Assistive Technology Country Capacity Assessment

August 2024

Acknowledgements ──────

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List of Abbreviations and Acronyms

AAL	Anova Analytics Limited
AD	Assistive Devices
ADD	Action on Disability and Development
ADL	Activities of Daily Living
AP	Assistive Products
AT	Assistive Technology
CCBRT	Comprehensive Community Based Rehabilitation in Tanzania
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CMC	Christian Medical Centre
COBET	Complimentary Basic Education in Tanzania
CSOs	Civil Society Organizations
CRPD	Convention on the Rights of Persons with Disabilities
DBAS	Deaf Blind Assistance Services
DP	Disabled People
DPO	Disabled People Organization
EMD	Emergency Medicine Department
FBO	Faith-Based Organizations
FCDO	Foreign, Commonwealth and Development Office
HSSP	Health Sector Strategic Plan
ICT	Information Communication Technology
ILO	International Labour Organization
KCMC	Kilimanjaro Christian Medical Centre
MoEST	Ministry of Education and Science and Technology
MoH	Ministry of Health
MSD	Medical Services Department
NCDs	Non-Communicable Diseases
NGOs	Non-Government Organisations
OPA	Older People Association
OPDs	Organisations of persons with Disabilities
OUT	Open University of Tanzania
PHC	Population and Housing Census
PfR	Payment for Results
PO-RALG	President Office -Regional Administration and Local Government
PMO	Prime Minister's Office
PMO-LYED	Prime Minister Office – Labour, Youth, Employment and People with disabilities
PWDs	Persons with Disabilities
SDGs	Sustainable Development Goals
SHIVYAWATA	Shirikisho La Vyama Vya Watu Wenye Ulemavu Tanzania
SIDO	Small Industries Development Organisation
SNE	Special Needs Education
TENMET	Tanzania Education Network/Mtandao wa Elimu Tanzania
TFDPO	Tanzania Federation of Disabled Peoples' Organisations
TLB	Tanzania League of the Blind
TTC	Teacher Training College
UHC	Universal Health Insurance Coverage
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
UNOPS	United Nations Office of Project Services
URT	United Republic of Tanzania
USAID	United States Agency for International Development
WG	Washington Group
WHO	World Health Organisation
YLD	Years Living with Disability

Executive Summary —————

Purpose

The Assistive Technology (AT) capacity assessment report for Tanzania aims at providing information/data on the country's ability to finance, regulate, procure and provide assistive technology. The county capacity assessment was conducted between February and May of 2024.

Methods

The assessment employed mixed methods; namely, review of literature, key informant interviews with both the state and non-state actors and a survey of users.

This report is based on data collected in line with the World Health Organization (WHO) AT Capacity Assessment Manual and presents an assessment on Tanzania's current needs and capacity to provide AT, with recommendations on the five interdependent areas of assistive technology (5Ps) i.e. policy, provision, products, personnel and people (product users).

Key findings

Below is a highlight of the findings of the assessment based on the 5Ps:

People/users

- The Tanzania National Census data of 2022 estimates that there are about 5.8 million people in Tanzania living with disabilities who require AT of one form or the other. Disability increases with age and that females are more affected as compared to males.
- The common difficulties faced by AT users are seeing, hearing, walking, communicating, remembering, and undertaking daily activities of life. These difficulties appear to increase with age with females worst affected.
- The Tanzania National Census data of 2022 revealed that the causes of disability are diverse: disease is the main contributor to vision (55.1%), hearing (46.3%), mobility (46.8%), and communication (71.4%) disabilities. Congenital conditions significantly impact hearing (31.5%) and remembering (31.0%). Accidents cause most of the mobility related disabilities (13.4%), while violence, drug abuse, and pregnancy have minimal influence across all categories.
- In the 2022 census, 20.2% of people with albinism use assistive devices across Tanzania. Usage is higher in Zanzibar for mobility (4.6%) and spinal cord injuries (9.4%) than on the mainland. Device usage for seeing, hearing, self-care, and communication disabilities is low, with minimal gender differences across the regions.
- An assessment based on 31 randomly selected AT users shows that about 58% and 60% of them have difficulties in seeing (even with spectacles) and walking. A slightly lower proportion of the AT user population have difficulties in undertaking the daily activities of taking care of self (42%) and remembering (39%). However, fewer (about 6 each) of the 31 AT users have difficulties in hearing and in communicating in their usual languages.
- AT users (21 out of 31) indicated a challenge on skills training opportunities especially for older people. Difficulty was in terms of availability, affordability, accessibility, acceptability, approachability, adaptability, and appropriateness. All users indicated difficulty in obtaining information related to accessing Assistive Products (AP) and AT services.
- Other than the Open University of Tanzania (OUT) that had AT unit whose enrolment requirement is one having a disability and needing Information Communication Technology (ICT) skills training, none of the training institutions in Tanzania were offering skills training to out-of-school persons with disabilities. The OUT offers ICT-Based AT to persons with visual impairment and persons with hearing impairment[1]. All users indicated the need for dedicated institutions to implement adapted curriculum for developing skills to improve quality of life of persons with disabilities.

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1. For the deaf need ICT-Sign Language **https://www.out.ac.tz/vis/#**

- Sixty five percent (65%) of AT users who participated in the survey have not been taught how to take care of Persons with Disabilities (PWDs) or people with special needs including older people. This challenge appears more prevalent among the males (77% compared to the 33% females). This could indicate that most capacity building programs are targeted at women than men.
- Overall, analysis of AT devices and related services demand among the AT users shows the demand for supply of AP and AT services among all types of functional limitations[2] increase among older people of age 60+.This calls for specialised services including screening, intervention and user basic training on AP. It further calls for efforts for capacity building among staff providing AP and AT services
- An assessment of how the AT users pay for the AT devices and related services, shows some support from donors, self-funded purchases, family support, and arrangements with local artisans who make the devices. Those that had accessed to AT services and programs cited awareness on the use of white stick; screen readers for the deaf; optical character reading; and those run by Starkey foundation and the UNCRPD.
- According to the users who participated in the survey, the benefits associated with accessing AT from different sources include easy access; aide in communication; supports them to help others with special needs; and reduces their disability. However, there are number of challenges associated with the sources above. The challenges include lack of enough funds to purchase the devices; lack of effective support by the devices; and lack of readily available inputs required for making AT devices in Tanzania.
- A number of factors determine access to AT and related services. They include (i) cost of accessing the AT devices and services; (ii) the nature of disability; (iii) belief by some parents that children with disability should be taken care of by the Government; (iv) the effectiveness of the available AT devices in easing disability challenges; (iv) device manufacturers (either locally or internationally) not fully incorporating the needs of PWDs; and (v) lack of knowledge by many PWDs on how to effectively and appropriately use the devices.
- About one third (32%) of AT users indicated inability to access AT, citing lack of awareness on their availability; lack of support to access them; and the fact that the technology is relatively new in Tanzania. Those that were able to access AT were supported by occasional help from social workers, sponsorship donations; and their ability to make direct purchases either from shops or via online channels. Some of the AT devices indicated were fabricated or made locally and accessed in nearby hospitals for those living near the hospitals. Some of the local AP fabricators are Kyaro Tech Assistive Technology (Arusha) and Karakana ya Walemavu Dodoma.

Provision

- Provision of AT is uncoordinated limiting access to specialized services (e.g., prosthetics and communication devices), access to Assistive Products (AP) and access to AP user training calling for integrated AT ecosystem monitoring and evaluation.
- AT involves products and services delivered in different sectors thus likely to be overlooked in sector budgets and service provision or being given low priority. This causes poor service delivery to people in need of AP and AT services.
- Provision of Assistive products and services have to focus on cognition, communication, hearing, mobility, self-care and vision. Findings indicate that more focus is on vision, mobility and to some extent, hearing. Less attention is given to communication, cognition and self-care. With increasing population of older people who are likely to need care services, there is need to enhance provision of care services in the country.
- There is no link between AT providers and the health sector making it difficult to identify appropriately supported AT users.
- AT service provision pathways is managed across the system making it difficult to determine who can provide what, to whom, when, and in what circumstances.
- For service provision, several government and non-government institutions provide training on AT. For government, the key trainer is Patandi Teacher Training College (M). For non-government, some of the key trainers are Kilimanjaro Christian Medical Centre (KCMC) in Kilimanjaro and Comprehensive Community Based Rehabilitation in Tanzania (CCBRT).
- There is limited data on product procurement, disaggregated by type of disability. There is need to improve data availability across stakeholders responsible for AP. In this study it was possible to get data from MoEST and PO-RALG on supply of AP in schools.

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2. See appendix 11 that indicates most AP purchased by the surveyed institutions

Products

- Government sets budget for buying ICT facilities for PWDs, salary for AT trainers, payments for outreach programs; purchase of materials and therapeutic equipment; capacity building and service provision. For non-government organizations, the funds are devoted to provision of materials, human resource, trainings and purchasing the ready-made assistive technology; buying materials, exhibition of AT programs; acquisition and provision, training and maintenance of AT devices.
- Both government and non-state actors collect, manage and store a certain level of AT related data. The common type of data collected and managed include number of users trained, screened and treated; number of AT devices provided; number of operated persons.
- Both government and non-state actors procure AP. The procurement mechanisms are both at individual purchase (need basis) and bulk purchase. PO-RALG is the major purchaser of AP. The main sources for AP are both local (small scale) and overseas (China, India, Kenya, Germany)
- Government and non-state actors receive products from international donations. Examples of recent donations for government are audiometers and tablets installed with game-based screening. The non-government institutions receive prefabricated devices and wheelchairs from entities such as Latter-Day Saints (USA).
- There is no centralized procurement. Each Ministry determine the kind of AT they need and the resources for the same. Non-government and private organizations make procurements on an independent basis. Nonetheless, the resources allocated to AT is extremely limited despite the demand and the incidence of communicable diseases in country, particularly for Older People.
- For distributors, sellers and service providers, their focus areas include provision of hearing assistive products and mobility aids. The role of these institutions includes assembly and supply, advocating for availability of AT and promoting their use.
- Most of the institutions interviewed are aware of regulations or standards that assistive products need to comply with, and conduct assessments, fittings, user-trainings, follow-ups, maintenance and repairs of AT products beyond supply as they also learn from each other as peers.
- For procuring institutions, the focus areas include provision of AT products for vision and mobility impairments. Their role in AT ecosystem is primarily training PWDs and deployment of AT as well as advocacy for AT. A majority of institutions interviewed have dedicated AT programs with clear identification of people involved and indicators for monitoring and evaluation.
- A majority of the institutions interviewed procure assistive products and related services at either national or sub-national levels through bulk purchase or individual purchase. The major consumer is the Government. Suppliers are identified through open tender of direct procurement. Other AT products are received as donations from international donor organizations.
- Overall, the assessment established that there is no centralized procurement system, with each Ministry determining the kind of AT they need and the resources for the same. Non-governmental and private organizations make procurements on an independent basis.

Policy

- The Government of Tanzania, recognising the need for AT and the critical role it plays for its citizens in need, has committed itself to a number of international treaties related to AT. Emerging from these treaties, however, the national policies for older people, persons with disabilities and healthcare all mention AT but do not include substantial actions on how to improve availability of and access to AT.
- On policies and programs, there exist no dedicated national AT strategy in Tanzania. A number of disintegrated programmes however exist that focus mainly on alleviating hearing, cognitive and mobility impairments through training, monitoring, coordination and implementation of programs, and provision of technical assistance to critical players in the ecosystem as well as provision of AT devices. A majority of them, particularly the local institutions, have specific AT programs with clear identification of the people involved, and the indicators used to monitor and evaluate the programs. An estimated Tshs 8.7 billion (US$ 3.4 M) has recently been allocated in the country to AT to support capacity building and provision of products to targeted groups. All local policy making and program managing institutions interviewed collect or manage data about AT, health conditions and/or functional limitations that may require AT. The organizations have dedicated strategies, plans or road maps that include AT.
- There exist a platform or mechanism for intersectoral and/or interagency coordination of AT at PMO-LYED. However, it needs to be capacitated to fully implement its role.

- Whereas physical disabilities affect most of the population there seems to be limited support for mobility functioning policy and programming. Overall, there are challenges related to policy and programming on treatment, skills training, rehabilitation, vocational rehabilitation and care.
- Triangulating the above assessment of AT users' views and outcomes based on the surveys, and the policymakers and program managers' perspectives, the AT ecosystem in Tanzania can be described as one having the relevant budget allocation, programs and strategies in place but lacking an elaborate implementation to create an impact in reaching a critical mass of PWDs and those with special needs.
- Provision of AT services in Tanzania is not covered in the National Health Insurance scheme

Personnel

- AT support personnel are found across sectors including Education, health, social workers, faith-based organisations (FBO) and other charity organisations.
- The few available AT personnel provide services covering awareness creation and access, advocacy on AT ecosystem, provision of devices, training and consultancy. Within the health sector, consultants providing services in the AT industry included: Ear, Nose and Throat (ENT), Ophthalmology; Orthopaedics; Rehabilitation, , Geriatrics; Paediatrics. According to the MOH, by 2024, there were 600 physiotherapists, 250 occupational therapist, 168 prothesis and orthotist and 8 speech and language therapists in the country. MOH data further indicate that human resources in health facilities has been declining in recent year, falling from 48 percent of the total requirement in 2016 to 34 percent in 2022. There is at least 66% shortage of health and allied human resources across the country.
- There is no coordinated and clear training system for AT.
- Less is known about availability of AT skills training opportunities for AT experts and the people in need of AT skills training. In most cases, AT provision has remained "snowballing" more so for people who become disabled in adult age thus negatively impacting the provision of AT in the country.
- Although progress has been made in availing health sector performance data/report, public access of such resources is seldom available.
- Teacher and allied health training colleges are catering for common types of impairments such as blind, deaf, intellectual etc. Other important specializations such as cognition, communication, hearing, mobility, self-care are seldom addressed.

Conclusion

The Tanzania AT Country Capacity Assessment report illustrates a complex state of AT ecosystem. While AT provision improves quality of life, the delivery ecosystem faces challenges in terms of quality, availability, accessibility, awareness, skills training, adequacy, acceptability and affordability of products. The evidence suggests the need to improve AT ecosystem in the country, more so for older population who seem to face more challenges including shortages of rehabilitation centers and vocational skills training to improve their quality of life.

This assessment provides practical recommendations to enhance the AT ecosystem, such as the need to establish skills training and rehabilitation centers, establishing a link between health practitioners and the rehabilitation centers as a referral system, introduction of programs to monitor AT ecosystem in the country and a database for AT products accessibility for different types of functioning (cognition, communication, hearing, mobility, self-care and vision) and implementation of Task-Shift approach for in-service health workers.

1. Background ─────

World over, participation of all persons regardless of impairments remains a critical prerequisite for inclusion. This highlights the role of Assistive Technology (AT) in mitigating limitations and impairments that the aged and people living with disabilities would suffer from. Recognizing that as a global concern, World Health Organization (WHO, 2024)[3] defines Assistive Technology (AT)[4] as products and their related systems and services that help maintain or improve an individual's functioning and independence in cognition, communication, hearing, mobility, self-care and vision, thus enabling their health, well-being, inclusion and participation in community and all areas of society. WHO thus acknowledges that improving access to AT can contribute to the achievement of the Sustainable Development Goals (SDGs) and to ensuring that no one is left behind; hence a key success driver of primary health care, particularly in developing and low-income countries.

The broader socioeconomic benefits of AT – according to WHO (2024)[5] - span a number of areas. For instance, it is argued that early provision of hearing aids for young children supports language development and communication skills thus limiting negative impacts on their education, future employment and community participation. The provision of AP such as appropriate wheelchairs facilitates mobility, improving individuals' access to education and employment while reducing healthcare costs due to a reduction in secondary complications such as pressure sores and contractures. Therapeutic footwear for diabetes reduces the incidence of foot ulcers, preventing amputations and the associated impact on individuals and burden on health-care systems. Additionally, the timely provision of assistive technology for older people can improve their functioning, independence and wellbeing thus enabling them to live their full lives. These benefits cannot be gainsaid.

WHO estimates that more than 2.5 billion people globally need one or more assistive product. This number will increase by 1 billion (or about 40%) in the next 25 years to 3.5 billion in 2050 on account of ageing populations and an increase in non-communicable diseases. It is also estimated that by 2030, more than 2 billion people will require at least 1 assistive product, with most of the older people in fact needing 2 or more of these products. Going forward, therefore, the multiplicity in use of these products highlights the need for integrated services in the provision of AT products and systems. Currently, however, only 10 percent of people globally who need of AT have access to assistive products.

In Africa, the situation is disproportionately grave, with about 15.6 % of the population constituting people living with disabilities of one form or the other (WHO (2021)[6], with each requiring at least one assistive product. This, based on the current estimated total population of 1.49 billion, represents about 232 million people. At a rate higher than the global average of 40% increase in 25 years, the proportion of the population living with disabilities in Africa is projected to double by 2050. This indicates that Africa's has more than proportionate need for AT products and services. To avail the needed AT, there are several challenges, including: shortage of effective structured support from Governments that reflects weak governance, and inadequate funding; weak promotion of public-private partnerships, insufficient regulatory capacity; and

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3. https://www.who.int/news-room/fact-sheets/detail/assistive-technology.

4. Assistive products can range from physical products such as wheelchairs, glasses, prosthetic limbs, white canes, and hearing aids to digital solutions such as speech recognition or time management software and captioning.

5. https://www.who.int/news-room/fact-sheets/detail/assistive-technology#:~:text=Assistive%20technology%20can%20help%2 0people,and%20has%20broader%20socioeconomic%20benefits.

6. WHO regional Office for Africa (2021) Report on the Framework for Improving Access to Assistive Technology In The Who African Region. Accessible via chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.afro.who.int/sites/default/files/2021-08/AFR-RC71-11% 20Framework%20for%20improving%20access%20to%20assistive%20technology%20in%20the%20WHO%20African%20Regio n.pdf.

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fragmented supply of assistive products, coupled with the perennial shortage of skilled healthcare personnel. For Tanzania, the 2022 National Census and Demographic Household Survey 2022 shows that an estimated 5.8 million people (or about 11.1% of the population of 5 years and above) have some form of difficulty in the daily activities of life (Table 1). Difficulty in seeing (3.0%) and walking (1.8%) are the most common type of disabilities in the country. Prevalence of disability has increased from 9.3 percent in 2012 to 11.2 percent in 2022[7].

Table 1: Disability prevalence among persons aged 7 and above by type of disability and place of residence

Type of disability	Prevalence		
	Both sexes	Male	Female
Seeing	3.0	2.9	3.1
Hearing	1.1	1.1	1.1
Walking	1.8	1.8	1.9
Remembering	0.6	0.6	0.6
Self-care	0.3	0.3	0.3
Communication	0.6.	0.6	0.6
Others	3.7	3.4	3.9

The prevalence of disability in the country mimics the global trends, which increases with age. According to the Population and Housing Census of 2022, in Tanzania, disability prevalence increases gradually with age, peaking at 50.6% for females and 48.8% for males aged 80 and above

Figure 1: Prevalence of Disability by Age Groups and Sex (Source: Tanzania, 2022 Population and Housing Census)
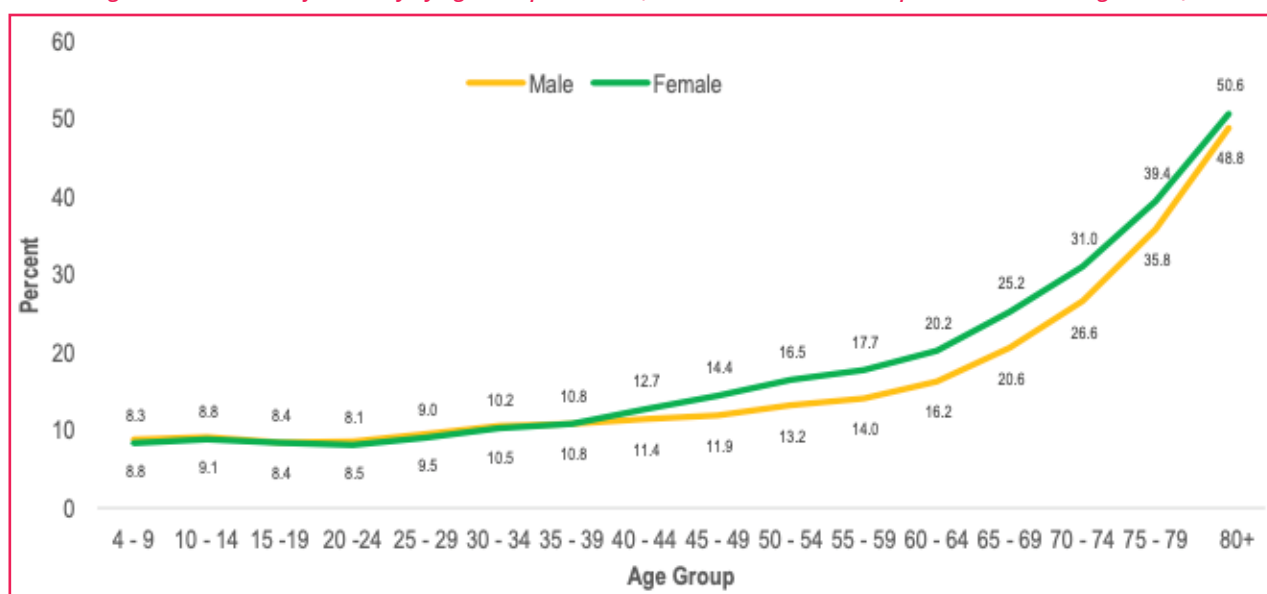
Given that a critical mass of the population, estimated at 11.2% of people aged 5 years and above experience some form of difficulty, there is need for structured programs for AT in Tanzania. An examination of the initiatives that the Government of the United Republic of Tanzania has undertaken in an effort to increase access to AT shows that the Government has formulated some programs to support people in need of AT.

7. **The United Republic of Tanzania (URT), Ministry of Finance, Tanzania National Bureau of Statistics and President's Office - Finance and Planning, Office of the Chief Government Statistician, Zanzibar. The 2022 Population and Housing Census: Tanzania Basic Demographic and Socio-Economic Profile Report; Tanzania, April 2024.**

The Government, recognising the need for AT and the critical role it plays for its citizens, has committed itself to the following international treaties related to AT, such as: (i) the United Nations Convention on the Rights of Persons with Disabilities (CRPD) in 2009[8]; (ii) the United Nations Convention on the Rights of Persons with Disabilities and Optional Protocol; and (iii) the Protocol to the African Charter on Human and Peoples' rights on the Rights of Persons with Disabilities in Africa and the International Agreement on the rights of disabled people. Emerging from these treaties, the National policies for older people, persons with disabilities, and healthcare all mention AT but do not include substantial actions on how to improve availability of and access to AT.

Capacity assessment of AT in Tanzania

From a policy standpoint, although the Government of the United Republic of Tanzania (referred to as the Government herein) has some form of procedure to support people in need of AT, the funding remains inadequate to meet demand. Most AT users depend on donations and informal markets to access AT required to perform activities of daily living (ADLs), as well as social and economic activities. The current AT assessment dives into these issues in more depth.

The Country Capacity Assessment will enable the Government to know its capacity to finance, regulate, procure and effectively provide assistive technology. It will also facilitate the government, its institutions and other stakeholders providing AT to prepare informed plans to deliver AT to those in need.

The results of this assessment will also be used to raise the awareness targeting stakeholders such as communities, policy makers and program designers in the delivery, monitoring and evaluation of AT in the country. The availability of capacity assessment results will facilitate all stakeholders in addressing AT at all levels of health and social care.

The Ministry of Health (MoH) Section of Rehabilitation, Palliative Care and Geriatric Care are the key government collaborative partner working with HelpAge Tanzania and WHO on AT. Other MoH sections, national and local authorities, and other relevant Ministries, offices and non-government partners including Organisation of People with Disability (OPDs) and Older People's Associations (OPAs) are also engaged in the process.

Assessment Objectives and Deliverables

The general objective of this AT assessment is to contribute to improved access to assistive technology through providing data on the country's capacity to finance, regulate, procure and provide assistive technology. The capacity assessment exercise was guided by the following specific objectives:

- conduct a situational analysis of the country capacity, using WHO assessment tools, to meet the population's needs in Assistive Technology (AT).
- identify priority gaps and propose a plan to address them along the five interdependent areas of assistive technology (5Ps).
- identify priority of access to AT based on users' needs.
  develop measurable indicators to monitor and evaluate progress.
- set recommendations for the provision of technical support for specialist staff, carers and others to link with other deliverables (products, personnel).
- revise or develop the national list of priority assistive products and specifications based on the results of the assessment, drawing on the WHO model list of priority AP (see appendix 6).
- propose terms of reference for a multidisciplinary coordination mechanism to support and coordinate the implementation of the proposed priority interventions.

2. Methods, technique and tools _____

This report is based on data collected in line with the WHO AT Capacity Assessment Manual and presents an assessment of Tanzania's current needs and capacity to provide AT, with recommendations on the five interdependent areas of assistive technology. To achieve these objectives, the assessment employed mixed methods, namely, review of literature and key national policies/guidelines, key informant interviews with both the state and non-state actors and sample survey of users.

The key informants were purposively selected, drawn from key areas of AT (the 5P) to provide insights into the types of needs, AT use and challenges experienced by people using AT in Tanzania. Among Key Informants were the Ministry responsible for AT including the MoH, PMO-LYED, MoEST and PO-RALG who also provided information on functioning of AT ecosystem in Tanzania.

Ahead of field work, to ensure comprehensive coverage, the assessment conducted a stakeholder mapping and categorized them as shown in Table 2. The mapping was done through review of literature, interviews with practitioners in the sector, input/discussions with the MoH, Prime Minister's office and HelpAge Tanzania. Table 2 further depicts the techniques deployed and the number of respondents in each category that participated in the survey/assessment.

Table 2: Assistive Technology Stakeholders in Tanzania, Assessment Participants and Techniques

Category	Stakeholders	Focus/rationale	No. of respondents	Technique/tool
Policymakers/ program managers	Prime Minister's office; Ministry of Health (MoH) (Rehabilitation, Palliative Care and Geriatric Care); Ministry of education, Civil Society Organizations (CSO) and DPs (like HelpAge, Action on Disability and Development (ADD), TENMET, HakiElimu, Plan International); PO-RALG, USAID, UNICEF, UNESCO, WHO, ILO); Ministry of community development gender, women, children and special groups, ministry of communication, ADD, PMO-public service and PO -public service, Disability reference network-under the premise of FCDO-British high Commission	Secondary data (DHIS 2 and school data), Practices on formulating and implementing AT policies. Availability of think tanks on AT; Government departments responsible for AT; Policies governing AT regulations, Universal Health coverage, professional bodies	10	Purpose sampling Interviews Self-administered questionnaire Desk review
Products	Medical Stores Department (MSD), Insurance organizations (like NHIF and others), Producers of AT, Entrepreneurs, CCBRT, KCMC hospital, regional referral hospitals, local producers like the SIDO-disabled aid producers Engineering, Lake Victoria Mara, Tanzania Medicines and Medical Devices Authority	Assess AT supply ecosystem	20	Purpose sampling Self-administered questionnaire
Provision	Ministry of Health department dealing with rehabilitation services, Ministries dealing with PWD services including (Prime Minister's Office, MoEST, PO-RALG, Ministry dealing with social work), Kilimanjaro Centre for Community Ophthalmology, referral hospitals -KCMC, Dodoma, Iringa, Mbeya, Tanga, National Hospital- MOI,	Focus is on aspects of products availability and affordability for each category of people with disabilities	9	Purpose sampling Self-administered questionnaire
Personnel	Patandi College, University of Health and Allied Sciences,	Focus on distribution of knowledge on AT ecosystem in the country per type of products (Section 4.4)	6	Purpose sampling Self-administered questionnaire
People (AT users)	Tanzania Federation of Disabled Peoples' Organizations (TFDPO) (SHIVYAWATA), Tanzania League of the Blind (TLB) DPOs (disabled people organizations), older people with disabilities, older people Associations	Learn how people in need of AT support ecosystem.	33	Random sample of PWDs Interviews Self-administered questionnaire

3. Findings

3.1. AT users/People

The assessment categorized users into two dichotomies, namely, people with disabilities (PWDs) and Older People. This distinction was informed by similar studies in other countries that established a direct correlation between ageing and the need for Assistive Products. Studies have indicated that older people are more susceptible to non-communicable diseases (NCDs), accidents, frailty and fragility than the younger age[9] group and hence the need for this classification.

In terms of disability, school-going age students present one of the largest constituencies of PWDs in Tanzania. Table 3 shows the distribution of students with disability by school level (source: PO-RALG - annual school census data).
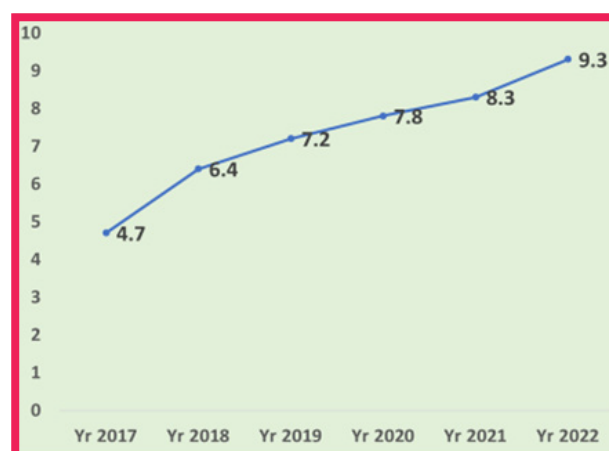
Figure 2: Burden of NCDs in Tanzania – Source MOH Report

Table 3: Students with disabilities in Tanzania in 2023

Level	Enrolment	Population with disability	Percent of the total enrolment
Pre-primary	1,679,542	6,892	0.41%
Primary (Std 1-VII)	11,425,482	74,295	0.65%
Secondary (F1-IV)	2,881,335	15,032	0.52%
Secondary (F V-VI)	196,020	1,088	0.56%
COBET	57,843	586	1.01%

From these data, the population of school going population with disability in 2023 was 97,893, representing 0.6% of the total enrolment. Appendix 10 shows the common assistive products used by the pupils in schools. Braillon sheets, puzzles, hand magnifiers, white cane, Perkins Brailler and hearing aids are the common equipment.

Using a Washington Group (WG) Questionnaire, Mulongo et.al (forthcoming), conducted a survey in nine (9) regions of Tanzania[10] to map the proportion of pupils with disability in government primary schools. Table 4 depicts the number of students identified by the WG questionnaire as having a functional disability compared with official government school data. According to the government data of 2023, only 106 (0.62%) of pupils in grade three had a disability in mainstream schools. However, using the WG questionnaire, the population of PWDs climbs to 14.9%. If this is extrapolated, it means that 4,157,497 students in Tanzania have a functional disability. The government when screening for early identification do depend on use of screening tools and medical equipment like E Chart, Snellen Chart, Pinhole for screening pupils with visual impairment; drums, tuning fork for screening hearing impairment and puzzles, charts, balls for screening children with intellectual impairment. These findings may also call to question the reliability of the instruments used to assess disability in the country. The proportion of PWDs is therefore likely to be underrepresented in official documents.

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9. Sousa, A. C. S., Sales, A. M., Dias, M. F. S., Costa, A. V. (2022). Association of Sociodemographic factors to fragility and chronic diseases in aged populations. Multi -Science Journal, 5(1): 1 1 -16; Tier, C. G., Santos, S. S. C., Poll, M. A., & Hilgert, R. M. (2014). Health conditions of elderly in Primary Health Care. Rev Rene, 15(4), 668-75.

10. Kigoma, Rukwa, Katavi, Dodoma, Pwani, Singida, Simiyu, Dodoma and Mara

Table 4: Number of students identified by the WG questionnaire as having a functional disability compared with official government school data.

School Type	Number of Students identified as having a functional disability	Percentage (%) out of the Surveyed Students	Proportion of pupils with disabilities in BEMIS data (2023)
Inclusive/ Mainstream	161	14.9%	0.62%
Special Schools	34	3.2%	-
With SNE units	81	7.5%	-
Grand Total	**276**	**25.6%**	**-**

According to Population and Housing Census (PHC) of 2022, the prevalence of disabilities among the population aged 7 years and above in Tanzania and Tanzania Mainland rose from 9.3% in 2012 to 11.2% in 2022. In Zanzibar, it increased from 7.5% to 11.4%. The PHC report indicate that disabilities in Tanzania is attributed to various causes, with diseases being the leading factor, affecting 57.6% of PWDs. Congenital disabilities account for 18.8%, and accidents for 7.0%. Urban areas report more disease-related disabilities (60.7%) than rural areas (56.0%). Gender differences show males report more disabilities from accidents (9.5%) compared to females (4.9%).

Table 5: Percentage Distribution of Persons with Disability by Cause of Disability, Place of Residence and Sex;

Sex	Cause of Disability							
	Total	Inborn	Disease	Accident	Beaten	Drug abuse	Pregnancy	Others
Tanzania	100	18.8	57.6	7.0	0.7	0.2	0.6	15.2
Rural	100	19.6	56.0	6.9	0.7	0.1	0.5	16.1
Urban	100	17.2	60.7	7.3	0.7	0.2	0.8	13.2
Male	100	22.1	55.9	9.5	0.9	0.3	-	11.3
Female	100	16.1	58.9	4.9	0.6	0.1	1.1	18.4

Source: The 2022 Population and Housing Census: Tanzania Basic Demographic and Socio-Economic Profile Report

Assistive devices improve PWDs' daily activities and socioeconomic participation. Data from the PHC report of 2022 indicate low usage of AT devices, except for persons with albinism (20.2%). Zanzibar shows relatively higher AT device usage than Tanzania Mainland (Table 6).

Table 6: Percentage of Persons with Disability Using Assistive Devices by Sex and Type of Disability in Tanzania

Type of Disability	Tanzania			Tanzania Mainland			Tanzania Zanzibar		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Albinism	20.2	20.3	20.1	20.4	20.4	20.3	15.7	16.9	14.2
Seeing	1.8	1.7	1.8	1.7	1.7	1.7	3.5	3.1	3.7
Hearing	0.4	0.4	0.4	0.4	0.4	0.4	1.5	0.5	0.3
Walking	2.8	3.4	2.3	2.7	3.4	2.2	4.6	5.6	3.8
Self-care	1.7	1.8	1.6	1.6	1.7	1.5	3.7	3.7	3.7
Communication	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
Spinal bifida	0.8	0.8	0.7	0.8	0.8	0.7	12.3	10.2	14.5
Spinal cord injuries	2.2	2.2	2.2	2.1	2.1	2.1	9.4	10.2	8.8

Source: The 2022 Population and Housing Census: Tanzania Basic Demographic and Socio-Economic Profile Report

Studies on prevalence indicate that functional limitations increase with age i.e. "More than 46 per cent of older persons – those aged 60 years and over - *have disabilities and more than 250 million older people experience moderate to severe disability. Looking ahead, the global trends in ageing populations and the higher risk of disability in older people are likely to lead to further increases in the population affected by disability"*[11]. The findings call for Universal Health Coverage to include provision of AT and rehabilitation services which was the aim of WHO Global Disability Action Plan[12].

To triangulate these data, the current assessment conducted a random survey of 31 PWDs (comprising both males and females) to understand the situation with respect to difficulties faced by AT users in seeing, hearing, walking, communicating, remembering, and undertaking daily activities of life. The sample comprised representatives from age groups spanning 20-29, 30-39, 40-49 and 50-59 to those 60 years and above (about 32%). On the basis of these analysis, whose summary is presented in Appendix 1, a number of insights can be generated:

- Overall, for the group of 31 people sampled, the difficulties appear to increase with age: but in a non-uniform manner across the different types of difficulties and across age groups.
- AT users (21 out of 31) indicated challenges in accessing skills training opportunities especially for older people "I lost vision at the age of 54 in 2007 it was hard to find a place to have training on life skills so I can manage my life. I managed to be trained in use of ICT at the Open University of Tanzania and became basic ICT facilitator for my fellow blind people and awardee of the Commonwealth of Learning in 2016 during PF8 conference. I am now at 71 years of age with ICT knowledge I still manage my life" (Resp.11). AT difficulties include availability, affordability, accessibility, acceptability, approachability, adaptability, and appropriateness more so for people who become disabled at adult age. All users indicated difficulty in obtaining information related to accessing AP and AT services.
- Other than the Open University of Tanzania (OUT) that has an AT unit whose enrolment requirement is one having a disability and needing ICT skills training, there is no other training institutions in Tanzania offering skills training to out-of-school persons with disabilities. The OUT offers ICT-Based AT to persons with visual impairment and persons with hearing impairment[13]. All users indicated the need for dedicated institutions to implement an adapted curriculum to develop skills to improve the quality of life of persons with disabilities.
- Parents and teachers of children with hearing loss who participated in the survey indicated a need for enhanced screening and intervention[14] services to the community, one of the parents said … I thank the SINTEF project "I Hear You" that helped to identify my child as having hearing loss. As a parent I didn't know my child had hearing loss, I thought was rude… after the support from the project both teachers and myself we are happy. One of the teachers said … by participating in the project now I am now aware of children with hearing loss and how to support them. One of our pupils needed a hearing aid and now is performing well. This calls for efforts to establish courses and programs that would increase country capacity on screening, assessment and intervention of all types of functional limitations. SINTEF[15] (Norway) is implementing the "I Hear You" project in collaboration with the Open University of Tanzania since 2017.
- Of the persons with disabilities interviewed, 20 out of 31 had the opportunity to participate in basic ICT skills training to increase their functional capabilities.
- A substantial number of the sampled AT users (20 out of 31 or 65%) have not been taught how to take care of PWDs or people with special needs including older people. This challenge appears more prevalent among the males (77%) than females (33%). This could indicate the possibility that most capacity building programs are targeting women than men calling for the need to establish care as professional courses. Overall, analysis of AT devices and related services demand among the AT users shows that the most
- demanded AT devices include the White stick (particularly among men of age 60+); motorized tricycle (including with accompanying wheelchair); spectacles; and stimulation tools for persons living with down syndrome. AT devices required include hearing aids and wheelchairs.
  Based on the respondents that participated in this study (Appendix 2), analysis of AT empowerment programs

11. https://social.desa.un.org/issues/disability/disability-issues/ageing-and-disability

12. https://www.who.int/publications/i/item/who-global-disability-action-plan-2014-2021

13. For the deaf need ICT-Sign Language https://www.out.ac.tz/vis/#

14. Ertzgaard et al. (2020). Prevalence of hearing impairment among primary school children in the Kilimanjaro region within Tanzania. International Journal of Pediatric Otorhinolaryngology, 130, 109797.

15. https://www.sintef.no/en/projects/2017/i-hear-you/

- on the population shows that 74% of AT users do not know of any program that gives them access to AT. This challenge is more prevalent among the male users (82% of their total population) than the female users (56% of their total population). Reasons cited by the male users include: their confidence that such programs do not exist or lack of awareness about the existence of such programs; and a feeling that the support they have received was primarily from good Samaritans.
- Those that had access to AT services and programs cited awareness on the use of white stick; screen readers for the deaf; optical character reading; and those run by Starkey foundation and the UNCRPD.
- Analysis of their understanding of programs that give them access to AT, majority of the users participated in the survey (87%) said they do not understand the programs. This challenge was more prevalent among the female AT users (78%) compared to the males (55%). The female users cited difficulties in accessing such programs, lack of information about such programs and lack of a global running call to support them.
- Users who participated in the survey were asked whether they were personally able to access AT, only 32% (all males) indicated NO; citing lack of awareness campaigns on their availability and support to access them; and the fact that the technology is relatively unavailable in Tanzania. When AT are available less information is available on availability. However, 55% of males and 63% of females indicated that they were able to access AT. The access has been supported by occasional support from social workers, sponsorship donations, and direct purchases either from shops or via the online channels. Some of the AT devices were fabricated or made locally and accessed in nearby hospitals for those living near the hospitals. A significant portion of the total population of AT users (28%) indicated that they did not know whether they were able to access AT.
- An assessment of how the AT users pay for the AT devices and related services, shows some support from donors, self-funded purchases, family support, and arrangements with local artisans who make the devices. The main funders available of AT and related services include institutions, family and friends support, NGOs (through physical and online /mobile phone aided channels), good Samaritans, and self-financing.
- Users in the survey reported access points for AT and related services were mainly at local artisans, retail shops, delivered by family and well-wishers, hospitals, borrowing from other users (sharing), employers (government), and through the ICT basic skills training using voice AT program. Reasons provided for the choices of the above access points include advice from doctors; lack of alternative means; poor accessibility of the items elsewhere, affordability; enhanced productivity through the access points; and ease of access.
- According to the participants (users) the benefits associated with accessing AT from different sources include easy access; aide in communication; supporting with special needs; and reduces disability. However, there are number of challenges associated with the sources above. The challenges include lack of enough funds to purchase the devices; lack of effective support by the devices; and lack of readily available inputs required for making AT devices in Tanzania.
- A number of factors determine access to AT and related services. They include (i) cost of accessing the AT devices and services; (ii) the nature of disability; (iii) belief by some parents that children with disability should be taken care of by the Government; (iv) the effectiveness of the available AT devices in easing disability challenges; (iv) device manufacturers (either locally or internationally) not fully incorporating the needs of PWDs; and (v) lack of knowledge by many PWDs on how to effectively and appropriately use the devices.

Table 7 below highlights the key gaps and opportunities by/for users.

Gaps	Opportunities
• Limited awareness of AT programs amongst users related to screening, assessment and intervention • The tools for collecting disability data are either weak or users do not fully understand them. The problem of data under-reporting is prevalent is schools. • 32% of users are unable to access AT due to lack of awareness and unavailability • Shortages of institutions that provide users with Basic AT skills training for people with disabilities who become disabled at adult age • Most disabled AT users face difficulties in understanding AT basic skills when facilitated by non-disabled staff • Lack of a comprehensive survey/data on disability.	• Huge demand for AP and AT services among increasing population with different types of functional limitations • Opportunity for programs on awareness, creation and supply of assistive products (AP) in Tanzania • Prevalence of disability for older people is over 40%[16] indicating high demand of basic AT skills training whose entry qualification is disability or limited functional capability • There are some disabled people with AT skills who can be mentors of their fellow persons with disabilities • Although the national census of 2022 provides important data on disability, the 2008 Tanzania disability survey report conducted by the National Bureau of Statistics has richer data. There is opportunity to conduct a similar study in cycles of 5 years to complement the national census.

Table 7: Gaps and opportunities under the user's domain

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16. URT (2023) National Census 2022 results. Dodoma: NBS

3.2 Provision

AT ecosystem in Tanzania uses multisectoral approach due to the diversity of stakeholders involved, spanning family; health sector personnel; community health workers; social workers; AT products producers, sellers and distributors; and policy makers. The government of Tanzania has made progress in mainstreaming disability service provisions including implementation of inclusive education strategy, building special schools, training teachers of special needs, care and support services, homes for older people, and institutions for vocational training for persons with disabilities. However, there are challenges related to users (PWD). These include limited skills training opportunities due to lack of adapted curriculum, vocational training institutions following entry qualifications, and most emphasis given to school going children and not adults. Like other developing countries, the main AT provision challenge in Tanzania relates to coordination and lack of centralised information repository for one to obtain information such as on AT providers. Lack of the repository hampers referral mechanisms for patients and effective budgeting/planning by the government.

AT provisions mainly focuses on products and services. AT provision across products include provision of Assistive Products such hearing aids, mobility such as wheelchair, self-care, and prothesis servicers, communication services, and some home adaptations. AT services involve plans for providing services at local authorities, DPOs, training institutions/ schools/colleges, companies/NGOs. The current study established the following:

- Provision of AT is uncoordinated, limiting access to specialized services (e.g., prosthetics and communication devices), access to AP and AP user training. This calls for integrated AT ecosystem, monitoring and evaluation.
- AT involves products and services delivered in different sectors thus likely to be overlooked in sector budgets and service provision or being given low priority. This causes poor service delivery to people in need of AT products and services.
- Provision of AT products and services have to focus on cognition, communication, hearing, mobility, self-care and vision. Findings indicate that more focus is on vision, mobility and to some extent, hearing. Less attention is given to communication, cognition and self-care. With increasing population of older people who are likely to need care services, there is need to enhance provision of care services in the country. One way of doing this is establishing vocational training institutions to train certified care workers.
- There is no link between AT providers and the health sector making it difficult to identify appropriately supported AT users. For example, 101 audiometers, 203 otoscope, and 70 Ear screening audiometer were distributed to schools – one would have expected that these should have been disseminated through the health sector that would guarantee appropriate assessment prior to provision. The findings further reveal challenges related to collecting data on AT procurement due to limited interactions with different community officials responsible for provision of such services.
- AT service provision pathways is managed across the system making it difficult to determine who can provide what, to whom, when, and in what circumstances. This is a challenge facing both providers and the users. For example, those who sell products in some cases do not have information on who provides skills training. Those who provide funding are likely to buy but not provide funding for training and possibly for maintenance of the AP. In this survey, respondents indicated a critical challenge they faced on maintaining braille machines and the orbit readers – moreover, there is no institution that provides training on maintenance of such tools (only one expert for Orbit reader has been trained in Kenya). There is therefore a need to establish AT maintenance technical courses for apprentices who will help fix the AP to reduce wastage.
- For service provision, several government and non-government institutions provide training on AT. For government, the key trainer is Patandi Teacher Training College (TTC). For non-government, some of the key trainers are Kilimanjaro Christian Medical Centre (KCMC) in Kilimanjaro and Comprehensive Community Based Rehabilitation in Tanzania (CCBRT). The training programs in the government institutions focus on training the deaf and the blind on ICT and certification in Special Education while the non-government players focus their training on prosthetics and orthotics.
- There is limited data on product procurement, disaggregated by type of disability. There is need to improve data availability across stakeholders responsible for AP. In this study it was possible to get data from MoEST and PO-RALG on supply of AP in schools.
- The PMO-LYED manages six vocational and rehabilitation colleges in Tanga (Masiwani), Singida (Sabasaba), Dar es salaam (Yombo, Temeke) Mwanza (Mirongo), Tabora (Luanzari) and Mtwara (Mtapika, Masasi). New colleges for vocational education and rehabilitation for people with disabilities are expected to be built in

Ruvuma (Liganga), Kigoma (Nyumbigwa, Kasulu) na Songwe (Ukwile, Mbozi). Colleges provide opportunity for persons with disabilities to learn vocational skills and develop life skills to enhance their functional capabilities. These colleges do provide courses related to tailoring, basic agriculture, welding, cookery and decorations. The colleges are catering for the needs of people with hearing impairment, vision impairment. Albinism and those with physical disabilities calling for enhancing these colleges to support basic skills training and intervention services for all types of functional limitations. To achieve the goal of enhancing AP and AT services in Tanzania, these colleges have to be capacitated for implementing adapted curricula for all types of disability and functional limitations.

- There are shortages of disability type specialized service provision centres across the country, reflecting that AT provision system is fragmented, calling for the establishment of disability-specific service provision centres.

In Tanzania, AT is provided through multiple stakeholders including health insurance, education sector, non-governmental organizations and companies, local authorities and self-financed or AT family-based procurement. The shortage of data on AT procurement creates a challenge to effectively measure capacity to provide AT, calling for the development of a strategy to collect AT data to enhancing provision of AT in the country. For the case of older people, the country is progressing well; in 2021, a National operational guideline for community-based health services[17] was created. Among other things, it guides the provision of preventive services, resource mobilisation, curative and rehabilitative services for older people.

Table 8 highlights the key gaps and opportunities on provision of AT.

Gaps	Opportunities
• Limited coordination of AT provision in Tanzania • Low provision of services for people with limited functionality related to communication, cognition and self-care due to shortage of specialised technical people including the care workers • Ad hoc budget for AT products and servicers • Unclear linkages between AT providers and the health sector • Shortages of AT-certified technical courses • Fragmented provision of AT specialized services	• The PMO-LYED is meant to coordinate matters related to disability. • The government and non-government agencies own homes for older people and children and there is an established system for vocational education • A need to enforce AT provision guideline • Demand for service providers is high. Create linkages between AT providers and MoH • Establish AT certified technical courses • Establish hubs for disability type specialized services

Table 8: Opportunities and gaps in AT provision

3.3. Products

The assessment here focused on five stakeholders that influence the AT devices and related services. The institutions that were surveyed include a business enterprise, a private company, and three NGOs (non-profit stakeholders) all of which have a national geographical scope in their operations. Appendix 3 provides a summary of the responses generated by the stakeholders on each thematic area.

3.3.1. Products & Procurement

The single most major consumer of AT in the country is the government. For instance, in 2020, PO-RALG purchased assistive devices (appendix 6) worth TZS3 billion for students with disabilities, with a bias for blind, deaf, intellectual, physical, albinism and low vision. In 2019, another TZS 2,150,580,672.58 was spent by PO-RALG to procure among others, braille, speech trainers, audio meters and white canes (see appendix 10 for the AT available in schools). This year, a total of TZS 2.5 billion has been earmarked for assistive devices for primary and secondary schools.

17. URT (2021). National operational guideline for community-based health services. Dodoma: Ministry Of Health, Community Development, Gender, Elderly and Children; URT (2021). National Strategy for Provision of Health Services for Older People in Tanzania. Dodoma: Ministry Of Health, Community Development, Gender, Elderly and Children; URT (2020). National Guidelines for the Provision of Psychosocial Care and Support Services, Dodoma: Ministry of Health, Community Development, Gender, Elderly and Children

In 2022, WHO-Tanzania office procured for MOH two containers of AP, consisting of a range of 14,000 products to support mobility, cognition, vision and self-care functions. The same initiative introduced the registration of assistive products within the MSD catalogue to facilitate further government procurement and distribution of assistive products orders.

To triangulate secondary data, the assessment conducted a survey of 11 AT institutions comprising of 6 government stakeholders (Muhimbili national hospital-Mloganzila; The Open University of Tanzania; Patandi Teachers College; Bugando medical centre; Mbeya Zonal Referral Hospital; and Bombo referral regional hospital); four NGO non -profit stakeholders CCBRT Hospital; Inuka Rehabilitation Hospital; KCMC-Prosthetics and Orthotics Department; DeafBlind Assistance Services (DBAS) and one private institution (Saifee Hospital Tanzania). All these institutions, except KCMC which has a sub-national scope, have a national geographical scope of operation.

We classified their responses to key questions based on the three groups along the various thematic focus areas. A summary of their responses that help describe the AT situation among these product and service procurement entities is provided in Appendix 4. Table 9 below summarises the data:

Table 9: Sample 'products & procurement' in Tanzania

Theme	Government stakeholder	Non-government, including NGOs	Private
Area(s) of focus for AT	Hearing impairments; vision impairments; Cognitive impairments; Communication impairments; and Mobility impairments	Mobility impairments; Vision impairments; Mobility impairments; Hearing impairments; Cognitive impairments; Communication impairments; Self-care impairments.	Cognitive impairments;
Role of organization in AT	(i) Skills training courses for the blind and for the deaf - ICT; (ii) Training student teachers for children with disabilities; (iii) Fabrication (iv). Curative, rehabilitation and teaching.	(i) Research and partnerships ii) Education and outreach iii) Policy and advocacy (ii) Production of Prosthesis and Orthosis devices;	Rehabilitation programs
Programs AT	i) ICT-Based AT (ii) CBM outreach; (iii) Clubfoot Treatment (MDH), Orthotic And Prosthetic Workshop (MOH); (iv)Hearing aids v) Continuous audiological assessment	Production of prosthetics and orthotics including certification Parkinsonism programs involving neurologists, physiotherapist, occupational therapist, speech therapist, dietician and nurses.	Purpose sampling Self-administered questionnaire
Products procured	Crutches (axillary/elbow); Walking frames; Wheelchairs, manual for active use; Magnifiers, optical (including telescopes); White canes; Braille slate/frame writing equipment and braille paper; ICT-equipment; Canes/sticks (including tripods and Quadri pods); Lower limb orthoses; Lower limb prostheses;	Crutches (axillary/elbow); Walking frames; Canes/sticks (including tripods and Quadri pods); Lumber Belt, Neck collar; Lower limb orthoses; Lower limb prostheses; Wheelchairs, manual for active use; Therapeutic footwear; diabetic, neuropathic, orthopaedic; Pressure relief cushions;	Canes/sticks; Crutches; walking frames; Limb orthoses; Therapeutic footwear; diabetic, neuropathic, orthopaedic; Pressure relief cushions; Wheelchairs; Prescription spectacles
Frequency and volume of procurement	About 100PCs of crutches, at least 3 wheelchairs, and 10 magnifier glass; 300-400 pairs of cane sticks annually	250 pairs of Crutches; 1000 pairs of can sticks;	On need basis
Major suppliers	Government ministries;	Trucare; Ortho rehab; Shijiazhuang Aosuo International Trade Co. Ltd-China; Rhema Orthopaedic and Rehabilitation Company-Tanzania; SwissLimbs: Camfore in china, Proactive in India, Ottobock in Germany; procure online overseas.	
Workforce providing AT	Audiologists; Audiometric technicians; Hearing aid technicians; Speech and language therapists; Braille teachers; Mobility orientation trainers;	Mobility orientation trainers; Opticians; Occupational therapists; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Community based rehabilitation workers; Wheelchair technicians	Speech and language therapists; Opticians; Occupational therapists; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Biomedical engineers;
Consultants that provide AT services	Ear, nose and throat; Rehabilitation; Orthopaedics; Paediatrics	Ear, nose and throat; Ophthalmology; Orthopaedics; Rehabilitation; Orthopaedics; Rehabilitation; Diabetes; Geriatrics; Paediatrics; Ear, nose and throat; Ophthalmology;	Ear, nose and throat; Geriatrics; Ophthalmology; Orthopaedics; Rehabilitation; Paediatrics;

From the data, the assessment deduces the following:

- Except the private sector, both the government and the non-governmental organizations allocate specific budgets to AT. In 2023, the government allocated at least TZS 8.7 billion to AT. On average, non-government organisations allocate TZS 3B for AT. For government, these funds are devoted to buying ICT facilities for PWDs, salary for AT trainers, payments for outreach programs; purchase materials and therapeutic equipment; capacity building and service provision. For non-government organizations, the funds are devoted to provision of materials, human resource cost, trainings and purchasing the ready-made assistive technology; Buying materials, Exhibition of AT programs; to facilitate the acquisition and provision, training and maintenance of AT devices.
- Both government and non-state actors collect, manage and store a certain level of data. The common type of data collected and managed include number of users trained, screened and treated; number of AT devices provided; number of operated persons.
- Both government and non-state actors procure AP. The procurement mechanisms are both at individual purchase (need basis) and bulk purchase. PO-RALG is the major procure of AP. The main sources for AP are both local (small scale) and overseas (China, India, Kenya, Germany, etc.)
- Government and non-state actors receive products from international donations. Examples of recent donations for government are audiometers and tablets installed with game-based screening. The non-government institutions received prefabricated devices and wheelchairs from entities such as Latter-Day Saints (USA).
- Most of the institutions are aware of regulations or standards that assistive products need to comply with, and conduct assessments, fittings, user-trainings, follow-ups, maintenance and repairs of AT products beyond supply as they also learn from each other as peers.
- For procuring institutions, the focus areas include provision of AT products for vision and mobility impairments. Their role in AT ecosystem is primarily training PWDs and deployment of AT as well as advocacy for AT. A majority of institutions interviewed have dedicated AT programs with clear identification of people involved and indicators for monitoring and evaluation.
- A sizable budget is allocated to AP and AT services supply . For the surveyed institutions indicated had allocated 3,693,599.14 USD for AT products and services in the country for the year 2023/24. Additionally, about half of the organizations interviewed either collect or manage data about AT, health conditions and/or functional limitations that may require AT and are aware of the existing regulations or standards that assistive products need to comply with.
- A majority of the institutions interviewed procure assistive products and related services at either national or sub-national levels through bulk purchase or individual purchase. The major consumer is the Government. Suppliers are identified through open tender of direct procurement. Other AT products are received as donations from international donor organizations.

3.3.2. Assistive Products and Procurement System

Of the health supplies in Tanzania, Assistive products guidelines in regard to procurement and distribution are well documented.

There is no centralized procurement, with each Ministry determining the kind of AT they need and the resources for the same. Non-government and private organizations make procurements on an independent basis. Nonetheless, the resources allocated to AT is extremely limited owing to the demand and the extent of communicable diseases in country, particularly for Older People.
The TFDPO, SHIVYAWATA and Tanzania League of the Blind (TLB) have continually encouraged local artisanal AT production. However, this production hardly meets demand and seldom meets the global AT standards.

Peters Braille Press Traders, Rehab Health, Nakiete Pharmacies, Orthorehab Tanzania Limited and Hui'er Tanzania Hearing Technology and Service Company Limited are the main suppliers of AT products mostly in the country.

3.4. Policy and programs

3.4.1. Policy environment

Timely provision of treatment, tuition/training, rehabilitation, vocational rehabilitation and nursing/ care for people with loss of body functioning or disability depends much on availability of policy and programs. In Tanzania there are number of policies that guide provision of stipulated rights in the United Republic of Tanzania (URT) constitution for persons in need of assistive technology as a means to enhance their lost body functioning. In Tanzania there are a number of documents that provide opportunities to safeguard persons with disabilities/ loss of body functioning rights including

- The United Republic of Tanzania constitution of 1977[18] that recognises rights of persons with disabilities including respect, education, equipment, and employability.
- The National Disability Policy of 2004[19] that referred technical aids or appliances that enhance functional ability of persons with disabilities.
- The Tanzania Vision 2025[20] that focuses on removing all forms of inequalities by 2025.
- The Disability Act of 2010[21] that focus on enforcing rights to persons with disabilities
- The Child Act of 2009, that enforces rights to children
- Inclusive education strategy of 2009-2017; 2018-2021 and 2021-2026[22]

The government through Persons with Disabilities Act No.9 of 2010 established a National Disability Fund aimed, among other needs, to finance procurement and provision of Assistive technology to marginalized children with disabilities. National Strategies on Inclusive Education focuses on inclusion in the provision of education for all children with special needs. However, the provision of pre-service teacher-training in teacher training colleges focuses on three types of special needs: visual impairment, hearing impairment and intellectual impairment.

In 2003, Tanzania developed the National Aging Policy[23] which was designed to protect rights of older people in Tanzania in areas related to health, education, economic empowerment and care. As such the policy indicated a need to recognise older people as resource, to allocate resources with a view to improve service delivery to older people, involve older people in decision making matters, provide opportunity for income generating activities, and provide legal protection. It is important to note that policy implementation faces hurdles when it comes to health care and reduction of poverty as there are no programs that prepare professionals on care services. With healthcare services there is no mention of assistive technology.

On policy and programming within the health sector little has been done on capacity building that would later enhance AT accessibility in all places including health services institutions, educational institutions and vocational training centres. Further, there is less involvement of persons with disabilities in formulation of frameworks and policies (See Appendix 1) that would improve equity issues in the provision of health services in Tanzania.

18. The Constitution of the United Republic of Tanzania https://www.nao.go.tz/uploads/Constitution_of_the_United_Republic_of_Tanzania_en.pdf

19. The National Disability policy https://www.kazi.go.tz/uploads/documents/en-1599783389-National%20Policy%20on%20Disability%202004.pdf

20. Tanzania Vision (2025) https://www.healthdatacollaborative.org/fileadmin/uploads/hdc/Documents/Country_documents/tanzania_development_vision_2025.pdf

21. The Tanzania Disability Act of 2010 http://parliament.go.tz/polis/uploads/bills/acts/1452071737-ActNo-9-2010.pdf

22. URT (2021). National Strategy For Inclusive Education 2021/22-25/2026, Dodoma: MoEST

23. United Republic of Tanzania (2003). The National Aging Policy. Dar Es Salaam: Ministry of Labour, Youth Development and Sports

Table 10: Legal frameworks and policies on disability inclusion in the health sector

Legal framework/policy	Description on disability inclusion
Persons with Disabilities Act (2010)	Provides protection and promotion of the rights of persons with disabilities in Tanzania, including health care, social support, accessibility, rehabilitation, education and vocational training, communication, and employment
Public Health Act (2009)	Provides provisions for accessible health facilities including buildings and toilets for persons with disabilities, as well as provisions for persons with disabilities in schools and training institutions
National Health Policy (2007)	Makes reference to persons with disabilities as vulnerable persons
National Client's Service Charter for Health Facilities (2018)	Includes provisions for people with special needs including elderly, persons with disabilities, pregnant women and under five children. Provides provisions for support services including accessible formats such as braille, large print, audio visual materials, simple terms, and sign language interpretation services. Furthermore, encourages dignity to persons with special needs.
Health Sector Strategic Plan V- July 2021 – June 2026 (HSSP V)	Provides actions toward improving provisions to people with special needs including: rehabilitation, community health care, nutrition and reproductive, maternal, neonatal, child and adolescent health (RMNCAH). Further the strategy stipulates a need to enhance primary health care as a means of increasing inclusivity and equity.
Comprehensive Council Health Planning Guideline (2020)	Has provision on strengthening Social Welfare and Social Protection Services, related to early identification, care and support to children with disabilities; re-integration of PWDs through community-based rehabilitation.
National Guideline for Gender and Respectful Care Mainstreaming and Integration Across RMNCAH Services in Tanzania (2019)	Has provisions on mainstreaming disability and ensure all people have access to information and services on an equal basis.
National Guideline for Water, Sanitation and Hygiene in Healthcare Facilities (2017)	Provides provisions on accessibility to buildings and services including toilets and equity in hygiene provisions and services
Analysis of the document indicates	• Legal frameworks and policies on special needs do not provide direct provisions on assistive technology for each of the specified functional need. • Capacity building on health personnel do not include issues of AT related to each of the functional need: cognition, communication, hearing, mobility, self-care and vision • Frameworks and policies lack provision on treatment, tuition/training, rehabilitation, vocational rehabilitation and nursing/ care for people with loss of body functioning. • Rarely vulnerable groups including elders and PWD participate in decision making as there is no guideline on representation of persons with disabilities in the health-related decision-making process • Costs of health services are unaffordable for persons with disabilities "People with disabilities and their families face additional direct costs (e.g., for medical treatment), indirect costs (e.g., for informal care), and opportunity costs (e.g., access to employment), which increase their vulnerability to becoming poor or chronically poor"[24]

For out-of-school people with disabilities including children, youth and adults, there is no clear policy and strategy guiding provision. Thus, one of the gaps that exists in the case of policies and programs is related to less services to youth and adult age disability onset. Similarly, it is only a few places one finds possibilities for skills training for people who become disabled out of school, youth and older people. Whereas tuition or training in digital technology may improve the quality of life of persons with disabilities, less opportunity is availed to all groups of persons with disabilities. Findings from policy and programs indicate AT ecosystem to be supported by the government, non-government and international agencies.

- Most of the policy and programming on AT ecosystem focus on vision, cognition, communication, hearing, mobility and self-care by providing rehabilitation and re-integration, policy formulation and programming. About 75% of the government stakeholders interviewed indicated that they were involved in policy and programming for vision, hearing and care functioning. On the other hand, 33% indicated that they are involved in cognition, communication and policy formulation on AT. Whereas physical disabilities affect most of the population only 50% indicated to support mobility functioning policy and programming. Overall, there are challenges related to policy and programming on treatment, skills training, rehabilitation, vocational rehabilitation and care.
- 75% of the government institutions and 60% of the NGO interviewed allocates budget for AT provision. The allocated budget is for buying AT, paying for human resources and providing skills training to PWD, building infrastructure, procurement of learning resources, advocacy and capacity building for healthcare staff.

24. Pinilla-Roncancio, M., & Alkire, S. (2021). How Poor Are People With Disabilities? Evidence Based on the Global Multidimensional Poverty Index. Journal of Disability Policy Studies, 31(4), 206-216

- In Tanzania, coordination of AT provision seems to be fragmented and that the Prime Minister Office – Labour, Youth, Employment and People with disabilities (PMO-LYED) is coordinating, other ministries including Ministry of Health (MoH), Ministry of Education, Science and Technology (MoEST), Ministry of Community Development Gender Women and Special Groups and President Office -Regional Administration and Local Government (PO-RALG). This diversity requires a multidisciplinary coordination mechanism to support and coordinate the implementation of priority interventions. Appendix 9 presents proposed terms of reference (ToR) for this mechanism.
- ICT-Based AT in Tanzania implemented at the Open University of Tanzania (OUT) provides ICT skills training to the community including children, youth, and adult who become disabled at old age. The ICT skills training services is available for people with visual impairment and those with hearing impairment. The challenge is that it is still provided at OUT headquarters thus a need to scale up to further improve access to ICT-Based AT.

3.4.2. Key programs that provide AT

Programs that provide AT include school children who have different programs in the Ministry of Education, Science and Technology (MoEST) and Presidents Office-Regional Administration and Local Government (PO-RALG). The two ministries allocate budgets almost each year to buy and distribute AT tools in schools, colleges, higher learning institutions, and units in primary schools. Other programs include:

- ICT-Based AT which is provided at the Open University of Tanzania (OUT) for people with visual impairment and for people who are deaf. Entry qualification in the program is pegged on being disabled, being deaf, or being visually impaired. The ICT-Based AT currently is offered only at OUT HQ, and there is a need to ensure it is offered in all regional centres. The services at OUT are provided to all ages.
- In education, there are programs in Teacher colleges and higher learning institutions that train teachers in special education. Staff in the teaching profession are involved in advocating use of AT in the community.
- Non-government organisations such as HelpAge Tanzania, Connect Autism Tanzania, Access Tech and
- Support, Morogoro Older People Organisation, Mwangaza, Boresha Macho, and Kyaro Tech, provides services to PWD and elders related to assessment, diagnosis and interventions and AT ecosystem including designing, production, maintenance, training and distribution.
- Both the Government and Non-government AT stakeholders focus on advocacy to include AT tools in health product lists so they can have a budget. Provision of AT services in Tanzania is not covered in National Health Insurance scheme[25].

Table 11 outlines potential areas for programmatic intervention and progress indicators to monitoring their progress.

Table 11: Potential programmes and progress indicators

Area of AP	Proposed intervention	Status	Way forward for programs	Indicators
Policy	Ensure implementation of inclusive policies	There is no policy guiding AT provision in the country	Develop AT policy to guide among others budget items related to health care, social support, accessibility, rehabilitation, education and vocational training, communication, and employment	Policy on AT provision in the country
Products	AT Technical products and services	• There is no database for disability-specific AP and AT services • There is no database for priority AP and AT services for disability/functional limitation specific • There are no data on national standards for disability-specific AP and AT services • There are no established procedures and tools for screening, assessment, diagnosis, intervention and rehabilitation	• Assemble and avail data on disability-specific AP and AT services • Establish database for priority AP and AT services for disability/functional limitation specific • Establish data on national standards for assistive products and services • Establish procedures and tools for screening, assessment, diagnosis, intervention and rehabilitation • Establish standards for products	• Disability-specific AP and AT services in the country (qualitative indicator) • National standards for assistive products and services (qualitative) • National procedures and tools for screening, assessment, diagnosis, intervention and rehabilitation (qualitative)

25. URT (1999). National Health Insurance Fund Act, 1999; Mwingirwa, E. (2022). National health insurance coverage for prosthetic and orthotic services in Tanzania. Tanzania Journal of Health Research, 23.

Area of AP	Proposed intervention	Status	Way forward for programs	Indicators
People/User	Awareness of AT among users	• Whereas disability is on increase 11%[26] less is known about AT to the community. There is no specific database indicating disability specific data with associated AT to enhance functional capabilities • There is no coordination of AT products and services	• Collect data on disability specific type • Collect data on innovations and success stories • Share widely information on AT • Facilitate AT user self-advocacy campaigns • Monitor AT trainings to care givers and AT users	• Incidence of disability (by type, age, sex etc) • Number of campaigns on AT • Number of caregivers and AT trained • Information communication materials produced (number, type)
	Establish User Skills Training Opportunities	• There is one institution providing ICT-Based AT user skills training for people with visual impairment and people who are deaf in Tanzania • There are no data on specific disability/ functional limitation type rehabilitation services • There are 6 Government owned vocational and rehabilitation colleges and 3 new ones are at different stages of construction providing training services for the deaf, people with physical disabilities, people with visual impairment and those with albinism • Vocational and rehabilitation training programmes are related to textile, agriculture and welding • There are no data on training programmes for parents/care givers of people with disabilities and older people	• Facilitate development of disability type adapted curricular • Create disability type-specific technical working group • Facilitate development of training manuals • Develop assessment tools • Monitor disability-specific type as entry qualification • Successful disability-specific users recruited as training facilitators • Establish and share data on specific disability/ functional limitation type rehabilitation services	• Number of disability/adapted curricular developed • Number of disability specific technical working groups formed and % that are functional • Number of disability-specific users recruited and trained as training facilitators (Trainers of Trainers – ToTs)
Provision	AT-certified technical courses	• There are no data on AT-certified technical courses like Audiology technicians, Braille technicians, wheel chair technicians • There are no data on AT facilitators/ trainers on disability/ functional limitation specific type • There are no data on AT service provision	• Collect data on AT-certified technical courses like Audiology technicians, Braille technicians, wheel chair technicians • Collect data on AT facilitators/ trainers on disability/ functional limitation specific type • Collect data on AT service provision (care services, career guidance and counselling)	• Number of training institutions offering AT-certified technical courses such as Audiology technicians, Braille technicians, wheel chair technicians • Number of qualified AT-certified specialists such as Audiology technicians, Braille technicians, wheel chair technicians • Number of AT facilitators/ trainers on disability/ functional limitations (by specific type) • AT service provision (e.g. care services, career guidance and counselling) – Qualitative indicator
	Establish hubs for disability type specialized services	• There are no data on hubs providing disability type specialized services • There are no data on institutions providing disability and older people care capacity building courses	• Collect data on hubs providing disability type specialized services • Collect data on institutions providing disability and older people care capacity building courses	• Number of hubs providing disability type specialized services • Number and type of institutions providing disability and older people care capacity building courses

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26.   URT (2022) Tanzania Population and Housing Census report of 2022. Dodoma: National Bureau of Statistics

Area of AP	Proposed intervention	Status	Way forward for programs	Indicators
Personnel	Establish Basic AT skills training opportunities for staff	• There are no data on established courses that enhance personnel skills on screening, assessment, diagnosis, intervention, rehabilitation and support • There are no data on AT related causes in training institutions on different types of functional / disability limitations • There is no data on AP maintenance and fabrication centres • There is no data on number and disability/limitation-specific type in which AT users provide training to fellow AT future users.	• Database on established courses that enhance personnel skills on screening, assessment, diagnosis, intervention, rehabilitation and support • Establish public facing database on AT related courses in training institutions on different types of functional / disability limitations • Public facing database on AP maintenance and fabrications centres • Database on disability/limitation-specific type in which AT users provide training to fellow AT future users.	• Number of skilled personnel on screening, assessment, diagnosis, intervention, rehabilitation and support • Number of /courses training institutions on different types of functional / disability limitations • Number of centers offering AP maintenance and fabrications • Number and disability/limitation-specific type in which AT users provide training to fellow AT future users.

3.4.3. Key Policy and program Gaps and Opportunities

Table 12 below highlights the Policy and program gaps and opportunities.

Gaps	Opportunities
• he Aging Policy of 2003 does not use the general term health care as pertains to AT. Moreover, the policy is a bit obsolete to capture current needs, including use of digital technologies • Ministry of Health documents rarely include AT resulting in limited inclusion in the budget • The 2003 Aging policy is addressing issue of care; however, such a profession is nonexistent. • The 2004 National Disability Policy and other disability related documents do not mention directly issues related to AT for different types of disabilities • Disability Act (2010) mentions about regulations for provision of assistive devices	• The policy needs to be reviewed, as an opportunity to include a need for AT for older people and ICT-Based AT skills training for older people to enjoy in the ICT based social economic environment. • Department involved in rehabilitation should plan to include AT and skills training as a component. • Skills training on AT focus on aggregated data on types of special needs and or disability • Develop standards for AT and encourage local AT innovation as it responds directly to the needs and the environment through which they are used • As policy is being reviewed there is need to recommend a profession on care that would support the country to ensure existence of quality care services for people who need long-term care and support particularly those with special needs and older people with disabilities • An opportunity for review; there is a need to include aspects of AT and personnel for implementing the provision of AT to the community. Perhaps this is an opportunity for a cross cutting strategy on AT. • The aspect of AT has to be related to the type of disability. • There are training institutions that offer training on special education. These will need to include aspects of AT and need to develop professionals on AT • While implementing Disability Act 2010 the available stakeholders in AT will have to advocate for regulatory frameworks on AT to be in place • The health policy (2007) indicates a need for the provision of basic health services that are of good quality, equitable, accessible, affordable, sustainable and gender sensitive

Table 12: Policy and program gaps and opportunities

3.5. Personnel /Human Resource

The AT People/human resources in our context refer to general and specialist health personnel, primary healthcare givers, special needs teachers and insurance. The data for this section is derived from three sources, namely: statistics from MOH, primary survey data and grey literature. Recent statistics from the government on staffing level were not readily available. This is one of the gaps that are highlighted in Table 14.

3.5.1. Human Resource for Health & Allied

Personnel is key to provision of AT services. In Tanzania a number of personnel in the AT ecosystem are unknown and uncoordinated basing on shortages of skills training programme. For example, rarely do we find hearing service provision because of the rarity of training on audiology in the country. The audiologist, clinical audiologist and speech therapist services in the MoH staffing level are mostly found at referral hospitals[27]. It is evident that MoH recognizes the need for social development and thus in the staffing at dispensary, there is community health worker/ social welfare assistant whose role is to connect people to the dispensary.

The survey indicated the need to strengthen AT ecosystem in the country by increasing more experts through training. With regard to different categories of functional limitations, one finds cognition, communication, hearing and self-care as having few experts. With hearing WHO estimates that

> *"Unaddressed hearing loss poses an annual global cost of US$ 980 billion. This includes health sector costs (excluding the cost of hearing devices), costs of educational support, loss of productivity and societal costs. Of these costs, 57% are attributed to low- and middle-income countries" (WHO, 2024)*

According to Wilson and Tucci (2021) hearing loss is a serious problem to all ages including the adult age as such impacts the community and rarely is addressed at lower levels of health service provision. Addressing hearing loss through support personnel from health sector is important and more so training institutions have to provide training to increase the number of professionals who would screen hearing loss and provide interventions services through training and products including the audiologists, audiology technicians, and hearing aid technicians who are generally lacking (see Table 11 that shows the available specialists in the health facilities that participated in this survey).

Hearing loss is a larger problem than one might think. Hearing loss in infants and young children can impede access to spoken language and in adults. Hearing loss results to social-economic isolation, unemployability and is associated with an increased risk of dementia, falls, and other deleterious health conditions for those older people than 60 years. Hearing loss is the third leading cause of years lived with disability (YLDs) for all ages particularly for people older than 70 years. Hearing loss is therefore an immense global health concern (Wilson & Tucci, 2021). The AT industry workforce in Tanzania include audiologists, audiometric technicians, hearing aid technicians, speech and language therapists, mobility orientation trainers, opticians, occupational therapists, physiotherapists, prosthetists and orthotists, biomedical engineers, community-based rehabilitation workers, wheelchair technicians, inclusive education teachers and braille teachers. The nine (9) surveyed institutions indicated availability of the following workforce providing AT services.

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27. **URT (2014) Staffing levels for ministry of health and social welfare departments, health service facilities, health training institutions and agencies 2014-2019. Dar Es Salaam: MoH**

Table 13: Workforce providing AT in the 9 surveyed hospitals

Number of experts	Government	Non-Government	Total
Audiologists		2	2
Audiometric technicians		1	1
Hearing aid technicians		3	3
Speech and language therapists		3	3
Braille teachers		1	1
Mobility orientation trainers		2	2
Opticians		3	3
Occupational therapists	3	3	6
Physiotherapists	8	11	19
Prosthetists and orthotists	2	5	7
Prosthetist and orthotist technicians		3	3
Biomedical engineers		4	4
Community based rehabilitation workers		15	15
Inclusive education teachers	8,609		8,609[28]
Wheelchair technicians		2	2
Total	8,622	58	8680

Within the health sector, consultants providing services in the AT industry included: Ear, Nose and Throat (ENT), Ophthalmology; Orthopaedics; Rehabilitation, Orthopaedics, Geriatrics; Paediatrics. According to the Ministry of Health Report (2024), there were 600 Physiotherapists, 220 Occupational Therapists, 258 Prothesis and Orthotist and 6 speech and language therapists. This indicates the need to enhance the provision of AT experts to improve the service in the country.

The MoH report further indicate that the country has 146 rehab facilities and 1084 rehabilitation experts against a population of about 61 million people. Consequently, the population to practitioner ratio is anticipated to be 1:56,957, but the population to facility number ratio is 1: 422,884. This indicates that most people do not have simple access to rehabilitation programs.

Table 14: Medical staffing levels - Source - MOH Report, 2022

Facility Level	Requirement	Available	% Shortage
Dispensaries	100,646	30,625	70
Health Centre	68,204	25,354	63
District Hospital	123,624	29,409	76
Regional Referral Hospital	16,324	11,664	29
National Hospital, National Speciliazed Hospital,Zonal Referral Hospital	27,941	18,528	34
HTIs	2,637	956	67
MDAs/Parastatals	9,547	3,142	67
Total	348,923	119,678	66

According to the Tanzania Health Facility Registry, there are 12,433 operating heath facilities in Tanzania until May 2024. 90% (11,964) of all operating facilities in Tanzania are not known to provide any type of rehabilitation services. At Primary Health Care level <10% are at district level and provide some form of rehab services, <1% (0.89%) facilities are tertiary, secondary and private clinics. Most of these health facilities

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28. Data from the MoEST 2023 in which distribution of teachers: 82 in pre-primary education, 7,390 primary education and 1,137 in secondary education see appendix 7

provide some of the rehabilitation services in either physiotherapy, occupational therapy or prosthetics and orthotics. Only 10 of these facilities provide all three above mentioned rehabilitation services.

MOH data further indicates that generally, human resource in health facilities has been declining in recent year, falling from 48 percent in 2016 to 34 percent in 2022[29](see Figure 2). MOH attributes this to the expansion of Comprehensive Emergency Obstetric and Newborn Care (CEmONC) services, construction of 76 new Councils hospitals, construction of Emergency Medicine Department (EMD), procurement of equipment e.g., Digital X-ray, Telemedicine, introducing and expanding specialized and super specialized services. MOH report indicate that by 2022, there was at least 66% shortage of health human resources across the country (See Table 14).

Katavi (22%), Ruvuma (28%), Kigoma (31%), Pwani (31%), Simiyu (32%), and Mtwara (33%) are the neediest in terms of human resources, all below the national average of 34%. Noteworthy, even the best performing Regions are below staffing levels, with the highest being Dar es Salaam (53%).

AT support personnel are found across sectors including Education, health, social workers, faith-based organisations (FBO) and other charity organisations. The available personnel provide services including creating awareness and access, advocate on AT ecosystem, provision of devices, training and expertise. The challenge faced are that those of uncoordinated and unclear training system for AT. Furthermore, less is known about availability of AT skills training opportunities for AT experts and the people in need of AT skills training for enhancing their quality of life, more so to elderly and people who become disabled at old age. In most cases, AT provision has remained "snowballing" more so to people who become disabled at adult age thus negatively impacting the provision of AT in the country.
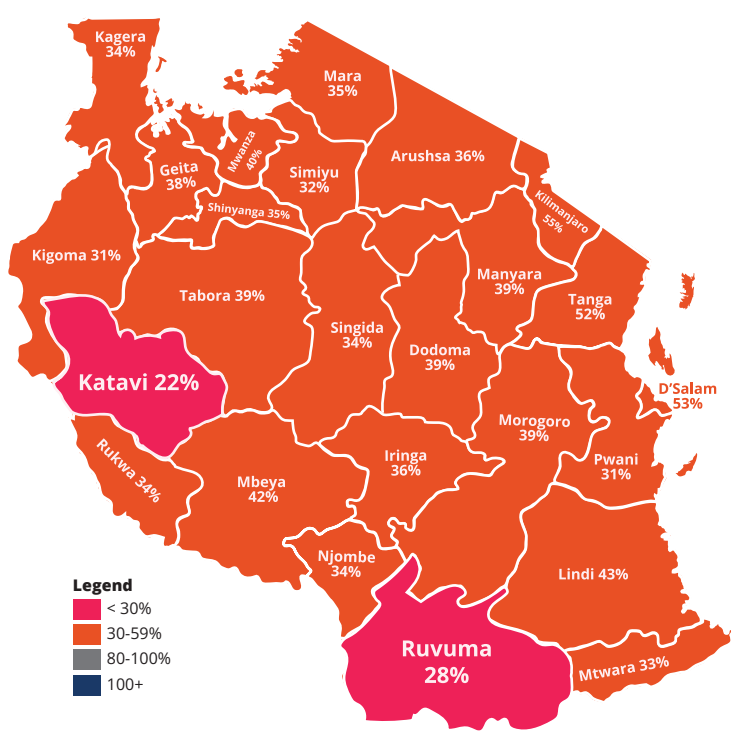
Figure 3: Human resource spread by health

"I became blind at 50 years old. It was a had time to me to find somewhere to learn skills that would help me to survive. I managed to find one at Tanzania Society for the Blind (TSB) to learn braille skills. My braille teacher was a student at the Open University of Tanzania and introduced me there, where I got training on ICT for the blind and got employment as ICT trainer for the blind. Life changed and received a commonwealth of Learning award in 2016 in Kuala Lumpur Malaysia" (Respondent 13)

As the world is changing there is a need to introduce skills training for AT experts so they can provide services including screening for functional loss in the community and providing interventions. The experts must be consulted to produce adapted curricular that would support people with disabilities to learn new skills and fully participate in the community as full members of the community. With the adapted curricular implementation, and the changing innovations and devices, there is need to increase AT personnel in relation to different types of functional limitations: cognition, communication, hearing, mobility, self-care and vision. Furthermore, there is need to curb the shortage of coordination mechanisms of AT personnel in the country that makes it difficult to coordinate the different sectors, more so on strengthening the link between health and AT experts.

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29.   The assessment couldn't obtain the 2023/24 data.

3.5.2. Human Resource for PWDs

Comparatively, the government has made good progress in training personnel for children with disabilities in schools, with Patandi TTC and teacher training universities playing a critical role. In 2023, there were 1,137 teachers with special needs education (SNE) specialisation, mostly for intellectual impairment, autism, deaf-blind and deaf (see Table 13 and Appendix 7). Compared with non-government schools, although the government contributes 95.9% and 90.2% of total student enrolment in primary and secondary schools respectively, the proportion of contribution of SNE teachers was 96.6% and 92.4% for primary and secondary schools respectively. Moreover, the government has been proactive in implementing the SNE guidelines in recruiting teachers, with 1,022 teachers with disability employed on government schools (see Appendix 8).

Table 15: SNE teachers in government and non-government schools

	Specialisation	Total		
		M	F	T
Pre-Primary schools	Intellectual Impairment	7	11	18
	Autism	0	6	6
	Deaf	10	25	35
	Deaf-Blind	1	1	2
	Blind	7	14	21
	Total Pre-primary	**25**	**57**	**82**
Primary Schools	Inclusive Classes	2,658	2,340	4,998
	Deaf	379	465	844
	Deaf-Blind	26	17	43
	Blind	312	240	552
	Intellectual Impairment	387	446	833
	Autism	60	60	120
	Total - Primary	**3,822**	**3,568**	**7,390**
Secondary schools	Intellectual Impairment	176	112	288
	Deaf	383	199	582
	Blind	190	77	267
	Total - Secondary	**749**	**388**	**1,137**

3.5.3. Insurance coverage

MOH data indicate that the Health Insurance Coverage is 15.4% far from the Health Sector Strategic Plan (HSSP) V target of 58% by 2025/26. Overall enrolment of Health Insurance trend is unsatisfactory. Fortunately, the Government passed the bill for Universal Health Insurance Coverage (UHC) which provides a framework and opportunity for proactive collaboration among health stakeholders.
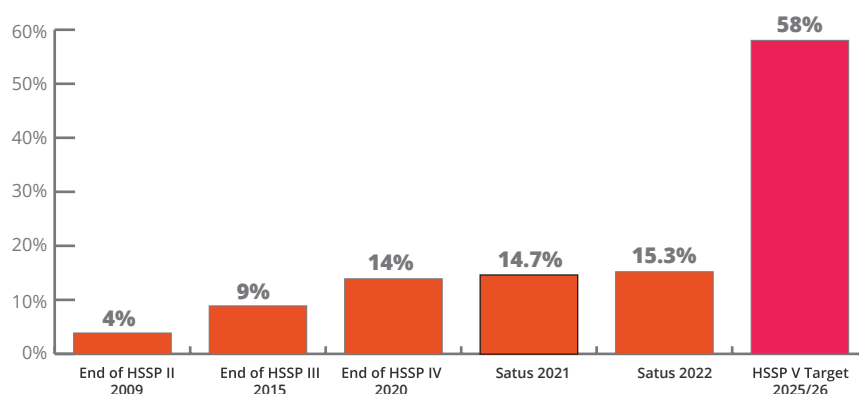
Figure 4: Health insurance coverage as % of total population (all schemes) – Source MOH report

Table 16 below summarises the gaps and opportunities in HR and insurance.

Gaps	Opportunities
• Although much progress has been made in availing health sector performance data/report, public access of such resources is seldom available. • There is at least 66% shortage of health and allied human resources across the country. • Teacher and allied health training colleges are catering for common types of impairments such as blind, deaf, intellectual etc. Other important specializations such as cognition, communication, hearing, mobility, self-care are seldom addressed.	• Using a payment for result (PfR) mechanism, the government could be incentivised by development partners to avail annually (on a public facing portal) the health sector performance report and associated data. • The expansion of Comprehensive Emergency Obstetric and Newborn Care (CEmONC) services, construction of 76 new Councils hospitals. • The Universal Health Insurance Coverage (UHC) bill is now operational, providing a framework and opportunity for proactive collaboration among health stakeholders. Opportunities for continuous professional development of personnel though Task-Shift approach for in-service health workers abound. For example, TAP project that MOH and HelpAge implemented in 2022 a program with the support of WHO, to train primary and community health care workers to identify, refer people in need of assistive products, and provide assistive products at primary health care level facilities. Other opportunities include inclusive AT skills training where people in need of AT are trained to provide AT services to their fellows.

Table 16: Gaps and opportunities in HR and insurance

3.6 Stakeholders' views

During the validation meeting for this report, stakeholders in the AT ecosystem underscored the high demand for assistive devices, especially among the older people, and the need for more AT experts and institutions specializing in assistive Technology and Assistive products. The study highlights the challenge of coordinating assistive technology (AT) expansion, particularly in communication, cognitive, and self-care devices. The inequitable access to facilities, the relationship between aging and disability, and the educational challenges faced by the deaf were also emphasized. Additionally, accurate data on AT and the need to develop a comprehensive AT strategy document were found to be crucial in addressing these needs effectively.

The stakeholders identified the need to strengthen the coordination system among all stakeholders, including sectoral ministries as a vital element in among others, securing investment and ensuring efficient AT service delivery in the country. Building the capacity of AT experts and training professionals in areas with significant gaps were also highlighted.

Projects should focus on increasing the availability of assistive products, using local suppliers to reduce costs, and integrating AT into essential health commodities to be covered by National Health Insurance Fund (NHIF). Strengthening institutions that provide education in assistive devices, along with creating a unified system for purchasing AT for government institutions was termed as important.

Additionally, expanding research on AT needs and developing local production facilities for assistive products should be prioritized. Increasing awareness and budget allocations for AT, particularly in schools and among public servants will facilitate better inclusion and support for people with disabilities. The development of shared systems for purchasing AT, and further training of specialists will also contribute to better access and integration of assistive technologies into society. These initiatives will help reduce costs and address the needs of people with disabilities, including the older people.

4. Conclusion and Recommendations ———

4.1. Conclusions

The Tanzania AT Country Capacity Assessment report illustrates a complex state of AT ecosystem. While AT provision improves quality of life, the delivery ecosystem faces challenges in terms of quality, availability, accessibility, awareness, skills training, adequacy, acceptability and affordability of products. In Tanzania only 36% of people who need AT receives information related to access to it. The evidence suggests a need to improve AT ecosystem in the country more so to adult population who seem to face more challenges including shortages of rehabilitation centres and vocational skills training to improve their quality of life.

4.2. Recommendations

Thematic Area	Recommendations
AT users (People)	• Establish skills training centres in which entry qualification is the disability or the need of AT • Establish rehabilitation centres in at least zonal hospitals • Develop adapted curricula for skills training for those who need AT • Provide opportunity for users of AT to innovate and train fellow users (e.g., people with visual impairment train fellow people with visual impairment
Provision of AT	• Establish database for AT providers • Strengthen data collection system on health conditions and functional limitations to estimate the need for assistive technology • Establish a link between health practitioners and the rehabilitation centres as a referral system • Create AT users forums linked to AT provisions and key decision makers
Policy and programmes	• Develop policies that monitor AT ecosystem in the country • Develop programmes whose only entry qualification is the need to enhance limited functioning using AT • Create financing mechanism for AT • Support develop AT innovation
Products and procurement	• Establish database for AT products accessibility for different types of functioning (cognition, communication, hearing, mobility, self-care and vision) • Establish support system for in-country AT innovation • Establish repair centres for AT users and others
Personnel	• Establish AT related courses in training institutions for different types of functioning (cognition, communication, hearing, mobility, self-care and vision) • Implement Task-Shift approach for in-service health workers. • Establish training on AT maintenance and fabrication centres through PPP. • Establish inclusive AT skills training where people in need of AT are trained to provide AT services to their fellow

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Appendices

Appendix 1: Proportions (%) of AT Users by gender and age group

		Male						Female					
		Age 20-29	30-39	40-49	50-59	60+	All	Age 20-29	30-39	40-49	50-59	60+	All
Users' Age Distribution (%)	%	10	6	10	13	32	**71**	6	6	3	0	13	**29**
Difficulty in Seeing even with AT (spectacles)	None	5		9	9	18	**29**	11		11		22	**13**
	Moderate			5	5	9	**13**					11	**3**
	High	9	5			9	**16**		22			11	**10**
	Extreme (no sight)		5		5	9	**13**	11					**3**
Difficulty in Hearing even with AT (hearing aid)	None	9	9	14	18	36	**61**	11	22	11		22	**19**
	Moderate	5				9	**10**	11				22	**10**
Difficulty in Walking (or climbing ladder/stairs)	None	10	5	14	10		**27**	11	22	11		11	**13**
	High	5			5	24	**23**	11				33	**17**
	Moderate					19	**13**						
	Extreme (Can't walk)				5	5	**7**						
Difficulty in Communicating in the language you are most comfortable with (for instance in understanding and being understood)	None	5	9	14	18	41	**61**	11	22	11		22	**19**
	High							11				11	**6**
	Moderate	9				5	**10**					11	**3**
Difficulty in remembering	None	5	9	14	14	27	**48**		22	11		11	**13**
	High					5	**3**	11					**3**
	Moderate	9			5	14	**19**	11				33	**13**
Difficulty in undertaking the daily activities of taking care of self (e.g. in bathing, dressing, etc)	None	14	9	14	14	9	**42**	11	22	11		11	**16**
	High					23	**16**					22	**6**
	Moderate				5	14	**13**	11				11	**6**
Have you been taught how to take care of PWDs or people with special needs?	NO	14		14	9	41	**55**		11	11		11	**10**
	YES		9		9	5	**16**	22	11			33	**19**

Appendix 2: AT programs and Access Trends

		Male						Female					
		Age 20-29	30-39	40-49	50-59	60+	All	Age 20-29	30-39	40-49	50-59	60+	All
Do you know of any programme that gives you access to AT? (%)	NO	5	9	14	9	45	**58**		11	11		33	**16**
	YES	9			9		**13**	22	11			11	**13**
Do you think many users of AT understand the programmes that give them access to AT? (%)	NO	5	9	9	14	18	**55**	22	22	11	0	22	**32**
	I DON'T KNOW	9	0	0	5	27	**41**	0	0	0	0	22	**9**
Are you able to access AT? (%)	NO	5	9	5	5	9	**32**						
	YES	9		9	14	23	**55**	25	13			25	**23**
	I DON'T KNOW					14	**14**		13			25	**14**

Appendix 3: AT Capacity Assessment of Distributors, sellers, and Service Providers

Theme	Private/Business	NGOs (Non-profit)	Business Enterprise
AT focus area	Hearing impairments Vision impairments; Mobility impairments; Hearing impairments; Cognitive impairments	Mobility impairments; Hearing impairments; Visual impairments; Self-care impairments;	
Role in AT	Deals with assembling hearing devices (hearing aids) and supplying them directly to hospitals and hearing specialists (audiologist) that they can tune these devices for patients with hearing loss.	(I) Healthcare providers through selling medicines, medical devices and cosmetics; (II) Advocating for availability and accessibility of AT, Service Delivery; (III) We are the sole distributor for Orbit reader and advocates for AT for disabled people in Tanzania	
Specific programmes related to AT	No	Yes	No
Nature of AT programme	N/A	An inclusive Education Programme; seeking to advocate for use of AT in all levels of education in Tanzania and plan, in collaboration with institutions, the training of AT and distribution of AT in schools like Orbit readers as the sole provider in Tanzania.	N/A
Specific budget for assistive products and related services	No	YES (2 NGOs): Budget of about Tsh 372,650,000.00 for advocacy and Training, as well as buying, distributing, and maintaining orbit readers.	No
Data collection and management on AT, health conditions and/or functional limitations that may require AT?	No	Yes (2 NGOs) - including one that does not have a budget for AT (and excluding one with a budget).	No
Nature of data collected and information system employed	N/A	One NGO collects basic information of the patient, hearing test during the initial fitting of the hearing device, a hearing test of the first year of wearing the hearing device after 3, 6 and12 months and results of annual hearing tests afterwards. Other information includes hearing device type, the hearing device product number. The information system used is the traditional on paper format and an excel spreadsheet as a back-up. The organization's role is to help patients navigate the direction of assistive hearing products across the country in terms of research and development together with publications on hearing health. An additional NGO collects data on people with disabilities in need of AT, users of AT,	N/A
Awareness of regulations or standards that assistive products need to comply with to be on the market	Yes	Yes	Yes
Type of regulation/standard and to follow requirements. If no, please explain why (e.g. there are no regulations/standards).	• ISO certification or locally certified in medical device regulatory bodies to operate. • Premises and the product/technology certification before distribution, selling or service. • Registration and certification • Assessment of Assistive products strengths and weakness before use and distribution	(i) emphasize on good quality of the AT products that must comply with all the requirements according to TBS (Tanzania Bureau of Standards) and Tanzania Medical and Drug Authority (TMDA); and the products must not cause any adverse effects on the Users. NO, am not aware of any regulations. As far i am concerned, the standards have not been set for different disabilities. There is a need to develop standards that guide provision of AT in the country	

Theme	Private/Business	NGOs (Non-profit)	Business Enterprise
Organization [1] accept any AT scheme(s)/programme(s) as a form of payment	N/A	NO (3 NGOs). The AT schemes are rarely known to us. We receive requests of AT from individuals or organisations or schools or institutions as buyers as such we do not asked where they obtained financial support. It is likely some might be having support from different organisations	Don't Know
Which of the following products that your organization sell/distribute?	Digital Hearing Aids;	Canes/sticks (including tripods and Quadri pods); Crutches (axillary/elbow) ; Walking frames ;Therapeutic footwear; diabetic, neuropathic, orthopaedic; Wheelchairs, manual for active use; Pressure relief cushions ;White canes; Braille slate/frame writing equipment and braille paper; Reading glasses; Magnifiers, optical (including telescopes)	Canes/sticks (including tripods and Quadri pods); Crutches (axillary/elbow); Walking frames; Wheelchairs, manual for active use; White canes; Braille slate/frame writing equipment and braille paper
For each, what is the estimated annual number of products your organization distributes/sells?	This is the first 3 months since we got registered and with no relevant sale due to system compliance, but we are expecting about 100 pairs of hearing devices to be dispersed at the end of the first year.	50 Wheelchairs ; 50 Auxiliary Crutches and about 120 Orbit readers; 20 walking frames; 50 white canes; 10 pressure cushions; 10 canes and tripods;	100 Canes/sticks
Are assessments, fittings, user-trainings, follow-ups, maintenance and repairs done when this product is distributed/sold?	yes (A user manual is provided to guide the user a proper way of handling and using the device. Current hearing levels are installed in the hearing device to tune according to the patient's hearing level and a patient's hearing comfort. Follow-up are made according to a set calendar after the initial fitting. After 1 month, 3 months, 6 months, then a year. After the first year the follow-ups can be after 6 months or annually, depending to the patient's schedule. Since basic information is taken, reminders are made to the users to help. Maintenance are key to a longer lifespan of a device, dehumidification boxes are provided to the users and during follow-ups the hearing device is taken up to be inspected, cleaned and dehumidified with specialized equipment for maintenance. Repairs are done free with warranty and with a reasonable cost when out of warranty. The hearing device is first taken to be assessed with some technical devices then the device is put in a category of either it's fixable or non-fixable)	yes (AT users are taught how the products are used and how to care for them to attain durability. Alternatively, there is a team of therapy staff who will be in charge of prescribing, and those responsible for training and repair of the equipment (orbit readers))	yes (Done before the users order the products as the base for required specifications);
Is information collected on user impact and/or satisfaction when distributing/selling this product?	yes (Based on the trials provided, the feedback has been good with the device)	yes 2 NGOSs (1 don't know). For those who said yes, they assess the level of satisfaction with the products (for any dissatisfaction we seek support from our suppliers); other information collected include on ease of use and challenges faced. On the basis of the challenges identified, an expert is deployed to train and support on how to solve the challenge.	Yes (On specifications which are aligned to the user needs and strengths)
Is peer-to-peer training available when distributing/selling this product?	Yes (Basic audiological training in hearing interpretation, patient explanation & counselling, device selection, device fitting, patient. The training is only available in an isolated/private area where the patient is discrete from public).	Yes (1 NGO said NO). For those who said Yes, one indicated that the suppliers train them on how the product is used before and after purchase; We train teachers to support the students at school level. The other said that the trained teachers have a network where they communicate with each other. At the school level, if they cannot solve any challenge, they contact maintenance personnel at the NGO.	Yes (Training is carried out to the user especially if the product is new to him/her).

Appendix 4: AT Capacity Assessment for Products and Procurement

Area of interest	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	Private
Area of interest	Bombo referral regional hospital Bugando medical centre Mbeya Zonal Referral Hospital Muhimbili national hospital-Mloganzila Patandi Teachers College The Open University of Tanzania	CCBRT Hospital Deafblind Assistance Services (DBAS) Inuka Rehabilitation Hospital KCMC- Prosthetics and Orthotics Department	SAIFEE Hospital Tanzania
Which area(s) of AT does your organization focus on?	Hearing impairments ;Vision impairments; Cognitive impairments ;Communication impairments; and Mobility impairments	Mobility impairments; Vision impairments; Mobility impairments; Hearing impairments ;Cognitive impairments; Communication impairments; Self-care impairments	Cognitive impairments;
Please describe your organization's role in AT	i. Creating ICT skills training courses for the blind and for the deaf; ii. Training students teachers on teach children with disabilities; iii. Has orthopaedic unit for assistive devices fabrication and eye clinic; iv. Curative, rehabilitation and teaching; v. Help maintain or improve an individual's functioning related to cognition, communication, hearing, mobility, self-care and vision, thus enabling their health, well-being, inclusion and participation; vi. Help patient to resume on his/her normal daily activities or functional activities.	i. Collaboration with others where these collaborations involve joint research projects and partnerships to develop and deploy assistive technologies effectively. 2 Education and outreach by organizing workshops, training programs, and public outreach campaigns to promote and advocate for the needs of the disability in the community. 3 Policy and advocacy which includes advocating for funding for research and development in the field, promoting standards for accessibility in technology design, and advocating for the rights of individuals with disabilities in work places; ii. Production of Prosthesis and Orthosis devices; iii. Expanded: Provision of prosthetics, orthotics, customized footwear, various assistive devices tailored to individual needs, and a wide range of wheelchairs to support mobility and enhance quality of life; iv. Procure and train.	We have a rehabilitation program and various movement disorder units
Does your organization have a specific program related to AT?	Yes (all but Bombo referral regional hospital)	Yes	Yes
If YES above, a. name the program b. describe it c. name the key people involved d. describe the indicators used to monitor and evaluate the program	i. ICT-Based AT ii. People with visual impairment and the deaf. iii. Hearing Aid programming, Fitting, speech training: (iv) Orientation and mobility for visual impairment; iv. CBM outreach; v. Clubfoot Treatment (MDH), Orthotic And Prosthetic Workshop (MOH); vi. Hearing aids; a program is specifically for people with hearing problem, a hearing aid device is inserted into the ear of a person. The program involves audiologists, ENT specialists and speech therapists; vii. Continuous audiological assessment is used to monitor and evaluate the program; **Learning facilitators:**ICT for the deaf; the teacher is deaf, ICT for the blind; the teacher is blind. *Other programs are related to innovation. Through collaboration with SINTEF, we developed a game-based audiometry through the project 'I Hear You'. **Learning Indicators:** increased rate of participants developing independent living, using ICT, participation of PWDs in online meeting and enrolment in online courses, using ICT to solve challenges of employability. The other indicator is publications on AT support services outcomes and challenges.	i. Prosthetics and orthotics; involves fitting of different prosthetics and orthotics devices together with provision of appropriate wheelchairs. Programs involves certified Prosthetist /Orthotist, wheelchair technologist, and a physiotherapist who is trained specific for wheelchairs provision; ii. Production of Prosthesis devices, Orthosis devices and assemble wheel chair; program involves Orthopaedic Technologists who fabricate artificial limbs and assistive devices; **Learning Indicators:**Number of People requiring assistive devices and artificial limbs and availability of material and Medical personnel is used to evaluate program.	We have a Parkinsonism program, that involves a neurologist, physiotherapist, occupational therapist, speech therapist, dietician and nurses.
Does your organization allocate a specific budget for assistive products and related services?	Yes (3); (Total estimated budget at Tsh 215 million; NO (3)	Yes (BUDGET estimated at Tsh 495 million + USD 100,000.	No
Please explain what this budget is allocated to (e.g. provision, training etc.):	Buying ICT facilities for PWDs, salary for AT trainers, payments for outreach programs; purchase materials and therapeutic equipment's; capacity building and service provision	Provision of materials, HR cost, trainings and purchasing the ready-made assistive technology; Buying materials, Exhibition of AT programr and salaries; to facilitate the acquisition of prosthetics and orthotics materials, components, along with a diverse array of mobility-assistive devices, to ensure the efficient functioning of the department and the provision of comprehensive services; and provision, training and maintenance of AT devices	
Does your organization collect or manage data about AT, health conditions and/or functional limitations that may require AT?	Yes (4); No (2).	Yes (2); No (2)	No
If YES above: Please describe the type of data collected (registry of products, number of products provided, number of services provided, number of current AT users, etc.), the information system …	Number of users trained and screened for hearing loss; Number of AT devices provided; Number of operated persons	AT users' improvement rate, devices given, their demographics, Number of dropouts	
Are there any regulations or standards that assistive products need to comply with to be on the market?	Yes (2); No (2); Don't know (2)	Yes (2); No (2)	Don't know

Area of interest	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	Private
If YES above, describe your organization's role, the regulation/standard		Organization's role is to make sure all the AT are of good standard and good quality required. We purchase from recognised supplier who are compliant with the regulations and boards;	
Does your organization procure assistive products and related services?	Yes (3); No (1) ; Don't know (2)	Yes	Yes
If YES above, at what level does procurement occur in your organization?	National	National, Regional	Other
Please list all products that your organization procures.	Crutches (axillary/elbow); Walking frames; Wheelchairs, manual for active use; Magnifiers, optical (including telescopes); White canes; Braille slate/frame writing equipment and braille paper; ICT-equipment; Canes/sticks (including tripods and Quadri pods); Lower limb orthoses; Lower limb prostheses	Crutches (axillary/elbow); Walking frames; Canes/sticks (including tripods and Quadri pods); Lumber Belt, Neck collar; Lower limb orthoses; Lower limb prostheses; Wheelchairs, manual for active use; Therapeutic footwear; diabetic, neuropathic, orthopaedic; Pressure relief cushions	Canes/sticks (including tripods and Quadri pods); Crutches (axillary/elbow); Walking frames; Lower limb orthoses; Lower limb prostheses; Therapeutic footwear; diabetic, neuropathic, orthopaedic; Pressure relief cushions; Wheelchairs, manual for active use; Reading glasses; Prescription spectacles (near/far vision)
How is the assistive product procured?	Individual purchase (need based); and Bulk Purchase	Individual purchase (need based); and Bulk Purchase	Other
How often (frequency) and how much (volume) procurement takes place? e.g., annually, 600 pairs, etc	About 100PCs of crutches, at least 3 wheelchairs, and 10 magnifier glass; 300-400 pairs of cane sticks annually	250 pairs of Crutches; 1000 pairs of can sticks	On need basis
Who are the top three major suppliers?	Government ministries	Trucare; Ortho rehab; Shijiazhuang Aosuo International Trade Co. Ltd-China; Rhema Orthopaedic and Rehabilitation Company-Tanzania; SwissLimbs: Camfore in china, Proactive in India, Ottobock in Germany; procure online overseas.	
How are the suppliers chosen for each product?	Open tender	Open tender and direct procurement;	Direct procurement
What are the assessed taxes and duties for the product? (in % or TZS)? in the space below, outline the taxes/duties for: a) Import duty for final finished product. b) Import duty for component par...	Don't know	Depends on product	
Are there any technical specifications available to guide procurement of each assistive product named above?	NO (2); Don't know (2)	The relevant technical specifications	
Indicate where the supplies can be found	Tanzania and abroad	Local and overseas (china, india, Germany, etc)	
What percentage of the population, or total number of people, are covered by the existing insurance scheme(s)?	Don't know	20%	(Assistive products are not covered under insurance)
What information is used to determine the quantity of products to procure? (List the primary data source and provide relevant attachments where applicable).	Remaining stocks	Funds secured; funds available; doctors' assessment of needs	
Has your organization received any products that were obtained through an international donation?	Yes (2); No (4)	Yes (2); No (2)	no
If yes above, please list the products, the annual volume received, and from which international donors	Audiometer battery charged, audiometer electric, tablets installed with game-based screening	Prefabricated devices; 300 wheelchairs from latter day saints (USA);	
Does your organisation provide training services on AT?	Yes (3) and No (3)	Yes (2) and No (1)	No
Are there any policies that guide who can prescribe and/or provide assistive products?	Yes (2), No (1) don't know (2)	Yes (2) , No (1) don't know (1)	
If yes, please explain your role, the policy	My role is consistent with the NIMR guidelines on ethical clearance; Prescribers of assistive devices are different, orthopaedic surgeons, neurosurgeons, ENT surgeons, Physiotherapists, Ophthalmologists etc. depending on patients' needs;	The Orthopaedic technologist are the one who prescribe and provide assistive product; Comply to health, Education and human right policies	
Are there any written guidelines or standards for assistive product provision?	Don't know (3) No (1)	Yes (1) and don't know (3)	

Area of interest	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	Private
If yes, please explain your role, the policy.	This is internal service guideline and standard which was prepared to fit the internal organization role		
Does your organization design, manage and/or facilitate any degrees, diplomas or other courses to train the assistive technology workforce? *If your organization is involved in another way, please...	Yes (1) Don't know (2)	Yes (3) don't know (1)	
If yes, please explain your role, the nature of the degree/diploma/course, and which workforce(s) it is for:	Programs to train the deaf and the blind ICT and a degree in Special Education	Training on prosthetics and orthotics;	
Does your organization oversee and/or coordinate professional associations that are relevant to assistive technology in the country? *If your organization is involved in another way, please select...	Don't know (6)	Yes (2) don't know (2)	Don't know
Which workforce provides AT in your organization?	Audiologists; Audiometric technicians; Hearing aid technicians; Speech and language therapists; Braille teachers; Mobility orientation trainers;	Mobility orientation trainers; Opticians; Occupational therapists; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Community based rehabilitation workers; Wheelchair technicians;	Speech and language therapists; Opticians; Occupational therapists; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Biomedical engineers;
	Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Biomedical engineers;	Occupational therapists; Physiotherapists; Prosthetic and orthotic technicians; Community based rehabilitation workers;	
	Occupational therapists; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Biomedical engineers;	Prosthetists and orthotists; Prosthetic and orthotic technicians;	
	Hearing aid technicians; Mobility orientation trainers; Opticians; Physiotherapists; Prosthetists and orthotists; Prosthetic and orthotic technicians; Biomedical engineers;	Audiologists; Hearing aid technicians; Braille teachers; Mobility orientation trainers; Opticians; Occupational therapists; Physiotherapists; Speech and language therapists; Prosthetists and orthotists; Inclusive teachers;	
How many workers in each of the categories above do you have in your organization? List	Physiotherapist - 8 Occupational therapist - 3 Prosthetists and orthotisitis - 2	Mobility orientation trainers - 2 Opticians - 3 Occupational therapists - 1 Physiotherapists - 6 Prosthetists and orthotists - 5 Prosthetic and orthotic technicians - 1 Community based rehabilitation workers - 4 Wheelchair technicians - 2	A team of 8
		Physiotherapist they are 5 works Occupation therapist they are 2 works Prosthetic and orthotic technicians they are 2 works Community based rehabilitation workers they are 11 works	
Do these workers receive specific training on AT provision? If so, is it part of core training or continuing education?	Yes, there are trainings on awareness for PWDs, training on game-based screening, and training on use of audiometers;	Yes, continuous education	No
Which of the following consultants provides AT in your organization?	Ear, nose and throat; Rehabilitation; Orthopaedics; Paediatrics;	Ear, nose and throat; Ophthalmology; Orthopedics; Rehabilitation; Orthopedics; Rehabilitation; Diabetes; Geriatrics; Paediatrics; Ear, nose and throat; Ophthalmology;	Ear, nose and throat; Geriatrics; Ophthalmology; Orthopedics; Diabetes; Rehabilitation; Paediatrics

Appendix 5: Summary of AT Capacity Assessment for Policymakers and Program Managers

	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	UN agency
	The Open University of Tanzania PMO-LYED Ministry of Health Ministry of community development gender women and Special Group.	Connect Autism Tanzania; Access Tech Help and Support; African Women Aids Working Group (AFRIWAG) Helpage Tanzania Morogoro Elderly People's Organization	WHO
Which area(s) of AT does your organization focus on?	Hearing impairments; Vision impairments; Mobility impairments; Hearing impairments; Vision impairments; Cognitive impairments; Communication impairments; Self-care impairments; Rehabilitation and re-integration; Policy formulation on assistive products/technology; Mobility impairments; Hearing impairments; Vision impairments; Self-care impairments	Cognitive impairments ;Vision impairments ;Communication impairments ;Mobility impairments ;Hearing impairments ;Self-care impairments ;Focus on Programming for AT	Mobility impairments; Hearing impairments; Vision impairments; Cognitive impairments; Communication impairments; Self-care impairments;
Please describe your organization's role in AT	Developing training modules and facilitating adapted curriculum for the blind and for the deaf; Monitoring, coordination and implementation; Coordinate provision of AT ranging from procurement, training of staff and distribution of AT; Policy on elderly	Connect, Educate and Change the life of people with disabilities; To provide accessible and inclusive technology services to persons with disabilities so as to build their technological capacity and self-independence in all aspects of human life to enable them learn and work easily; Participating in Identification of AT needed, mapping of stakeholders, provision of AT, mentoring and referrals for more services: the role of HAT is to Program for increased access among the older people in need of AT, this entails mobilising resources to ensure systems and policies are in place for AT, ensure capacity building to primary health care workers and community based workers on AT and conducting advocacy related work to policy makers for improving AT access. HAT also provides AT in humanitarian settings such as prosthetic limbs: To increase public awareness campaigns;	Provision of Technical assistance to country on AT including support development of national policy guidelines, tools, standards, quality of care, indicators, advocacy, resource mobilization, capacity building and contribute to the global report on AT.
Does your organization have a specific program related to AT?	Yes (3) and NO (1)	Yes	No
If YES above, a) name the program b) Describe it c) name the key people involved d) describe the indicators used to monitor and evaluate the program	1. Program for ICT skills for the blind in which learning facilitator is blind 2. Program for ICT for the deaf and the facilitator is deaf 3. Program for developing ICT signs in sign language 4. Program to train sign language for the community **Key people involved** : Digital Inclusion Expert, ICT skills training facilitator, people with disabilities and the University management. **Indicator used to monitor and evaluate the program include among others** 1. Ability of PWD to secure training opportunities , more so online learning platforms 2. Program graduates to participate in international competition, as such Clement Ndahani who became blind at the age of 50 currently is the only awardee of the Commonwealth of Learning during PF8 in Kuala Lumpur Malaysia; 3. Ability of PWD to apply online jobs and be employed 4. Using ICT to improve their quality of life through doing online business and using ICT for lifelong learning	Inclusive education, Assessment and resource center; solving scientific and technological problems for persons with disabilities. in this program, persons with disabilities presents their technological and scientific problems. It is the task of administrators to troubleshoot them. That is done in social media through access technology; technological help and support; questions and answers; culture of excellency; research; demonstrations; and education. as indicators, persons with disabilities who use Access technologies increased; Improving the systems and policy environment to strengthen access to Assistive Technologies for persons living with disabilities (PWDs) and older people; Our program focuses on improving access to AT among the older people and PwDs including in the humanitarian settings. this is done through developing specific projects addressing Capacity for provision of AT, improving systems and policy environment for improved access to AT and a) MWANGAZA and BORESHA MACHO programs; b) MWANGAZA: objective was to enable people with visual impairment to ACCESS Eye Health Care Services with specific focus to Older People and People with Disability in 9 District Councils of Morogoro Region. Lasting June 2016 to May 2019. BORESHA MACHO: to improve Sustainability and Access to Affordable High Quality Eye Health Services for all, with a specific focus to Women, Older People and People with Disabilities. The project cover 5 District Councils of Gairo, Kilosa, Mvomero, Morogoro Municipal Council and Morogoro rural in Morogoro Region. Implementers included Morogoro Regional Referral Hospital and MOREPEO lasting for 3 years 2020 to 2023. We conducted sensitization meetings and campaigns for Eye Health Services through media, posters, cars with audio speakers propagating the BORESHA MACHO service delivery. Additionally, we collected data for Eye Health delivered Services through Older People Monitoring Groups (OPMGs), while Health Services including Eye Surgeries wa s conducted by Morogoro Regional Referral Hospital Eye Unit through Outreach Services. **Key People Involved** 1. Regional Health Management Committee team under RMO 2. Council Health Management Committee team under DMO 3. Morogoro Regional Referral Hospital Eye Unit under Regional Eye Specialist 4. Local Leaders at District levels 5. Sightsavers International 6. HelpAge International 7. MOREPEO **Indicators** 1. Number of clients that attended outreach services 2. Number of clients who underwent Eye Surgeries and other eye treatments 3. Number of referral cases 4. Outcomes/ results of Eye Surgeries and other eye treatments	n/a
	Other Programs Include: (a) Skills development for PWDs (b) We provide skills training for PWDs and care. We colleges and homes that are run in partnership with Ministry of Community Development Gender Women and Special Groups and implementing partners. **Indicators** include types of disability, number of PWDs enrolled and services provided, human resources and AT provision where needed; Older people reached		

	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	UN agency
Does your organization allocate a specific budget for assistive products and related services?	Yes (3) and NO (1)	Yes (3) No (2)	No
If YES above, please list the most recent annual budget in TZS:	Tsh 8.7 billion	Tsh 43.3 million	n/a
Please explain what this budget is allocated to (e.g. provision, training etc.):	Provision of AT resources complementing government support. Paying the human resources responsible for ICT skills training.	In this organization, persons with disabilities are trained ICT for free.	n/a
	Provision: 60,000,000 for production of sunscreen lotion for persons with albinism which is allocated each year (2) Training: construction of new colleges and rehabilitation of old ones, capacity building for staff in colleges; procurement of training and learning resources	Identification of people who need AT, Training of CHWs & PHWs) and Stakeholders Mapping on AT	
	Procurement of AT	In 2022 we allocated USD 51,244: for training and in 2023/2024 we allocated USD 119,917.52 for deploying systems and policy environment to strengthen access to AT	
	For purchase of assistive devices	Public awareness and sensitization, training of home-based healthcare workers, training of OPMGs, training of Regional Health Management Committee and 9 District Health Management Committee, training of local leaders, salaries to salaried MOREPEO personnel, transport, meals, accommodation, office supplies	
Does your organization collect or manage data about AT, health conditions and/or functional limitations that may require AT?	Yes (3) and NO (1)	Yes (4), no (1)	No
If YES above: Please describe the type of data collected (registry of products, number of products provided, number of services provided, number of current AT users, etc.), the information system ...	Data are collected for persons with disabilities enrolled in different courses in Tanzania 🇹🇿. AT users at OUT mostly use ICT in their learning.	Most students failed to perform their task due to lack of AT	
	We collect data on AT tools available, AT users, AT products, Number of products distributed, and number of services provided. The data are collected each year.	We have no data on registry of products, number of current AT users, and number of products provided to persons with disabilities in Tanzania. we provided number of access technology services daily countlessly according to numbers of problems presented	
		40 CHWs were trained, 41 Primary Heath worker, CHMts and social Welfare officers were trained, about 96 stakeholders engaged on AT were mapped in Tanga Region. People reached through the work of CHW # Of PWD identified by the trained CHWs on AT M:198 F:146 TOTAL 344 # Referrals made by trained CHW M:49 F: 34 TOTAL 83 # People Provide with AT M:16 F:7 TOTAL 23 # of PP reached through awareness raising M: 355 F: 491 TOTAL 846 GRAND Total M:618 F:678 TOTAL: 1296 About 797 360 were male and 437 female older people were reached under this project	
	Person with person need	We collect data on people in need and people who have accessed AT through our partnership with the health facilities and district social welfare officers.	
		1. Number of clients that attended outreach services 2. Number of clients who underwent Eye Surgeries and other eye treatments 3. Number of referral cases 4. Outcomes/ results of Eye Surgeries and other eye treatments We sent the data to HelpAge International and Sightsavers International.	
Can you recommend any other stakeholders, key local leaders/ opinion formers, or champions for AT that we should speak to for this assessment? (give full name, contact details (phone number)	Professor Elifas Bisanda, the Vice Chancellor of the open university of Tanzania, vc@out.av.tz, bisanda56@gmail.com, +255786066632		
	All DPO can speak. SHIVYAWATA regional office in Dodoma. Chacha was trained in our colleges as PWD skills development and now owns a factory contact +255753287959. As a means of collaborating with PWDs the PMO plans to engage Chacha in manufacturing of AT mobility products. Chacha further is planning to innovate manufacturing of updated white canes with sensor.	Tech Access with Independent Daily Living Skills: Email: taidalstanzania@gmail.com; +255687101542; Tanzania League of the Blind, Email: tanleb@yahoo.co.uk	

	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	UN agency
	Director General, TMDA	Mmassa Malugu - 0713871087 and Husna Chambua 0682989156 councilor and living with disabilities	
	HelpAge International	Social welfare officers at all wards, district and Region.	
		1. Dr. Ukio, RMO (0717730610) 2. Dr. Njau, Eye Unit Specialist, (0713408042)	
Does your organization have any strategies, plans or road maps that include AT?	Yes	Yes (4) no (1)	Yes
If YES above Please describe	The road map is to ensure inclusion of PWD in all university programs.	i. Carry out research on sciences and technologies that are accessible to persons with disabilities; ii. Give out updated information on science and technology to persons with disabilities and the wider society; iii. Produce information into accessible formats to be consumed by persons with disabilities; iv. Encourage persons with disabilities to purchase, possess, and use computers, smartphones, and other accessible technologies; v. Advise persons with disabilities on the best computers, smartphones, and accessible technologies suitable for use according to their needs; vi. Search for and design learning materials in accessible formats for persons with disabilities; vii. Initiate and design various projects that aims at influencing full participation and inclusion of all persons with Disabilities in digital technology use of accessible hardware, software, websites, and information that for persons with disabilities; viii. Carry out consultancy services and training programs in computer literacy, access technology, social media, conventional and electronic Braille literacy, sign language, and any other ICT related contents for persons with disabilities; ix. Evaluate website accessibility of various institutions for the welfare of persons with disabilities; x. Care, repair, maintain, and install hardware and software of computers, phones, embossers, and other access technology devices; xi. Prepare lessons, segments, and demonstrations on computers, smartphones, applications, and other accessible technologies; xii. Establish the centre for training persons with disabilities digital literacy and access technology. xiii. Advocate for presence of access technology specialist in all educational institutions and vocational training centres.	Framework for improving access to assistive technology in the WHO African Region https://www.afro.who.int/sites/default/files/2021-08/AFR-RC71-11%20Framework%20for%20improving%20access%20to%20assistive%20technology%20in%20the%20WHO%20African%20Region.pdf
	Most are under development and what is available is the five plan that include AT. There are number of guidelines under preparation including a guideline on support and intervention for people with albinism.	Our strategic plan focuses on the following: Year 1 2023: Focus on needs assessment, awareness campaigns, and establishing partnerships with local stakeholders. Year 2-3 2024 - 2025 : Implement AT provision programs, training initiatives, and develop fundraising strategies and advocate for availability of National Guideline for the provision of Assistive technology Year 4-5 2026- 2027: Advocate for policy changes, support AT innovation, and establish a knowledge-sharing platform for sustainability.	
	National Rehabilitation strategic plan 2021-2026	Improving access to AT is described as one of the areas we address in our business plan	
		This will take more time.	
Is there a platform or mechanism for intersectoral and/or interagency coordination of AT?	Yes (3) and NO (1)	Yes (2) No (3)	Yes
If YES above, Please describe	The University has Assistive Special Technology Unit (ASTU) that manages skills training for PWD and the AT coordination desk in the PMO-LYED.	Associations and federations of PWDs, Older people council or associations, international day for people with disability, International day for older people, Governments have departments (under social welfare officers) dedicated to coordinating assistive technology services and policies. Professional associations for occupational therapists, physical therapists, speech-language pathologists, and other professionals who work with people with disabilities often have AT committees. Disability-focused organizations play a vital role in promoting intersectoral collaboration on AT issues. We have established a multisectoral coordination forum on AT which provides leadership on AT.	There is TWG under the leadership of Prime Minister's Office
Is your organization primarily responsible for any health/social welfare financing schemes providing coverage for AT?	Yes (3) and NO (1)	Yes (1) no(4)	No
Provide a name and brief description of the scheme(s):- (e.g. insurance schemes, programs providing AT free of charge or at subsidized rate, vouchers or cash to purchase assistive products after...	The government pays program fees and the Institutional CSR supplements; National Health insurance which finances for contributors	We provide AT services free of charge; Provision of AT for PWDs, provision of improved Health Insurance card (iCHF), conducting mainstreaming health checks, capacity building for social welfare, PwDs, OP and Health workers. Mapping the stakeholders for AT.	
Who is covered by the scheme(s)?	PWDs, principal contributors, and elders	PWDs, Government, NGOs like AFRIWAG YDCP and FBO	
What percentage of the population, or total number of people, are covered by the scheme(s)?	All students with disabilities enrolled in the university programs; Outside the University, around 9% of the population		

	Government stakeholder	Nongovernmental, non-profit stakeholder (national)	UN agency
Does the scheme(s) cover assistive products only, service provision (assessment, fitting, user training, follow-up, maintenance and repairs) only, or both?	The scheme covers all costs; and in some cases, more than AT devices	User training and follow-up; Both assessment, fitting, user training, follow-up, maintenance and repairs	
What is the total amount/budget (in TZS) that was allocated to AT in the most recent financial year?	Tsh 7.7 billion	Tsh 352 million	
Please list all products that are covered under the financing scheme(s).	Magnifiers, optical (including telescopes); Reading glasses; Prescription spectacles (near/far vision); ICT based AT; Canes/sticks (including tripods and Quadri pods); Crutches (axillary/elbow); Walking frames; Lower limb orthoses; Lower limb prostheses; Pressure relief cushions; Wheelchairs, manual for active use; Magnifiers, optical (including telescopes); Reading glasses; White canes; Braille slate/frame writing equipment and braille paper; Life skills training, vocational training, counselling and guidance	Pressure relief cushions; computer or smartphone, and our task is to train them on how to use them and troubleshoot them; Identification, Capacity building, iCHF and training	
What is the coverage amount (in % or TZS)?	Tsh7.6 billion		
How long does the coverage last? (e.g. TZS 250,000 coverage for spectacles is replenished every 2 years).	For one year and some for the whole program of study	For one year	

Appendix 6: AT Capacity Assessment of Distributors, sellers, and Service Providers

Item No.	Description	Unit of measure	Quantity
1	Alphabet Training Plate	Pcs	400
2	Low Vision Stand	EA	100
3	Magnifiers (Handheld)	EA	100
4	Universal Braille Kit	Kit	500
5	White Cane – Folding	Pcs	250
6	White Cane Straight	Pcs	250
7	Braille Slates with Grooves & Stylus	Pcs	400
8	Writing Device for the Blind	Set	200
9	Abacus	Pcs	700
10	Braille Paper 11" x 111/2"	Ctn	150
11	PVC Braillon Paper – 11" x 11.5"	Reams	300
12	Braille Paper 210mm x 297mm	Ctn	70
13	Hearing Aid – Behind the Ear	Set	350
14	Hearing Aid – Pocket Type	Set	350
15	Otoscope	Pcs	150
16	Sound Level Meter	Pcs	150
17	Ear Mould Manufacturing Kit	Kit	23
18	Auditory Trainer	EA	19
19	Isolation Liquid (500ml)	Bottle	100
20	Impression Mass (400g @bottle)	Set	40
21	Dental Plaster (290g)	Pkt	40
22	Receiver 2 Pin	Set	300
23	Hearing Aid Cords Y-2 pin	Set	500
24	Ear Light (Handheld)	EA	200
25	Advanced Digital Audiometer	EA	38
26	Speech Training Mirrors	EA	19
27	Hearing Aid Cord – 2 Pin	Pcs	500
28	Hearing Aid Repair Kit for 2 Pin	Set	300
29	Picture Wall Chart – Assorted Pictures	Sheet	5000
30	Building Blocks – Hard Plastic	Set	400
31	Albino Special Lotion (1 x 8 doz)	Ctn	200
32	Albino Hat	Pcs	1500

Item No.	Description	Unit of measure	Quantity
33	Albino Sunrays Protection Spectacles	EA	1500
34	Puzzles (1 x 20 doz @ Ctn)	Ctn	50
35	Rattles (1 x 20 doz @ Ctn)	Ctn	70
36	Rubber Mats	EA	210
37	Bead diff. sizes (1 x 500g x 20pkts)	Ctn	100
38	Small Bells	Pcs	50
39	Crutches – Elbow	EA	75
40	Crutches – Axillary	EA	75
41	Wheelchairs	EA	75
42	Braille Thermoform Machine	Set	5
43	PVC Braillon Paper – 11" x 11.5"	Ream	200
44	White Cane – Folding	Pcs	75
45	Writing Device for the Blind	Set	75
46	Braille Paper 210mm x 297mm	Ctn	100
47	Desktop Video Magnifier (CCTV)	Pcs	4
48	Hearing Aid – Behind the Ear	Set	156
49	Hearing Aid – Pocket Type	Set	156
50	Otoscope	Pcs	25
51	Receiver 2 Pin	Set	156
52	Hearing Aid Cords Y-2 pin	Set	200
53	Ear Light (Handheld)	EA	135
54	Advanced Digital Audiometer	EA	25
55	Hearing Aid Cord – 2 Pin	Pcs	200
56	Hearing Aid Repair Kit for 2 Pin	Set	100
57	Albino Special Lotion (1 x 8 doz)	Ctn	80
58	Albino Hat	Pcs	129
59	Albino Sunrays Protection Spectacles	EA	129
60	Crutches – Elbow	EA	50
61	Crutches – Axillary	EA	50
62	Wheelchairs	EA	50

Appendix 7: Number of special needs teachers in schools (2023)

	Specialisation	Government			Non-Government			Total		
		M	F	T	M	F	T	M	F	T
Pre-Primary schools	Intellectual Impairment	7	7	14	0	4	4	7	11	**18**
	Autism	0	1	1	0	5	5	0	6	**6**
	Deaf	8	20	28	2	5	7	10	25	**35**
	Deaf-Blind	1	1	2	0	0	0	1	1	**2**
	Blind	7	13	20	0	1	1	7	14	**21**
	Total Pre-primary	**23**	**42**	**65**	**2**	**15**	**17**	**25**	**57**	**82**
Primary Schools	Inclusive Classes	2,583	2,280	4,863	75	60	135	2,658	2,340	**4,998**
	Deaf	344	416	760	35	49	84	379	465	**844**
	Deaf-Blind	26	15	41	0	2	2	26	17	**43**
	Blind	310	237	547	2	3	5	312	240	**552**
	Intellectual Impairment	379	432	811	8	14	22	387	446	**833**
	Autism	58	56	114	2	4	6	60	60	**120**
	Total - Primary	**3,700**	**3,436**	**7,136**	**122**	**132**	**254**	**3,822**	**3,568**	**7,390**
Secondary schools	Intellectual Impairment	168	100	268	8	12	20	176	112	**288**
	Deaf	343	183	526	40	16	56	383	199	**582**
	Blind	182	75	257	8	2	10	190	77	**267**
	Total - Secondary	**693**	**358**	**1,051**	**56**	**30**	**86**	**749**	**388**	**1,137**

Appendix 8: Number of teachers with disability in schools (2023)

Type of Disability	Government Schools			Non-Government Schools			Total		
	M	F	T	M	F	T	M	F	T
Albinism	20	13	33	0	0	0	20	13	33
Physical Impairment	450	209	659	13	3	16	463	212	675
Deaf	58	54	112	6	3	9	64	57	121
Blind	157	61	218	11	2	13	168	63	231
TOTAL	**685**	**337**	**1,022**	**30**	**8**	**38**	**715**	**345**	**1,060**

Appendix 9: Terms of reference for a multidisciplinary coordination mechanism

Area of AP	Proposed intervention	Coordination mechanism
People/User	Awareness on AT among users	AT coordinator at PMO-LEYD whose role • Collect data on disability specific type innovations and success stories • Share widely information on AT • Facilitate AT users self-advocacy campaign • Monitor trainings to home-based care givers in hubs
	Establish User Skills Training Opportunities	AT coordinator with experts in Disability and Special needs whose role may include • Conduct training needs assessment • Facilitation of development of disability type adapted curricular • Create disability type-specific technical working group • Facilitate development of training manuals • Develop assessment tools • Monitor disability-specific type as entry qualification • Successful disability-specific users recruit as training facilitators
Provision	AT-certified technical courses	AT coordinators at sector level (MoH, PMO-LEYD, MoEST (VETA and NACTVET) establish AT courses related to: • ATP-specific maintenance • AT service including (care services, career guidance and counselling, • AT facilitators/ trainers
	Establish hubs for disability type specialized services	Disability type specialized coordinator whose role include • Conducting client needs assessment • Develop national standards for some of the assistive technology • Providing technical services to client including maintenance of AP, guidance and counselling • Facilitate training to community including home-based care givers
Products	AT Technical products and services	AT coordinator at hubs • Establish database for disability-specific AP and uses • Establish products needs • Establish standards for products • Coordinate adaptations to fit users
Policy	Ensure implementation of inclusive policies	AT coordinators at Ministry level ensure availability of budget items related to health care, social support, accessibility, rehabilitation, education and vocational training, communication, and employment
Personnel	Establish Basic skills training opportunities for staff	AT coordinators • Establish continuous training for healthcare workers on: screening, assessment, intervention, rehabilitation • Establish AT related courses in training institutions for different types of functioning (cognition, communication, hearing, mobility, self-care and vision) • Implement Task-Shift approach for in-service health workers. • Establish training on AT maintenance and fabrication centres through PPP. • Establish inclusive AT skills training where people in need of AT are trained to provide AT services to their fellow

Appendix 10: Number of assistive products in primary schools

Albino		Intellectual			Physical		Low Vision			
Albino lotion	Albino travel hat	Hard plastic blocks	Puzzles	Rattles	Clutches	Wheelchairs	CCTV magnifiers	Hand magnifiers	Low vision stand	Spectacles
3,414	691	2,112	4,191	2,664	Clutches	192	478	211	2,454	768

Deaf										
Audiometers	Ear light	Ear mould manufacturing kit	Ear screening audiometer	Hearing aid cords	Hearing aids	Otoscope	Receiver	Sound level meter	Speech trainer	Speech training mirror
191	182	163	70	621	1,032	203	322	189	48	117

Blind								
Braille transforming machine	Braillon sheets	Hands frames	Orbit readers	Perkins braillers	Stylus	Thermoform	Typewriters	White cane
40	5,494	975	77	936	782	30	110	973

Appendix 11: Products mostly purchased by the institutions that participated in the survey.

Crutches (axillary/elbow); walking frames; wheelchairs, magnifiers, optical devices (telescope), white canes, Braille slates/-frame writing equipment and braille papers; hearing aids, sunscreen lotion, albino sunrays protection spectacles, audiometers, otoscope, desktop video magnifiers (CCTV), albino hat, puzzles, rubber mats, Braille Thermoform Machine, speech training mirrors, picture wall chart, building blocks, ICT-equipment (smartphones, computers, tablets, printers); canes/sticks (including tripods and quadripods), orthoses, lumber belt; neck collar, therapeutic footwear, neuropathic, pressure relief cushions, spectacles (near/far vision) and reading glasses. In all cases an increased need for manual for active use of AT. Of the proposed AP falls more on functional limitations related to mobility and vision few are related to cognition, communication, hearing and self-care. This calls for efforts to increase rehabilitation and training on enhancing availability of AT services and AP related to cognition, communication, hearing and self-care in areas of screening, intervention and rehabilitation. This calls for specialised services including screening, intervention and user basic training on Assistive Products (AP). Further calls for efforts for capacity building among staff providing AP and AT services

Appendix 12: Institutions that participated in the survey

1. Access Tech Help and Support
2. African Women Aids Working Group (AFRIWAG)
3. Bugando medical centre
4. CCBRT Hospital
5. Connect Autism Tanzanai
6. Deafblind Assistance Services Dbas
7. Gabriella Centre for Rehabilitation -Hai Kilimanjaro
8. Helpage Tanzania
9. Hui'er Tanzania Hearing Technology and Service Company Limited
10. Inuka Rehabilitation Hospital
11. Karakana ya walemavu Dodoma (SIDO)
12. KCMC- Prosthetics and Orthotics Department
13. Kyaro Tech Assistive Technology Arusha, Tanzania
14. Mbeya Zonal Referral Hospital
15. Ministry of Community Development, Gender, Women and Special Groups.
16. Ministry of Health
17. Morogoro Elderly People's Organization
18. Muhimbili National Hospital-Mloganzila
19. Nakiete Pharmacies
20. Orthorehab Tanzania Limited
21. Patandi Teachers College
22. Peters Braille Press Traders
23. PMO-LYED
24. Rehab Health
25. Saifee Hospital
26. SHIVYAWATA
27. Tanga Referral Regional Hospital
28. The Open University of Tanzania
29. WHO – Tanzania