhance utilization. Based on the ongoing programs, more data will be produced and unfortunately the council does not have local server.

We noted that for different reasons (e.g. skills, equipment) the availability and use of spatial data is very minimal to all levels of the Tanga City Council. When we asked the health facility in charges and ward executive officers on use of spatial data, **99% of the respondents confirmed that, they have never used any spatial data to plan or inform their decision.** Some of the few spatial data such as school location and health facility location are available, but the respondents seem not aware of its potential.

Administrative Boundaries Data:

We noted that the government in partnership with other stakeholders has invested in the development of the administrative area registry. The administrative areas include vitongoji, villages, mtaa, wards, township authorities, divisions, councils, districts, regions. The system shows information on area type and level, area code(s) (under multiple coding systems), validity dates – when areas were established and retired, Maps and area boundaries. At the moment the administrative boundaries map is only at the ward level and no data sets were found for administrative boundaries at mtaa level. This data set is critical in planning and budgeting at mtaa level and at the same time helps to accurately record the Ward Education Officer in the mtaa register.

Education Data:

Under normal circumstances each ward is expected to have both secondary and primary school students. Education planners in collaboration with Ward Executives should have correct number of children to be enrolled.

At the school level, we noted that there are differences in the data management system between Secondary School and Primary School. In the primary level, students' records are entered during the registration processes of the students. This data includes their birth certificate and parental status and not Students Academic progress report. Unfortunately, the headteacher can update the data for up to standard three students only. This situation affects the quality of data that the ministry will have because it will be different from reality. In secondary school, there is specific file for each student which contains information such as details of the

parents, place of residence, student progress report, birth certificate etc. Unfortunately, most of the file that we visited, did not have updated information.

Gender Based Violence Data:

We note that there are efforts to make sure fighting against gender-based violence is succeeded. Key personnel that collect this type of data include Gender Desk Police Officer and Tanga City Social welfare officer. Under normal circumstances, someone will expect the GBV data should have been the same from these two main sources, however for different reasons they tend to differ unnecessarily. More efforts is needed to strengthen the data collection coordination.

Historical Data:

Availability of historical data is important especially when someone wants to look at the trend and predict the future. It is also important in the application of emerging technology such as Artificial Intelligence and Machine Learning. We noted that most of the ward executives have difficulties on tracing the historical data of the respective ward. A similar situation was found to some of the departments, units and health facility. This is due to the fact that most of the data are kept in the paper or individual computer or USB. There is no council server and dashboard that stores and visualizes all the data to inform decisions. In the health sector, systems such as DHIS2 was easy to trace the historical data in aggregate. When it comes to the facility level disaggregated data it was very difficult to access especially for those facilities not connected GOTHOMIS. A similar situation was found in secondary and primary schools.

Community Health worker data:

In Tanga city there are community health workers who ideally should work closely with health facilities in their day to day operations. It is unfortunate these Community health workers are surviving from the project they are employed. Due to this situation, most of the data they collect, their priority is to send to their employer, i.e. project lead and funder. Community health worker data is critical in designing prevention programs and save life. A clear engagement and mainstreaming strategy need to be in place to maximize the community data that are critical. This will help the council to know what is going on beyond the health facility data and plan accordingly. One example of how Tanga City Council could utilise the community health workers to prevent maternal and child mortality is shown below;

i. Potential Data use Case:

- Community Health worker will be allocated specific coverage area
- They will be trained to use the tool to do preliminary assesment of the health of citizens and collectd relevant data
- The tool allow community health worker to send an emergency alert for action to relevant stakeholders including ambulance driver, health facility incharge and DMO office.
- Based on previous experience from other countries, this system will tremendously help to save lives of mother and child, track pregnant women, monitor antenatal care, identify and refer women at risk, improve communication with health

facilities in case of emergency. It will also help to identify and address reasons of death to women and young children at the community level

Data Storage:

As per the national financial regulations, all business organizations are required to keep all financial data including financial reports and receipts for at least ten years. Similarly, you could have expected to have a guide in the other sector such as health sector. At the moment, most of the data especially disaggregated data either current or historical data are stored in the counter books and files.

95 percent of the health facility in charge confirm that they mainly store data in paper file/book. In the health sector as previously mentioned, there are 16 books that collects data at the health facility. Apart from having more investment in the system development in the health sector, it was noted that **only 25 percent of the facility store data in the GoTHOMIS system which unfortunately is stand alone at the facility.** It is only Immunization data that all facilities claimed to store them in the Immunization registry. Regardless of the importance of the spatial data, **only 6 percent of the health facility confirmed to have spatial data.** Strengthening the GoTHOMIS system and enhance its network is critical to support data use.

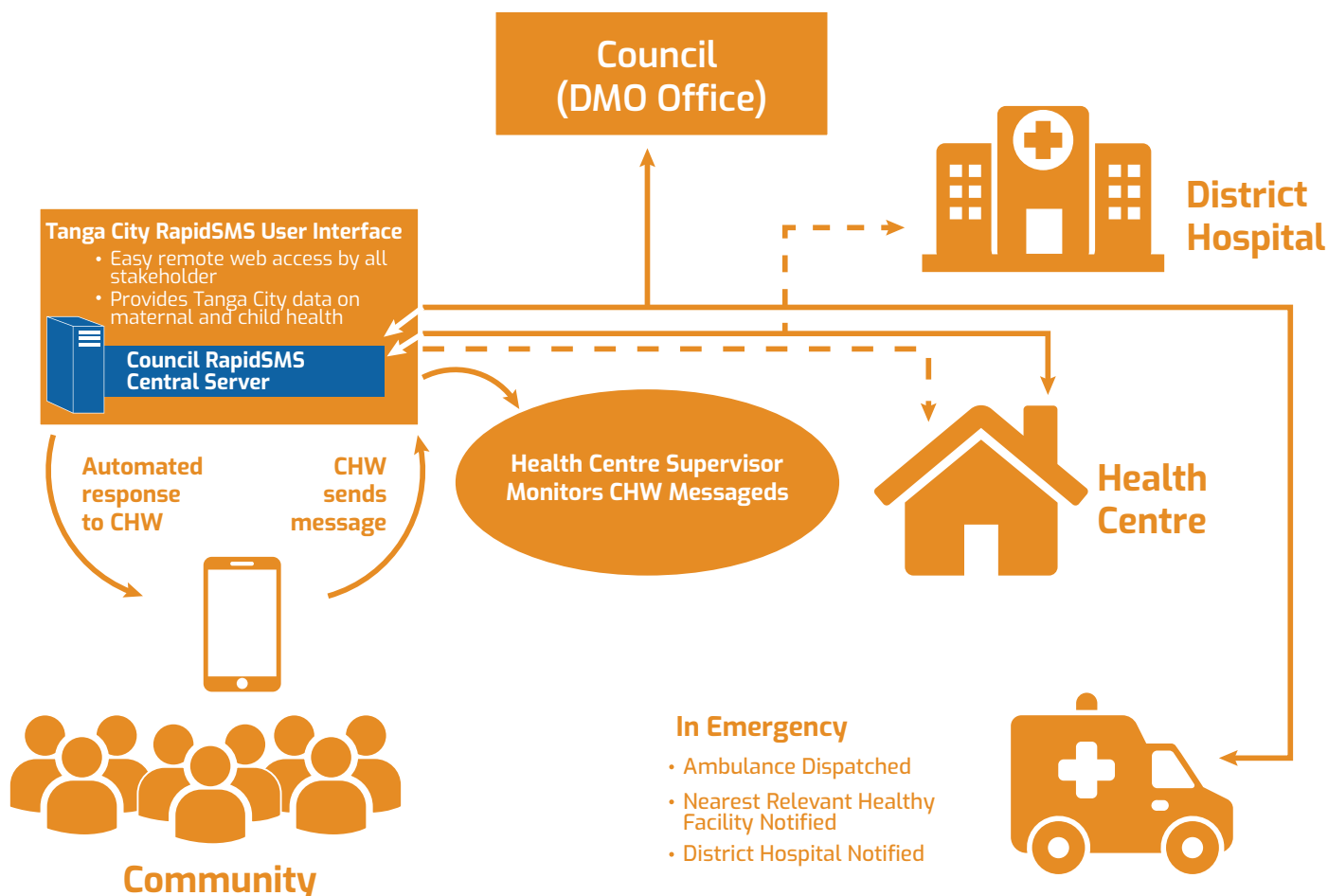


Figure 6: CHW Potential data use case visualiztion

At the ward level, 95 percent of WEO confirmed to store data in paper file/ books. Almost all of them they don't have computer. One of the biggest challenges they mentioned of storing data in counter books or files is mainly during the update and retrieval of the data. Oftentimes, they prefer to collect new data rather than working with old counter books. It is unfortunate, all WEO do not have knowledge on the data format that can be used to store data in ICT system.

Apart from the counter books and paper files, we noted that some respondents i.e. Ward Executive Officer and Incharges claimed to store data in their own laptops or USB drive. Even though the council has an ICT unit, but it does not have a server that could have been used for all the departments and units.

Data collection

Data collection processes have direct influence on the quality of data collected by local governments and other stakeholders. Existence of the data collection guide helps to enhance data quality. We have noted that there is a diverse approach that has been used to collect data from the ward level to the council level and also from one sector to another. The following are some of the learnings;

In Education Sector:

All data both in primary and secondary schools are collected in paper form and stored in counter books prior to be entered into the Basic Education Management Information System. Primary Records Manager (PREM) collects all the Students registration disaggregated data directly.

Education Data Flow

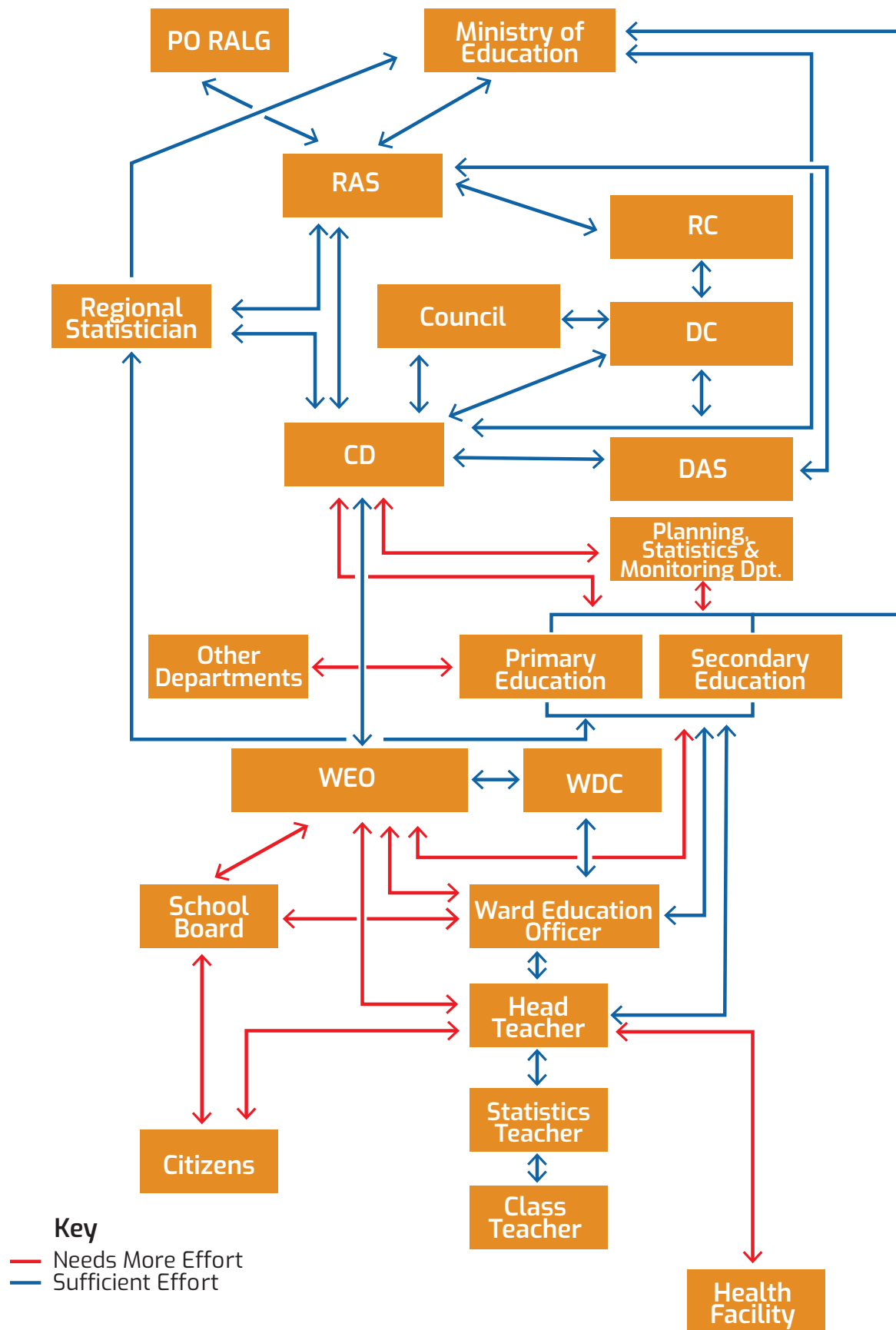


Figure 7: Overview of Education Data Flow at the council level

The class teacher is responsible to collect all the data and send to the teacher who is responsible for school statistics in order to consolidate the whole school data before submitting to Headteacher for approval. At the current setting, the initial data collected are entered in more than seven books and the headteacher is responsible to validate and enter into the system in aggregate. Unfortunately, BEMIS does not collect real time data on school operations, it only collects Previous year data on 31st March of the following year.

The Ward Education Officer is in charge to approve data uploaded for that particular ward before sharing it to the primary or secondary education department whereby the statistic/Academic officer in charge will approve for regional office to do further

processes. Regardless of the availability of the system in place, the council through primary and education department has always been asking data from school. This is due to the fact that there is no school management system that collects disaggregated data and accesible at the council level

At the ward level:

Data are mainly collected by Mtaa executives with support from technical staff such as mtaa education officer. **More than 90 percent of the respondents believes that, data related to population should be collected and updated regularly. However, 95 percent of the respondents claimed lack of the data collection equipment, data collection standard and shortage of employee are the major challenges in data collection.**

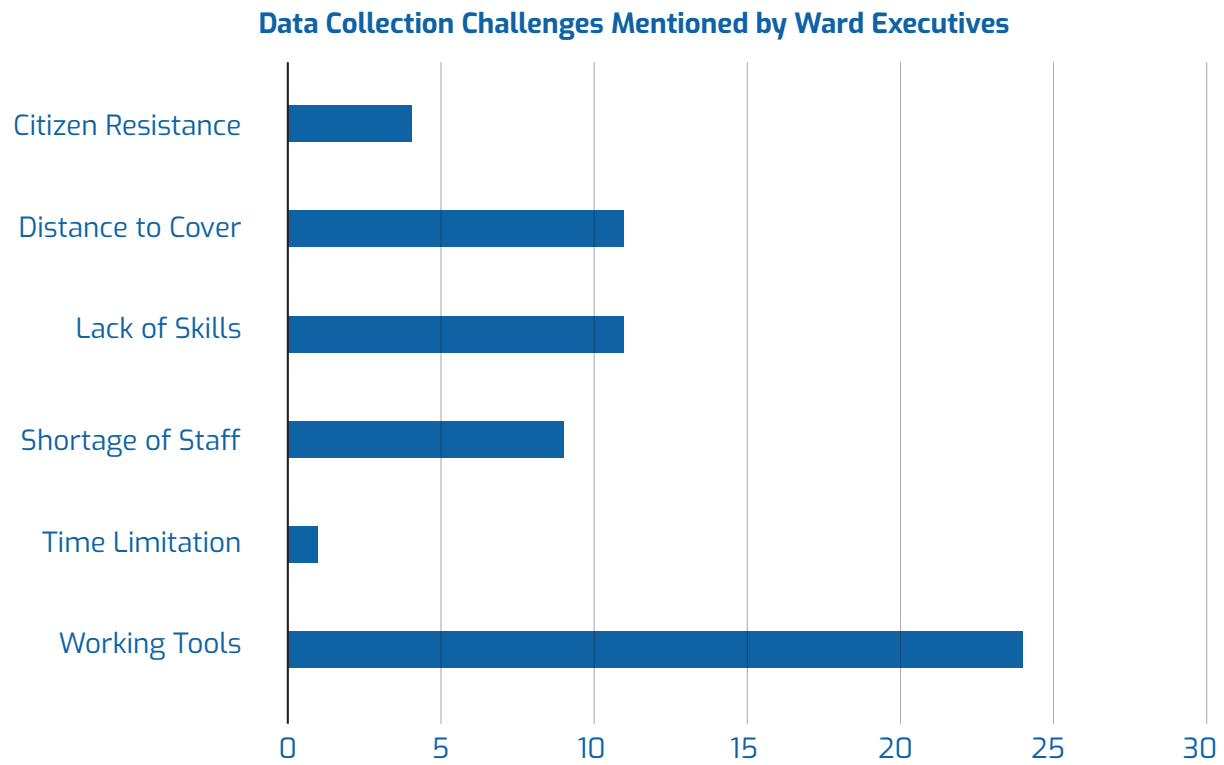


Figure 8: Data collection challenges mentioned by ward executives strucutre

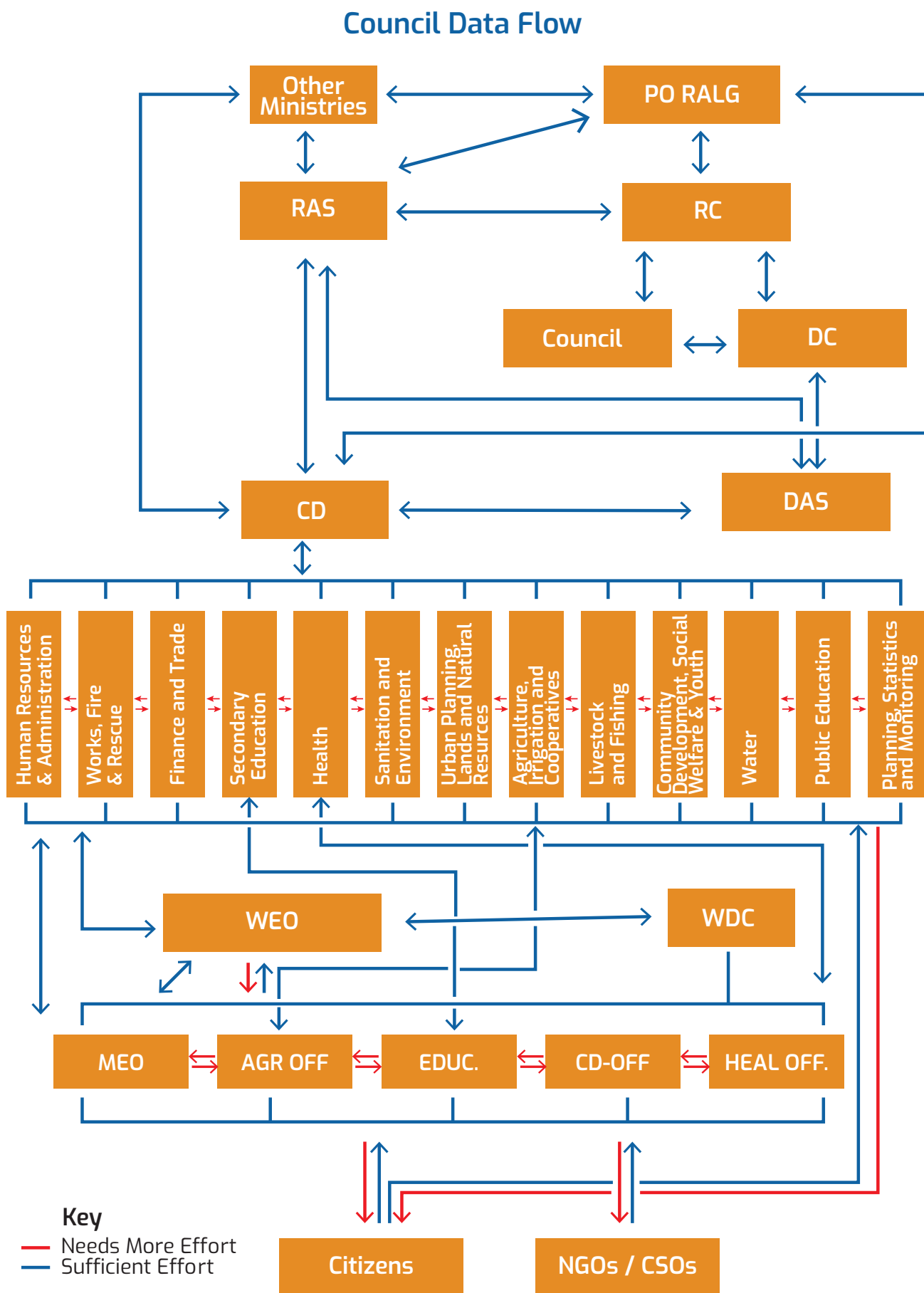


Figure 9: General Overview of the Council data flow

Health Sector:

This is the sector which has received a lot of investment in data collection system. There are more than seven systems in place as discussed in the infrastructure section. Most of the dispensaries are still collecting data manually due to the fact that, they have not been connected to most of the systems. For example, to date almost all dispensaries have not installed GoTHOMIS. There are 16 books that collect disaggregated data at the health facilities and these data are aggregated and entered into the DHIS2 system by 5th of the following month. All facility in charges engaged emphasized on the need to link GoTHOMIS and DHIS2 for easy data collection process and reduce of their workload.

Data Sharing:

Sharing of data within the organisation and with key stakeholders always enhances effective use of the little resources available. It also avoids duplication of efforts when two organisations serve similar clients. Interoperability of the data systems is critical to enhance data sharing among the stakeholders while observing the privacy and security. As discussed in the data infrastructure dimension, the government started to address the interoperability issue, however more support is needed to make sure the completion is done as soon as possible. ***We feel that to address the issue of interoperability at the national level joint technical team representing each ministry and coordinated by the Prime Minister office could be an ideal step to make things happened.***

At council level, there is opportunity to make sure inter-departmental data flow is considered from the beginning when the data systems at the council level for administrative and routine data is developed.

While the interoperability is an issue, still we noted that there is a strong data sharing to some of the departments within the local government. For example, there is a strong sharing mechanism between the land use plan data and building permit cases.

We also noted that, the social network such as whatsapp is heavily used in almost all the local government employees to communicate and share data. For example, in education sector, Ward Education Officer has established a whatsapp group to facilitate data sharing.

More data seems to flow more from the bottom to the top than vice versa. Similarly, horizontal data flow is very limited i.e from department to department.

While there is an officer responsible for council' data in the department of planning, statistics & monitoring unfortunately most of the data he has to request from the respective department. As he said ***"During our planning, I have to ask each department to send their data and sometimes it takes time to receive it. If we could have a system that store and visualize data set from each department and unit in real time that could have been a real transformation."***

A similar situation was seen in the Community Development unit where the officer said ***"We really need a system that will help us to know what is going on in real time at the Mtaa level and even to NGOs. Unfortunately, so far we don't have that mechanism to access that data unless we asked the ward team members who in most cases will have to ask the NGOs themselves."***

This situation was also raised by the Executive Director who said ***"I wish to see what is going on in all wards and school in real time. There are some decisions that***

someone might need to do it based on the real time data for effectiveness.”

At the moment we also learn that, while there are specific data needs for each sector, there are also data needs that are crosscut to all or more than one sector. The identification and management of these type of data is critical to enhance sharing. At the moment more effort is needed to map those data and create a sharing framework.

Data Literacy

It is always easy to expect someone to be able to work and use data to inform day to day operations and plan for the future. However, sometimes the result is different from what was expected, and it ends up in frustration to both ends. Understanding the capability of Tanga City key staff to work and use data is critical to inform the next step of action to enhance data use.

During our engagement, we wanted to find out, to what extent ward executives are confident to work with data. Their ability to derive meaningful insight from what they have collected and develop a plan of action. Realistically we did not expect ward executives to be able to use advanced tools and software to conduct different analysis, however we did expect him/her to be able to develop simple visualization, communicate with data, be able to demand data from his/her, manage data properly and can derive insight from the data.

Similarly, from the health facility level, our expectation is to make sure they can collect, get insights from what they have collected and take action. We expect the head of the facility to tell us the trends of service delivery data and align it with financial data. Considering this is the main source of health data, we also expect them at least to know

the emerging technologies such as AI and machine learning and see how they could be part of making sure these new technologies enhance health sector service delivery in Tanga City and the country

The evidence collected confirmed that apart from other factors, skill is a major factor on low data use. During facility in charge focus group discussion one in charge said ***“Please invest on skills to these people in order to see change in data use. At the moment the confidence of working with data to these people is very low and it also affects the quality of data they collect.”***

Understanding if they are capable to work with at least basic excel, ***it is only 2 WEOs out of 24 who confirmed they can work with basic excel (we didn't test practically).*** Understanding if they know any other tool that can work with data apart from excel, ***100 percent confirmed they don't know any other tools.***



Please invest on skills to these people in order to see change in data use. At the moment the confidence of working with data to these people is very low and it also affects the quality of data they collect.

Capability to use internet is essential especially if someone want to search for certain data or trends or information beyond the facility and also communicate. We found out that, there are some facility heads, ward executives and schoolteachers who are born before computer, they are struggling to cope with the technology trends and unfortunately have not received training. For example in one facility there **only 3 out of 10 staffs who knows how to use computer.**

Capability to develop data collection tool such as questionnaire, was a challenge to most of the ward executives. Most of the tools used was developed by third party from new program introduced in their ward. **Almost all ward executives confirm they have never used any data cleaning or analysis program.**

In terms of the capability to communicate with data, we noted that most of the facility in charges and ward executives have limited capacity and they have never received the training. Most of them just post the information to notice board showing the income and expenditure they have received.

Skills to engage citizens and gather as much information as possible, is important especially to Mtaa and Ward executives. The government has developed Opportunity and Obstacle for Development Guideline which was updated in October 2019. Local Government Training Institute is responsible to conduct training on citizen engagement, however for different reasons this was not yet done in Tanga City Council.

In terms of data privacy and security skills, we wanted to find out if they do understand their responsibility to privacy and security at the same time facilitate innovation to happen. We learnt that all respondents understand the importance on privacy and security, however they don't know how they should work in data protection and security and be

able to support research and innovation. Unfortunately, there is no any data guide that exists at the council level that could help inform the type of action that someone could take to facilitate data sharing and protect privacy and security

Data Infrastructure

Availability of ICT data tools-Software

Availability of the data infrastructure is critical to enhance data flow and use to any type of organization regardless is a private or public. During our field work, we noted that there are more than 20 systems that were introduced in Tanga City Council. All these systems were either developed by the President Office Local Government Authority Ministry or by the sector Ministry. Most of them were initiated as part of the implementation of a certain project funded by a certain donor who has specific interest in that particular sector.

There is no ICT system at the council level that coordinate, collect and store routine/ administrative data from the ward level to the council level. Most of the existing systems at the council level are web-based and the server is not hosted at the council. The ICT unit at Tanga City Council has minimal role to most of these systems and cannot do any integration with other systems at the local level. In most cases the user department is the custodian of the system e.g. DHIS2 - DMO is the focal person who is supported by an officer who is responsible to make sure all data are entered. Most of these systems are collecting data in aggregate form and do not offer real time monitoring of the progress. For example, District Health Information System (DHIS2) collects monthly summary data of the facility registry books (there are 16 books) in aggregate form and focal person is responsible to make sure all the data are

entered in the system by 5th of the following month. Currently the system is in the process to be linked with ELMIS at least to collect summary data because of its capability. Access to most of these systems is assigned to a focal person in a respective sector. Unfortunately, regardless of the role of the council statistician, he does not have his own access.

In the education sector similar situation was observed, there is Basic Education Management Information System (BEMIS) where data are entered from the school level annually by 31st March. It just collects historical data for the whole previous year.

Apart from BEMIS, the government established a Primary Record Management system (PReM) a web-based system which is managed and hosted by the National Examination Council of Tanzania which is under the Ministry of Education, Science and Technology. It collects disaggregated data (e.g. gender, date of birth, disability, parental status etc.) and manages the individual transfer of students. Establishment of this system has enabled the government to save more than 2 billion of the ghost students. If there are any changes to students e.g. disability, lost parents, change location the head teacher cannot update the data for students who are year 4 and upwards. This might affect the quality of data and consistency between the school and the Ministry. It is unfortunate there is no school management information system at any school that collect routine/ administrative data, this could make life easy to head teacher as one said;

“There is no reason to use paperwork and then transfer them in aggregate to the system. It could have been easy and save our time and focus on teaching if there will

be a system that will make us enter data directly. At the moment almost everyday we receive the phone from council education unit requesting data urgently. Sometimes we have to stop teaching to make sure we meet the deadline. I propose to install School Management Information system that capture all data and linked to other system so that whoever wants any data they can access online.”

For the health sector, the District Medical Officer is in charge of all the data collected and facilities are the main source of disaggregated data. As mentioned earlier, the government has installed different systems in these facilities however due to different factors, the availability of these health systems varies from one facility to another. As mentioned before, this is the sector that has more systems in place and still most of them don't communicate to one another. Each system was developed for a specific purpose by specific project or funder at that particular time. For example, Facility Financial Accounting and Reporting System (FFARS) was developed to respond to growing need for improved financial management skills at the service provider. It includes simple, standardized documents and processes which form part of the United Republic of Tanzania's official Public Financial Management (PFM) system. How much funding, and from which sources, is available for core services at each facility, together with how those funds are being used to meet service delivery targets are examples of data that are in the system. It will provide information to ensure that procurement regulations are being followed, and will also enable complete and consistent reporting on revenues and expenditures. The system is linked to Plan Rep system which enable plan and budget exportation. While each facility has a password to use

the system, some of the facility travel to the council or nearby facility to process the data. This is due to different reasons including poor infrastructure, skills and lack of human resource.

The Government of Tanzania, Health Operation Management Information System (**GoT- HoMIS**) is another electronic information system exists in the council that collects and report facility level clinical information (basic patient level clinical dataset), and support health facilities in service delivery management. Continue improvements is going on to perfect or incorporate various core functionalities/ modules including Electronic Medical Record (EMR), Laboratory Information System Tracking and Inventory of Medical Supplies, Billing and Revenue Collection Practitioner Performance.

Out of the 16 facilities interviewed, it is only 6 facilities that have been connected to the GOTHOMIS system. This is huge obstacle to facilitate data flow within the council and beyond. This system is extremely important to be installed to each facility due to the fact that it collects granular data. Linkage of this system with DHIS2 is an urgent need from all facility in charges.

Other systems that available includes NHIF, CHF, ELMIS, POS, IDRS, DHIS2 and Immunization (**A list of systems is in Appendix 1**).

Availability of ICT data tools (Hardware)

At the ward level, we have noted that there is a big difference in the investment of ICT data collection tools such as phones or iPad. For example, there is an officer in one ward who has more than three data collection tools

just because there are three to four projects going on at that particular ward supported by different donors. At the same time there are wards just because there are no projects, ward and mtaa executives are still struggling to collect data manually. This affects their service delivery to the citizens and delay in the update of the citizen register which contains very important data regarding the citizens. At the moment, 90 percent of the Mtaa executives are collecting data manually. A similar situation was observed at the dispensary levels.

Based on respondents' feedback, we found out that, there is huge gap in availability of working computer (desktop and laptop) at the health facility, school and ward level. Through DHFF mechanism, health facilities included in the plan to buy those computers in stages but till now the financial position is not good.

At the ward level, when ward executives were asked about the availability of computer, 95 percent confirmed that they don't have working tool provided by their employer. Some of the employees are using their own laptop and phone to support their work.

In terms of access to internet all facilities have not connected to the National Fiber Optic for different reasons. This is very important in order to have reliable and strong connectivity. At the moment we found out that, 83% wards have access of health facility internet while at the health facility level, 75% have access to internet. The major issue is the quality of connectivity

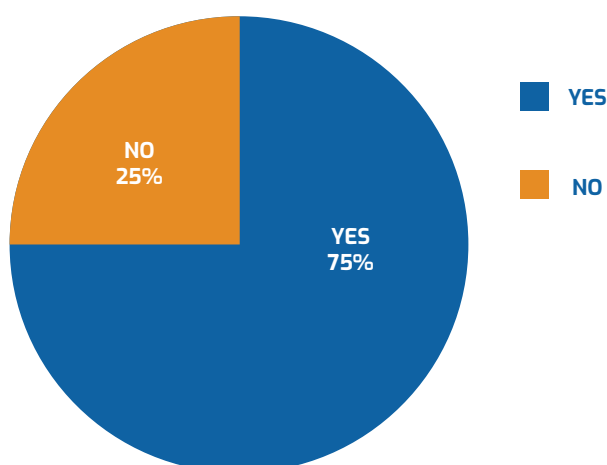
Lack of internet access to facility is inconvenience to the health facility incharge who will have to travel to other facility or council or to any other area that he/she can have access. It affects quality of service

delivery to citizens. We also noted that **92 percent of the Ward offices have access to electricity**

In terms of the human resource, we noted that, it is **only one health facility that has Data Clerk as per the Health facility guideline**. Unfortunately, more efforts are

needed to make sure more skilled staff are recruited to support the team. Status of the human resource as per the response from the ward executives and facilities incharge is shown below;

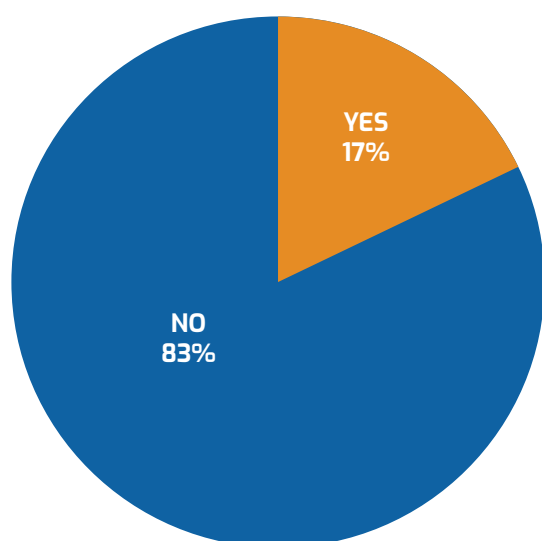
Access to Internet at the Health Facility Level



92%
of the
Wards have
access to
electricity

Figure 11: Access to internet at the health facility level

Access to Internet at Ward Level



83%
of the Wards
have access to
internet

Figure 12: Access to internet at Ward level

Human resource Gap at the Health Facilities

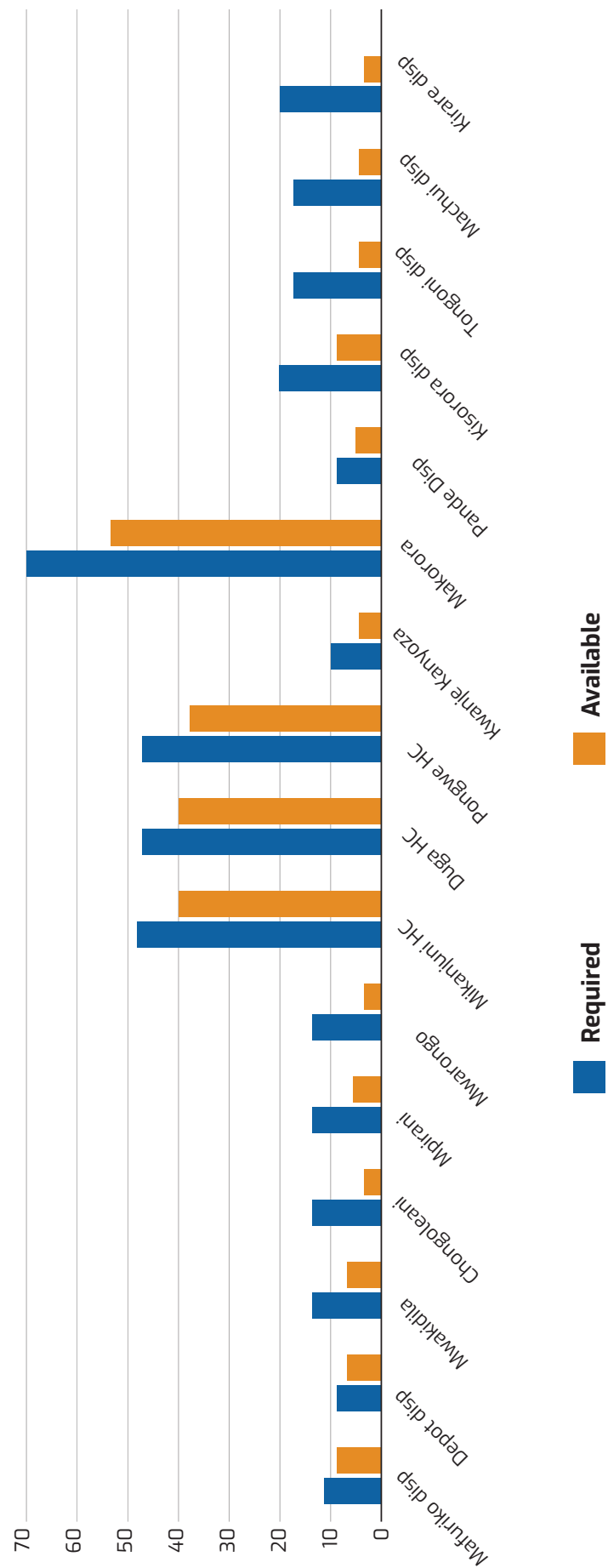


Figure 13: Status of Human Resource Gap at the Health Facility

Human Resource Gap at the Ward Level

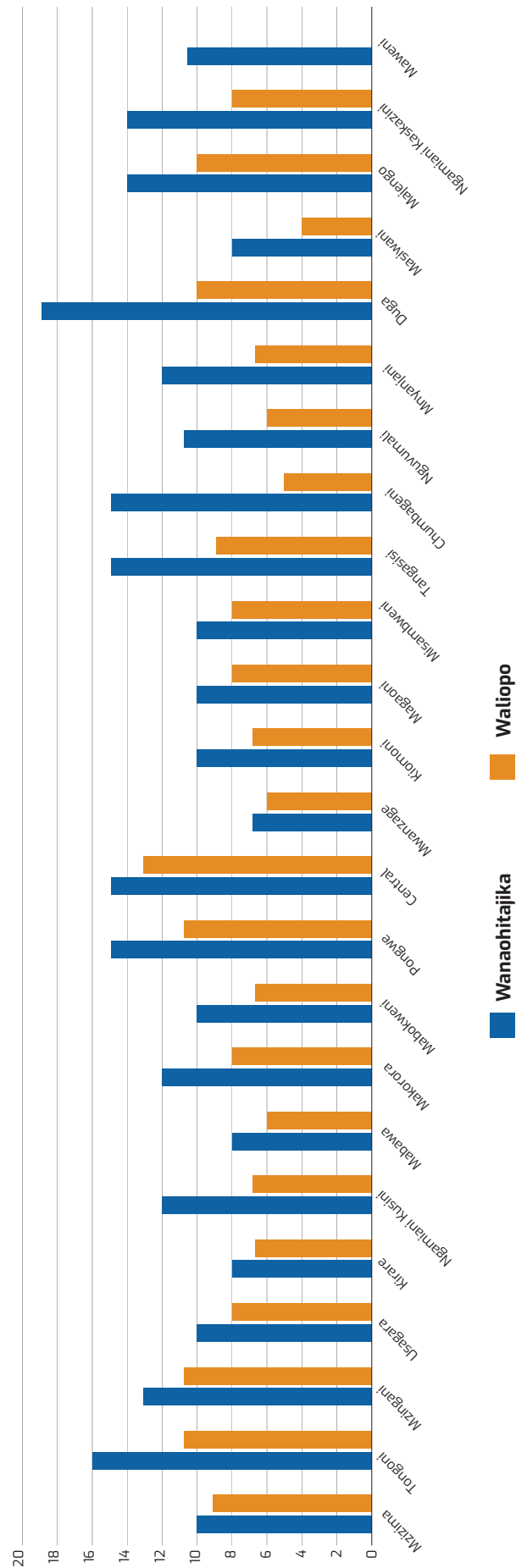


Figure 14: Human Resource Gap at the Ward level

Interoperability

As mentioned earlier, there are more than 20 ICT systems exists in Tanga City Council. Most of these systems were developed or acquired and installed as independent project either from the ministry of health, PORALG, other ministry or individual government organizations.

Most of them operates in silos which resulted to have more important information is knowable but is not known by the right people at the right time. In these systems mainly aggregate data are entered. For example, DHIS collects only aggregated data compile from the facility.

At the moment efforts has been done to link some of the systems. For example, FFARS system has already linked to Planrep. While the objective of the interoperability is to capture data across systems beyond one sector to support evidence-based decision, it is unfortunate little has been done across the sector not only in terms of connecting the systems but also data mapping and standards..

Data use case:

“Juma is a standard 5 primary school student at Primary School X. As per the performance requirements, he has been performing poorly in the class compared to other students, It is unfortunate most of the subject teachers at the school believe that, he is performing poorly because he is not serious. Because of that perception, he was getting punishment from most of the subject teachers believing that his performance will increase overtime. Juma’s parents died a while back and he has been taken care of by his grandmother who did not go to school. It is unfortunate when he was 2 years old, he had acute malnutrition which to date the nutritionist are continuing

supporting him. He needs more support and a different teaching approach to improve his performance instead of continuing punishing him. The school is not aware of what happened to Juma, while the health center knows. Juma was punished for something which was not his fault and in reality, that punishment will not result to increase his performance.”

There might be more Juma receiving punishment because data systems across the sector do not communicate with each other. More data are known but not to the right people for decision. If the school could have known this before, the approach could have been different. Interoperability of the system across the sector not only will enhance data flow but also the collaboration of the sectors specialists. The partnership between nutritionists and school if exists could have helped Juma to receive relevant support to enhance his performance”.

Data privacy and security

While data is very important to inform our planning and decision, it also has a risk if someone misuse it. The government role is to make sure it facilitates use of those data to different stakeholders but at the same time make sure the safety and privacy of its citizens is not jeopardized as stipulated in the constitution. At the moment as a country, Data privacy policy is not yet out however, process is going on to make sure it is out soon. While the policy is still in the process, it is important to note that some of its dimension has been covered in other policies and acts including Cyber security, Electronic and Postal Communication and Cybercrime and ICT policy. It also covered in the NBS revise Act and regulations.

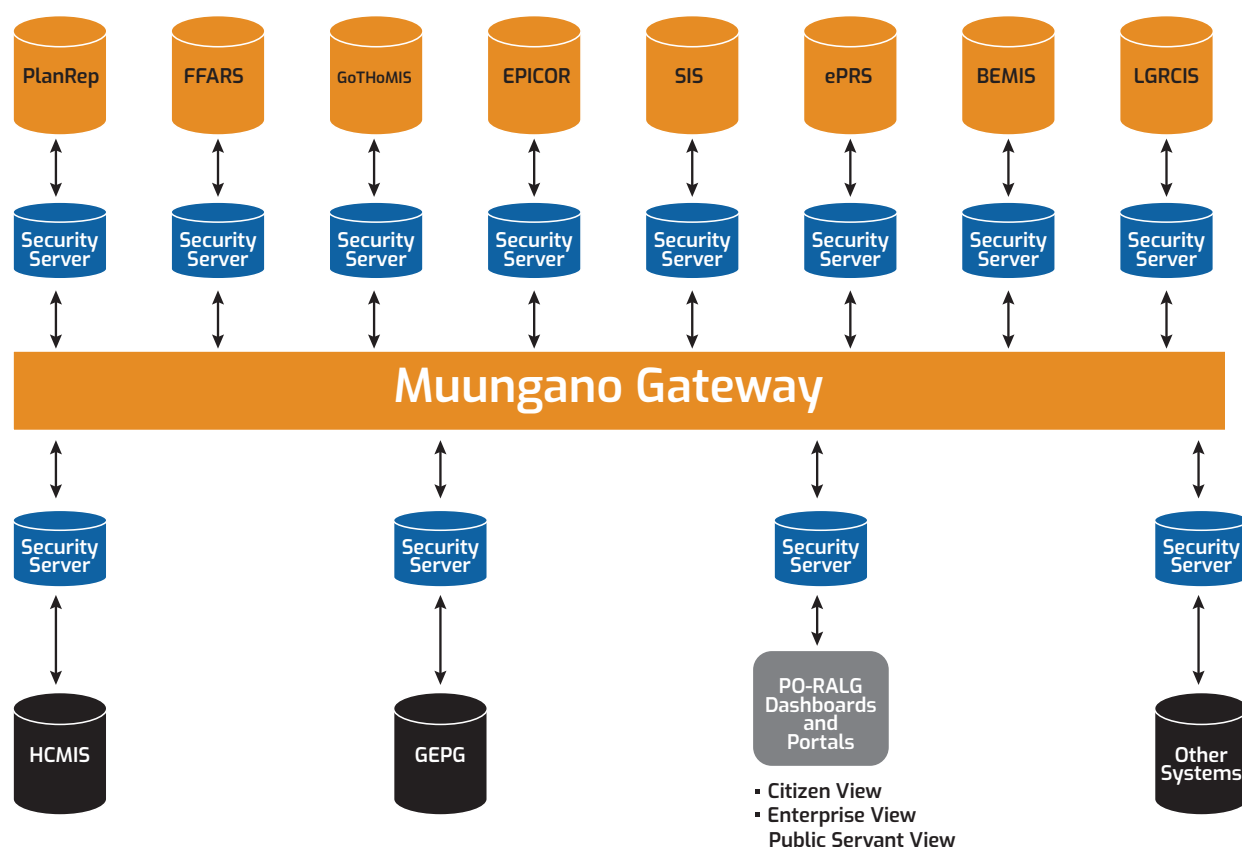
We noted that there are some measures that has been taken to make sure the privacy and security is observed. Some of the measures include development of the web- based systems with security features and making sure they are only accessible through city local area networks. The government business processes empower the City Executive Director to be the custodian of all city data that is collected by his team members. Unfortunately there is a higher risk at the council level due to the fact that most of the data are still kept in paper based.

At the health facility level, we noted that most of the data are stored in paperwork, a similar situation we saw at the ward level where even the population register is in paper

form. Some wards and facilities have locked cupboards where they put all the files.

Some of the gadgets used to collect data are personal and the city has no control of its use. When we asked for the maintenance and repair of ICT equipment such as laptops and desktop, we noted that there is no control and proper procedures to guide that, most of the respondent confirmed that they send their personal laptop to their own technician. How ICT equipment and tools are disposed is very critical to protect data privacy and security. We noted that, there is no protocol known by the local government staff for asset disposition and this might expose the data in the disposed assets.

Interoperability Vision of PORALG



Source: Dr. Ntuli Kapologwe. Director of Health, Social Welfare and Nutrition Services.

Figure 15: Interoperability Vision of PORALG

TANGA CITY COUNCIL

④ Conclusion & Recommendations

Using digital technology and digital data is critical to enhance data use to support preparing the future of children and address other community problems. There are good steps the council has taken to tap in this opportunity, However more investments and strong coordination are required to tap in the development of Information and Communication Technology and Emerging Technology. It is critical for all departments, units and other stakeholders to put citizen as a central focus and design interventions with system thinking in mind to enhance collaboration and complementarity for high impact.

There is no perfect data ecosystem in the world, taking steps for continue improvement is needed. Data is a crosscut issue and it is the right time to incorporate in the City strategic plan as a cross -cut issue and make it as a national agenda. Some of the issues that we learnt in the process include the following;

- There is limited data sharing within the sector and across the sector at the facility, ward and council level, this resulted to duplication of efforts.
- The confidence on data quality (population data) is low due to the fact that, is hardly updated and for different reasons such as lack of skills.
- There is very limited if any structured data demand template from department and units shared to the Ward and Mtaa executives.
- Council static officer does not work much with data as his core responsibility.
- Low Capability to work and communicate with Data.
- The need for working tools such as computer is urgent to enhance working environment at all levels.
- Lack of ICT dashboard at the council level is a mis-opportunity to enhance data flow within and outside the council
- Lack of awareness on the importance of spatial data affects local government performance in different areas including revenue collection

Recommendations

These recommendations are derived from the insights we have collected for the last five months on the ground and our engagement with heads of units, ward executives, health facility incharges, sector-based ministries and other stakeholders. We do understand some of these recommendations complements some of the previous works e.g Investment of Digital Health Road map,

Our recommendations were carefully presented to avoid duplication and enhance complementarity. The presented recommendations are not exclusive, but we believe will help Tanga City to start the journey of data revolution and align with Third Five Year Development Plan where the digitalization is one of the focus. Some of the recommendations are as follows;

Data use

Mapping of Data needs:

We learnt that, almost all departments, do not have exhaustive template that shows data that they should have from the ward level to council level, from one sector to another based on their business processes. This situation affects the readiness of having those data and it became inconvenience and unrealistic to the source they rely on. Understand data needs based on the responsibilities will enhance availability and use of data in each department and unit.

Invest in data collection:

As we have seen, data is a new oil at the same time is a factor of production. Apart from supporting local government to inform decision, local government can generate resources based on the data they have. Some of the data that are urgently needed includes;

i. Spatial Data

Spatial data is critical especially in addressing community problems and also understand where the interventions are needed. It also helps local government to enhance its efficiency and effectiveness on revenue collection. Starting with citizens problem will help to understand what spatial data is needed and develop a framework to collect it.

Urban planning unit should champion this in collaboration with other stakeholders. The most important part is to know which spatial data is needed and its impact at the end of the day. There should be a data portal for all spatial data which can also be linked to other existing systems.

ii. Administrative Boundaries

We do recognize the previous investment done on developing administrative boundaries. There is a need to have more investment to develop administrative boundaries at the Mtaa levels. This need was also raised during our discussion with the Urban Development plan unit. As he said

“Our intention is to develop a Geo - database and make sure all maps are accurately digitized and be able to track the history of the plot. We want to allocate all potential use of the lands including Agriculture and minerals. Existence of the administrative area will enhance data quality at the ward level and inform better planning and decision.”

Support roll out of real time data collection systems

At the school levels, we noted that there are frustration associated with frequency of data demand from the council and ministry staff. These demands sometimes come up with deadline without knowing that, the teacher is in class or not. Installation of School management system that will capture all the disaggregate data and linked to BEMIS and PREMIS will transform the sector completely and enhance data availability and use. The dashboard can show visualization of students, teacher attendance trends and other data needs. This kind of system will enhance comparison among school and also inform other relevant decision to be taken on time. Instead of developing it from the scratch, it is important if possible, to optimize the existing system that has been piloted in some of the districts. A similar roll out in the health sector is crucial, at the moment, very few health facilities have GOTHOMIS and can operate DHIS at their facility level.

Invest in development of data requirements template

There is well structured governance structure at the ward level and facility level. At the ward level there are different committees such

as ward development committee, piece and security committee. Similarly, in the health sector there are health governing committee and others.

It is unfortunate, There is no standard template for those committee to enhance data use & analysis.

Development of data standardization

At the moment there is huge challenge in terms of the capability to compare and contract on the progress between one ward and another. At the same time data are randomly collected without agreed standard format with standard template. This is the gap that need to be filled in to enhance data flow and sharing within and outside the system.

Enhance data coordination:

At the moment, Tanga City Council has Statistic Officer who is responsible to make sure all data are accurate, clean and derive insights from those data to support planning, learning and monitoring the progress. Their are other statistic officer in the respective departments e.g. primary education and secondary education and DHIS2 focal person. It is important to develop data team which extract the team members from departments and units. The main work for this technical team is to discuss all data related issues and share insights from the data that they have been collected. This is the team that should make sure all requirements to enhance data flow are implemented as stipulated in the developed policy and guidelines.

Data sharing Framework:

During the management meeting, Participants claimed to share data however, it shows that, the sharing is mainly quarterly management meetings. Technical sharing on day to day is a sustainable way to enhance data flow within the city. At the moment, there is limited, if any structured meetings between the sectors and within the sector. For example, the Agriculture officer in a certain ward requested data related to land use planning to dLAB researcher, the data which could have just been collected from the urban planning. It is unfortunate, there is no framework to communicate which data is needed from which sector by which sector.

At the moment, data sharing is also a challenge between Citizens, NGOS, CSOs and Tanga city. This is a national problem and we are aware the government through local experts developing **"Wadau portal"** which will capture all data from NGOs and CSOs. At the city level, the council has invested on TV, Radio and website to communicate to citizen. The guide to share the data to these tools is not yet in place. Lack of the data sharing guide make difficult to compare within the council and with other council and region. Support national development of data sharing guide at the sub-national level will be the next step to enhance data flow.

Data Literacy

We have seen, data skills as a challenge to most of the Tanga City council employees. Skills to make insight from the data, skills to communicate with data (As seen from the website) and skills to manage the data, skills to understand which other types of data will enhance to make the decision they are supposed to do, skills that help them to understand which data source available

and reliable, how to make use of data to inform the decision or advise the decision maker, how do proactively take prevention measure based on the insights from the data collected. How to clean, visualize the data for easy communication and so on. Under normal circumstances, Local Government Training Institute (LGTI) is required to train all local government employees on citizen engagement and data skills through the application of Opportunity and Obstacle for Development guideline. This is the tool which was recently revised to engage citizen. Unfortunately, more than 80 percent of the respondents don't know about this guide and they have just seen for the first time when we shared during our engagements. When we followed up with LGTI we found that, there is a need to support development of data curriculum for ward executives and councilors.

As similar situation was seen in the health sector, facility in charges in most cases send the data as required to different system and minimal efforts is in place to use the data for their own decision-making processes. Most of them are still struggling to understand how they can process the data in the existing systems.

Recruitment of the Data Clerk at the facility level will enhance data quality and processing. At the moment, data quality can be a challenge due to the fact that, there is limited skilled team members as communicated in the insight section.

Apart from having skilled team, it is important to create incentive mechanism for data champion and support innovation that will use data and create impact directly to citizen or city operations

Support ICT infrastructure:

Today 4th Industrial Revolution is pushing everyone including the governments to change. Digital transformation is not an option but a necessity to be competitive. Invest on digital infrastructure is a must for every country and organization. We do acknowledge the investment that the Tanzania government has done at all levels however, more strategic investment is needed as also presented in the Tanzania Digital Health Investment Road map 2017-2023.

So far, the need of basic tools such as desktop is huge at the ward level and at the facility level. Similar situation at the school level. It is less than 5% of mtaa executives who have at least digital data collection equipment. It creates high risk to the data quality and overburden their operations. Successfully example of investment was in the Immunization program where all the facilities have data collection tool and data is collected at the point of service delivery.

It is important to make sure all wards and facilities have electricity and internet (National Fiber Optic connection); these are minimal requirements for all the system to work properly. At the moment some health officers sometimes have to travel to search for internet facility or get support to enter the data in the system because of lack of infrastructure. All ward executives' officers faces alot of difficulties in data management. According to one ward executive ***"If you asked any one of us to give you the data for the last five years, it will be a huge task to us, and we might run away. This is due to the fact that, the files might be lost and if available it might take us more than a week to get them. To balance the situation, someone might just give you the data he/she think is correct."***

Support Development and roll out of Ward dashboard:

For the whole period we have engaged different stakeholders in this work, all of them agreed, the major turnaround is to have up to date ward data dashboard that include population register and all other relevant department and unit data for each mtaa. All these mtaa dashboard can be consolidated and show the ward data. The most important is to develop data needs based on specific responsibility that should be incorporated in the data collection tool. The dashboard will show all the visualization that are relevant to mtaa, ward and council. Through this dashboard someone can be able to compare and look at the trends and inform the decision. The dashboard will show visualization of different things that will be agreed and can have both internal and external use depending on the privacy policy that will be agreed. The existence of dashboard will easy data flow from the community to the council.

Data protection and privacy

We do recognize the non-existence of data privacy and security policy at the national level and local government. However, there are sector specific guide that exist in the country e.g cyber security policy. For local government we still believe that, there are some risk areas that need to be addressed in order to make sure the role of protecting the privacy and security of its citizen is still observed while facilitating data innovation to take place. While most of the respondents confirmed to know the importance of privacy and security, they also seem to do their work without confidence because there is no policy or guide. Tanga City can be proactive and champion the development of the Local

government policy to develop local data and privacy policy that observe all the privacy and security issues but at the same time enhance data use. The policy will help to answer the following questions,

Some of those risk areas includes;

- For those who are using their personal laptop, how they should handle repair and maintenance of their laptop
- For outdated tools/laptops, what is the procedure to dispose those equipment's
- How and where to save the data sets and in which format
- How to hand over the accessibility of the system password for the facility if the personal in charge want to go leave or sick
- Who is responsible to prepare the data sets ready for sharing without affecting the privacy and security?

The questions above were observed in the field and we do believe it is important to think about for consistency and also privacy and security of the data owner.

Shareback session:

This report was for the Tanga City stakeholders and from dLab perspective, sharing back to them and discuss on the next step was extremely important. On 29TH December shareback session was organized in Tanga City Council. All insights where shared during the session and were positively received, and all members got an opportunity to provide inputs. Most of the inputs provided were aligned with the insights and recommendations. Proposals on what to start with in the intervention was provided. Each proposals did have its own weights and if there could have been resources all of them could have been done. It was also noted that some of the proposal will need to support all four-dimension areas as per the framework used.

Considering all departments and units plans are heavily rely on the data collected from the ward offices under the support of mtaa executive. It was agreed that, it is important to prioritize strengthening ward executive and its supporting team. This will enhance quality of data at the local government which will result into better planning for better results.

Participants noted that, most of the insights emphasises on the need to fully digitilise the council to enhance data flow and use. This is an opportunity for Tanga City Council to be more competitive especially in this era of 4th Industrial Revolution.

It was advised that, local government should lead the process of resource mobilization to all partners and make sure whatever project is going to be done in Tanga city Council, it complements what has been invested.

Tanga City Council Executive Director informed the stakeholders that Local government is willing to partner with anyone and provide fully support to any stakeholder to enhance availability of data and use to support making Tanga City the best place for children. He also advised his management team to write different proposals that will enhance the implementation of the projects that will address the gaps identified by the Data Readiness assessment.



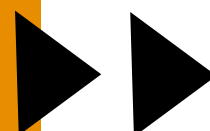


References:

- I. 10- steps to achieving a data privacy compliance framework <https://insights.redflaggroup.com/articles/10-steps-to-achieving-a-data-privacy-compliance-framework>
- II. A Questionnaire-Based Data Quality Methodology accessed at https://www.researchgate.net/publication/276198070_A_Questionnaire-Based_Data_Quality_Methodology
- III. Data Desk, Open County Initiatives accessed at <https://openinstitute.africa/kenyas-first-county-data-desk-launched/>
- IV. Data for Health and sustainable Development accessed at <https://www.healthdatacollaborative.org/where-we-work/tanzania/>
- V. Data Quality : A Survey of Data Quality Dimensions accessed at https://www.researchgate.net/publication/241631252_Data_quality_A_survey_of_data_quality_dimensions
- VI. Delivering Data where it Counts accessed at https://developmentgateway.org/publication_landing/delivering-data-where-it-counts/
- VII. Kyela Sub-national Roadmap accessed at <https://drive.google.com/drive/folders/1Hy87KW0mTwhBt51u9FTbxPGujapJhGG>
- VIII. National Data Revolution Policy, Republic of Rwanda accessed at <http://statistics.gov.rw/publication/rwanda-national-data-revolution-and-big-data>
- IX. National Second Five year Development Plan accessed at https://mof.go.tz/mofdocs/msemaji/Five%20_2016_17_2020_21.pdf
- X. Sustainable Development goals accessed at <https://sdgs.un.org/goals>



- XI. Tanga City Social and Economic Profile report, 2017, National Bureau of Statistic
- XII. Tanga City Strategic Plan , 2016 – 2021 accessed at <http://www.tangacc.go.tz/storage/app/uploads/public/5d8/cde/a89/5d8cdea890dbb985803003.pdf>
- XIII. Tanzania Digital Health Investment accessed at https://path.azureedge.net/media/documents/Tanzania_Digital_Health_Investment_Road_Map.2017_to_2023.pdf
- XIV. Tanzania Digital Health Strategy accessed at http://www.tzdpg.or.tz/fileadmin/documents/dpg_internal/dpg_Documents/Tanzania_Key_Health_Documents/Tanzania_Digital_Health_Strategy_2019_-2024__1_.pdf
- XV. The journey to better Data for better Health accessed at https://path.azureedge.net/media/documents/DHS_health_tanzania_rpt1.pdf
- XVI. Understanding Data use accessed at <https://developmentgateway.org/blog/dg-white-paper-release-understanding-data-use/>
- XVII. We Need to Improve GIS Boundary Data Accuracy for Better Development Decisions <https://www.ictworks.org/improve-gis-boundary-data-accuracy-gis/#.X-MOpBMzZQI>





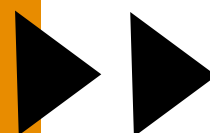
Appendices:

Appendix i. Some of the ICT systems in Tanga City Council:

S/N	Name of the System	User at the Council Level	Saver Location
1	Plan Rep	Planning and Monitoring	PORALG
2	Epicor	Finance and Trade	PORALG
3	TASAF MIS	City Director Office	TASAF - HQ
4	HCMIS - LAWSON	Human Resource	President's Office Public Service Management and Good Governance
5	LGRCIS - Revenue	Finance and Trade	PORALG
6	PREMS	Secondary education	NECTA
7	PREM	Primary education	NECTA
8	Kange Revenue Collection System	Planning and Monitoring	TANGA CITY
9	Tanga City Website	Planning and Monitoring	TANGA CITY
10	FFARS	Health	PORALG
11	GovNet – Government Network	ICT - unit	TANGA CITY
12	CHF	Health	MOHG
13	GOTHOMIS	Health	PORALG
14	Government Audit Recommendations Implementation Information Trucking System (GARI-ITS),	Internal Audit	MOF



15	Electronic Procurement System (TANEPS),	Procurement	PPRA
16	Finger Print Attendance System.	Human Resource	TANGA CITY
17	System of Management and Maintenance of Asset (SOMMA),	Procurement	PORALG
18	BEMIS	Secondary and Primary Education	PORALG
19	DHIS	Health	MoHCDGEC
20	Immunization System	Health	MoHCDGEC
21	ILS – Integrated Logistic System	Health	MoHCDGEC
22	IDSR - Integrated Disease Surveillance and Response (IDSR)	Health	MoHCDGEC





Appendix ii. Ward Questionnaire

Name of the Ward

Name of the Ward executive.....

Tel

Email

As part of the process to understand more on data management and use in your ward we are requesting you to respond to this questionnaire. Your respond will be confidential and it will be used only for the purpose of conducting data readiness assessment. Your honest responses will enhance our recommendations to the Tanga City Council Management to support your ward to collect and use data effectively and efficiently.

Q51. What does data mean to you in your work?

.....

**Q52 How you use those data apart from budgeting and planning?
Give us an example**

.....

Q52. What are the sources of the data of your ward?

.....

Q52.1 How do you collect those from each source?

.....

Q52.2. Which data you should collect every day, month and year

.....

Q52.3. What are the challenges of collecting them?

.....



QS2.4. Have you ever used spatial data for planning and inform your decision? YES or NO

If yes give us an example

.....

Qs2.4.1 Which spatial data do you need?

.....

QS3. Where do you store those data after collecting them?

.....

QS4. Do you know data format that you can store data? YES or No

If yes give example

.....

QS5. Do you have population register for each mtaa? YES or No

QS5.1 How frequently does your register updated? Please tick

Monthly

Quarterly

Yearly

Other

QS5.2. When was your register last updated?

.....

QS5.3. Please list the data that is included in your register?

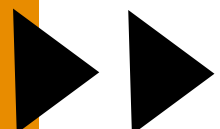
.....

QS5.4. How many computers you are supposed to have in your ward?

.....

QS5.4.1 How many do you have?

.....



QS5.4.2 Please list ICT equipments that you have can be used to collect data?

.....

QS5.6 How many Mtaa executives have ICT tool for data collection provided by the council?

.....

QS5.7 How many Mtaa Executives do not have ICT tool for data collection provided by council?

.....

QS5.8 Do you have electricity in your office? YES NO

QS5.9 Do you have access to internet? YES NO

QS.6 Which format do you store your data? Please list

.....

QS.7 Do you have any ICT system that you are using to collect data? YES NO
If yes, please list them

.....

QS.8 Do you have any program that you used to clean data? YES NO
If yes, please list them

.....

QS.9 Do you have any program that you used to analyze ward data? YES NO
If yes List them

.....

QS10 How many staff you are supposed to have?

.....



QS 12. Can you use excel, please tick YES NO
if yes which level - please tick Basic intermediate
advance

QS 13. Please list other tools you use apart from Excel (if any)

.....

QS 14. Have you ever developed any visualization based on the data
you have collected in
your ward? YES NO
If yes describe is about what?

.....

QS15. Do you have structured meeting with your team (Mtaa
executive and Technical team) where all insight from the
data are tabled for discussion.
If yes, do you have minutes

.....

QS16. As the secretary to Ward Development Committee, which
data do you take to the committee?

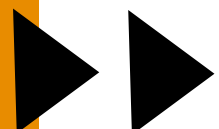
.....

QS17: Please list data that you always receive either monthly,
quarterly on yearly from the Department

.....

QS17: What data do the department need from you?

.....





Appendix iii. Facility Questionnaire

Data readiness assessment is a tool that provide insight on areas that need to be strengthen in order to enhance data management and use effectively and efficiently. Tanzania Datalab with support from Tanga City Council and Botnar foundation is in the process of developing the Data Readiness report for Tanga City Council. In order to have relevant recommendations your valuable inputs on this questionnaire is highly needed. Your honest response will be confidential and will only be used for this purpose.

Name of the respondent:

Name of the facility:

Email:

Tel:

Qs1. Please list ICT system that your facility uses to collect data

Name of the System	Data collected	Daily, monthly, quarterly, yearly, Other	Status of operation	Additional Data that you need to collect from those system



Qs3. List spatial data that you have in your facility.

.....

Qs3.1 List spatial data that you need to inform your decision

.....

Qs4. Who else is using the data you collect?

.....

**Qs5. What are the sources of your data
(exclude the systems mentioned above)**

.....

Qs6. Does your facility have access to internet? YES or NO

Qs7. How many staff should have laptop/desktop for their work?

.....

Qs8. How many staff do they have laptop/desktop?

.....

Qs9. How many staff you should have?

.....

Qs10. How many staff do you have?

.....

Qs9. List data that you collect using Non – digital tool

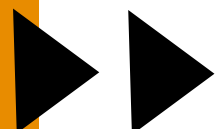
.....

**Qs10. Do you have someone who is the data focal person
(Data clerk?)**

Please tick YES or No

If yes, please list his/her responsibilities

.....



Qs11. Do you have a guide on how to share data i.e format, what not to include e.t.c.

.....

Qs12. Can you access data sets you have collected for the last ten years? YES or No

Qs13. What challenges do you encounter in data collection?

.....

Qs14. What data do you share in the Health Facility committee?

.....

Qs15. What data do you share to the communities?

.....





P. O. Box 33335
Dar es salaam - Tanzania
+255 782 374 894



www.dlab.or.tz
connect@dlab.or.tz



@ dlabTZ



@ dlabTZ



@ dlabTanzania



@ dlabTZ



@ dlabTZ