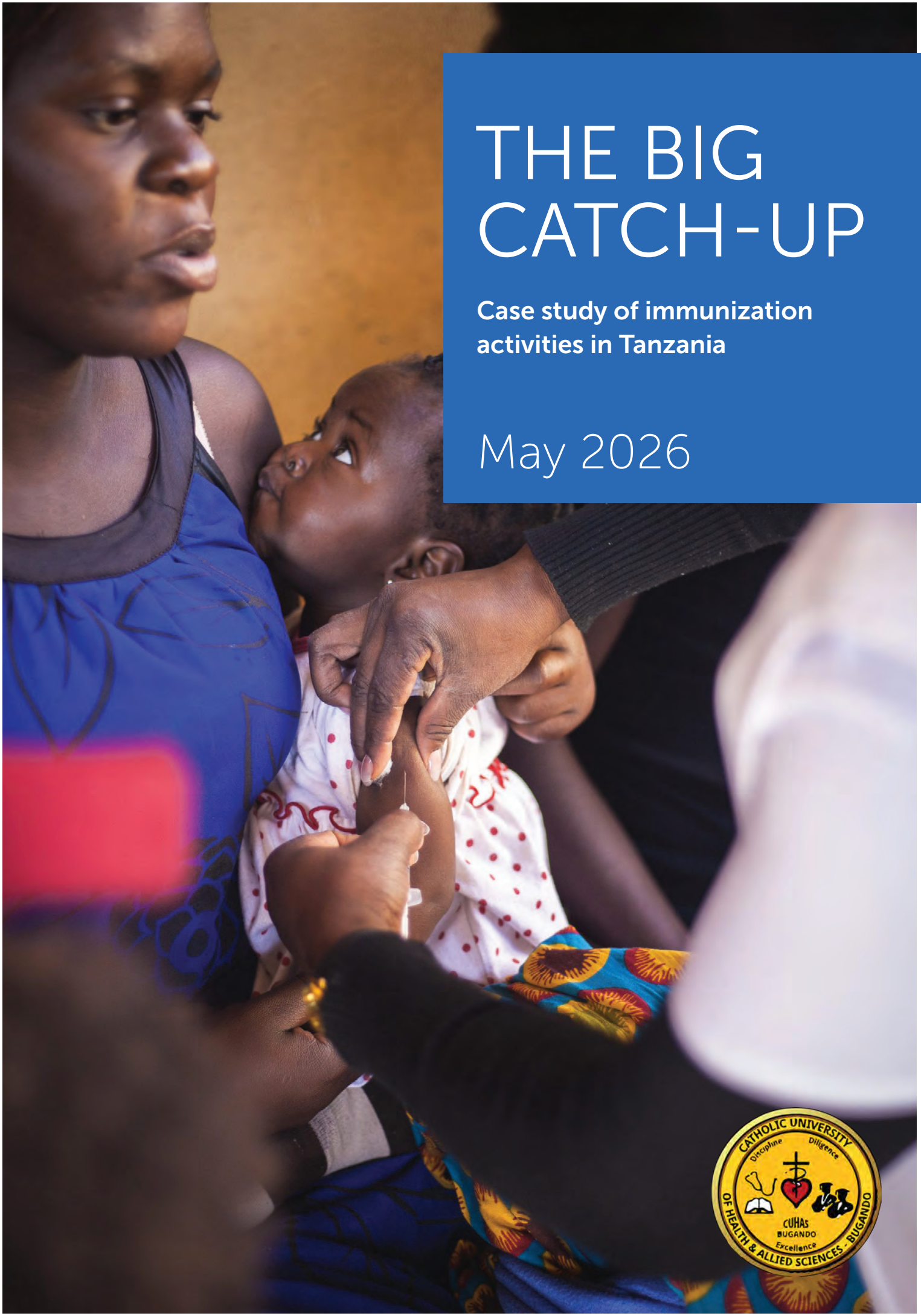

THE BIG CATCH-UP

Case study of immunization activities in Tanzania

May 2026

CATHOLIC UNIVERSITY OF HEALTH & ALLIED SCIENCES - BUGANDO
Discipline Diligence
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Abbreviations

Abbreviation	Full form
AEFI	Adverse event following immunization
ANC	Ante-natal care
BCG	Bacillus Calmette-Guérin vaccine
BCU	Big Catch-up
BeSD	Behavioural and social drivers' assessment
bOPV	Bivalent oral poliovirus vaccine
CHW	Community health workers
cMYP	Comprehensive multi-year plan
CSO	Civil society organization
EPI	Essential programme on immunization
FGD	Focus group discussion
HBR	Home-based record
HW	Health worker
IA2030	Immunization Agenda 2030
IAR	Intra-Action Review
ICC	Immunization inter-agency coordinating committee
IVD	Immunization and Vaccine Development
KII	Key informant interview
LQAS	Lot quality assurance sampling
MOV	Missed opportunity for vaccination
MCV	Measles containing vaccine
NBS	National Bureau of Statistics
NGO	Non-governmental organization
NIS	National immunization strategy
OCGS	Office of the Chief Government Statistician
ODK	Open-source data kit
OPD	Out-patient department
OPV	Oral poliovirus vaccine
PCCS	Post-campaign coverage survey
PCV	Pneumococcal vaccine
PHC	Primary health care
PI	Principal investigator
PIRI	Periodic intensification of routine immunization
PMC	Perennial malaria chemoprevention
RCA	Rapid convenience assessment
RCM	Rapid convenience monitoring
RI	Routine Immunization
RWG	Regional Working Group
SIA	Supplementary immunization activity
SOP	Standard operating procedures
TDHS	Tanzania demographic health survey
TimR	Tanzania immunization Registry
UI	Under-immunized
VIMS	Vaccine information systems
VPD	Vaccine-preventable disease
WUENIC	WHO/UNICEF Estimates of National Immunization Coverage
ZD	Zero-dose

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Tables and figures

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Executive summary

This case study on Big Catch-up on immunization activities in the United Republic of Tanzania employed a mixed-methods approach to document and analyze the country's experience on Big Catch-up (BCU) immunization initiative. **Tanzania was among the top 10 countries**, ranked sixth out of twenty-one countries in 2021, for having **the highest number of zero-dose (ZD) children.**

Methodology

The case study focused on three main areas: i) planning and implementation, ii) integration with routine services and ii) persistent immunization gaps and promising approaches. Retrospective data were reviewed to document strategic planning and operational implementation at national and subnational levels. The study utilized concurrent parallel mixed methods design in 7 selected regions and 16 district councils to collect data from 61 health facilities. The case study surveyed 281 healthcare workers and 976 caregivers. In-depth interviews (IDI) with key stakeholders at Ministry of Health (MOH), President Office Regional Administration Local Government (PORALG) and Ministry of Health Zanzibar, Regional, District levels and health facility levels were carried out. In addition, at the community focus group discussions (FGDs) were conducted with caregivers of children aged between 12 and 59 months. Analysis of immunization coverage data, service statistics, resource allocation metrics, monitoring indicators and community survey at national and subnational level was done.

Key findings

The BCU case study in Tanzania revealed the following in relation to the documentation of evidence: i) fragmented planning and coordination of engagement during BCU activities implementation (limited evidence of engagement of all stakeholders during planning and implementation of the BCU), ii) fragmented evidence on the BCU monitoring implementation (clear BCU monitoring indicators were in place in the BCU recovery plan but limited tracking of these indicators over time) and iii) at the beginning of the BCU, implementation of the data collection mechanisms were not tailored to segregate children by age (>12 months or <12 months) and those vaccinated during catch up activities.

Regarding target determination, there was a clear mechanism to establish estimates of un- and underimmunized children in eligible age ranges for catch-up (0 to 59 months) and thereby establish BCU targets. BCU targets which were based on the health facility data, but the system lacked validation to verify if the targets were realistic and did not

segregate targets by age categories (<12 or >12 months). In addition, the councils implemented context specific programmatic strategies to reach the missed children that included but were not limited to increased number of targeted outreaches, door to door mobilization and increased number of vaccination days at a fixed site (more sessions per week). Based on available council data, of the 1,152,681 children identified as having zero-dose immunization status, 843,708 (73.2%) were reached and vaccinated with Penta1 by the end of 2024. An additional 17,141 children aged over one year received Penta1 between January and July 2025.

Regarding factors contributing to ZD and UI, i) there was a disparity in vaccination services between rural and urban areas (more daily services in urban), ii) geographical and economic activities variations still contributed to missed vaccination (pastoralists, small businesses in urban), iii) caregivers and healthcare workers' perception towards vaccination was very positive which may provide an opportunity to improve services, iv) availability of vaccination services was considered by the caregivers as critical to address the problem of missed children, v) the healthcare workers knowledge and practices in relation to BCU was still low, vi) general acceptable practices in relation to screening and administration were noted in more than 70% of the observations and vii) HW customer care was poor in some health facilities contributing to caregivers not taking their children for vaccination.

The Afya campaign system, a digital reporting system for immunization campaign data, introduced during BCU was key in segregating BCU data from routine data. The effective engagement of community healthcare workers (CHW) was critical in community mobilization and reaching missed children eligible for catch-up. Furthermore, the integration of campaign activities/training was effective in resource utilization. As documented in Tanzania Demographic Health Survey (TDHS) 2022, the proportion of children aged 12–23 months and age 24–35 months who were fully vaccinated with basic antigens was still low in the surveyed councils; this could be considered among the indicators of the RI. The use of vaccine information systems (VIMS) and Tanzania immunization Registry (TimR) systems which have been revised to capture client-based data will support the implementation of the above recommendation and ensure the relevant indicators to monitor programme performance, vaccination coverage and ZD children depending on local diseases outbreaks.

In October 2025, the case study findings were disseminated to national and subnational technical stakeholders (~90 participants) to validate the results and to obtain their views on the process and findings. Stakeholders commended the team and noted the importance of the results that have documented the BCU implementation in Tanzania. Stakeholders emphasized the importance of minimizing data inconsistencies by using standardized vaccination digital data collection tools for routine and supplementary immunization activities. These tools should capture vaccination data according to age categories and specific antigens. These would allow the precise documentation and the use of a unified comprehensive monitoring framework that triangulates data different sources (coverage data, procurement data, vaccine-preventable disease data, metadata). This immunization data framework in turn will serve as guidance for the councils to plan and budget local vaccination activities. In addition, the stakeholders emphasised the importance of the training and mentorship of health care workers and CHW which was also highlighted by the case study.

Introduction

The Big Catch-Up: An Essential Immunization Recovery Plan[1] is a strategy of intensified immunization activities aimed at catching up children on missed antigens and doses and reducing the number of unimmunized and UI children around the world. The Big Catch-Up (BCU) was developed to address persistent inequities and gaps in immunization coverage, which were further exacerbated by the COVID-19 pandemic.

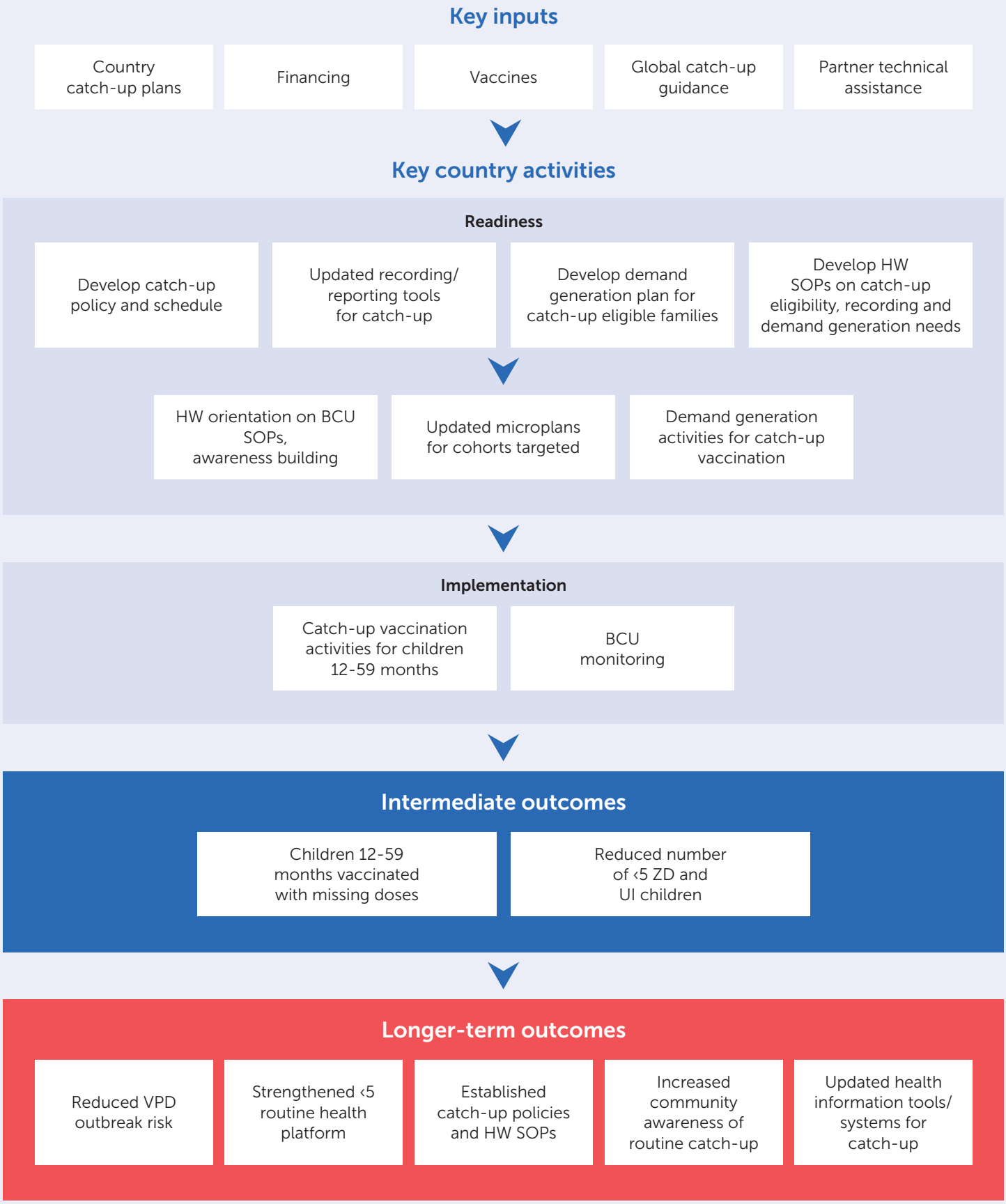
The initiative seeks not only to recover coverage lost during the pandemic but also to strengthen routine immunization systems (RI) and institutionalize catch-up strategies to reach ZD and UI children. Country-level case studies are key component of the learning approach that supports evidence generation around catch-up vaccination.

BCU aims to **catch up** with un- and UI children born between 2019 and 2022, **restore** immunization coverage to at least 2019 levels[2], and **strengthen** immunization systems. Further, the BCU aims to catalyze policy and schedule change, update recording and reporting tools, generate demand for catch-up among eligible families, and support CHW with skills and tools for catch-up. As a time-bound initiative, the BCU encourages countries to institutionalize catch-up to continuously reach children who miss timely doses as well as strengthen immunization services within primary health care (PHC) systems, improve resilience and support progress to meet the Immunization Agenda 2030 goals and objectives. The overall Theory of Change (TOC) for essential catch-up vaccination captures the inputs and activities necessary to reach children who have missed vaccines and overall strengthen RI systems (Figure 1).

1. World Health Organization, United Nations Children's Fund and Gavi, the Vaccine Alliance. The Big Catch-Up: An Essential Immunization Recovery Plan for 2023 and Beyond. New York: WHO, UNICEF and Gavi, 2023

2. https://iris.who.int/server/api/core/bitstreams/56fa2a93-2544-4a04-a206-5405aa56be4d/content, accessed October 2025

Figure 1: Theory of change for essential catch-up vaccination



Source: WHO

The BCU has received substantial financial and technical support from Gavi, the Vaccine Alliance, and there is a collective interest in generating and sharing evidence and lessons from country experiences with BCU implementation. A monitoring, evaluation and learning (MEL) strategy that reflects the variability and constraints of existing health information and records systems has been developed and implemented to track progress at global, regional and national level. The MEL strategy includes readiness monitoring, leveraging administrative information systems, targeted assessments and real-time monitoring, case studies and surveys.

1.2 BCU case studies

BCU case studies were included in the overall BCU MEL strategy to provide an in-depth understanding of the "how" and "why" of BCU planning and implementation, plans for institutionalization and the persistent factors that contribute to missed vaccination. Standard guidance[3] was developed and disseminated, including through the TechNet platform, to capture national and sub-national experiences with BCU and generate lessons for strengthening immunization services and PHC. The Alliance for Health Policy and Systems Research (AHPSR) partnered with the Immunization, Vaccines and Biologicals (IVB) unit of WHO to support case studies of BCU immunization activities in several countries in support of the overall MEL strategy for BCU. Country partners were selected to carry out the case studies in five different countries, with a specific focus at national or subnational level as indicated below:

- **National focus:**
  - Cameroon - Evidence for Sustainable Human Development Systems in Africa (EVIHDAF)
  - United Republic of Tanzania – Catholic University of Health and Allied Sciences (CUHAS) and Afya Intelligence
  - Yemen – Building for Development
- **Subnational focus:**
  - Nigeria (Bauchi and Rivers states only) – Brooks Insights and Health Policy Research Group, University of Nigeria-Enugu
  - Pakistan (Punjab and Sindh provinces only) – Centre for Economic Research, Pakistan, and RAYN

1.3 Tanzania immunization landscape

The United Republic of Tanzania (Tanzania) has an estimated population of 61,280,743 people with an annual birth cohort of 2,213,094 children[4]. As of December 2024, Tanzania has a total of 195 councils and 8,355 health facilities providing RI services, of which 8,159 are in Tanzania Mainland and 196 in Zanzibar. The country routine vaccination schedule contains nine vaccines to protect against 14 vaccine-preventable diseases (VPDs). Based on the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC), vaccination coverage during years before the COVID-19 pandemic (2016-2019) has been nearly at or over 90% for the children below one year for all doses except for measles-rubella second dose (MR2) and human papillomavirus vaccine (HPV).

During the COVID 19 pandemic, there was a decrease in the coverage of all vaccine doses dipping below 90% with increase in the number of ZD children[5]. The vaccination coverage varied between regions, districts, and socioeconomic characteristics. The number of districts with a DTP3 coverage of less than 80% increased from 8 districts in 2019 to 20 in 2021. WUENIC data placed Tanzania among the top 20 countries with nearly half a million children un- and UI in 2021. In addition, in Dar es Salaam, a study identified 1,226 ZD in ten health facilities in Ilala and Kigamboni as of December 2021[6].

3 Big Catch-up Task Team and the Data Strengthening and Use Working Group. Case Study Guidance & Sample Tools for Monitoring and Learning from the Big Catch-up. Immunization Agenda 2030, 2024.
4 https://www.nbs.go.tz/uploads/statistics/documents/sw-1720088450-2022%20PHC%20Initial%20Results%20-%20English.pdf: Accessed 15th April 2025
5 https://www.immunizationagenda2030.org/images/documents/IA2030_Annex_FrameworkForActionv04.pdf: accessed 30th April 2025
6 Sambayuka, B., Mwendo, E., Babyebonela, L., Kisanga, J. A., Marandu, S., Tinuga, F., ... & Guillot, A. (2023). Improving Urban Immunization and Reducing the Zero-dose Children: Results from Implementation Study in Dar es-Salaam, Tanzania. Adv. Prev. Med. Health Care, 6, 1042).

Tanzania participated in the BCU to address backsliding of immunization coverage during the COVID-19 pandemic. In Tanzania, the BCU initiative aimed at i) increasing overall population immunity, including cohorts beyond one year of age, hence lowering the risk of VPD outbreaks, ii) reducing dropouts, iii) integrating migrants, refugees and other mobile populations into the national immunization system, iv) encouraging home based record retention and practicing of presenting these at every health contact, v) improving immunization system resilience, and vi) reducing a need for and frequently of costly campaigns to close immune gaps.

In July 2022, an increase in confirmed measles cases was observed and a measles outbreak was declared on 15th August 2022[7]. The outbreak was confirmed in 27 regions and 86 district councils. In line with the BCU, two rounds of Periodic Intensification of RI (PIRI) activities were conducted in February and March 2023 in response to the growing number of ZD children and measles outbreaks. The activities focussed on all antigens, including bivalent oral poliovirus vaccine (bOPV), Rotavirus vaccine (Rota), inactivated poliovirus vaccine (IPV), measles-containing vaccine (MCV), PCV (pneumococcal conjugate vaccine), and Pentavalent vaccine (comprised of diphtheria, tetanus, pertussis, hepatitis B, and haemophilus influenzae type b). In total, 22 regions, 118 councils, and 4,780 health facilities were capacitated and involved in the PIRI implementation[8].

Despite the documentation of the success story in relation to the BCU[9], a number of challenges were highlighted during the BCU implementation, these included but were not limited to: i) limited healthcare worker understanding around late/delayed vaccination and how to determine eligibility, ii) lack of national guidelines regarding appropriate minimum intervals and alternative schedules during early phases of implementation, iii) inadequately designed data collection tools to capture age-segregated data associated with delayed/late vaccination during 2022 catch up activities early roll-out, iv) concern about wastage and/or vaccine supply management, v) concurrent outbreaks of polio and measles with focused reactive supplementary immunization campaigns (SIAs), vi) Human Papillomavirus (HPV) vaccination multi-age cohort (MAC) campaign, and vIi) financial sustainability.

This case study focuses on three main areas and is guided by specific research questions (Table 1): i) planning and implementation, ii) integration with routine services and iii) persistent immunization gaps. It includes all infant and childhood antigens since Tanzania was, in 2021, among the top 10 countries with the highest number of ZD children. The case study also documents the existing barriers to the immunization program which might have contributed to low coverage and equity of RI. This will be achieved through a thorough desk review that will include the reference to Tanzania's latest EPI Review (2024). The results are intended to inform the design of innovative approaches on how to integrate catch-up activities into RI.

ZD children in Tanzania are children who have not received the first dose of diphtheria, tetanus, and pertussis-containing vaccine (DTP1) by the end of their first year of life.

7. Michael F, Mirambo MM, et al. Trends of measles in Tanzania: A 5-year review of case-based surveillance data, 2018-2022. Int J Infect Dis. 2024 Feb; 139:176-182. doi: 10.1016/j.ijid.2023.12.007. Epub 2023 Dec 18. PMID: 38122965; PMCID: PMC10784152.
8. Ministry of Health: Immunization Recovery Plan (2023-2025): April 2023
9. https://www.gavi.org/vaccineswork/tanzanias-big-catch-gains-ground accessed 21st April 2025)

Table 1: Research questions for Tanzania's BCU case study

Areas of study	Research questions
Planning and Implementation	• How were missed children identified and prioritized across different contexts? • What implementation adaptations were required between high-density urban and dispersed rural settings?
Integration with Routine Services	• How has Tanzania transitioned BCU approaches into sustainable routine practices? • What systems changes were put in place to support integration with primary health care delivery?
Immunization gaps	• What social, economic, and geographic factors contribute to ongoing immunization gaps? • What innovative approaches successfully reached previously unreached populations?

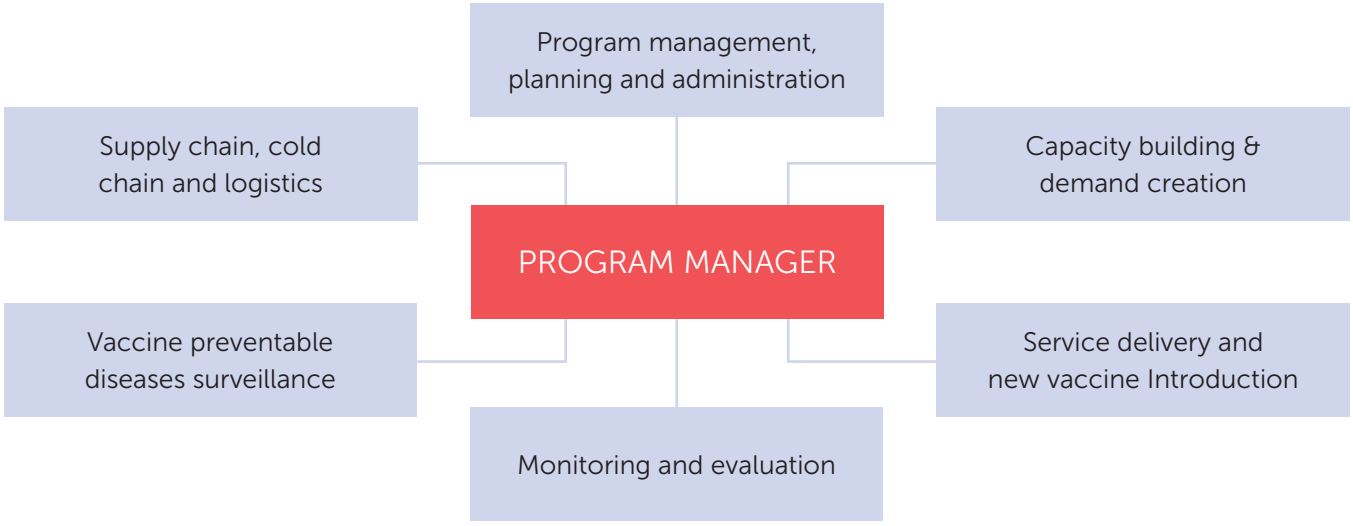
Therefore, this case study aimed at summarizing the essential catch-up vaccination results, the lessons learned, and next steps to sustainably reach ZD and UI children as part of the immunization services and PHC.

1.3.2 Tanzania immunization landscape

The Immunization and Vaccine Development (IVD) Programme, under the Ministry of Health, is responsible for the overall management and coordination of RI activities. The programme is led by a Program Manager and organized into six functional units: Program Management, VPD Surveillance, Service Delivery, Demand Generation, Supply Chain Management, and Monitoring and Evaluation each contributing to the achievement of national immunization objectives detailed in the national immunization strategy (NIS) 2021-2025 (Figure 2). The programme financing is based on the modality for all vertical programmes with funding from donors (70%) and government (30%). All costs related to implementation at subnational level (human resources, infrastructure, services) are financed by the government.

The Tanzania's immunization programme provides protection against 14 VPDs through a comprehensive set of strategies that include RI, PIRIs, and SIAs. These coordinated efforts are designed to protect individuals and communities by reducing disease transmission, morbidity, and mortality associated with VPDs.

Figure 2: Tanzania immunization program structure



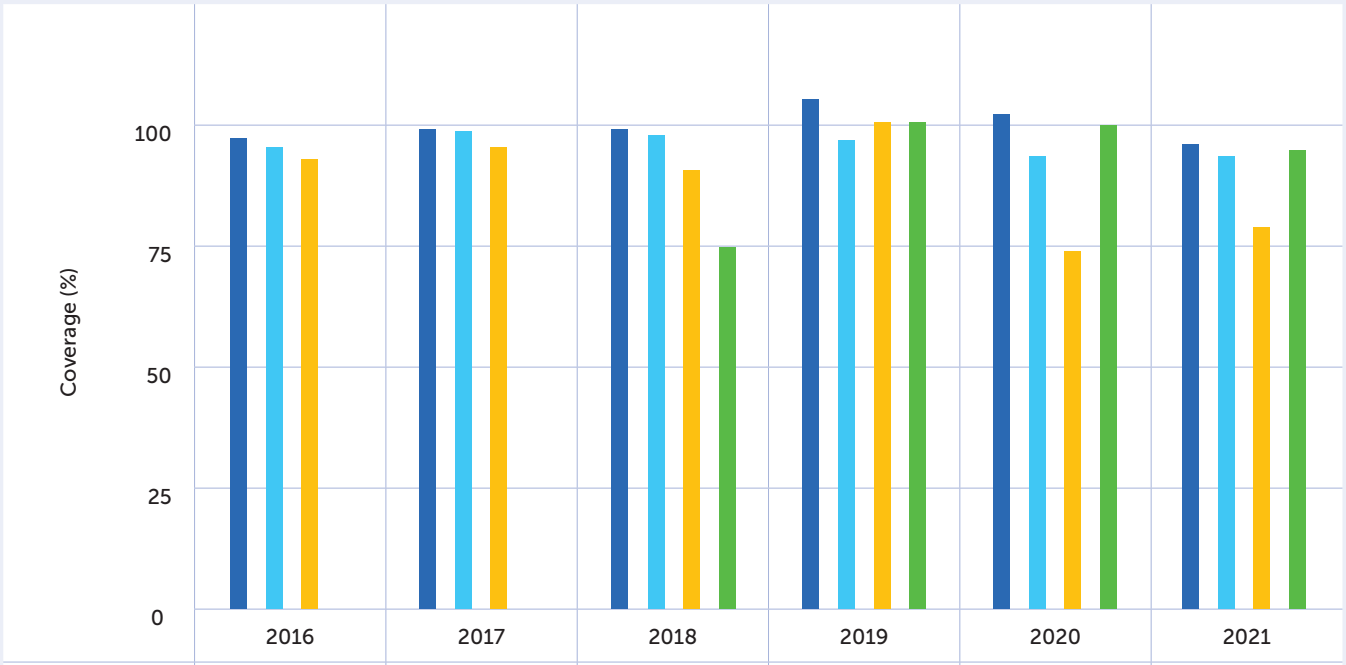
1.3.3: Effects of the COVID-19 Pandemic on the Health System and the Immunization Programme

The COVID-19 pandemic significantly affected Tanzania's health system, with direct and indirect consequences on RI service delivery. During the early phases of the pandemic in 2020 and 2021, health facilities experienced temporary service interruptions due to infection-prevention measures, redeployment of staff to COVID-19 response activities, and supply chain delays. Caregivers' fear of infection and mobility restrictions led to a decline in attendance for immunization sessions. Consequently, the number of immunization sessions, conducted for both fixed and outreach, decreased, contributing to an accumulation of ZD and UI children across the country. The analysis of the vaccination trend for Bacille Calmette-Guérin (BCG), bivalent Oral Polio Vaccine (bOPV), Diphtheria Tetanus Pertussis, Hepatitis-B and Hib (DTP-HepB-Hib), measles-rubella (MR), Pneumococcal Conjugate Vaccine (PCV), and Rota vaccines showed a sharp decline by February 2021[10].

Developed by Ministry of Health the Tanzania Immunization Recovery Plan (2023–2025) highlights that the COVID-19 pandemic had a profound impact on the country's immunization programme, worsening pre-existing system and increasing access challenges. The diversion of health resources toward pandemic response activities such as testing, contact tracing, and mass COVID-19 vaccination campaigns redirected critical attention, funding, and human resources away from RI services. Consequently, RI stock distribution delays, intermittent stockouts at health facilities, and the suspension of outreach services were frequently reported, especially in remote and underserved areas. On the demand side, movement restrictions, economic strain, and caregivers' increased focus on livelihood recovery limited attendance at immunization sessions. Additionally, misinformation and safety concerns linked to the COVID-19 vaccine contributed to declining community trust in immunization overall. These effects were compounded by limited engagement of local political leaders,

10. Sangeda RZ, James D, Mariki H, Mbwambo ME, Mwenesi ME, Nyaki H, Tinuga F, Manyanga DP. Childhood vaccination trends during 2019 to 2022 in Tanzania and the impact of the COVID-19 pandemic. Hum Vaccin Immunother. 2024 Dec 31;20(1):2356342. doi: 10.1080/21645515.2024.2356342. Epub 2024 May 23. PMID: 38780570; PMCID: PMC11123454.

Figure 3: Trend of immunization administrative coverages for vaccine antigens given at the same schedule (2016 - 2021)



	2016	2017	2018	2019	2020	2021
Penta 3	97	99	99	105	102	96
PCV 3	96	99	98	97	94	94
OPV 3	93	96	91	101	74	79
IPV 3			75	101	100	95

inadequate operational funding, and suboptimal supportive supervision, all of which constrained the performance of the immunization programme. The cumulative impact of these factors resulted in declining coverage for several childhood vaccines with significant decline in 2021 (Figure 3), widening immunity gaps, particularly for antigens administered beyond the first year of life.

The pandemic also disrupted global supply chain operations, delayed vaccine shipments and increased risks of stock imbalances. CHW' workload intensified, particularly as facilities balanced COVID-19 response activities with essential services. The pandemic period highlighted the fragility of data systems, with delays in reporting and limited visibility of ZD children due to manual aggregation processes.

There were more districts with DTP3 coverage of equal or above 90% in 2019 and 2020. In 2021, the number of districts dropped from 170 (88%) of districts in 2020 to 144 (73.8%) in 2021. Relatively, the number of districts with DTP3 coverage below 80% increased from 8 (4%) districts in 2020 to 20 (15.3%) districts in 2021. The number of districts attaining the target performance for MR1 declined from 153 (78.5%) in 2020 to 111 (56.9%) in 2021, while the number of councils with MR1 coverage below 80% doubled in 2021 compared to 2020 (34 (17.4% vs 16 (8.2%) respectively).

1.3.4 Service delivery modalities, human resources, and system adaptations post-COVID19

Tanzania's immunization programme operates through a tiered health system that delivers vaccines via fixed, outreach, and mobile services, ensuring broad geographic coverage across rural and urban settings. In rural areas, service delivery primarily depends on outreach activities to compensate for long travel distances between communities and health facilities. Health care workers frequently conduct monthly outreach sessions to reach the community's populations. Local leadership structures, including village executives and community volunteers, play a pivotal role in mobilizing households for vaccination services. In urban settings immunization services are predominantly facility-based. Although health facilities are more accessible, high population mobility, overcrowding, and socio-economic disparities contribute to missed opportunities for vaccination[11,12].

CHWs play a critical role in both rural and urban settings by extending the reach of health services, including immunization. They often act as the first point of contact for communities, conducting outreach to ensure children receive routine vaccines and providing essential health education. They contribute to a broad range of health services, including maternal and child health, nutrition counseling, disease surveillance, and health promotion, making them a vital link between the health system and the population they serve.

11. Jejaw, M., Tafere, T.Z., Tiruneh, M.G. et al. Three in four children age 12–23 months missed opportunities for vaccination in Sub-Saharan African countries: a multilevel mixed effect analysis of demographic health and surveys 2016–2023. BMC Public Health 25, 62 (2025). https://doi.org/10.1186/s12889-024-21273-3
12. Bendera A, Nakamura K, Tran XMT, Kapologwe NA, Bendera E, Mahamba D, Meshi EB. Persistent socioeconomic disparities in childhood vaccination coverage in Tanzania: Insights from multiple rounds of demographic and health surveys. Vaccine. 2025 Apr 11;52:126904. doi: 10.1016/j.vaccine.2025.126904. Epub 2025 Feb 24. PMID: 39999540.

Study design and methods

This study involved a cross-sectional design utilizing a mixed approach, guided by the BCU Theory of Change and existing case studies research frameworks. The study made use of multiple data sources, including document reviews, secondary data analysis, key informant interviews (KIIs), focus group discussions (FGDs), participant observations, and structured questionnaires. Qualitative data was collected through KIIs with government officials, health managers and healthcare providers. FGDs were conducted with community members, including village leaders and parents / caregivers of un- or UI children, to understand perceptions and barriers to immunization. Vaccination sessions observations were conducted to capture real-world practices during vaccination. Quantitative data was obtained through surveys administered to CHW and parents or caregivers, complemented by secondary analyses of RI.

2.1 Study objectives

The case study objectives were:

- To determine how BCU activities are/were planned, implemented and monitored to identify and vaccinate children who missed one or more doses of nationally recommended vaccines;
- To describe how catch-up activities have been established and institutionalized into RI and PHC services; and
- To determine what the factors are contributing to the continued existence of individuals not reached by immunization services.

2.1.1 Main objective

This case study summarises the essential catch-up vaccination results, lessons learned, and provides the next steps to sustainably reach ZD and UI children in the United Republic of Tanzania.

2.1.2 Specific objectives of the case study

1. To document the evidence from the country experience of catch-up activities on the planning, implementation, monitoring and evaluation of BCU activities.
2. To determine how the target numbers of the missed children were, and strategies strengthened and institutionalized as part of the immunization services and PHC to sustainably reach those missed.
3. To explore the social, economic and geographical factors influencing the persistence of the individuals who are still unreached with vaccination through either on time vaccination or catch-up.
4. To determine the transitioned BCU approaches into RI practices.
5. To determine the system adaptations that supported the integration of BCU activities in primary health care delivery.
6. To document innovative approaches that were used to reach previously unreached children.

2.2 Study design and study population

A mixed methods approach was used to assess the strategic planning, rollout and implementation of the BCU activities at national and subnational levels over the period of eight months (May to December 2025). To capture the insights of policy makers, caregivers and community, the design integrated both qualitative and quantitative approaches. A desk review involved the extraction of key information using a checklist to capture relevant information to answer the study objectives. Quantitative data were collected through structured questionnaires administered to caregivers of children under the age of five years and healthcare workers. For the qualitative component, semi-structured interviews were administered to a selection of immunization stakeholders (managers, partners, CHW), and FGDs were carried out with caregivers and community leaders.

2.3 Sampling

To assess the BCU immunization activities targeting ZD and UI children in Tanzania post-COVID-19, we employed a three-stage cluster sampling method to ensure geographical and performance-based representativeness.

Figure 4: Selected regions for Big Catch-up case study data collection

A representative sample of 7 regions (Figure 4) was done across Tanzania's geographical zones. Five from Mainland (one region from each of the five zones Central, Coastal, Lake, Northern, and Southern Highlands) and 2 from Zanzibar. The rationale for selecting seven regions from each geographical zone was to ensure equitable national representation while capturing a range of low to high performing in terms of vaccination coverage. Regions were selected based on their high burden of ZD children, as highlighted in the Tanzania Immunization Recovery Plan (2023–2025). This targeted sampling approach was intended to support a comprehensive assessment of the implementation of the Tanzania Big Catch-Up Plan, focusing on regions where intensified efforts were needed to reach underserved populations and improve immunization coverage (Table 2).

Table 2: Selected regions for Big Catch-up case study data collection in Tanzania

SNO	Zone	Region selected
1	Northern Zone	Arusha
2	Central Zone	Tabora
3	Eastern Zone	Pwani
4	Southern	Katavi
5	Southern Highlands	Mtwara
6	Unguja	Mjini Magharibi
7	Pemba	Kaskazini Pemba

Selection of Districts/Councils within each region Councils listed in Table 3 were selected based on their immunization performance coverage trends and ZD prevalence over the past three years with a mix of urban and rural settings to capture implementation challenges and successes being considered. Two councils were chosen from each region, one high-performing and one low-performing. The resulting list of the councils was then cross-referenced with the Tanzania Big Catch-Up Plan (2023–2025) to align with the 81 prioritized ZD councils, ensuring the sample reflects both performance extremes and national immunization priorities.

Table 3: Selected councils for Big Catch-up case study data collection in Tanzania

SNO	Region	Council	Location	Within 81 councils ZD catch up priority list plan?	2024 DTP3 Coverage% (administrative)
1	Arusha	Arusha Dc	Rural	No	110
		Karatu Dc	Rural	Yes	76
		Arusha CC	Urban	Yes	103
2	Tabora	Kaliua Dc	Rural	No	113
		Nzega Tc	Urban	No	93
3	Katavi	Mpimbwe DC	Rural	No	100
		Tanganyika DC	Rural	Yes	92
		Mpanda MC	Urban	No	95
4	Pwani	Kibaha MC	Urban	Yes	85
		Mafia Dc	Rural	Yes	97
5	Mtwara	Masasi DC	Urban	Yes	93
		Nanyamba DC	Urban	No	58
6	Kaskazini Pemba	Wete	Urban	Yes	115
		Micheweni	Rural	Yes	123
7	Mjini Magharibi	Mjini	Urban	Yes	114
		Magharibi A	Rural	Yes	93

Selection of Health Facilities from each selected district/council: **Three health facilities** (high, medium and low) were sampled, ensuring a mix of i) higher-performing facilities to extract best practices and refine intervention strategies, ii) moderate performing facilities and iii) lower-performing facilities to identify key barriers and areas for improvement. These facilities were identified through consultative meetings at the regional level. At each health facility, a random direction was used to select 20 households with children aged 12-59 months at the time of catch-up activities. The caregiver in each household was asked to respond to the questions and randomly one child of the specified age was selected if there was more than one child.

Selection of Healthcare workers for key informant interviews, a list of health facilities was generated from the selected districts. To select 10 healthcare workers (vaccination nurses) for interview from a total of 42 health facilities, systematic sampling was applied. One health care worker was selected from each chosen facility. A sampling interval (k) was generated by dividing 42 by 10, resulting in 4.2, which was rounded down to 4. A random starting number between 1 and 4 was chosen. From that point, every 4th facility on the list was selected until 10 facilities were identified. The vaccination focal person (nurse) from each of these selected facilities was included in the study.

At each health facility, at least three healthcare workers were surveyed depending on the size of the health facility. In summary, a total of 7 regions, 14 district councils, 42 health facilities, 126 health care workers and 840 care givers were estimated.

2.3.1 national and sub-national levels

To answer the questions: i) How BCU activities are/ were planned, implemented and monitored to identify and vaccinate children who missed one or more doses of nationally recommended vaccines? and ii) how catch-up activities can be established and institutionalized into RI and PHC services? An interview guide was developed for 42 key immunization stakeholders, including staff from IVD under the MOH mainland and IVD Zanzibar, PORALG and immunization implementing partners, who participated in catch up activities (Table 4).

2.3.2 Community level

A multistage sampling technique was employed to ensure a representative selection of caregiver communities within the BCU context. First, councils were stratified based on immunization performance into two categories: High and low coverage councils. From each category, a purposive sampling approach was used to select districts, prioritizing those with known hard-to-reach populations, such as rural villages, nomadic communities, and urban informal settlements. Within the selected districts, systematic sampling was applied to identify health facilities serving the community. Finally, a systematic random sampling method was used to recruit caregiver participants, ensuring an equitable distribution across different settings.

The survey was conducted with 976 caregivers of children 12 to 59 months to establish the immunization coverage and ZD if any to establish the extent of BCU activities. In addition, a survey of 281 health care workers was done. Furthermore, focused group discussions (10 FGDs of 6-8 people randomly selected from 84 communities segregated by gender) were conducted.

2.4 Data collection methods

2.4.1 data collection tools development and pretesting

Quantitative data were collected using kobo toolbox (https://www.kobotoolbox.org/), with questions adopted from the Case Study Guidance and Sample Tools for Monitoring and Learning from the Big Catch-up guideline. The questionnaire was customized to meet Tanzanian immunization structures and context and during the development of the tools participatory action research was used by involving the key stakeholders (policy makers and community). The questionnaires and other qualitative tools were pretested to ensure their relevance, reliability and consistency.

2.4.2 Qualitative and quantitative data collection

2.4.2.1 Desk review

A total of 21 reviewed documents were reviewed that included 6 strategy and 5 policy/guidelines documents and 10 reviews/reports of surveys dating from 2003 to 2025 **(Appendix 2)**. The review aimed at documenting the evidence from Tanzania experience of catch-up activities on the planning, implementation, monitoring and evaluation of BCU activities and identify the degree of institutionalization of catch-up activities. The review highlights how catch-up immunization activities have been planned, implemented and evolved over time, including plans and efforts to institutionalize

catch-up into routine services, and the opportunities and concerns to go forward.

Some of the documents reviewed included Tanzania Immunization Recovery plan (2023-2025), 2022 Tanzania Demographic Health Survey, REC Microplans, 2024 EPI Review report, 2024 Post MR campaign Coverage Survey report, BCU M&E frameworks and data collection Tools, Tanzania Immunization Policy, National Immunization Strategy (2021 -2025), Big Catch-up Standard Operating Procedures (2023), WHO UNICEF Estimates of National Immunization Coverage (WUENIC) report, 2022, Vaccine Preventable Diseases Surveillance database.

2.4.2.2 Secondary data analysis

This study employed a secondary data analysis approach utilizing existing RI datasets extracted from the Vaccination Information Management System (VIMS) and data obtained from periodic intensification (PIRI) exercises implementations. The PIRI regional data were compiled from standardized spreadsheets which were subsequently aggregated to generate national-level datasets. Data cleaning and validation procedures were performed to ensure completeness across sources before analysis. The analytical process integrated R programming language and Microsoft Excel for data management. Noting that the majority catch up activities occurred in 2023 (early phase recording and reporting tools not fit-for-purpose) and then in 2024 catch-up doses started being captured and continued/ extended into 2025.

Descriptive statistics, including proportions, means, and coverage rates, were used to summarize immunization indicators, while time-series analyses were conducted to assess trends in vaccination performance across years. Additionally, Geographic Information System (GIS) techniques were employed to generate spatial visualizations depicting geographic variations in vaccination coverage, ZD prevalence, and outbreak distribution across councils and regions.

2.4.2.3 Qualitative methods

Data collection sites for Key Informants' interviews

Qualitative data were collected in seven regions of the United Republic of Tanzania: 1. Arusha (Arusha city council, Arusha district council and Karatu district council); 2. Tabora (Kaliua district council and Nzega district council); 3. Pwani (Mafia district council and Kibaha district council); 4. Katavi (Mpanda municipal council, Tanganyika district council and Mpimbwe district council); 5. Mtwara (Masasi district council and Nanyamba town council); 6. Kaskazini Pemba (Micheweni and Wete); 7. Mjini Magharibi (Mjini and Magharibi 'A'). Collection of qualitative studies relied on key informants' interviews (KIIs) and FGDs.

Key Informants' interviews - (programme managers & partners)

Thirty-six (36) KIIs were held with programme managers and partners **(Table 4)**. These included Regional and District Immunization and Vaccine Officers (RIVOs and DIVOs) respectively in the study sites. KII guide with main and probing questions was used to solicit information from the key informants **(Appendix 3)**. The guide covered background information, involvement in immunization catch-up activities, situation, catch-up activities and the way forward. Face to face interviews with KIs were conducted by researchers using interview guide in Kiswahili with both main and probe questions. Permission to record the interviews using digital recorders was requested from informants.

Key Informants' interviews- (CHW)

Sixteen (16) KIIs were also held with CHW operating within vaccination units at selected health facilities in the study sites. KII guide with main and probing questions in *Kiswahili* was used to solicit information from CHW.

The interview guide **(Appendix 4)** for CHW covered background information, involvement in immunization catch-up activities, vaccination

services, timely vaccination, key questions on catch-up activities, missed opportunities and the way forward. Face to face interviews with the CHW were conducted by researchers using interview guide with both main and probe questions in Kiswahili. Permission to record the interviews using digital recorders was requested from informants.

Data collection sites for focus group discussions

Focus groups data were collected from Katavi (Mpanda and Mpimbwe district councils); Arusha (Arusha city council and Karatu district council); Tabora (Nzega and Kaliua district councils); Coast (Kibaha and Mafia district councils); Mtwara (Nanyamba district council); and Pemba (Wete).

Focus groups

FGDs were conducted in the selected districts for both methodological and logistical reasons. Methodologically, the KIIs with CHW and the caregiver questionnaires had already provided broad representation across districts, and the FGDs were intended to complement these data by exploring group norms and shared community perspectives. Logistically, it was not feasible to conduct FGDs with both genders in every district. For this reason, a subset of districts was purposively chosen, and one single-sex FGD was conducted in each to ensure depth of discussion, participant comfort, and practicality.

A total of ten (10) FGDs were held with male and female caregivers and community members in the selected villages (Tables 5 and 6). Groups were stratified by gender and age, with each consisting of 10 participants who had a child aged 12–59 months. Two researchers facilitated each session, one as the moderator and the other as the recorder using a semi-structured guide (Appendix 5). Discussion topics included background information, child health, vaccine confidence and benefits, vaccine compliance, missed opportunities and catch-up, and additional suggestions. Participants were encouraged to express themselves freely, and permission for audio recording was obtained from all participants.

Table 4: Key Informant interview participants in the case study of Big Catch-up immunization activities in Tanzania

Affiliation	N	Category
Program Managers/Officers/Vaccine Focal Persons	7	National
Grant Coordinator	1	National
Data Manager	1	National
Partners	4	National
Regional Immunization and Vaccination Officers (RIVOs)	7	Subnational
District Immunization and Vaccination Officers (DIVOs)	16	Subnational
Health care workers	16	Subnational
Total	**52**	
Sex		
Female	23	44.2%
Male	29	55.8%

Table 5: Sex distribution of FGD conducted

District	FGD
District 1	Male caregivers
District 2	Female caregivers
District 3	Male caregivers
District 4	Female caregivers
District 5	Male caregivers
District 6	Female caregivers
District 7	Male caregivers
District 8	Female caregivers
District 9	Male caregivers
District 10	Female caregivers

Observation

Furthermore, in each health facility, we used a mystery client approach to conduct vaccination session observation in 44 health facilities with about 43-160 children observed for 12 items to determine the vaccination practices **(Appendix 6)**. In addition, in 61 health facilities checklist was used to document availability of Big catch-up tools, vaccination schedule for older children (see Appendix 11 for catch-up vaccination schedule), Big catch-up guidelines, vaccination services timetable etc. For more information on the observation results, see Appendix 6b.

Table 6: Summary of FGD respondents

	Overall	Geographic area 1	Geographic area 2	Geographic area 3	Geographic area 4	Geographic area 5	Geographic area 6	Geographic area 7	Geographic area 8	Geographic area 9	Geographic area 10
Total number of FGD participants	94	10	10	8	10	10	8	10	8	10	10
Affiliation											
Parents / caregivers	94	10	10	8	10	10	8	10	8	10	10
Gender											
Female	48	10	-	8	-	10	-	10	-	-	10
Male	46	-	10	-	10	-	8	-	8	10	-

2.4.2.4 Quantitative methods

Data collection

Semi structured questionnaires **(Appendix 7)** were administered to caregivers from June to August 2025 to assess their awareness, accessibility, and uptake of immunization services within the BCU realm. The questionnaire captured key demographic information to better understand factors influencing immunization behaviour (Table 7). Additionally, the questionnaire captured vaccine-seeking behaviour, caregivers' knowledge of vaccination schedules, their willingness to vaccinate children, the sources of information about immunization and the vaccination status of their children.

Regarding healthcare workers, the questionnaire **(Appendix 8)** captured information regarding their qualifications, in service training and their practices in relation to immunization (on time and catch-up), the information that can be used to strengthen the technical skills of all CHW (Table 8).

Table 7: Social demographic data of caregiver/ children surveyed

Variable	Number of respondents	Percentage of respondents (%)
Geographical area		
Arusha CC	59	6.1
Arusha DC	60	6.2
Karatu DC	77	7.9
Kaliua DC	55	5.6
Nzega TC	62	6.4
Kibaha MC	90	9.2
Mafia DC	22	2.3
Masasi DC	61	6.3
Nanyamba TC	69	7.1
Mpanda MC	61	6.3
Mpimbwe DC	61	6.3
Tanganyika DC	60	6.2
Magharibi A	70	7.2
Mjini	50	5.1
Micheweni	59	6.1
Wete	60	6.2
Governance area		
Mainland	737	75.5
Zanzibar	239	24.5
Settings		
Rural	455	46.6
Urban	521	53.4
Child Age(Months)		
Mean	30.5	--
STD	13	--
12-23 months	360	36.9
24-59 months	616	63.1
Sex of the child		
Male	506	48
Female	470	52
Relationship of the respondents to the child		
Mothers	908	93
Others	68	7

Table 8: Social demographic data of health workers surveyed

Variable	Frequency	Percentage (%)
Sex		
Female	215	76.5
Male	66	23.5
Age (Years)		
Mean	36.7	
STD	10.3	
Min	22	
Max	59	
Councils		
Arusha CC	16	5.7
Arusha DC	17	6.0
Karatu DC	19	6.8
Kaliua DC	17	6.0
Nzega TC	21	7.5
Mpanda MC	18	6.4
Mpimbwe DC	20	7.1
Tanganyika Dc	14	5
Kibaha MC	20	7.1
Mafia DC	25	9.0
Masasi DC	13	4.6
Nanyamba TC	16	5.7
Mjini	17	6.0
Magharibi A	13	4.6
Micheweni	16	5.7
Wete	19	6.8
Residency		
Urban	140	49.8
Rural	141	50.2
Level of HFs		
Dispensary	132	47
Health Centre	108	38.4
Hospital	41	14.6
Professional training		
Nurses	205	73
*Others	76	27
**Nurses of levels (n=205)		
Enrolled nurse	134	65.4
Registered nurse	71	34.6

2.5 Data analysis

Data were analyzed and triangulated iteratively to address the case study's overall objectives.

2.5.1 Qualitative data

Data analysis plan for qualitative studies
Content and thematic analysis was employed on qualitative data which was collected through KIIs and FGDs. The sample consisted of 16 KIIs with healthcare workers, 35 KIIs with Programme managers, Regional and District Immunization and Vaccine Officers, and 10 FGDs with both male and female caregivers in the regions and districts of the United Republic of Tanzania.

In data processing and analysis, the following steps were followed:

Step 1: Data organization
This first step involved reading and re-reading data to familiarize and organize it in a systematic and structured way for meaningful analysis.

Step 2: Developing codes and code book
A deductive and inductive coding strategies (hybrid coding) to arrive at the code to be used in the analysis was used. Data were arranged into broad categories otherwise known as 'nodes''- (parent node, child node and grand-child node) using a qualitative software known as 'Dedoose'. After going through the KIIs and FGDs guides and transcripts, the codes in **Appendix 9** were obtained.

Step 3: Coding data (populating the nodes with data from transcripts).
This step involved transferring pieces of information from transcripts.

Step 4: Data Reduction and themes identification
This step involved grouping coded data into a manageable size by identifying common themes, patterns or categories.

*Medical attendants (38), clinical officers (6), Medical Doctors (17), Public Health Officers (4), Environmental Health Officers (2), Laboratory technician (2), Maternal and child health Nurse (3), CHW (4)
**Enrolled Nurse are nurses with certificates while registered nurses are those with diploma and above

Step 5: Displaying data
This step involves presenting data in a way that is meaningful and readily accessible to others (tables, diagrams, flowcharts or matrices that summarize the data or presenting quotes or narratives that illustrate key themes or categories).

Step 6: Data interpretation and drawing conclusions (at least two people)
This step involved interpreting data and drawing conclusions in support with quotations from interviewed participants.

2.5.2 Quantitative data

The quantitative data were analyzed using STATA version 15, responses from caregiver surveys and CHW survey were analysed using descriptive statistical frequencies and percentages. Percentage of children who received specific vaccines at any time before the survey according to a vaccination card (Card retention) was done to establish "Basic antigens" and "Full coverage" as per schedule which were considered as main outcomes.

The full vaccination of the basic antigen was defined as percentage of children who received specific vaccines at any time before the survey (according to a vaccination card). To have received all basic antigens, a child must receive at least: one dose of BCG vaccine, which protects against tuberculosis, three doses of bOPV, IPV1, three doses of DPT-containing vaccine, which protects against diphtheria, pertussis (whooping cough), and tetanus and one dose of MR. The IPV2 was introduced May 2025 at 9 months of age and was not included in the analysis.

Fully vaccinated according to national schedule was defined as percentage of children who received specific vaccines according to their age at any time before the survey (according to a vaccination card). To be fully vaccinated according to the Tanzania national schedule, a child must receive the following: one dose of BCG vaccine, OPV (birth dose), three doses of OPV and one dose of IPV, three doses of DPT-HepB-Hib, three doses of PCV, two/three doses of RV, one dose of MR plus second dose of MR for those 18 months and above.

An additional analysis was the coverage by residence, region sex, regions, councils, education, etc. Knowledge, practices, and perception of caregivers and health care workers were estimated based on the scores of the specific questions. Overall observations of practices of vaccination sessions in 44 health facilities were done with number children observed in 12 practices items range from 43 to 160.

2.6 Ethical considerations

Ethical approvals were sought both at the institutional level, the Joint BMC/CUHAS Ethics & Review Committee with no CREC/932/2025, the National Health Research Ethics Committee (NatHREC) with certificate number NIMR/HQ/R.8a/Vol.IX/4978 and Zanzibar Health Research Ethics committee (ZAHREC) no ZAHREC/01/PR/JULY/2025/16, BOX 236 Zanzibar. The research was conducted in accordance with the national and local regulations for the use and protection of data. The written informed consent was sought from all participants and measures were taken to ensure confidentiality of data. Respondents were free to remove their data from the study until a set date (i.e. prior to dissemination and publication). In addition, the permission to conduct the study was sought from President's Office, Regional Administration and Local Government Tanzania (PO-RALG), Office of the Chief Government Statistician (OCGS) (Zanzibar) and the Second Vice President, Zanzibar.

2.7 Stakeholder consultations

Before conducting the study, an inception meeting that involved programme managers from Ministry of Health Mainland and Zanzibar), managers from PORALG, Regional Medical officers (RMOs), District Medical Officers (DMOs), Regional Immunization Officers (RIVOs) and District Immunization Officers (DIVOs), United Nations Children's Fund (UNICEF), World Health Organization (WHO) representing immunization partners was conducted (Figure 5).

During the stakeholders meeting, the following resolutions were made:

- **Immunization data:** Administrative data should be used as the core data source for evaluation due to its accessibility and operational relevance.
- **ZD clarification:** Immediate efforts were needed to standardize the definition and identification of ZD children.
- **Campaign lessons for RI:** Practices from the BCU campaign should directly inform and strengthen RI
- **Community engagement:** Stronger and institutionalized engagement with community actors is essential for a sustainable immunization programme.
- **Regular PIRIs:** Quarterly PIRIs must be supported and integrated into planning and funding cycles.
- **Training focus:** Capacity building should target both campaign and routine staff to ensure skill transfer and continuity.

Study limitations

This case study could be affected by a number of limitations. First, given the cross-sectional nature of the study, it is difficult to establish a fully causal relationship between outcomes and identified factors since both were measured at the same time. Therefore, it is less likely to exclude reverse causality since immunization outcome could have preceded some of the drivers such as areas with historically low immunization performances and ZDs. Second, there are several areas of potential bias. For example, the purposive selection of the regions and participants might have introduced some selection bias. Although difficult to rule out completely, health facilities and respondents such as government officials who actively participated in BCU might have overrepresented and potentially skewed our findings towards a successful implementation.

Likewise, self-reported data from caregivers and health care workers might have influenced the overall interpretation and performance of the BCU by recall and bias and social desirability. Also, observer bias cannot be excluded from our study despite data collectors receiving rigorous training for the survey. Interviewers could have been influenced by their preconceived notions about participants and asking questions in a modified way. Third, this study relied on secondary data from the routine health information systems. These data may contain gaps in reporting delays and inconsistencies in indicators' definition that may affect regional and subnational comparability and the precision of the findings. In addition, some information, like meeting proceedings, was not accessed to confirm a collaborative planning of activities.

Figure 5: Group photo during Inception workshop

Findings

3.1 Secondary data analysis

3.1.1 Epidemiology of VPDs for which vaccination is recommended as part of the national immunization programme

Epidemiological analysis of surveillance data for VPDs revealed a close relationship between measles incidence and immunization performance, particularly in relation to the second dose of the measles-rubella vaccine second dose (MR2). The spatial distribution map of MR2 dropout and measles outbreaks between 2022 and 2024 demonstrated clear geographic clustering of vulnerability (Figure 6). Councils with high MR2 dropout rates corresponded closely with areas that reported recurrent measles outbreaks, underscoring the direct link between incomplete vaccination and disease transmission.

Figure 6a. MR2 Dropout (2021-2024)

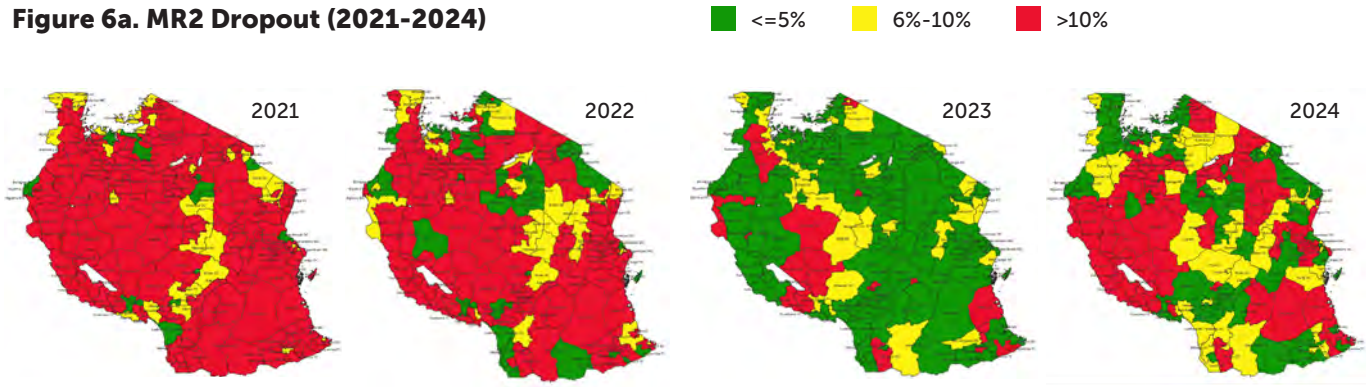
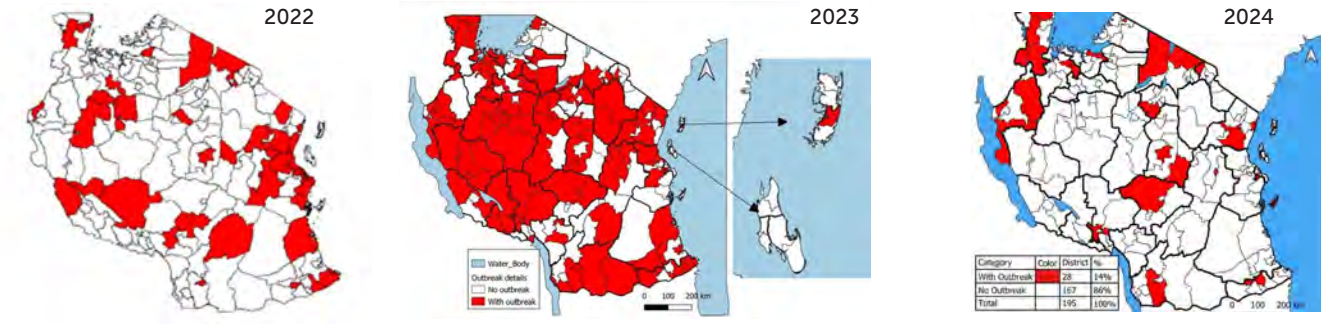


Figure 6b. Measles outbreaks (2022-2024)

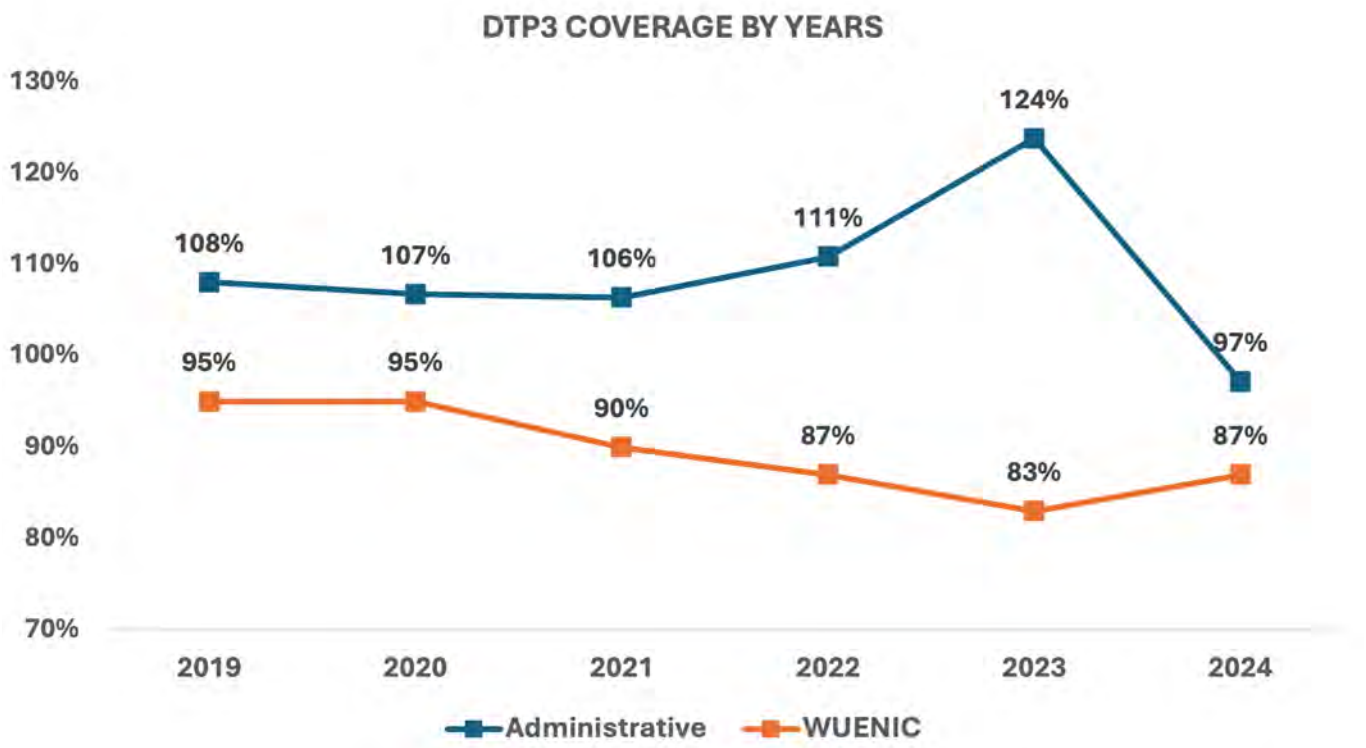


3.1.2 Coverage of childhood immunizations

Tanzania has made notable progress in sustaining high immunization coverage across most childhood antigens over the past 5 years. Prior to the onset of the COVID-19 pandemic, administrative data indicated that the country consistently achieved coverage levels exceeding 90 percent for key primary series antigens, including DTP1, DTP3 and MR1 among children under one year of age. However, based on WUENIC official coverage estimates, there was a disruption of the trajectory during COVID-19, leading to temporary declines in coverage across multiple antigens. Limited access to health facilities, diversion of health resources toward the pandemic response, and reduced caregiver confidence in visiting health facilities collectively contributed to interruptions of service delivery. The estimates indicated a drop in third dose Pentavalent vaccine (DPT3) coverage to below 90 percent in 2021, marking the first significant deviation from Tanzania's long-standing high coverage trend (Figure 7).

Further analysis of WUENIC data reveals that, while Tanzania has sustained relatively high coverage for most basic vaccines, performance for the MR2 has consistently remained below the national target of 95 percent (Figure 8). Between 2019 and 2024, MCV2 coverage demonstrated persistent underachievement, indicating challenges in fully closing the immunity gap for measles. The lowest coverage was observed in 2021, when national rates dropped to 60 percent, coinciding with extensive COVID-19-related disruptions that affected health service delivery and community outreach. Although gradual improvement was recorded thereafter, reaching a peak of 78 percent in 2023, coverage still fell short of elimination thresholds.

Figure 7: Trend of DTP3 coverage based on the administrative and WUENIC data (2025 release)



Analysis of administrative data for DTP3 revealed persistent disparities in coverage between urban and rural populations throughout the review period. Between 2019 and 2023, DTP3 coverage consistently remained higher in urban settings than in rural areas. However, an atypical pattern emerged in 2024, when rural areas achieved higher DTP3 coverage (99%) compared to 90% in urban settings (Figure 9).

Increase trend for children vaccinated with Penta1, Penta 3, MCV1 based on the administrative data was observed except for MCV2 in 2024 (Figure 10). It should be noted that the tools were not able to separate by age (below 12 months and above 12 months). From January 2025, the revised tool reported a total of 17,141 children above 1 year were vaccinated with Penta1 from January to July 2025 (Table 9).

Figure 8a: Trend of MCV1 coverage 2019-2024 based on the administrative and WUENIC (2025 release)

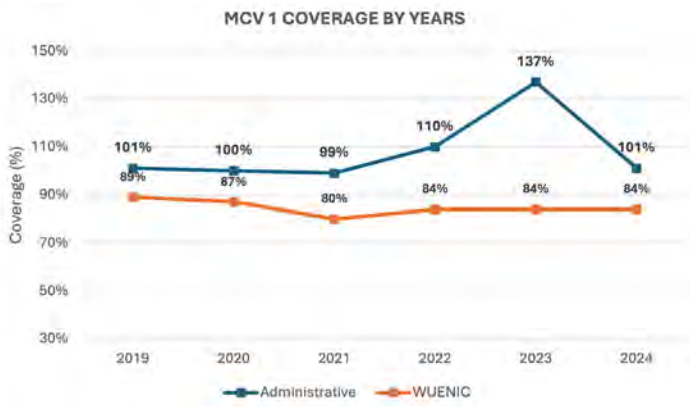


Figure 8b: Trend of MCV2 coverage 2019-2024 based on the administrative and WUENIC (2025 release)

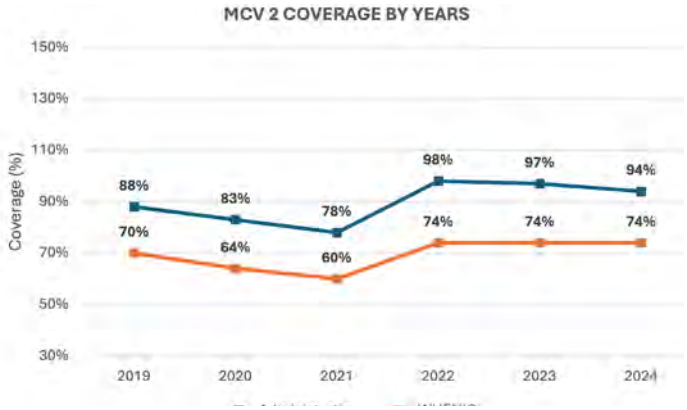


Figure 9: Trend of DTP3 (2019-2024) by urban and rural areas, based on the administrative data

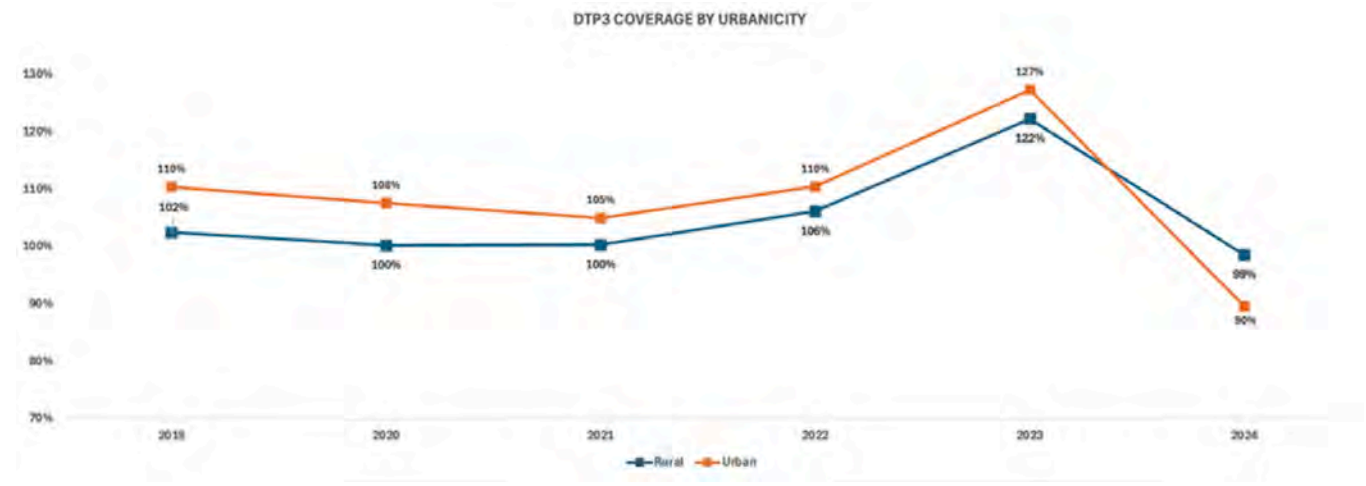


Figure 10: Administrative data for on time and catch doses administered 2019 to 2024

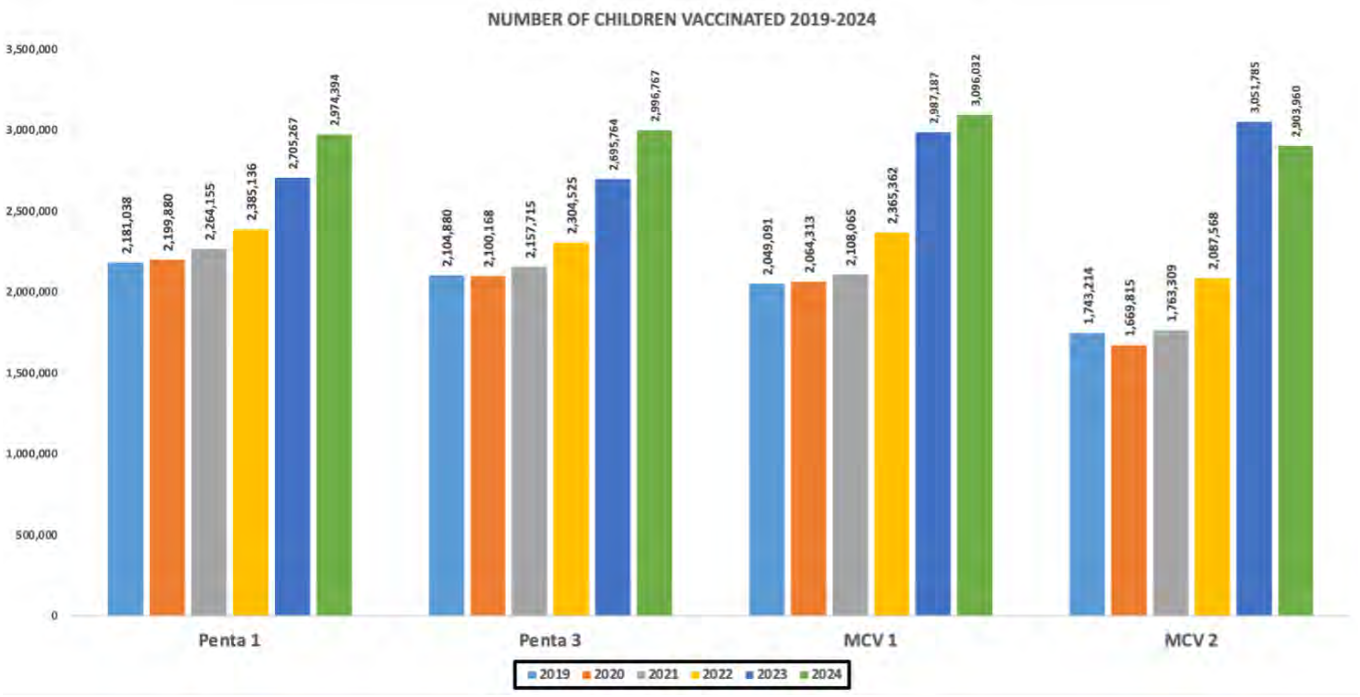


Table 9: Administrative data for on-time and catch-up doses from January to July 2025

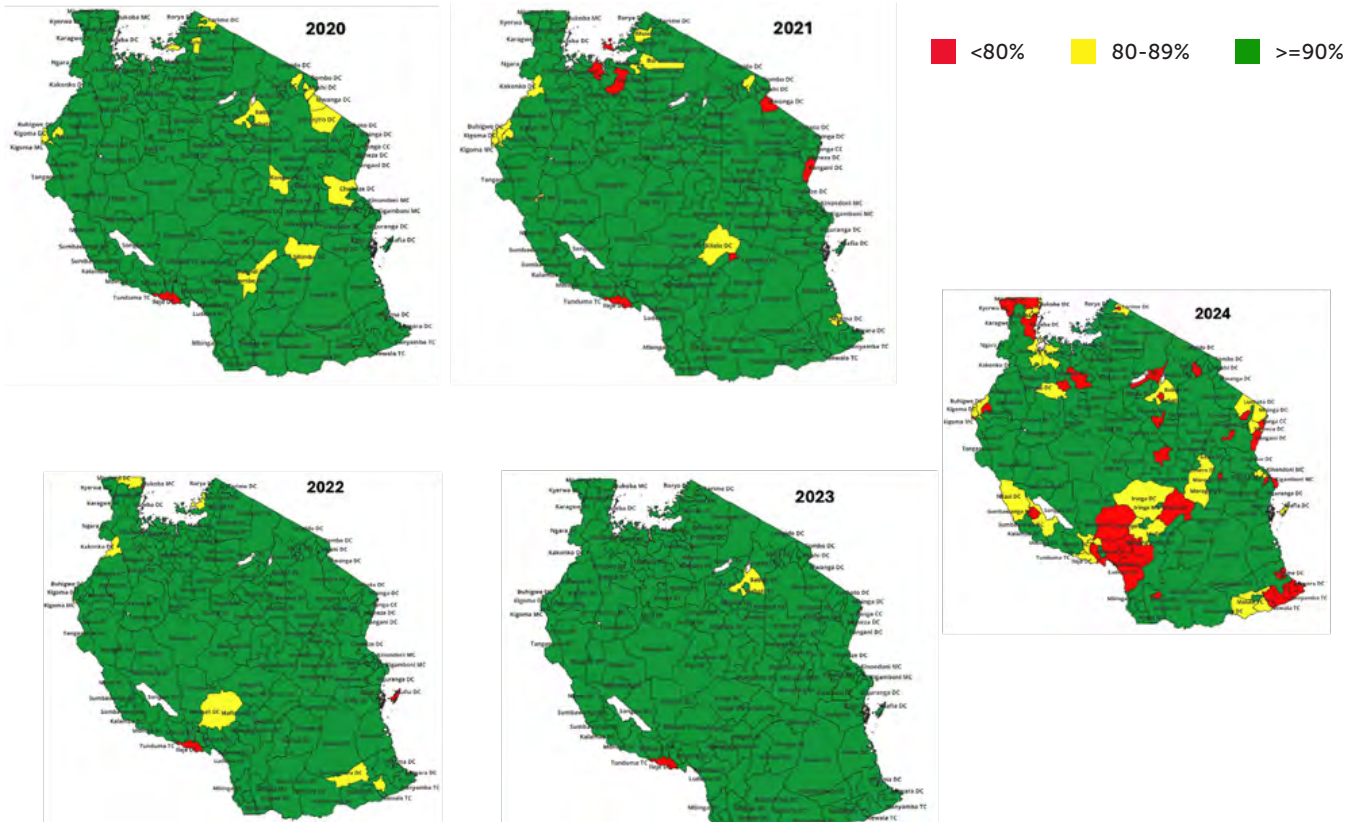
	Jan	Feb	Mar	Apr	May	Jun	Jul
Penta1							
<12 months	251,424	246,729	257,927	268,838	267,121	265,551	269,188
12-59 months	2,866	3,158	1,926	2,672	2,405	2,171	1,943
Total	**254,290**	**249,887**	**259,853**	**271,510**	**269,526**	**267,722**	**271,131**
Penta3							
<12 months	252,681	250,499	258,754	268,903	259,371	262,447	267,943
12-59 months	2,609	2,437	1,722	2,208	1,649	1,854	1,449
Total	**255,290**	**252,936**	**260,476**	**271,111**	**261,020**	**264,301**	**269,392**
MCV1							
<12 months	262,103	263,161	265,307	279,444	266,049	266,562	269,849
12-59 months	7,146	4,750	5,990	6,684	6,838	4,428	5,312
Total	**269,249**	**267,911**	**271,297**	**286,128**	**272,887**	**270,990**	**275,161**
MCV2							
12-23 months	228,560	232,602	232,471	246,013	237,205	241,411	243,358
24-59 months	3,438	3,472	4,277	4,101	3,441	3,660	2,971
Total	**231,998**	**236,074**	**236,748**	**250,114**	**240,646**	**245,071**	**246,329**

3.1.3 Sub-national level

Subnational analysis of administrative data for the DTP1 shows that the majority of councils in Tanzania have consistently maintained high coverage for RI doses over the years. From 2019 through 2023, most councils achieved coverage rates above 90 percent, demonstrating a strong reach and early uptake of RI services across the country. In 2023, councils attaining DTP1 coverage greater than 90% accounted for 97.4% of all the Councils. However, this trend shifted in 2024, when the proportion of councils reaching the ≥90% threshold declined sharply to 68.7%, with a further decrease to 55.9% by June 2025 (Figure 11). **Appendix 1** shows the subnational coverage of BCG, DTP1, DTP3, MR1, MR2 and IPV1 for the years 2019-2024.

This apparent decline is not indicative of reduced immunization performance but rather reflects a methodological change in target estimation. Beginning in 2024, the national immunization programme transitioned from using unfactored National Bureau of Statistics (NBS) population projections to operational targets, which more realistically represent the estimated number of children <1 year for all doses and <2 years for MR2 expected to receive vaccinations. Operational targets consider region-specific, factored operational targets derived from vaccine consumption data from multiple data sources, including Penta1 dose administered, first antenatal care (ANC) visit coverage, and regional demographic growth factors. The adoption of operational targets resulted in a more realistic denominator, leading to recalibrated coverage rates at subnational levels in 2024.

Figure 11: DTP1 coverage based on the administrative data at Council level



3.1.4 Estimated numbers of UI and ZD children

Analysis of council level administrative data from 2020 to 2024 estimated a total of 457,995 ZD children across five birth cohorts who had not received the DTP1 by their first year. The data reveal a concerning trend, with relatively stable numbers between 2020 and 2023, followed by a sharp increase in 2024 (Figure 12). The sharp increase in 2024 could be due to change in the methods of estimating operational targets that were used in 2024.

Spatial analysis using council-level maps further illustrated the distribution of ZD children across the country. The majority of councils consistently maintained a ZD rate below 10%, indicating relatively good coverage in most areas. However, exceptions were observed in 2021 and 2024, where a significant proportion of councils exceeded a ZD rate of 10%, signaling pockets of ZD children (Figure 13). The spike in 2024 can further be explained by the revised operational target estimates described above. These maps highlight the geographical disparities in immunization coverage and emphasize the need for council-specific strategies to address persistent gaps and prevent outbreaks. This is further supported by findings from the survey of caregivers and FGD regarding limited vaccination services availability especially in rural areas as detailed below in Section 3.4: Factors contributing to ZD children.

Figure 12: Trend of the ZD based on the administrative data using DTP1 coverage

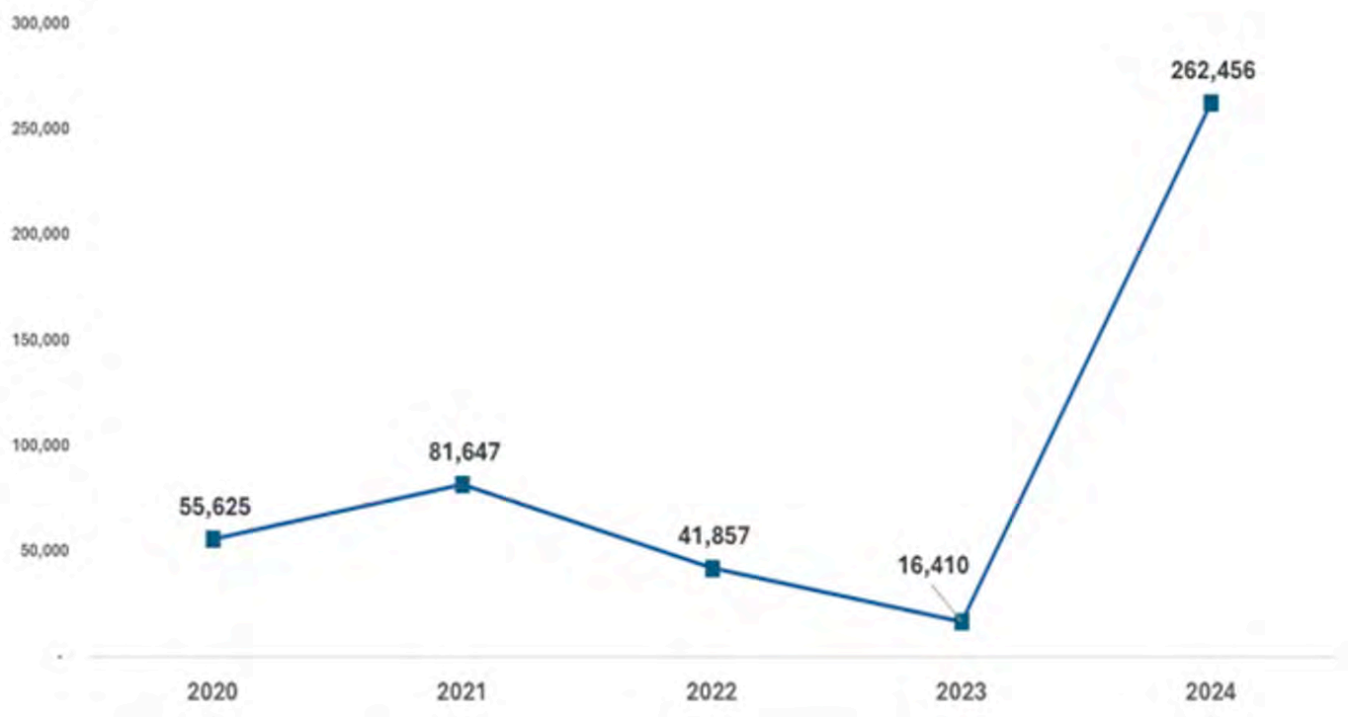
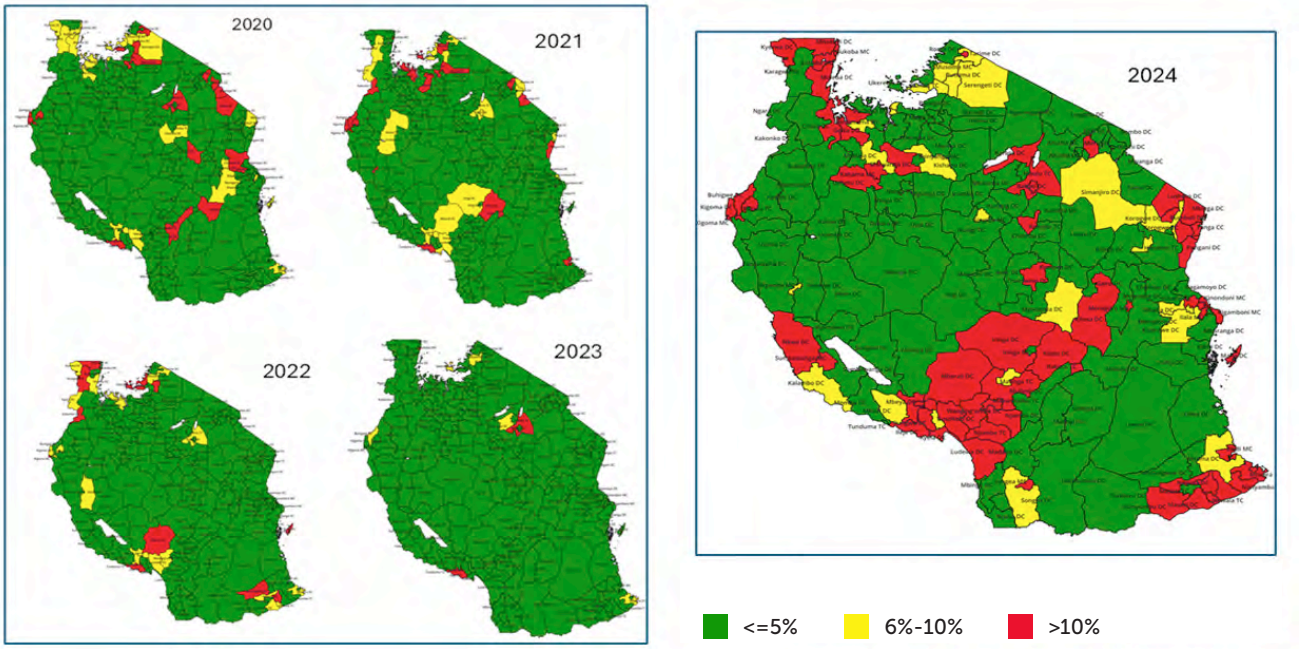


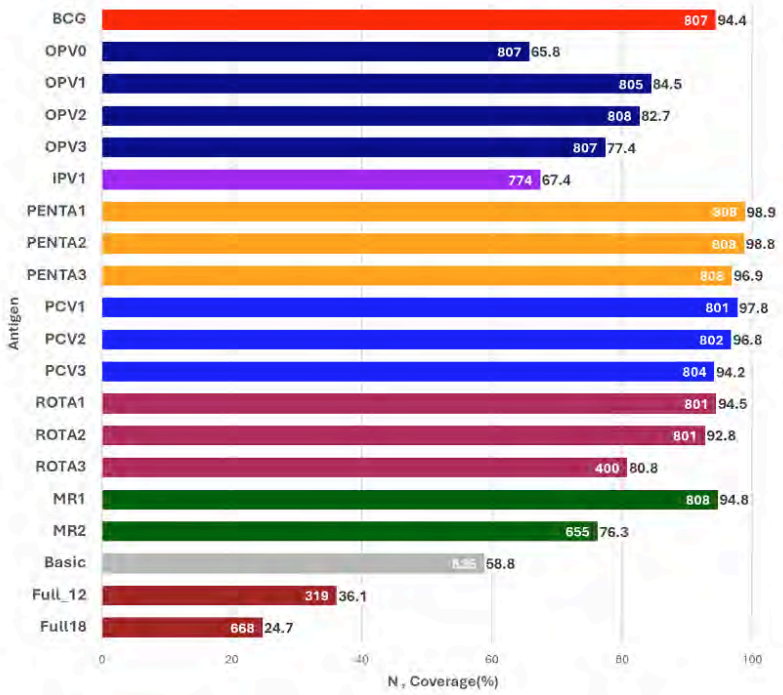
Figure 13: ZD percentage by council using DTP1 coverage based on the administrative data



3.1.5 BCU coverage results

A household survey involving 976 children was conducted, with vaccination status validated through immunization card review. The analysis revealed sub-optimal immunization coverage. Several antigens recorded comparatively lower coverage, including bOPV0 at 65.8% and IPV1 at 67.4%. Basic antigen immunization coverage defined as children who received BCG, three doses of bOPV, three doses of DTP, and one dose of MR among children aged 12–23 months was 58.8%. Moreover, full vaccination according to the national immunization schedule was lower, with only 36.1% of children aged 12 months fully vaccinated, underscoring cumulative dropouts and delayed vaccination across the schedule (Figure 14).

Figure 14: Survey vaccination coverage of children 12-59 months (August 2025)



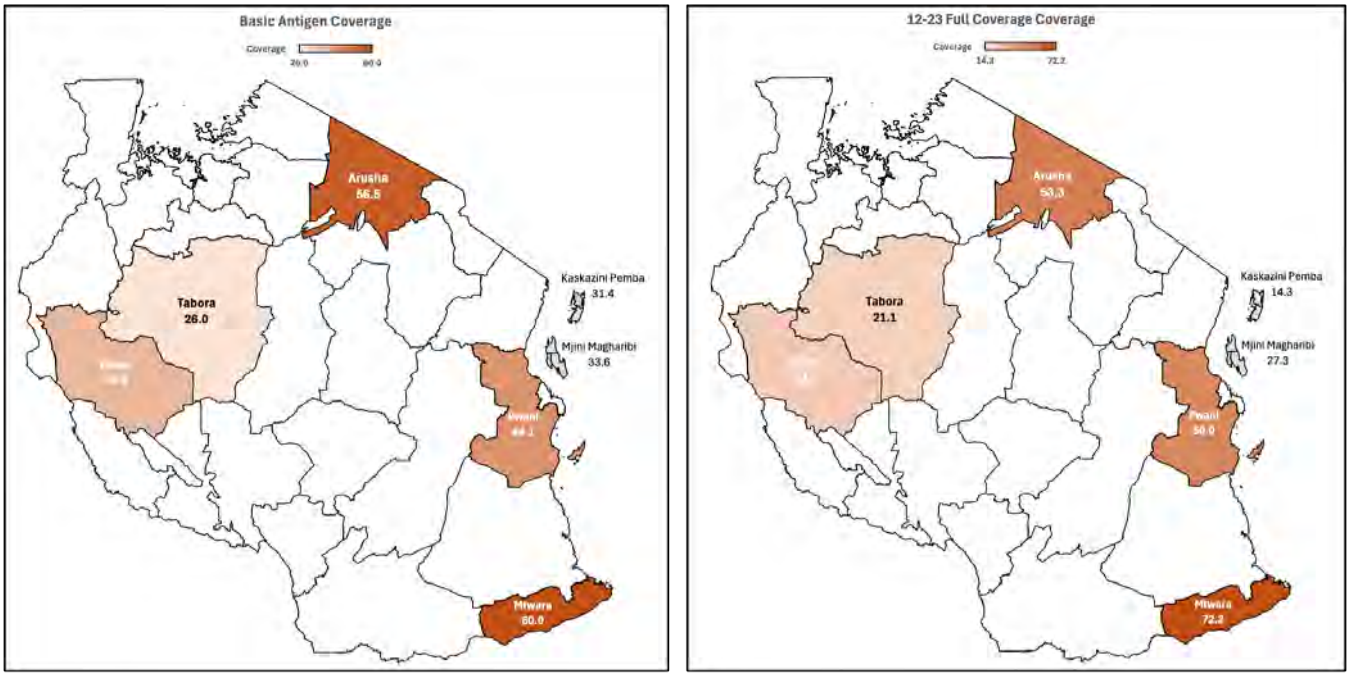
The analysis of antigen-specific coverage from the household survey revealed a notable variation across vaccines **(Appendix 10)**. The DTP series demonstrated the highest levels of uptake, with 98.9 % of children having received DTP1 and 96.9 % having completed DTP3, the values which were higher than the Tanzania national WUENIC estimates of 87% and 83%, however these values were almost similar to administrative 2024 values of 96% for DTP1 and DTP3, but lower than DTP1 (123%) and DTP3(120%) coverages reported in 2023. These findings suggest a strong initiation and continuity of the primary immunization series among the surveyed population.

The coverage for IPV was substantially lower, at only 67.4% compared to 83% of the national 2024 WUENIC estimate. OPV3 value of 77.4 % was slightly lower than 80% of the national 2024 WUENIC estimate. Similarly, the coverage for the MR vaccine showed a clear drop between the first and second doses: while MR1 coverage was relatively high at 94.8% (WUENIC 2024: 84%), MR2 coverage dropped to 76.3% (WUENIC 2024), reflecting a considerable dropout rate of 18.5 percentage points, compared to drop-out rate estimated by WUENIC 2024 of 10% percentage points.

A spatial analysis of household survey data revealed considerable regional variation in both the basic and full immunization coverage across Tanzania (Figure 15). The basic vaccination coverage map representing children aged 12–23 months shows that coverage levels were unevenly distributed, with some regions achieving coverage while others remained significantly below the national average of 58.8 percent. Similarly, the full immunization coverage map of the caregivers surveyed from each council demonstrated marked subnational disparities, with coverage ranging from below 14.3% to 72.2%.

Despite catch-up efforts at the time of the case study, there were still remaining coverage gaps in the surveyed councils among eligible children with more cases of UI. Using 2024 surviving infants' data and the council survey coverage of DTP1, three councils (Kaliua DC-964, Arusha DC -520 and Mpimbwe DC 306) still had more than three hundred children with ZD status necessitating continued catch up activities.

Figure 15: Council coverage of the basic antigens and coverage as per schedule (BCU case study household survey)



3.2 BCU planning, implementation and monitoring

3.2.1 Planning and prioritization process

The planning phase of BCU began in late 2022, following the declaration of multi-regional measles outbreaks that underscored the urgency of closing the immunity gap by restoring immunization coverage (Figure 16). The IVD Programme conducted a comprehensive desk review of immunization performance data from 2018–2022, identifying councils with high numbers of ZD children. Based on this analysis, 81 priority councils were selected for intensified catch-up efforts.

The BCU plan emphasized the following specific objectives:

1. To reduce the number of ZD children (missing Penta1) at the national level by at least 82% by addressing 90% ZD children in 81 poor-performing councils which had a total of 1,152,681 ZD children by December 2023.
2. To reduce the number of ZD children at the national level by 100% by addressing all ZD children in the remaining 114 councils by June 2024.
3. To increase and sustain immunization coverage above 95% in 37 councils with confirmed measles outbreaks by December 2023.
4. To increase and sustain HPV vaccination coverage above 95% in 28 Councils with low coverage of HPV by December 2023.
5. To identify opportunities/feasibility and implement strategies for integrating RI with COVID-19 vaccination activities by December 2023.
6. To increase the national Penta3 coverage to above 90% by June 2025.
7. At least 90% of the councils attain coverage above 90% for Penta3 by June 2025.
8. To improve the availability of vaccines to 100% at all levels by June 2025.
9. To improve immunization program management and financing to 100% at all levels by June 2025.
10. To improve VPD surveillance and attain the standard global indicators at all levels by June 2025.

The plan outlined the BCU strategy as a targeted response to measles outbreak that occurred in late 2022 and 2023. The plan emphasized strengthened oversight and monitoring through supportive supervision, mentorship programs, and logistical support to ensure effective implementation.

Figure 16: BCU Implementation timelines

Tanzania BCU funding

To achieve the objective of the BCU recovery plan, a total of USD 5.8 Million of performance based funding balances were approved by GAVI for Big catch-up activities.

The funds were supposed to cater for the following activities:

i) to support health facilities to develop micro plans and mapping of areas with high number or pockets of un/UI children by involving communities in 81 councils (USD 321,022),
ii) to conduct mentoring and supportive supervision on ZD catch-up plan to health care workers at health facility level every quarter (USD 299,183),
iii) to conduct councils-led intensification of house-to-house immunization activities at community level every quarter (USD 2,449,242),
iv) to revitalize outreach/mobile services and support CHW to trace defaulters in hard-to-reach areas, urban slums and special populations at health facilities in 81 councils (USD 599,468),
v) to conduct rapid assessment to identify factors associated with un/UI children at health facilities in 81 district councils (USD 155,221),
vi) to conduct bi-annual intra and after-action review/ evaluation of the ZD catch up implementation plan in 81 councils (USD 189,363),
vii) to support the central and regional level teams to conduct supportive supervision and oversee implementation of the catch plan activities semi-annually (USD 349,940),
viii) to support program management to effectively monitor implementation of ZD catch-up plan (USD 309,649),
ix) to conduct mapping for PIRI sites and orientation of CHMT and RHMT in councils with confirmed Measles outbreak (USD 66,965),
x) to conduct regional-led intensification of house-to-house immunization activities at community level in 34 councils with confirmed measles outbreak (USD 479,572),
xi) to conduct workshop for regional and councils mapping with HPV stakeholders (USD 3,987),
xii) to conduct health facilities HPV microplanning involving schools and communities (USD 148,060),
xiii) to intensify outreach services of HPV vaccination at school semiannually in 28 low performing councils (USD 319,692),
xiv) to conduct advocacy and community meeting in 16 regions (USD 44,255) and
xv) to conduct HPV catch up post implementation evaluation in 16 regions (USD 64,378).

3.2.2 Implementation strategy and key activities

The planning and implementation of the BCU initiative in Tanzania were conducted in phases, beginning late 2022. The process was primarily triggered by a multi-region measles outbreak that emerged in the last quarter of 2022, which exposed immunity gaps that had accumulated over the COVID-19 period due to the disruption in service delivery and reduced community demand. In response, the IVD Programme initiated a comprehensive assessment of immunization performance to identify the councils with the highest burden of ZD and UI children. This coincided with the global Big Catch-Up initiative launched by WHO, UNICEF, and Gavi, providing a timely framework for Tanzania to anchor its national recovery plan.

The national planning process was led by the IVD Programme in close collaboration with the PO-RALG and key immunization partners under existing coordination mechanisms such as the Interagency Coordinating Committee (ICC) and the Immunization Technical Working Group (TWG). These platforms provided the governance foundation for technical discussions, prioritization, and resource mobilization. WHO and UNICEF provided technical guidance, particularly in microplanning, monitoring, and demand generation, while Gavi supported financing and coordination for operational rollout. At the subnational level, Regional and Council Health Management Teams (RHMTs and CHMTs) adapted the national guidance to local contexts, using available data to identify service gaps, hard-to-reach populations, and communities affected by recurrent measles transmission.

Initially, the BCU recovery plan focused on eighty-one (81) priority councils identified as having the highest concentration of ZD children based on health facility data. However, following the nationwide measles outbreak, the IVD Programme revised the plan to expand the coverage to all 184 councils. This transition marked a shift from a targeted recovery approach to a full national intensification strategy covering all districts. The new phase aimed to identify, trace, and vaccinate every child under 5 years who had missed one or more doses of RI.

The planning process engaged limited multiple stakeholders across all administrative levels to CHWs. CHWs were central to the implementation process, being provided with special registers and default tracing forms to document ZD and UI children at household level. These tools were instrumental in improving community-level data visibility and ensuring that no child was missed during catch-up activities. Data from these registers were aggregated at the council level to estimate the number of ZD children.

Tanzania started implementing BCU before the global guidance came into effect. A simple plan was developed that guided the initial implementation. The implementation started in specific geographical areas, mostly regions with higher numbers of ZD children and measles outbreak followed by regions with a smaller number of ZD. BCU was implemented (as per initial plan), and PIRIs focused on extended fixed and outreach services and times and number of sessions were expanded as well as enhanced social mobilization within a specified period.

The service delivery was essentially the same though it varied in different geographical locations in terms of the number of outreach services, with some councils implementing household vaccination sessions. Initially, facility-based PIRI was common; later, catch-up vaccination was mainly implemented through outreach services. Those who were not reached in the first round of PIRI were reached through subsequent rounds.

The implementation of the BCU was not uniform across regions; rather, it was highly context-specific, with strategies adapted to local circumstances. In Zanzibar, cultural norms made home-based vaccination services more acceptable, while in Katavi the involvement of local leaders greatly facilitated community acceptance. In Dar es Salaam, door-to-door visits by CHWs proved effective in reaching children. During interviews, informants explained:

> *"I learned a lot in Zanzibar because many people prefer services at home. There are cultural factors; a mother may not be allowed to leave home without her husband's permission. So, if the service reaches her home, it's very easy".* (KII034M-National level)

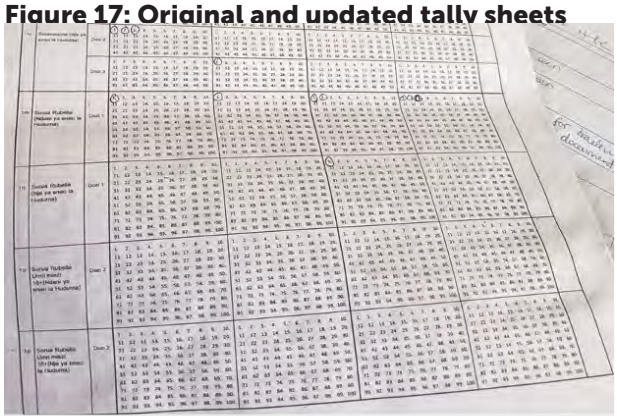
> *"In Dar Es Salaam, which I have seen, I have seen that they have involved these community-level service providers, CHW, to ensure that at least they will be going to those homes to be able to find out which child has not been vaccinated, to encourage the mother, that is, to give her education so that the mother can use her initiatives to reach the service delivery facility."* (KII019M-National level)

> *"For these pastoralists, I remember when we went to Katavi, we even invited the village leaders, and we had to call meetings with the community members to explain to them the importance of vaccination and start vaccinating in their residential areas."* (KII019M-National level)

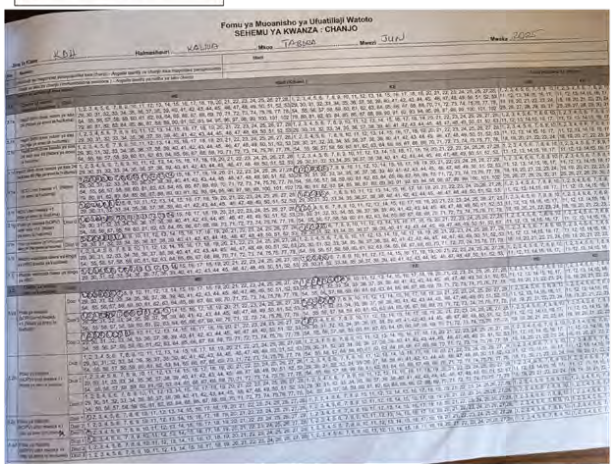
Generally, Tanzania implemented the BCU using a phased and adaptive approach microplanning that combined national guidance with subnational flexibility, placing strong emphasis on planning and community engagement (Figure 16).

Observation data collected July-August 2025 revealed that out of 61 health facilities assessed between June and August 2025, normal tally sheets (unrevised tally sheet) were present in 91.5% of the facilities. None of the health facilities had updated tally sheets (Figure 17) that were able to stratify <12 months and >12 months children. However, the vaccination schedule (see Appendix 11) either hard copy or soft copy for older children was present in only 24.6% of health facilities. The Immunization Recovery Plan 2023-2025 guidelines were present as soft copy in only 2 health facilities.

Figure 17: Original and updated tally sheets



A: Normal Tally Sheet



A: Updated tally sheet with age <12 months and >12 months

3.2.3 Weaknesses in BCU implementation

The BCU implementation faced several challenges that affected its overall effectiveness. Coordination of activities from the national level was suboptimal, with some key partners reporting they were not involved in planning, monitoring, or evaluation of BCU activities, which limited alignment and collaboration across stakeholders. Despite availability of funds and clear performance indicators as indicated in section 3.2.1 Planning and Prioritization Process, the monitoring and evaluation component was particularly weak, as data collection tools lacked sufficient disaggregation, resulting in discrepancies in PIRI data across multiple sources and poor management of activities.

HW also reported inadequate training on catch-up activities, including gaps in understanding revised immunization schedules and proper use of data collection tools. Despite the recovery plan clearly outlining implementation strategies and associated indicators, evidence from the BCU implementation phase indicates significant gaps in monitoring and evaluation. Specifically, there is limited documentation to show whether the indicators proposed in the plan were actively used to track implementation progress and measure performance. This lack of evidence suggests that while the plan provided a structured framework, its operationalization in terms of systematic data collection, reporting, and performance assessment was weak.

The findings revealed that, while many HW and managers were aware of the Standard Operating Procedures (SoPs) and the Catch-Up schedule that aimed at improving vaccination coverage, there were inconsistencies in interpretation, communication, and implementation across regions. Some respondents demonstrated a clear understanding of the SOP and its guidelines, whereas others especially at facility level and among caregivers expressed confusion regarding vaccine eligibility, age limits, and the procedure for catch-up doses.

Managers, and regional and district-level officers demonstrated relatively better understanding of the SOPs and their role in ensuring uniform vaccine delivery than lower cadres. They described how SOPs were disseminated from the national level to councils and facilities through training and circulars.

> *"The SoP was issued nationally and shared with councils. It guides us on how to identify missed children and how to catch them up regardless of age."* (KII015M-National level)

> *"The message was clear any unvaccinated child should receive the vaccine, even if they are above the usual age for RI."* (KII017M-Subnational Level)

> *"We received SOPs that direct how to manage ZD and UI children, including follow-up mechanisms."* (KII012M-National level)

However, some regional and district managers, facility levels staff, and CHW admitted that they received limited orientation or only verbal instructions without comprehensive written guidelines. This led to uncertainty during implementation.

> "*We were just told to implement the Big Catch-Up, but there was no formal training on the SOP."* (KII014-Sub-national level)

> *"Some were saying the SoP allows vaccination for any age, while others said only up to five years; that confusion still exists."* (KII018-Sub-national level)

> *"The SOP came late, and we didn't have time to study it properly before starting the campaign."* (KII016M-Sub-national level)
> "We only heard about it in meetings; not all staff were trained, so messages differ between facilities." (KII021M-Sub-national level)

Conversely, some CHW and caregivers reported confusion about eligibility, especially regarding older children and vaccine repetition. Many participants noted that unclear communication led to missed opportunities.

> *"Some thought we should not vaccinate children above 24 months; others said up to 59 months there was no uniform message."* (KII018-Sub-national level)

> *"Parents came asking if a seven-year-old who missed measles could get vaccinated — some nurses were unsure."* (KII021M-Sub-national level)

> *"I heard they were giving catch-up vaccines, but when I went, they said my child's age is above the limit."*
> (FGD03-Female caregiver, P5)

Respondents frequently mentioned inadequate training as a major contributor to unclear implementation of SOPs and the BCU schedule to capture older children.

> *"The SOP came with no proper training; most of us just relied on colleagues' explanations."*
> (KII014-Sub-national level)

> *"District officers attended training, but when they returned, they only briefed us for one day not enough."*
> (KII018-Sub-national level)

Weakness related to microplanning

Participants across different levels (national, regional, district, and facility) acknowledged the importance of updating microplans to capture older children who missed vaccines during infancy. However, implementation was often inconsistent due to limited technical guidance, data gaps, and insufficient community mapping. While some health facilities reported success in expanding microplans to include these older groups, others continued to rely on outdated plans designed mainly for under-one-year children. This was further supported by the observation that, out of 61 surveyed health facilities only 15 (24.5%) had updated microplans.

Updating microplans to include older children

Several managers reported that during the BCU, districts were encouraged to revise their microplans to account for older unvaccinated children. This adaptation was recognized as a crucial step in ensuring comprehensive coverage and equity.

> *"We were instructed to update the microplans to include children up to five years who had missed vaccines — this was a key Big Catch-Up objective."*
> (KII011M-Sub-national level)

> *"Our district updated the microplans to map ZD and UI children, including those above one year. This helped in planning outreach visits better."*
> (KII015M-Sub-national level)

> *"Before, we focused only on children below one year, but now we also include those who missed doses from previous years."*
> (KII018-Sub-national level)

> *"When we revised our microplan, we realized there were many children above one year who had never received the second or third dose."*
> (KII020M-Sub-national level)

Weaknesses and challenges in microplanning for older children

Despite these positive practices, respondents pointed out several weaknesses that limited the full integration of older children into microplans. The main issues included poor data capture, outdated population estimates, and limited community engagement in identifying missed children.

> *"Most facilities still use microplans from last year without updating them — they don't reflect the real situation on the ground."*
> (KII012M-National level)

> *"Some CHW still think vaccination is only for under-one children, so they don't list the older ones in their microplans."*
> (KII014M-Sub-national level)

> *"We lack disaggregated data for children above one year; we only estimate during the campaign period."*
> (KII020M-Sub-national level)

> *"The community health volunteers sometimes bring names of older children, but we don't have a section for them in our register."*
> (KII019-Sub-national level)

Catch-up training for CHW

Both managers and CHW emphasized that catch-up vaccination training was essential for strengthening service delivery under the BCU. However, findings revealed considerable variation in training coverage, duration, and delivery modality across districts and regions. The topics which were identified as partially covered or unclear were SOPs, data collection tools, screen procedures and microplan.

While some staff received formal training through cascade sessions, others reported only brief orientations or instructions without practical demonstrations or learning materials.

Training modality

The training modality varied across regions — ranging from cascaded in-person workshops, on-the-job orientations, and virtual briefings to council-level meetings.

At the higher levels, national and regional facilitators conducted Training of Trainers (TOTs), who then trained council and facility-level staff.

> *"Training was cascaded national TOTs trained regional and council health management teams, who later trained facility staff."*
> (KII015M-National level)

> *"Most of us at the facility were oriented by our DIVO through short meetings rather than a full training."*
> (KII018-Sub-national level)

> *"They used a cascade model, but some staff missed it because it was done quickly and in selected facilities."*
> (KII017M-Sub-national level)

> *"We just received verbal instructions on how to implement the catch-up; it wasn't a proper training."*
> (KII014-Sub-national level)

Training materials and tools

Respondents mentioned the use of printed SOPs, PowerPoint slides, and job aids summarizing catch-up procedures. However, several facilities reported insufficient or delayed distribution of these materials.

> *"We received SOPs for the Big Catch-Up from the Ministry, but not all staff got copies."*
> (KII016-Sub-national level)

> *"There were guideline booklets and printed charts for screening eligible children, but only one copy per facility."*
> (KII021M-Sub-national level)

> *"The materials came late we had already started implementing before receiving them."*
> (KII018-Sub-national level)

> *"Sometimes we share one manual among many workers, so some just follow verbal instructions."*
> (KII017M-Sub-national level)

Participation and coverage

The participation level in training sessions varied widely depending on district funding and partner support. Some councils trained all frontline CHW, while others selected only one or two representatives per facility, who were then expected to brief colleagues.

> *"Only one nurse per facility attended; she later briefed the rest."*
> (KII014-Sub-national level)

> *"We trained all staff working in RCH and outreach to ensure consistent messaging."*
> (KII012M-National level)

> *"Budget allowed only a few to attend; we relied on internal sharing after the training."*
> (KII019M-National level)

Frequency and duration of training

Catch-up training sessions were reported as brief and infrequent, usually lasting half a day to two days, depending on the district. In most cases, training occurred once before implementation of the BCU, with no follow-up refresher sessions.

> *"The training was just one day mostly theoretical, without enough practice."* (KII018-Sub-national level)

> *"We conducted a two-day training for all council immunization staff and RCH nurses before rollout."* (KII015M

> *"Refresher training was planned quarterly, but funds were not available."* (KII021M-Sub-national level)

> *"We were oriented for less than three hours; it was more of a meeting than a training."* (KII014-Sub-national level)

Training topics

Most respondents reported that training focused on catch-up vaccination procedures, eligibility screening, ZD identification, data entry, and reporting procedures. However, areas like community engagement and communication with caregivers were not always emphasized.

> *"We were taught how to screen children and identify missed doses."* (KII019-Sub-national level)

> *"Topics covered the definition of ZD, how to plan outreach, and how to document catch-up activities."* (KII015M-National level)

> *"We learned to use the daily register to record doses given and update the child health card."* (KII018-Sub-national level)

> *"There was little on how to handle caregivers who refuse vaccination communication skills were missing."* (KII014-Sub-national level)

Most respondents reported that training focused on catch-up vaccination procedures, eligibility screening, zero-dose identification, data entry and reporting procedures.

3.2.3 BCU monitoring in Tanzania

During the early stage of BCU implementation, data aggregation for catch-up doses administered to older, eligible children relied heavily on manual processes, using a spreadsheet that aggregated data from health facilities into council level, then to regional level which were finally aggregated to national figures. The PIRI tools which were in spreadsheet format (Excel or Google sheet) were designed to capture aggregate number of children vaccinated without any age categories (Figure 18).

To address this gap, the Afya Campaign System (Figure 19) was introduced in 2024 as an innovative digital platform, to support the planning, implementation, and reporting of immunization campaigns, including catch-up. The system was first applied during the MR campaign conducted in February 2024, which served as a key test for digital integration in catch up activities monitoring. The Afya Campaign System streamlined data collection, enabled real-time reporting, and supported improved supervision and accountability. It also facilitated the consolidation of data on ZD children identified during PIRI, allowing for disaggregation by region and council.

By 2025, the VIMS system for RI was upgraded to capture vaccination data for children over one year of age, representing a key step toward institutionalizing

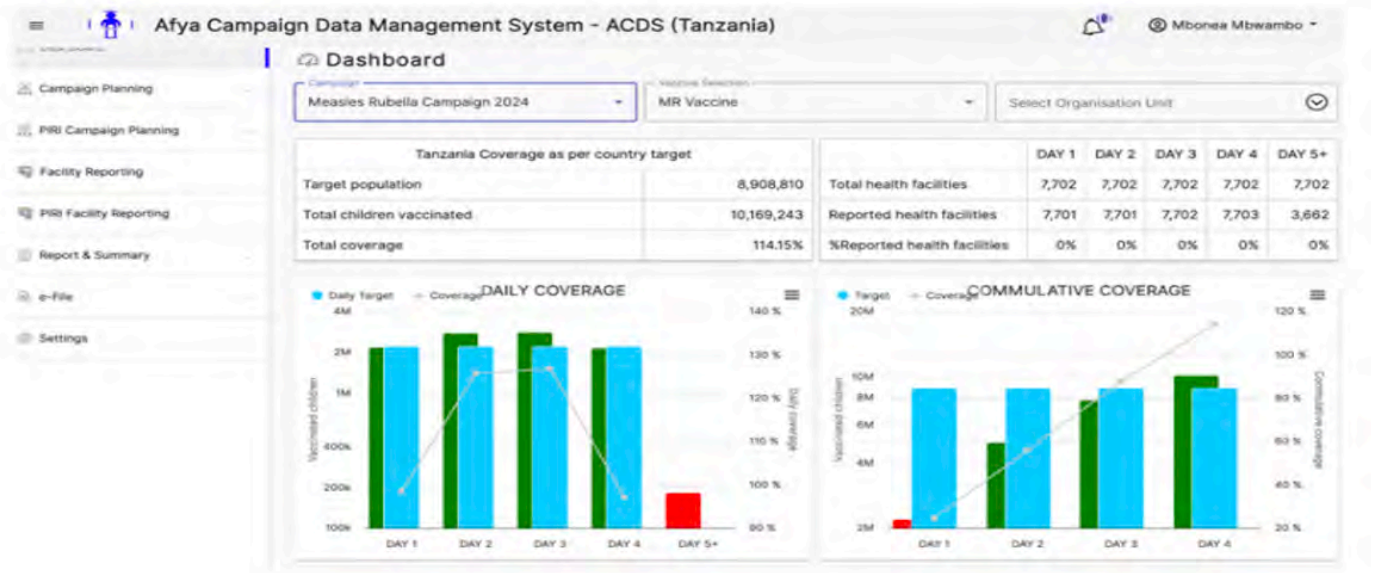
Figure 18: Regional data compilation form

FOMU NA.5: MAJUMUISHO YA WATOTO (WASIOCHANJWA NA KUTOKAMILISHA) WALIOPATA CHANJO _ NGAZI YA MKOA

MKOA	Dodoma
Tarehe:	24-27/03/2023

S/No	Watoto wallochanjwa SIKU YA 1																		Total Vaccination	Target Reached
	BCG	OPV1	OPV2	OPV3	PCV1	PCV2	PCV3	PENTA1	PENTA2	PENTA3	ROTA1	ROTA2	ROTA3	HPV1	HPV2	IPV	MR1	MR2		
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!

Figure 19: Afya campaign Dashboard



ZD recovery within the routine health system. Between January and July 2025, a total of 17,141 children above one year were reported to have received the DTP1 vaccine through this system. Furthermore, VIMS has been integrated with DHIS2, ensuring that facility level aggregated vaccination data now flows seamlessly into the national health services provisions reporting platform (DHIS2), strengthening both monitoring and decision-making for RI.

The BCU indicators mentioned in the National Immunization Recovery Plan were largely not achieved by December 2024. The **catch-up indicators** (number of ZD at the national level, number of children with Penta1 in 81 priority council, number of councils with confirmed measles outbreaks) were not achieved as per target by December 2024. In addition, only one **restore** indicator (national vaccination coverage for Penta1) was achieved based on the administrative data by December 2024. All other **restore** indicators (<12 months and routine MR2), percentage of councils with vaccination coverage (Penta1) above 90%, percentage of councils with vaccination coverage (Penta3) above 90%, percentage of councils with vaccination coverage (MR1) above 95% and percentage of councils with vaccination coverage (MR2) above 95% were not achieved by December 2024.

Regarding the **sustain** indicators (number of councils with updated Microplan for improving immunization services and percentage of health facilities with no stock out of Penta1 in month time) it was difficult to obtain data to verify these indicators **(Appendix 12).** Based on the available data (administrative) from the councils, out of 1,152,681 children aged 12-59 months assessed as having ZD immunization status, 843,708 (73.2%) received Penta1 by December 2024.

> *"The tools were not initially improved; they were improved later. That's why tools were revised later after seeing that even children vaccinated during Big-Catch Up were recorded like routine vaccinations, and we realized there were gaps. Now, the new tools accommodate everyone to ensure all children are captured in the system''* (KII034M)

Participants reported the use of a combination of paper-based registers, tally sheets, vaccination cards, and electronic systems (where available). These tools were used to identify children due for catch-up, track defaulters, aggregate doses administered and monitor coverage rates.

> *"We use child health cards and facility registers to identify children who missed doses. Each month we review these to plan catch-up sessions."* (KII014-Sub-national level)

> *"At district level, we try to compile reports from all facilities using DHIS2, but sometimes data entry is delayed, which affects our planning."* (KII012M-National level)

> *"Registers are available, but some are incomplete or not updated regularly, which makes tracking hard."* (KII018-Sub-national level)

> *"Electronic systems are better for tracking children across facilities, but not all facilities have internet or computers."* (KII019M-National level)

> *"Sometimes registers are missing information, like birth dates or previous doses, so we cannot know who exactly needs catch-up."* (KII018-Sub-national level,)

Key messages

- The compilation of aggregate vaccination data from health facilities at council level is prone to errors in terms of numerators. This indicates the possibility of unrealistic vaccination data and the lack of individual level data. The absence of individual level vaccination data limits the ability to accurately identify ZD, UI, and defaulter children, leading to reliance on aggregated summaries that can mask immunization gaps.
- Administrative coverage reports consistently show a higher vaccination coverage compared to the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC), suggesting potential data quality concerns in reported vaccination numerators and targets. This concern is reinforced by the occurrence of Vaccine Preventable Diseases (VPDs) outbreaks in councils that report a high administrative coverage.
- The current practices focus on specific vaccination coverage as an indicator to assess the performance of the programme, which may not comprehensively assess the performance of the programme.

> *"We receive reports late from some health facilities, which makes planning catch-up sessions difficult."*
> (KII019M-National level)

> *"Even with DHIS2, not all staff are comfortable entering data correctly, which can distort coverage numbers."*
> (KII012M-National level)

The verification and triangulation of the data at the time of compilation at the council level was not clear and this could have contributed to numerator problems.

3.3 Catch-up institutionalization

Tanzania's institutionalization of the catch-up activities as part of RI involves several strategies which will lead to the integration of a set of activities which were part of an initiative into routine activities of its primary health care system. As reflected by the data collected for this country report, there is a need to ensure that the activities are well planned for and integrated within each individual council annual health planning process to guarantee smooth implementation of the Health Sector Strategic Plan July 2021 – June 2026 (HSSP V) goal.

The CHWs' role in the detection and referral of ZD and UI children has been formalized, and their training includes a specific package concerning vaccination.

> *"The posters at the clinic help, but many people don't read. It would help if CHW visit our homes or talk during market days."*
> (FGD06-Female caregiver, P7)

Catching up of ZD and UI children will be part of the immunization plan and will be incorporated into the 2026-2030 National Immunization Strategy (NIS), which is currently under revision in collaboration with MoH, President's Office Regional Administration and Local Government in Tanzania (PO-RALG) and other key stakeholders.

The revised NIS will include strategies to routinely reach ZD like incorporating budget into Council, Regional and National levels to sustain BCU activities. In addition, the data collection platform used for data monitoring has been improved so as to capture vaccination coverage vaccination specific target groups and ensure that no one is left unvaccinated (ZD or UI).

There, however, remains some concerns surrounding institutionalization as the effective implementation of vaccination services ultimately depends on individual councils' planning capability and their prioritization of this particular service. It may also be difficult to

maintain the intensity of BCU in a routine setup due to the fact that are several other major health issues to tackle. Local councils should budget annually for refresher training to maintain the skills of CHW and improve service delivery to ensure **timely** vaccination and catch-up vaccination for un-/ and UI children.

> *"So, I think the strategy is to ensure that councils allocate funds through their medical centres, at least allocate a little money every year to conduct refresher training."*
> (KII019P-National level)

It will be essential to integrate missed opportunities concepts and catch-up into pre-service training. Pre-service curricula should include reducing missed opportunities for vaccination and catch-up guidelines to ensure that new CHW are fully prepared.

> *"First of all, immunization is a basic service. In our facilities, we already proposed that the Ministry, together with colleges, should look at how to review and change the curriculum so that this is one of the subjects taught to students."*
> (KII012M-Subnational)

> *"It should be part of pre-service training and also part of Big-Catch Up training. I think it's a good concept. One thing we considered as a program was to integrate all these concepts with guidelines in pre-service training. When it comes to in-service training, meaning someone fresh from college, they should already have all these concepts."*
> (KII034M-National)

Short, focused courses can quickly train new employees on vaccination procedures, reducing errors and improving service quality. CHWs should also benefit from short refresher courses provided at regular intervals to promote their engagement in RI. Training programs should integrate multiple immunization topics instead of focusing on a single vaccine or strategy. This ensures CHW are equipped to handle various vaccines and improve overall coverage.

> *"But also, when we perhaps have a switch in coverage, for example, if we have been told that we are doing a ROTA switch when we do those trainings, let's do integration, instead of just talking about ROTA, let's try to include other things that we consider important"*
> (KII019P-National level)

> *"Let's prepare a course, the vaccination coordinator will come to provide education about vaccination, other departments should also come to provide education, even if it's very brief, new employees should be placed in the same class and told when they go, they are going to do this and that, someone will understand so that even when they go there, the negligence will be reduced."*
> (KII020M-Subnational level)

Training a small group of mentors who can guide and supervise other CHW could ensure that knowledge is effectively cascaded, sustaining the program impact over time. The CHWs'community should be fully aware of their newly officialized role in vaccination and leaders should show

Despite high overall coverage, there are still pockets of unvaccinated children necessitating targeted strategies initiated and maintained at local settings.

full commitment to this activity. Mentorship programmes should also be developed considering context specific elements as highlighted during the stakeholders meeting.

> *".....We target them as mentors. That's the whole concept you see. Because if you train one person, they go back and cannot train their colleagues. But if you train a few mentors and assign them to facilities where they mentor others, I think this concept can help ensure impact with few mentors. You train them, and they continue mentoring at the facilities."* (KII034M-National Level)

Despite a high overall coverage, there are still pockets of unvaccinated children necessitating targeted strategies initiated and maintained at local settings. Councils' individual plans and commitment remain essential to the institutionalization of catch-up activities and efficient implementation.

3.4 Factors contributing to ZD children

Analysis of household and healthcare worker survey data and qualitative responses from caregivers and HCWs highlighted multiple factors contributing to missed, ZD, and incomplete vaccination among children as detailed below. The qualitative data revealed factors ranging from caregiver factors, health system factors, to contextual and environmental factors, such as social cultural, religious and economic factors.

3.4.1 Contextual and environmental factors

Access to vaccination services was limited by the long distances to health facilities, especially for those residing in informal settlements where no health facilities are available. Poor road conditions, particularly during the rainy season, further worsened the situation, making travel to health centers difficult. Participants reported:

> *"Some people are living more the 20 kms away from the health facility, deep in the forest with cattle, farming inside the reserves. And it is not permitted for a HW to go into the forest to vaccinate."*
> (KII20M-subnational level).

> *''...some communities live in environments that are still not recognized by the government and are far from services.''*
> (KII020M-subnational level).

A caregiver explained how seasonal rains affected accessibility:

> *"When it rains, the path is bad, so we cannot go to the clinic"* (FGD06-Male caregiver, P4).

Seasonal migration for work or farming was reported to result in missed vaccination appointments and loss of follow-up. One HW mentioned:

> *"...young mothers leaving children with relatives, creating risk of missed doses"*
> (KII12-health care worker).

Similarly, a caregiver added:

> *"When I moved to another area, I didn't know where to take my child for the next vaccine"*
> (FGD02-Male caregiver, P7).

3.4.2 Health system-related factors

Caregivers were discouraged from returning to health facilities for child vaccination due to postponements and stock-outs, a challenge consistently highlighted by both key informant interviews and focus group discussions.

> *"The biggest challenge lies with vaccination service providers, particularly when services are postponed. If a mother is told to return another day, she may leave without the vaccine, making it harder to ensure she comes back.."*
> (KII020M-Subnational level)

> *"Another reason is, for example, if someone is registered for clinic services at one of these private dispensaries, their child may be scheduled for a clinic visit in October, and when the date comes, they take the child, but upon arrival, they are told there are no vaccines, so they should come another day."*
> (FGD 002-Male caregiver, P8)

Another mother added:

> *"Sometimes the clinic has no vaccines; they should have enough stock all the time"*
> (FGD07-Female caregiver, 5).

Staff shortages and workload

The study found that many health facilities were understaffed, which limited their capacity to reach all eligible children and to conduct an effective follow-up. Healthcare workers reported that when one staff member went on leave, the remaining personnel struggled to manage the workload alone. One HW explained:

> *"We are few in number and must attend to many children. Sometimes the queue is too long, and mothers get tired of waiting."*
> (KII011-Subnational level)

Caregivers also expressed challenges caused by staff unavailability. One participant noted:

> *"Sometimes the nurse is not available, so we wait and miss the day"* (FGD03-Female caregiver, P6).

Long waiting and costs for service

Long waiting times and vaccine costs at private facilities were reported to discourage caregivers from completing vaccination schedules. Caregivers highlighted barriers related to overcrowding and costs. A HW echoed this by explaining:

> *"We have many children and few staff. Here we are six nurses, so we have many shifts. Sometimes you work in the morning, or in the afternoon, or at night. Sometimes someone is on leave. So in the*

> *morning, you must vaccinate children and at the same time serve pregnant women. Sometimes a person vaccinates more than 50 or even 60 children."* (KII05-Health care worker)

Caregivers confirmed these challenges during FGDs, describing how time constraints, combined with long queues and domestic responsibilities, often led them to skip or postpone vaccination appointments.

A caregiver said:

> *"The clinic is always crowded; you can stay there the whole morning. Sometimes I just go back home without vaccinating the child."* (FGD02-Male caregiver, P1)

Another caregiver explains vaccine cost at private facilities as challenge:

> *"Hospitals are crowded; private dispensaries are faster but may charge fees"* (FGD10-Female caregiver, P9).

Poor communication and unclear messages

The study revealed that parents often did not receive clear guidance on which vaccine doses were missing or when to return for follow-up appointments. Out of 231 (23.6%) caregivers who failed to take their child for scheduled vaccination, 196 (84.8%) did not receive any reminder.

> *"Parents are confused about which dose is due; sometimes they miss the second or third dose"* (KII12-Subnational level).

Similarly, another caregiver explained:

> *"We don't know which vaccines our child still needs; the nurse didn't explain clearly"* (FGD07-Female caregiver, P5).

3.4.3 Caregivers' factors

Some of the factors highlighted in interviews and FGDs were also reported by caregivers during the survey (Figure 20). From the caregiver perspective, service-related barriers emerged as the most frequently cited reasons for missed vaccinations. Many caregivers reported being turned away by CHW when presenting their children for immunization, often due to vaccine stockouts, restricted service days, or limited staffing at health facilities. Others described long waiting times, poor communication, and unfriendly treatment from health personnel as discouraging factors that reduced their willingness to return for follow-up doses.

Parental competing priorities

Some caregivers delayed vaccinating their children due to work, business activities, or domestic responsibilities, particularly during the farming season. In urban settings, daily economic engagements often interfered with their ability to access vaccination services. It was further, observed in the caregiver survey that, out of the surveyed caregivers, 231 (23.6%) reported to have missed taking a child for vaccination.

During interviews and focus group discussions, participants explained:

> *"Yes, peri-urban areas are just outside the city, highly populated, and health facilities are not far. However, due to economic activities or daily responsibilities, and the social interactions in these areas, there are significant challenges".* (KII034M-National level)

> *"..... but also, by being busy with life, which causes some people not to follow through because they are working to earn a living".* (FGD 002-Male, P7)

Another caregiver added:

> *"I was away on the farm, so my child missed the vaccination."* (FGD03-Female caregiver)

Forgetfulness also played a role, as some mothers noted that:

> *"Parents sometimes just forget the vaccination day."* (FGD10-Female care giver, P8)

Lack of knowledge

Limited understanding of the importance of vaccines led to the neglect of vaccination schedules regarding the timing of the measles dose and follow-up vaccinations after the child's first birthday. This was stated during both KIIs and FGDs. This was further observed during the survey of caregivers which noted that 92% had insufficient knowledge regarding vaccination of older children. CHW also reported that some caregivers did not read or remember the child vaccination schedules.

> *"The main reasons are in two or three ways, the first reason I think is understanding, I see that education about vaccination has not yet reached everywhere.''* (KII020-Subnational Level).

> *"Another factor is the lack of education, people having little knowledge about health services. This leads parents to ignore the special vaccination schedule".* (FGD 002-Male caregiver , P10)

> *"Parents understand vaccines are important but forget the dates; sometimes they think the child has finished after the first few doses."* (KII012-Subnational)

> *"The problem is not refusal but knowledge many don't know the schedule, especially for the measles vaccine given at nine months."* (KII005M-subnational)

> *"Sometimes I forget the clinic day when I am busy with farming, but if the HW reminds me, I go."* (FGD03-Female caregiver).

Fear and misconceptions of vaccines

Misinformation about vaccines and fear of side effects were frequently mentioned. This hesitancy was particularly reported among younger or less educated mothers. A HW emphasized that:

> *"Some parents believe vaccines can cause infertility or other illnesses."* (KII14-health care worker)

On the other hand, caregivers pointed out that:

> *"Some mothers don't want vaccines; they are scared it might make children sick."* (FGD01-Female caregiver)

> *".....there are some members of the community who are against vaccinations. For example, telling them, "If you go to take those vaccination tablets, I will beat you," because they believe it is dangerous and you could even die. So, you find a parent threatening the child not to get vaccinated."* (FGD 002-Male caregiver, P6)

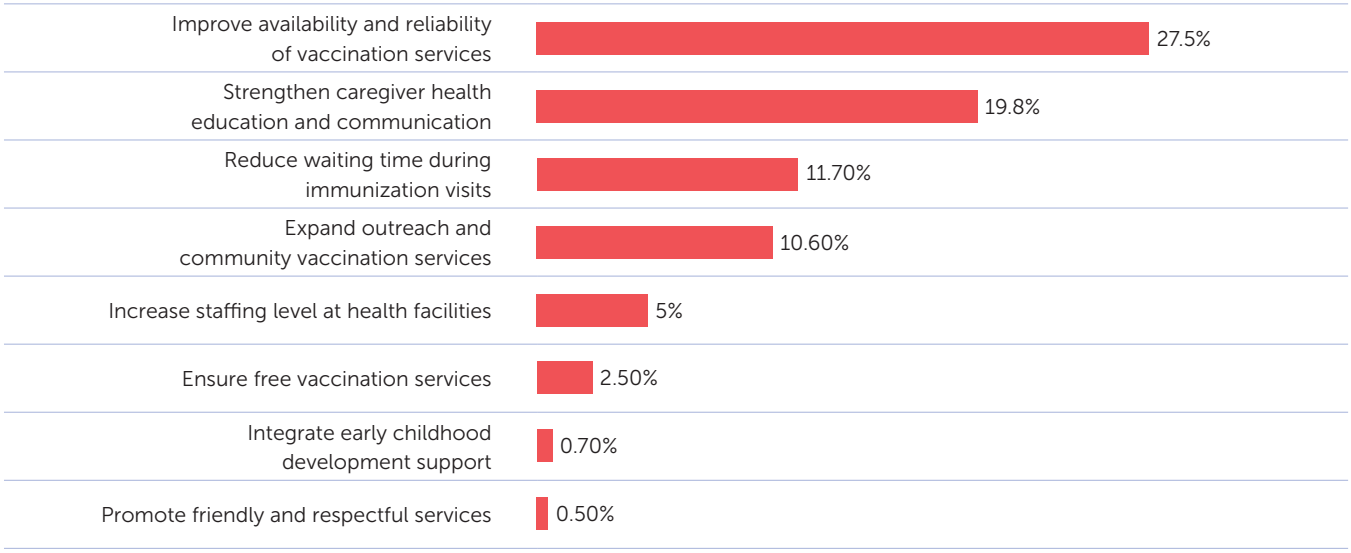
Traditional beliefs

Some families relied on cultural protection instead of vaccines. During KIIs one remarked:

> *"There are other families when children are born, they do not receive any vaccinations, they believe in traditional beliefs which protect them from illnesses."* (KII020M-Subnational level).

Respondents shared many concrete and actionable suggestions for improving routine immunization and catch-up activities.

Figure 20: Caregivers' suggestion on how to address ZD and UI (n=976)



Caregivers perception of vaccines and compliance with the vaccination schedule

Positive perception and trust in vaccination

Across most FGDs and KIIs, caregivers generally demonstrated strong trust in vaccines and perceived them as vital for protecting children from diseases like measles, polio, and tuberculosis, with 97% of caregivers surveyed showing positive attitude. HW and managers noted that community education efforts and past successful immunization campaigns have built confidence in vaccines.

> *"Most parents understand the importance of vaccines. They believe vaccines protect their children from severe diseases."* (KII015-Health care worker)

> *"The community's perception toward vaccination is positive; people are motivated when they see the benefits in other children."* (KII013M-National level)

> *"I make sure my child completes all vaccines because I have seen how vaccination protects them from diseases."* (FGD3-Female caregiver, P7)

> *"Vaccination helps our children stay healthy; we can see the difference between vaccinated and unvaccinated children."* (FGD01-Female caregiver, P1)

Despite overall positive attitudes, fear of side effects especially fever, swelling, or vomiting after vaccination remained a challenge in some communities. These fears occasionally delayed compliance or led to missed follow-up doses.

> *"Some parents are hesitant after the first dose if the child cried a lot or had swelling; they fear bringing them back."* (KII014-HW)

> *"A few communities still have concerns that vaccines can cause illness or infertility, especially for the HPV and measles vaccines."* (KII007M)

> *"After my child got a fever and swelling from the vaccine, I was afraid to take him for the next one."* (FGD2-Male caregiver, Mpanda)

> *"Some mothers in our area believe the vaccine causes the child to fall sick, so they skip doses."* (FGD4-Male caregiver,P5)

The behavior and communication of CHW played a key role in shaping caregivers' compliance and perceptions. Positive interactions encouraged return visits, while harsh treatment discouraged some caregivers from completing schedules.

> *"Some CHW' attitudes discourage mothers. If they are shouted at, they may not come back."* (KII019-Subnational)

> *"Good communication at facilities helps mothers understand schedules and the importance of completing all vaccines."* (KII017M-Subnational)

In contrast, HW emphasized the distance to vaccination sites as the primary barrier, particularly for families in remote and sparsely populated areas where outreach coverage remains inconsistent (Figure 21). HCWs also pointed to negative parental beliefs, misconceptions about vaccines, and poor caregiver knowledge regarding the importance of completing all vaccine doses as major contributors to both ZD and UI children. According to HCWs, cultural norms, competing livelihood priorities, and limited community engagement further compound these challenges.

Together, these findings illustrate that missed vaccination in Tanzania is driven by a complex interaction between service availability, caregiver behavior, and system-level factors. They underscore the importance of strengthening outreach services, improving HW–caregiver interactions, and expanding community education efforts to address misinformation and ensure that every child regardless of location or background receives the full course of vaccines recommended in the national immunization schedule.

Figure 21: Reasons for incomplete vaccination, according to HCWs (n=281)

3.5 To what extent did BCU activities address these factors

Participants across KIIs and FGDs highlighted multiple strategies being implemented to improve vaccination access and coverage among hard-to-reach and UI populations during the BCU. The strategies mainly focused on community education and awareness, outreach services and microplanning, collaboration with local leaders, improved data tracking and follow-up, flexible service delivery, and integration of services.

3.5.1 Community education and awareness

Community education was prioritized through the training of CHWs to create awareness and provide information in order to address misconceptions and increase the demand for vaccines, a point emphasized by key informants.

> *''First, we create awareness through education via volunteer CHWs. Fortunately, government programs have heavily supported and trained these CHWs.''* (KII034M-National level).

> *"We work closely with CHWs to move house-to-house and remind mothers whose children missed vaccines."* (KII18-Subnational level)

3.5.2 Involvement of local, religious leaders and traditional healers

Involvement of local, religious and traditional leaders helped improve trust and acceptance in hard-to-reach populations, as highlighted by key informants.

> *"And in the community, we involve religious leaders, government leaders, and traditional leaders, even traditional healers who are used by the people, and we provide them with this education."* (KII020M-Sub National level)

> *"...For these pastoralists, I remember when we went to Katavi, we even invited the village leaders, and we had to call meetings with the community members to explain to them the importance of vaccination and start vaccinating in their residential areas.''* (KII019P-National level)

> *"We involve religious leaders because they can convince parents that vaccines are safe and from God."* (KII21M-Subnational level)

3.5.3 Flexible scheduling

Conducting outreach on weekends and visiting work sites helped reach populations whose schedules did not align with the BCU, as remarked by informants during key interviews.

> *"People are usually occupied with daily activities especially those coming from rural areas. We therefore plan our visits according to their schedules, for example early in the morning when they return from sewed collection or later after they finish their work, first is about reaching them at the right time after their activities, second, we go to the actual working places, making it difficult to provide services during the week. That is why Saturdays and Sundays are more efficient, as most of them are available then."* (KII034M-National level).

> *"For example, in towns they realized that normal vaccination schedules were challenging for people to access. So, they tried to offer services even on weekends, such as Saturdays, or on weekdays but during evening hours, extended hours. But this was only a temporary project and has not been adopted by the government as the official approach to immunization service delivery."* (KII002P-Subnational level).

> *"Sometimes we open vaccination clinics on the market because that's where mothers are available."* (KII17M-Sub-national level).

3.5.4 Involvement of CHW

The involvement of CHWs facilitated program implementation, as they were responsible for identifying children who had missed vaccines.

> *"The plan was good as we were collaborating with CHWs so the had the main responsibility of following up and identifying children who had completely missed or had not completed the regular vaccination schedule."* (KII020M-Sub-national level).

> *"CHWs help us a lot because they know the households. They go door to door to remind parents when there is a vaccination day."* (KII 010M-Sub-national level)

> *"They are our eyes in the community. Without them, we wouldn't know which children have missed their vaccines."* (KII 018M-Sub-national level)

> *"Some parents fear vaccination, but when the message comes from a CHW they know, they accept it."* (KII012 – Sub-national level)

3.5.5 Use of updated microplans

Man KIIs highlighted that the strategy used to reach all was to update micro plans and map underserved populations, particularly for mobile and nomadic communities. Inaccurate population data were said to contribute to missed groups.

> *"We reviewed our micro plans to ensure all hamlets are covered, especially those that were not previously included."* (KII13M-Sub national level)

> *"Sometimes, pastoralist areas are left out because they move. We now include them in the catch-up plan."* (KII21M-Sub-national level)

3.6 RI and/or Catch-up activities: Considerations for future design

As suggested by the participants of this case study, RI or future catch-up activities can be designed in the following way to address the factors identified:

The programme should be more inclusive- including subnational immunization officers and structures (RMO, DMO, RCHMT, CHMT) and community members

RI and catch-up activities should involve a broad range of stakeholders, including regional and district medical officers (RMO, DMO), reproductive and child health management teams (RCHMT, CHMT), and the community. Inclusion promotes ownership and strengthens implementation.

Training duration and modality (cascade) should be improved

Training for *CHW* should be extended and delivered through a cascade model to ensure that knowledge reaches all levels with an emphasis of shifting from one-off, theory-based sessions to regular, practical, scenario-based training, including simulation of screening, usage of registers, and community follow-up of defaulters. This will improve the quality and consistency of service delivery.

> *"Frequent trainings for all staff on immunization SOPs and catch-up procedures will reduce errors and missed doses."* (KII012M-National level)

> *"If those who attend national or regional trainings could come back and train their colleagues, it would help keep everyone informed about new guidelines."* (KII019 – Sub-national)

> *"Training should not only be theoretical — new staff should practice identifying missed children using real registers."* (KII019 -Sub-national level)
> *"Practical mentorship from experienced vaccinators helps new staff understand the process better than just reading SOPs."* (KII018 -Sub-national level)

Tools and materials for catch up to be available in both print and soft copy

Respondents highlighted that the effectiveness of catch-up vaccination depends heavily on the availability and accessibility of tools and materials, such as tally sheets, microplanning templates, registers, and defaulter tracking forms. Many CHW mentioned challenges due to missing or outdated tools and emphasized the importance of having both printed and digital copies for efficiency and data accuracy.

> *"If we had digital versions of the tools, it would make it easier to share and report data faster to the district office."* (KII009M-National level)

> *"During the Big Catch-Up, we used different tally sheets from those used in RI; some of us didn't have printed ones on time."* (KII012 – Sub-national level)

District managers reinforced the need for both print and soft copies to enhance consistency, supervision, and backup in case of loss or damage to physical tools.

> *"All tools should be available in both soft and printed copies. Some facilities lack printers, so if the soft copy is there, we can easily print or share through WhatsApp."* (KII018M-Sub-national level)

Activities and budget should be decentralized for sustainability of the programme

Participants across districts highlighted that decision-making, planning, and budgeting for vaccination services are often centralized at national or regional levels. This limits the flexibility of district and facility levels to respond to local challenges such as outreach costs, transport needs, or social mobilization. They recommended decentralizing both activities and budgets to strengthen accountability, ensure timely implementation, and enhance programme ownership.

> *"If activities and budgets were decentralized, districts could innovate and prioritize areas with low coverage instead of waiting for instructions."* (KII018M-Sub-national level)

> *"Decentralization brings ownership. Each level from regional to facility would feel responsible for results and sustainability."* (KII015M-National level)

> *"Budget decisions should not only be made at the national level. The council health management teams understand the ground realities better."* (KII017M-Sub-national level)

Strengthening vaccine supply and cold chain
Health facilities should maintain a continuous supply of vaccines to avoid turning children away and missing opportunities for immunization.

> *"If the solar fridge fails or vaccines run out, children miss doses. Backup systems and regular supply are critical."* (KII016-Sub-national level)

> *"We need regular checks and backup plans to avoid spoilage and missed opportunities."* (KII011-Sub-national level)

Provide education to the community on the importance of vaccination
Participants (**managers** and **HW** and **caregivers**) widely agreed that inadequate community awareness about vaccination schedules and the importance of completing all doses remains one of the major contributors to low vaccine uptake. Strengthening health education campaigns was therefore identified as a key strategy to improve access, acceptance, and demand for vaccination services.

> *"Many parents do not complete the schedule simply because they don't understand the importance of all doses. Education should start from the community level using CHWs and local leaders."* (KII012M-National level)

> *"Health education should be part of every clinic day. Sometimes we focus on giving vaccines and forget to explain to mothers why follow-up is important."* (KII009-Sub-national level)

> *"Education through radio, schools, and village meetings can help reduce misconceptions about vaccines and increase trust."* (KII018M-Sub-national level)

> *"We want more education in our community. Some people still think vaccines make children sick, but if they hear from doctors or leaders, they will believe."* (FGD05-Male caregiver, P4)

> *"The posters at the clinic help, but many people don't read. It would help if CHW visit our homes or talk during market days."* (FGD06-Female caregiver, P7)

Improving data management and tracking

There is a need to strengthen vaccination registers, tally sheets, and digital tools to monitor coverage and follow up on defaulters.

> *"Using CHVs and phone calls to track children works, but data should be centralized and easier to manage."* (KII013M-National level)

> *"If the health facility keeps proper records and checks them every day, we can ensure no child misses vaccination."* (FGD 10-Female caregiver, P7)

Lessons learned

This case study has highlighted key enabling and hindering factors in the success of BCU. It also identified areas for improvement that are critical for achieving desired coverage targets. This section focuses on the lessons learned during the BCU planning, implementation and monitoring processes.

Programme management and financing
Limited planning that did not comprehensively involve subnational implementers was noted. Managers acknowledged the coordination gaps and limited funding that hindered the process of revising and implementing microplans effectively. Budgeting was mainly from the national to subnational level with limited involvement of the council and health facilities.

Human resource management
Inadequate human resources were observed in terms of number and competencies; the adequacy of human resources was a critical prerequisite for the achievement of the catch-up activities. Context-based strategies that consider the adequacy of human resources at the national and health facility level were documented as critical in the success of the catch-up activities. Regarding training, both managers and HW reported that catch-up vaccination regular training was essential for strengthening service delivery. However, findings revealed considerable variation in training coverage, duration, and delivery modality across districts and regions thus requiring context-based training strategies.

Vaccine and related consumables supply and logistics
Stock-outs were highlighted by caregivers among the reasons for not receiving vaccination services with some health facilities not having cold chain capacity, underscoring the importance of thorough assessment of the cold chain capacity at health facility levels.

Service delivery
A variety of catch-up strategies were implemented under BCU and RI programs to reach unvaccinated and UI children, including the PIRI, mobile and fixed outreach clinics, and integrated service delivery with other health or community programs. Each approach had notable strengths in improving coverage and community reach, but also showed significant gaps related to logistics, funding, staffing, and communication.

PIRI was praised for its coverage, flexibility and community mobilization, especially in terms of reaching pastoralist and mobile populations. Sustainability, funding and staff workload remain concerns for ongoing PIRI implementation. Mobile outreach campaigns were critical for reaching

remote areas but were constrained by limited transport, fuel and scheduling. Fixed outreach sessions were seen as predictable, structured and able to provide a broader suite of services but hindered by crowding, long waiting times and staff shortages. Context based strategies to address specific barrier such as the distance to vaccination sites, particularly for families in remote and sparsely populated areas need to be considered to improve vaccination services availability.

Integrated outreach enabled vaccination alongside other vital health services, like nutrition and antenatal care, thereby delivering essential services for providers and families in an integrated, efficient and cost-effective manners. Yet, this required significant coordination posed a higher burden on staff and required clear guidelines for combining services. Detailed microplanning was realized to be critical in the success of the catch-up activities including monitoring of the activities. This was further

supported by participants across different levels who acknowledged the importance of the timely availability of the updated micro plans to capture older children who missed vaccines during infancy. To ensure consistent implementation, technical guidance, data availability and community mapping data should be in place at the beginning of the implementation. The variation observed regarding how health facilities addressed the microplan challenges pointed to the necessity of context-specific strategies that consider the council and health facilities variations. The adaptation of the microplans to account for older children would be essential to ensure quality data and proper population estimates and effective community engagement.

The discrepancy in reported targets and children reached with Penta1 over time was noted. Data management was highlighted by managers and frontline CHW as a critical component of catch-up vaccination activities and monitoring. The variation in the availability, use, and functionality of data tools across districts was noted, emphasizing the importance of timely availability of the standardized data tools to ensure collection of quality data to monitor the programme. Timely availability of robust data tools would have addressed challenges such as incomplete records, errors during compilation, delayed reporting, limited electronic access and low staff capacity.

Generally, BCU activities, including BCU monitoring, were not carried out thoroughly, delaying the identification of problems such as registers for data, different types of vaccination cards (vaccination cards missing Rota3, some miss IPV, etc) and unsuitable vaccination schedules, such as a lack of daily vaccination services in several health facilities, and misunderstanding about the target of vaccination.

Demand creation

Based on the qualitative data and survey, the perception of caregivers towards vaccination was positive. In addition, the consistent service availability, short waiting times, and positive provider–client interactions encouraged the uptake of the vaccination services. Hence the barriers seemed to be caused by the health service providers and their individual interpretation of what service they should provide and under what schedule. The positive caregivers' perception of vaccines and compliance with the vaccination schedule were attributed to education efforts, CHW engagements and past successful immunization campaigns that built community confidence in vaccines. Sustained advocacy to the community level to address issues related to negative parental beliefs, misconceptions about vaccines, and poor caregiver knowledge regarding the importance of completing all vaccine doses needs to be prioritized to ensure sustained positive caregivers' perception.

Despite an overall positive attitude, fear of side effects especially fever, swelling, or vomiting after vaccination remained a challenge in some communities requiring strengthening of the vaccine safety surveillance system to provide the local data regarding vaccine safety. Furthermore, it was noted that the behavior and communication of CHW played a key role in shaping caregivers' compliance and perceptions. Positive interactions encouraged return visits, while harsh treatment discouraged some caregivers from completing schedules.

Furthermore, depending on the individual context of a council, specific strategies can be applied taking into account the specific needs of the community. This requires strengthening of the council capacity to comprehensively assess its needs, select relevant strategies and plan for its own vaccination activities.

Data management and programme monitoring

Data management emerged as a critical component of catch-up vaccination activities. Both managers and frontline HW acknowledged that accurate record-keeping, timely reporting, and systematic tracking of children who missed doses are essential for effective implementation of the BCU. However, there were variations in the availability, use, and functionality of data tools across districts. The combination of paper-based registers, tally sheets, vaccination cards, and electronic systems, where available, were used to collect data and identify unvaccinated and under vaccinated children. At the beginning of the BCU activities in 2022, the majority of data collection was paper based, and compilation was done using Excel sheets; this was followed by the Afya campaign digital system in 2023 and was fully incorporated in VIMS in 2024. Based on the available administrative data 843,708 (73.2%) of the children received Penta1 out of the administrative targets (1,152,681). Since January 2025, the VIMS system for RI has been upgraded to capture vaccination data for children above one year of age.

Data management challenges included incomplete records (children's health cards and registers had missing entries), delayed reporting (late submission of health facilities' reports affected district planning), limited electronic access (rural facilities lacked computers and/or internet connectivity for DHIS2, and low staff capacities (limited training in accurate data entry and interpretation). Data verification and triangulation at councils' level were prone to errors that could contribute to numerators' problems in the councils that used manual systems.

The monitoring and evaluation were suboptimal because data collection tools were not designed to disintegrate data from RI and from BCU. The BCU indicators as defined in BCU recovery 2023 aimed to monitor activities that would reduce the number of ZD children and number of councils with measles outbreaks. In addition, some indicators such as the national vaccination coverage for Penta1, the percentage of councils with vaccination coverage (Penta1) above 90%, the percentage of councils with vaccination coverage (Penta3) above 90%, the percentage of councils with vaccination coverage (MR1) above 95% and the percentage of councils with vaccination coverage (MR2) above 95% aimed to measure if the catch-up activities were restored. Lastly, the number of councils with updated microplan for improving immunization services and percentage of health facilities with no stock of Pentavalent vaccine in months' time were included to monitor if the strategies were sustained.

Persistent challenges to immunization services as highlighted by BCU

The findings of this case study have highlighted a number of challenges that continue to affect immunization services delivery: i) data quality concern implementation loss due to multiple manual processes from health facility to the national level, ii) delays in data entry and reporting, as vaccination teams continue submitting the data to district coordinators for entry into electronic spreadsheets, iii) limited visualization of intensification data for decision-makers, with delayed updates hindering real-time tracking, iv) restricted access to data from previous campaigns/intensification, which were stored in separate files and are difficult to retrieve, v) heavy workload on data managers at council level during compilation and aggregation of the data with limited verifications and approval strategies that could contribute to numerator problems, vi) increased demand for integration, especially with other campaigns such as the PIRI and limited human resource to ensure services are provided as per client demand, vii) limited availability of vaccination services as per client demand due to lack of daily services, postponement of services including outreach, stock out, shortage of staff etc, viii) insufficient training both in term of the content, focus and frequency and, ix) lack of collaborative planning at different levels of the implementation.

Plans for further institutionalization of catch-up

RI and catch-up activities should involve a broad range of stakeholders, including regional and district medical officers (RMO, DMO), reproductive and child health management teams (RCHMT, CHMT), and the community. As it promotes ownership and strengthens implementation, future policies must consider its inclusion.

Training duration and modality (cascade) should be improved to ensure the training for CHW is extended and delivered through a cascade model to ensure that knowledge reaches all levels to improve service delivery. Training a small group of mentors who can guide and supervise other HW ensures that knowledge is effectively cascaded, sustaining program impact over time. Preservice and in-service delivery training models should be incorporated in training package with practical, scenario-based training, including simulation of screening, use of registers, and community follow-up of defaulters be emphasized. Pre-service curricula should include catch-up and missed opportunities guidelines to ensure new CHW are fully prepared and importance of timely vaccination. The training guidelines revision should consider the importance of integrate multiple immunization topics instead of focusing on a single vaccine to ensure CHW are equipped to handle various vaccines and improve overall coverage. The need to ensure clear SOPs and checklist to monitor the catch-up activities due to the fact the effectiveness of catch-up vaccination depends heavily on the availability and accessibility of tools and materials, such as tally sheets, microplanning templates, registers, and defaulter tracking forms. This will ensure the challenges due to missing or using outdated tools are identified and addressed timely.

Decentralization of catch-up activities and budget should for sustainability of the programme require clear guidelines and inclusion of the catch-up activities in strategic documents such as National Immunization strategy. The centralization of planning of activities at national and regional limits the flexibility of district and facility levels to respond to local challenges such as outreach costs, transport needs, or social mobilization.

The sustainability plan should be revised to include the strategies of financing of vaccines and cold chain expansion and maintenance to ensure continuous supply of vaccines to avoid turning children away and missing opportunities for immunization. Local councils should consider including budget for refresher training to maintain the skills of HW and improve service delivery.

Sustained and continuous community engagement about vaccination schedules and the importance of completing all doses needs to be further strategized and integrated in routine community awareness activities. Strengthening health education campaigns has been identified as a key strategy to improve access, acceptance, and demand for vaccination services.

Opportunites for action

Catching up of ZD and UI children has been included in the National Immunization Strategy (NIS) which is under revision.

This can be achieved by using quality data to identify these children, to inform and guide action as well as in investing in new technologies and approaches to make the use of data timely. Moving from paper based to electronic centrally controlled systems can allow information of every child (0 to 59 months) to be accessed whenever she/he is seen by a health worker. Moreover, the development of an individual child-health record system with unique identifier to monitor vaccine status should be included as strategy. This will allow every child to be recognized wherever they are to get timely and appropriate services since all the information would be easily accessed. This will also be integrated into Zanzibar's Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition Strategy, which is currently in its final stages of development. In addition, the NIS will include strategies to catch-up un- and under-vaccinated children through improved funding to sustain catch-up activities at national and subnational levels.

Incorporating lessons from the BCU into the process of revising the national immunization guidelines (Mwongozo wa Mchanjaji)

Since the guidelines are currently being reviewed, use the lessons learnt and incorporate some of the priority programmatic issues in a revised version of the document: i) data management system should capture information including sex, age beyond 12 months, location (urban vs rural); and ii) ensure that training is regularly offered to the HCWs responsible for vaccination to update their knowledge on vaccination; the training sessions should include not only the changes in the vaccination schedule as well as how to handle vaccines to ensure that the cold chain is maintained throughout, how to document every issue pertaining to vaccination e.g. schedules of outreach showing dates and exactly location, refrigerator temperature etc. Along with a proper record keeping, this will ensure that every child, regardless of their age, has the opportunity to receive the vaccines and eventually reduce ZD and UI. To ensure the continuity of the above activities, a clear sustainability plan should be developed.

Leveraging the updated TimR 2.0 (Electronic Immunization System) for capturing children 12 months & above.

This is a good opportunity to track all important information regarding a child's vaccination status in relation to age and other parameters. The integration of unique identifiers may help to track the mobility of children and for every child to be timely captured by the system for vaccination and monitoring trends. This initiative also requires a clear sustainability plan for its success, and this can be achieved with a strong political will.

Based on caregivers' responses (Figure 19), there is a demonstrated need to improve service delivery such as the availability of vaccines in health facilities, sustained outreach services by public and private health facilities to increase the chances of reducing ZD and UI, and tailored strategies, based on the capacity of the facility, to ensure the provision of daily vaccination services. This will address the caregivers' busy schedule. Though retention of immunization cards by the caregivers was relatively high (85%) there are different versions of these cards and some of them are missing important information on vaccination including missing some antigens (e.g. rotavirus, IPV). Therefore, the provision of standardized and comprehensive home-based vaccination cards for caregivers will allow prompt access to the individual vaccination information for each child and improve the quality of data collected in community surveys.

To introduce detailed pre-service training on the vaccination process as per modified curricula for all relevant health personnel and maintain regular in-service refresher courses for all HW involved in vaccination services. The training plan should be geared towards ensuring a fully functioning monitoring/evaluation system by relevant stakeholders, including supervision activities.

To adapt a context-based planning of vaccination activities accounts for thethe specific characteristics of each region/council and their capacity to implement vaccination activities

Political will of the government to meet the demand of the staff and community. In light of the government's willingness to meet the demands of the community, this opportunity should be utilised to submit evidence-based strategies (guidelines and policies) to address the existing identified gaps in order to improve vaccine delivery services across the country. This should be further supported by financial sustainability strategy, such as increase in local budget allocated to individual councils for vaccination activities.

As partners have demonstrated readiness to support vaccination activities, the national plan should include the specific areas where support is required to ensure a smooth coordination of activities with a high value for money.

Stakeholders Feedback

The findings were disseminated to national and subnational technical stakeholders (~90 participants) to validate the results and to obtain their views on the process and findings (Appendix 13). Stakeholders commended the team and noted the importance and veracity of the results. The stakeholders raised a concern regarding inconsistencies between administrative, WUENIC and survey data as illustrated in the current report with administrative data reporting higher coverage. Regarding this, stakeholders recommended the use of digital tools to collect data from health facilities to the national level based on the realistic revised targets. Regarding the revised 2024 targets, the stakeholders recommended to objectively assess the accuracy of the targets.

These would allow a precise documentation and the use of a unified comprehensive monitoring framework that triangulates data from different sources such coverage data segregated by sex, age, geographical location, vaccines procurement and distribution data, survey data, and trend of vaccine preventable disease surveillance data such measles, rotavirus, polio etc. This in turn will serve as guidance for the councils to plan and budget local vaccination activities to ensure comprehensive assessment of the programme at the council and national level.

The stakeholders emphasised the importance of the training and mentorship of healthcare workers and CHW which was also highlighted by the case study. However, they stressed that, to ensure a stable district mentorship system, would require resources (funds, human resource) due to geographical variations and individual councils' funds capacity. Further exploration regarding a suitable approach for training is needed. In addition, quality pre-service training in relation to immunization services for all health professional cadres was considered necessary to reduce the reliance of short-term capacity building of limited number of staff.

Stakeholders commented on the observed limited vaccination services and pointed to a need of policy level direction regarding caregiver request of additional vaccination days and its practical contextualized implementation strategies.

KEY MESSAGES

- Revise the National Immunization Strategy (NIS) to address data challenges and set clear milestones to achieve all targets by 2030.
- Update immunization guidelines to include clear Standard Operating Procedures (SOPs) and checklists that guide vaccinators to record essential data (sex, age, urban/rural location, etc.).
- Ensure nationwide use of TimR to capture vaccination schedules for children over 24 months and send automated reminders to caregivers about upcoming doses.
- Build on the Government's demonstrated commitment by leveraging evidence-based guidelines and policies, and by providing adequate devices and internet connectivity to fully operationalize TimR, close existing gaps, and strengthen vaccine delivery nationwide.

Conclusion

The BCU case study in Tanzania has revealed some achievement in reaching missed children, however limited evidence of engagement of all stakeholders during BCU planning and implementation was evidenced.

The tools used during early implementation of BCU activities were not adequately designed to collect catch-up data and track BCU key performance indicators highlighted in BCU recovery plan, which was further affected by the targets that were not validated for accuracy. During BCU's implementation, council context-based strategies to reach missed children were appreciated and encouraged to cater for variations in terms of geography and human resource capacity. The Afya campaign system was key in segregating BCU data from routine data necessitating updating of the current systems in order to capture client-based data that can be used to justify revision of key performance indicators to comprehensively assess the IVD programme.

The proportion of children aged 12-59 months who were fully vaccinated with basic antigens was still low in the surveyed councils; this can be considered as indicator of the RI. The use of VIMS and TimR systems, which have been revised to capture individual vaccination data is expected to improve the quality of the data to comprehensively assess the key performance indicators of the programme. The overall card retention rate was 85.5%, using data from these cards, low coverages below 90% were observed for OPV0, OPV1, OPV2, OPV3, Rota3, IPV1 and MR2 in surveyed councils with only 59% of children aged 12-59 months being fully vaccinated with basic antigens; necessitating comprehensive interpretation of the coverage data with triangulation with data from VPD to appropriately assess the quality of the vaccination programme.

Social economic/geographical factors such as geographical and economic activities variations (pastoralists, small businesses in urban settings) that affect vaccinations service were highlighted to contribute to ZD children. CHW and parents/ care givers demonstrated a strong positive vaccine confidence providing opportunity to improve services.

The HW knowledge in relation to BCU was low with general acceptable practices in relation to vaccination observed in more than 70% of the observations. The effective engagement of CHW was critical in community mobilization and reaching missed children and the integration of campaign activities/training was effective in resource utilization.

To obtain a realistic assessment of BCU's achievements in Tanzania and ensure appropriate vaccination coverages, there is a need to establish appropriate targets, efficient data collection tools, efficient capacity to use the tools and verify data and triangulate data from different sources at subnational and national level. This will allow the identification of key performance indicators to monitor the quality of the vaccination programme and the assessment of individual council needs.

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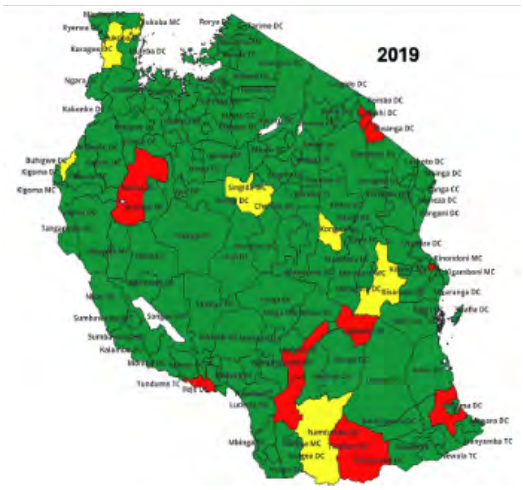
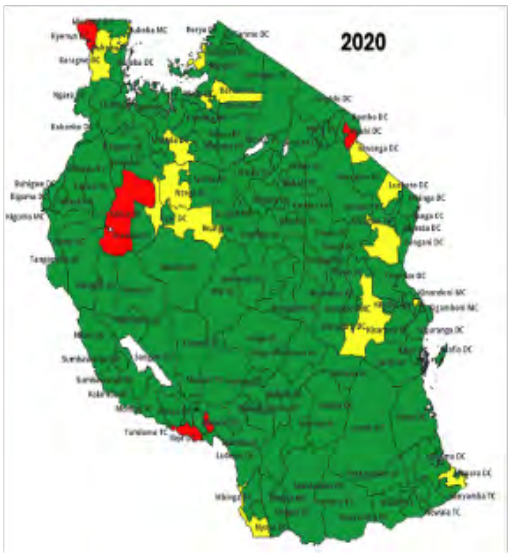
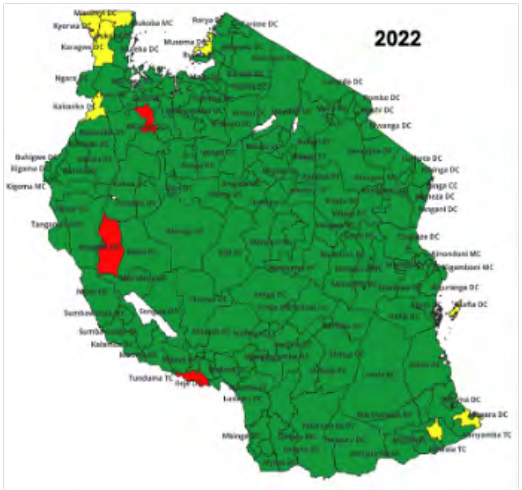
Appendix 1: Subnational coverage maps (administrative data)

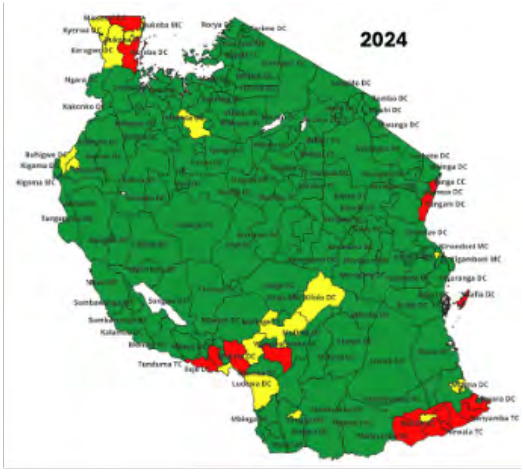
BCG MAP COVERAGE 2019-2024

LEGEND <80% 80%-89% >= 90%



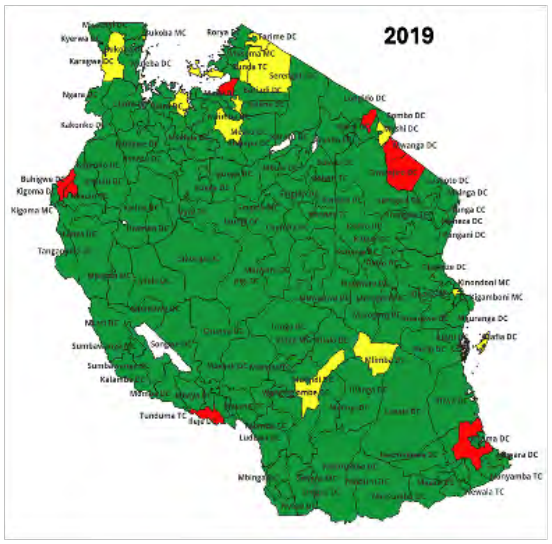


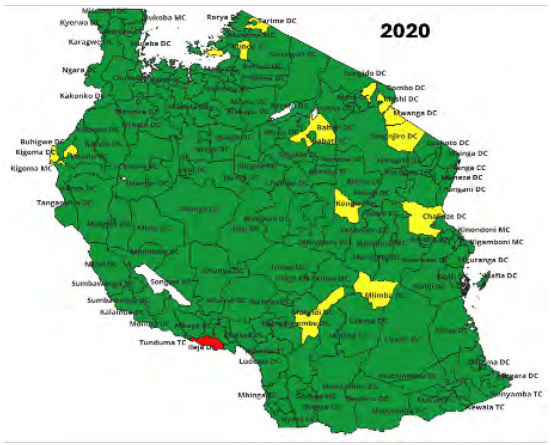


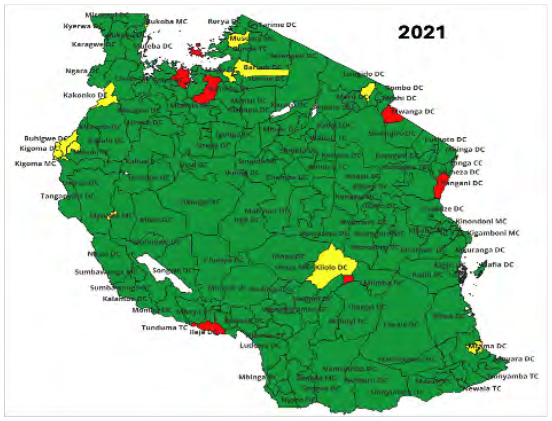


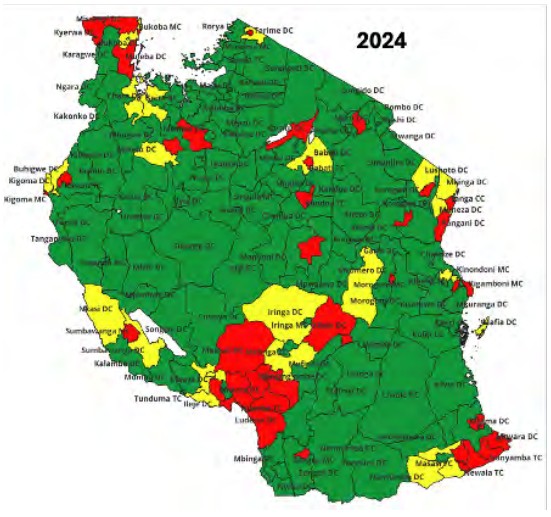
DTP1 MAP COVERAGE 2019-2024

LEGEND | <80% | 80%-89% | >= 90%



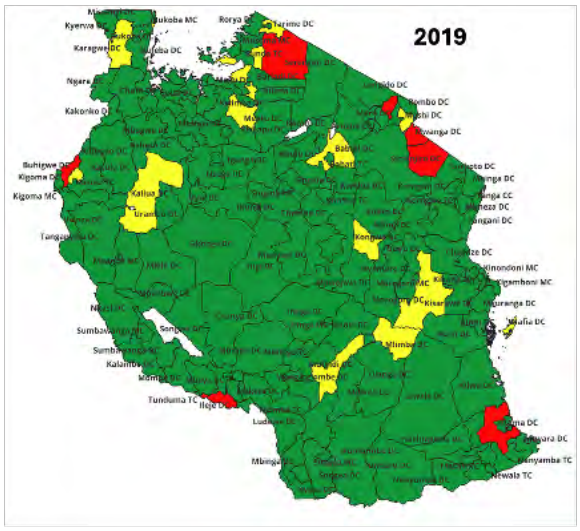


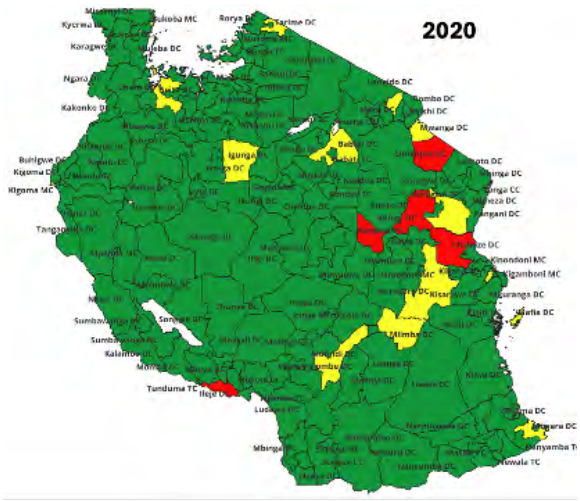


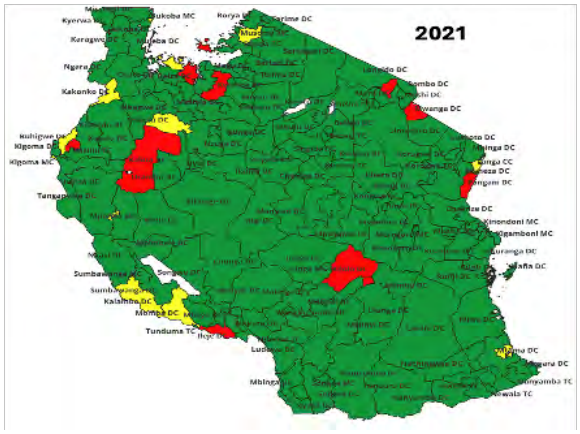


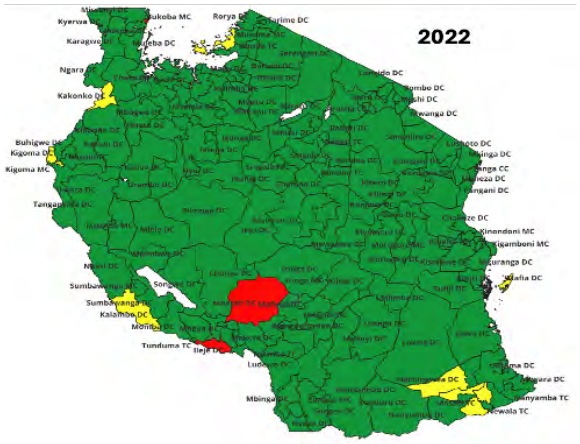
DTP3 MAP COVERAGE 2019-2024

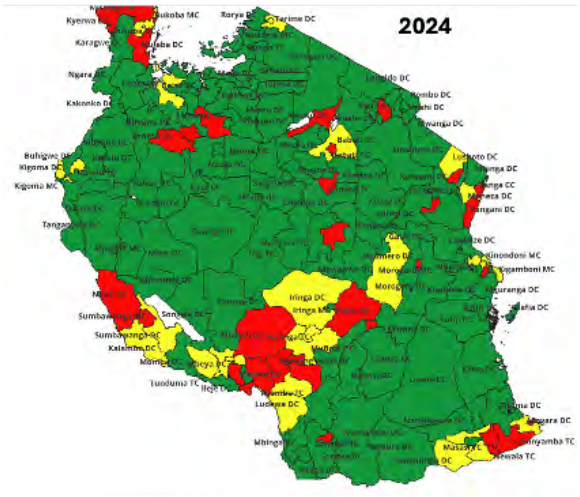
LEGEND <80% 80%-89% >= 90%











IPV1 MAP COVERAGE 2019-2024

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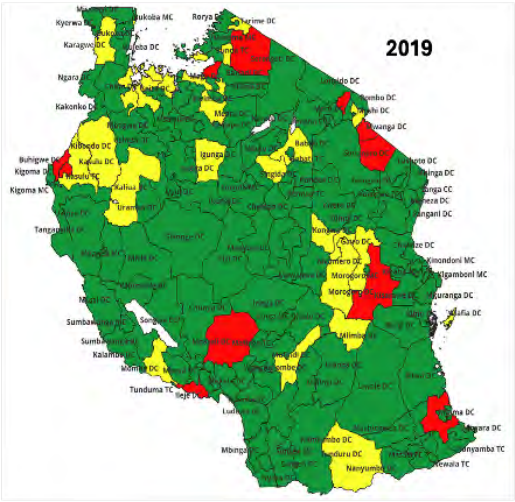

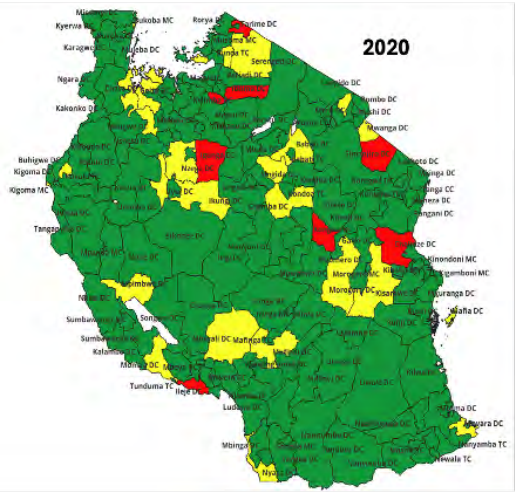

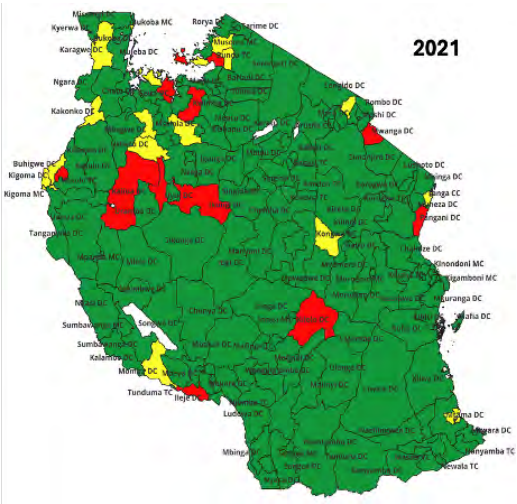

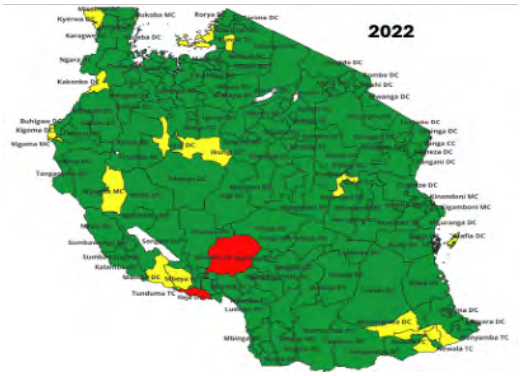

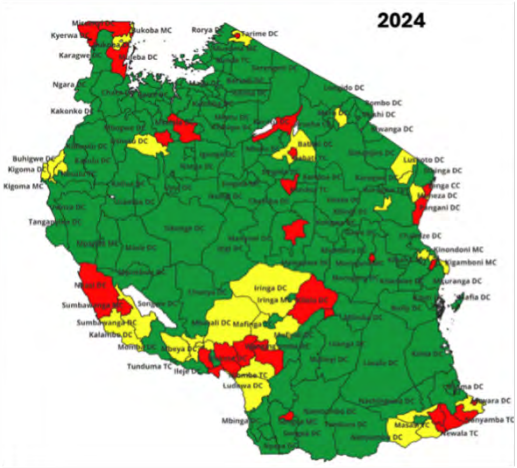

MR1 MAP COVERAGE 2019-2024

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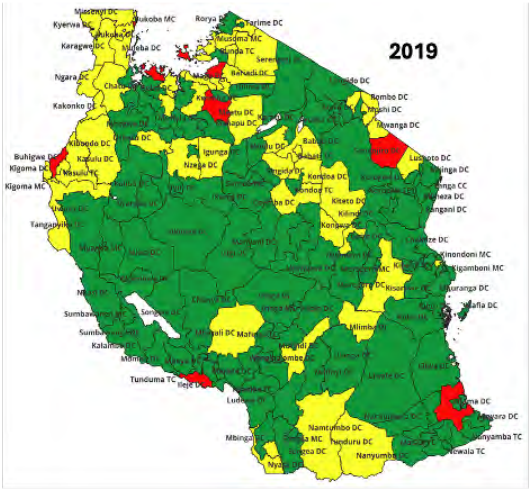

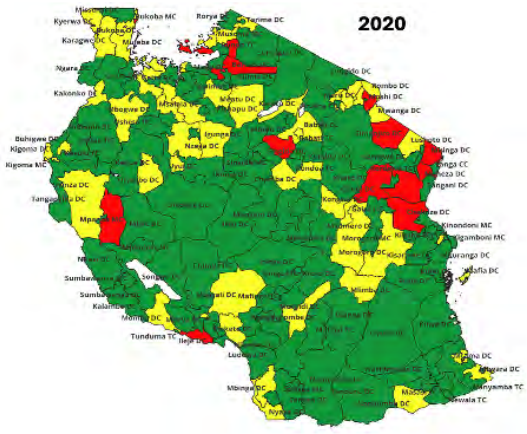

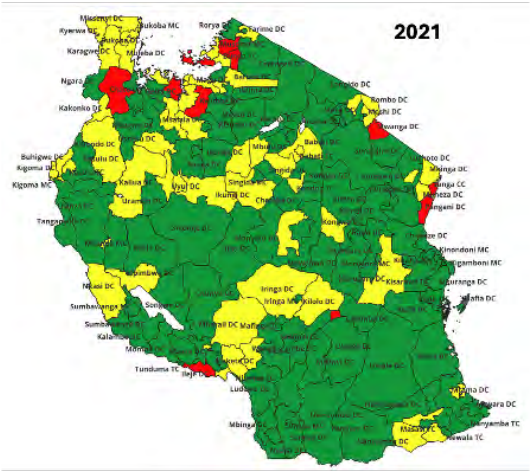

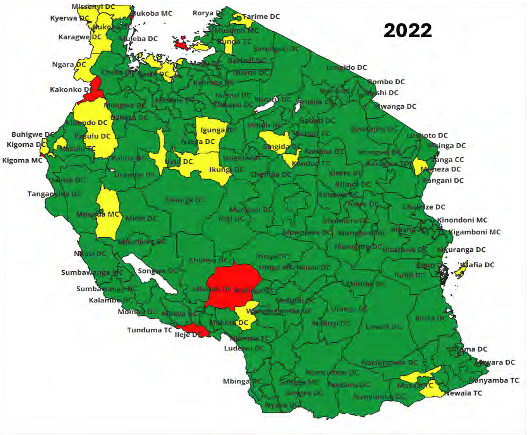

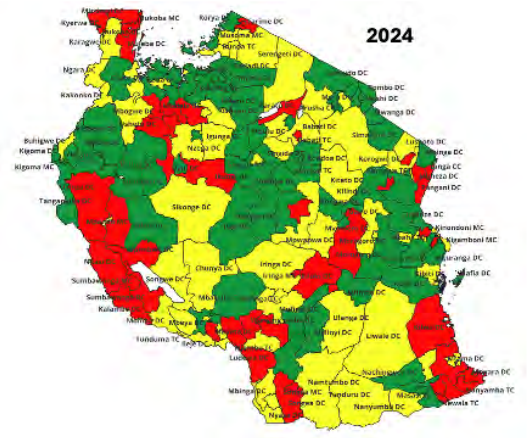

MR2 MAP COVERAGE 2019-2024

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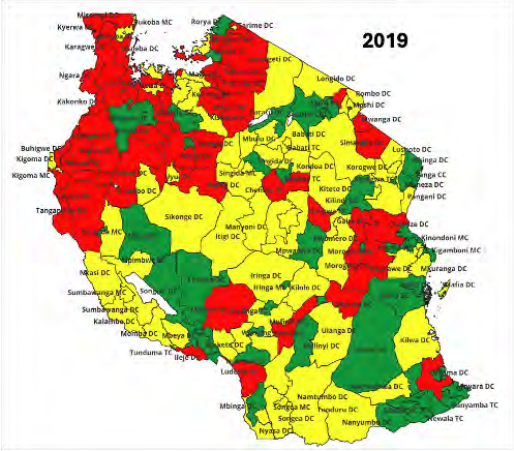
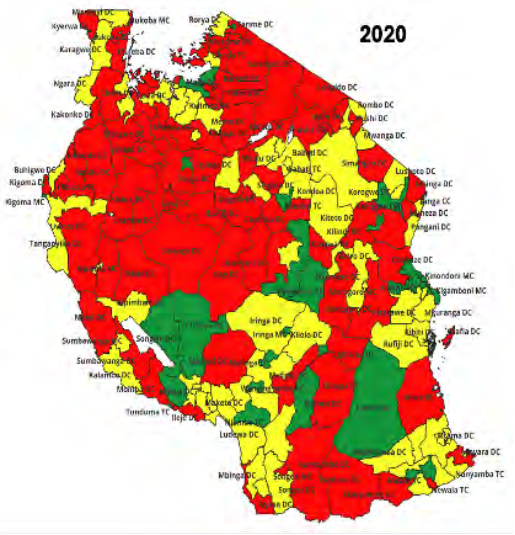
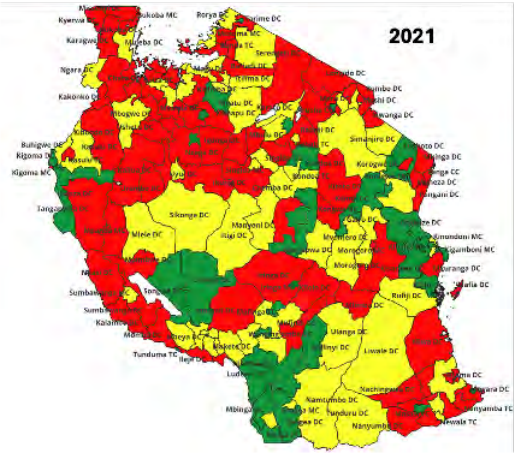
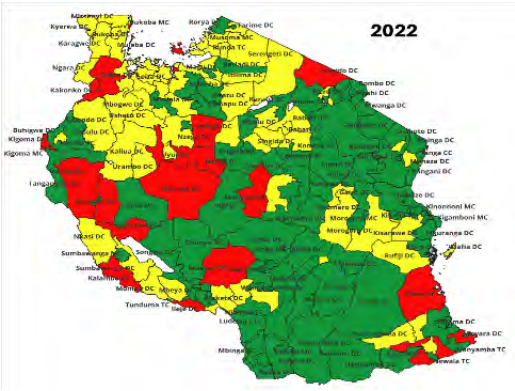
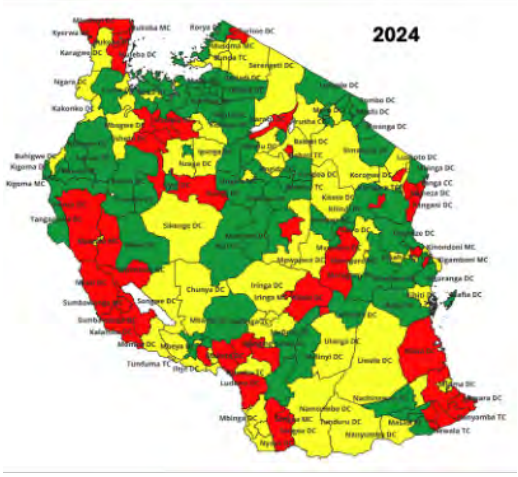










Appendix 2: Reviewed documents and reflection summary

SNO	Document	Author
1	National Immunization Program Financial Sustainability Plan 2003	MOH
2	Primary Health Services Development Programme known as Mpango wa Maendeleo wa Afya ya Msingi (MMAM) 2007 – 2017	MOH
3	Tanzania National Immunization Policy Guideline 2015	MOH
4	National Strategic Plan for Health Promotion 2015 -2020	MOH
5	A Guide for Conducting an Expanded Programme on Immunization (EPI) Review 2017	WHO
6	Policy Guideline for Community-Based Health Services	MOH
7	National Operational Guideline for Community-Based Health Services	MoH
8	Tanzania's Current National Immunization Strategy (2021-2025)	MOH
9	Health Sector Strategic Plan July 2021 – June 2026 (HSSP V)	MOH
10	Immunization Coverage and Equity Assessment Report	UNICEF
11	Tanzania Demographic Health Survey 2022	MOH (Mainland and Zanzibar), NBS, OCGS
12	Tanzania Joint Appraisal 2023	MOH/IVD
13	Tanzanian ZD Catch-Up Intra-Action Review (IAR) Report, 2023	MOH
14	Immunization Recovery Plan 2023-2025	Immunisation and Vaccine Development (IVD) Programme
15	Service Availability and Readiness Assessment (SARA) 2023 Report	MOH, PO-RALG Ifakara Health Institute (IHI)
16	Tanzania Joint Appraisal 2024	Ministry of Health, Extended Programme on Immunization
17	Implementation of Post Measles-Rubella Campaign Vaccination Coverage Survey Tanzania 2024	Ifakara Health Institute
18	The Circular for Implementation of the Integrated and Coordinated CHW' Program in Tanzania 2025	MOH
19	Programme Review 2024	MOH/IVD
20	Closing Immunization Gap: Tanzania's Success Story in Reaching ZD Children 2024	UNICEF
21	Supportive Supervision Report 2024	MOH/IVD

Summary of the desk review of relevant documents

The 21 reviewed documents included 6 strategy and 5 policy/guidelines documents and 10 reviews/ reports of surveys dating from 2003 to 2025 as listed in the above table. The review aimed at documenting the evidence from Tanzania experience of catch-up activities on the planning, implementation, and monitoring of BCU activities and identify the degree of institutionalization of catch-up activities. The review highlights how catch-up immunization activities have been planned, implemented and evolved over time, including plans and efforts to institutionalize catch-up into routine services, and the opportunities and concerns to go forward.

Stakeholders involved:
The policy/guidelines documents were developed by the Ministry of Health, and the surveys reports were compiled by MOH, IVD, UNICEF and IHI.

References to immunization/vaccination:
Strategies to Improve Immunization program performance were mentioned in MOH documents as early as 2003: Support to fixed health facilities, improvement of mobile and outreach services, reduction of missed opportunities, dropout rates, and targeting low performing districts for special strategies were all mentioned in the 2003 National Immunization Program Financial Sustainability Plan, and in the 2007 Primary Health Services Development Programme- MMAM 2007 – 2017 in terms of budgeting for outreach activities. Catch-up appears in the 2015 Tanzania National Immunization Policy Guideline where it is described as a strategy but does not yet specify detailed activities. BCU activities and tools are well described in the 2021 Tanzania's current NIS (2021-2025).

Reference to catch-up:
The 2015 Tanzania National Immunization Policy Guideline defines Catch-up vaccination as the action of vaccinating an individual, who for whatever reason (e.g., delays, stockouts, access, hesitancy, service interruptions), is missing/has not received doses of vaccines, supplements, deworming tablets for which they are eligible per the national immunization schedule but does not present detailed activities plans.

The 2021 Tanzania's current NIS (2021-2025) describes in priority action 1.3: Strengthen ZD and defaulter tracking mechanism with some specific activities including but not limited to: conduct PIRI activities at health facilities in 25 poor performing councils, orient clinicians to screen and identify ZD children when they visit health facilities for other services, train and orient CHWs on immunization services including defaulter tracing, develop, disseminate, and distribute immunization policy guideline/SOPs for defaulter tracking.
In the TZA-Joint Appraisal 2023, the key priorities for 2024 and 2025 were discussed, including: MR catch up campaign (Q1, Q2 2024), IPV polio campaign (Q1 2024), ZD catch up PIRIs (Q1, Q2, Q3 2024), MR outbreak response.

The Immunization Recovery Plan 2023-2025 included Tanzania immunization catch-up schedule but other tools such as identification of ZD, data collection tools, training materials, microplanning etc. were not included.

The 2025 MOH/IVD SUPPORTIVE SUPERVISION REPORT reports that the supervision found 67% of the visited health facilities had developed Reaching Every Child (REC) microplans, indicating planning and preparedness readiness. This indicates that these health facilities had details regarding target areas, target populations, timeline, vaccines, doses, etc. Regarding catch-up activities, the report highlights that 78% of the facilities had scheduled routine vaccination sessions (fixed, outreach, or mobile); 67 had REC micro plans; 72% of health facilities had a ZD tracking mechanism, while 70% had a defaulter tracking system; monitoring charts were found in 64% of the health facilities visited.

Plans for Institutionalization (tools/human resources):
The 2015 Tanzania National Immunization Policy

Guideline speaks of integrating continuous catch up into IVD program, but no specific activities are described. The 2021 National Operational Guideline for Community-Based Health Services specifies procedures for the identification, nomination, selection, training and motivation of CHVs to deliver community-based health service including vaccination services. Eventually, in 2023, the TZA-Joint Appraisal form the MOH/IVD described in detail the supporting factors and plans for institutionalisation by introducing a Policy of immunization daily from Monday to Friday, targeted outreach, house to house mobilization and defaulter tracing by CHWs, proper quantification and timely distribution of the vaccines and related supplies, support health facilities and councils to conduct micro planning, and conduct PIRI with special teams. The Immunization Recovery Plan 2023-2025 highlighted issues to be institutionalized: Integration of Immunization services in PHC, switching from 10 MR vials to 5 MR vials, HPV from two doses to single dose presentation, developed tools (hard and electronic-integrate for monitoring and evaluation catch-up) and extension of immunization sessions beyond normal hours/days.

In the TZA-Joint Appraisal 2024, the continued partnerships, investments in healthcare systems, strengthened health systems, and community-level engagement were identified as a key in improving RI services. Key interventions identified were: enhanced HW training, targeted outreach programs in urban and hard-to-reach areas and strengthened supportive supervision.

The MOH/IVD program review in 2025 made recommendations in line with catch-up activities to be considered for institutionalization. They included to ensure the provision of daily immunization services, outreach and mobile services as per guidelines; strengthen defaulters tracing, missed opportunities, and tracking and catching up of ZD and UI children; capacitate newly recruited and existing HCWs on immunization; improve the quality of microplanning through the application of the microplanning guidelines, holding consultative process and validating the micro plans; institutionalize catch-up as an ongoing activity within the routine programme for older children missing doses; integrate VIMS and DHIS2 and complete interoperability, with age-segregated data; enhance the use of vaccination data at all levels to inform program decisions; utilization of new technologies, electronic systems, and innovations in improving data accessibility, processing, and use; utilization of CHWs/volunteers to improve uptake of immunization services, especially for low-performing areas and doses; and solicit funds for Surveillance activities for its sustainability.

Efforts towards institutionalization were confirmed in the 2025 report from UNICEF (Closing Immunization gap: Tanzania's Success Story in Reaching ZD Children) which listed the lessons learnt, quoting that leadership at ministerial level facilitated rapid decision-making and action to address ZD children and growing immunity gap; data driven decision making was critical for identifying and reaching ZD children; available policy frameworks for service integrations and guideline for PIRI facilitated resource targeting and operationalization.

Appendix 3: Key informant interview guide – programme managers & partners:

Serial Number: |__|__|__| *Pre-assigned centrally*
Date of interview: **Interview start time:**
Day: |__|__| Month: |__|__| Year: |__|__| Hour: |__|__| Minutes: |__|__|
Name of Interviewer: _____ **Supervisor:** _____

Introduction:
Hello, my name is _____. This is [Name2] and he/she/they will be taking notes and helping me.
As you know, we are speaking to different people involved at several levels of the immunization programme as part of a mixed methods case study for the Big Catch-up initiative. We aim to understand the lessons learned on how to catch up children up to age 5 with vaccinations, as well as ways in which catching up children can be institutionalized in the immunization programme.

Given your involvement, the purpose of this interview is to gather your views and suggestions on the Big Catch-up planning and implementation that took place. Before we begin, do you have any questions?

Organization Name: _____
Organization Type (SELECT ONE)

1. Ministry of Health (Mainland) ☐
2. PORALG ☐
3. Ministry of Health (Zanzibar) ☐
4. UN (WHO, UNICEF) ☐
5. NGO ☐
6. CSO ☐
7. Other, specify_____ ☐

Title: _____

Location (SELECT ONE)

1. National ☐
2. Region ☐
3. Council/District ☐

Involvement
1. What was your **role in immunization catch-up activities** for older children 12-59 months ?

Situation
2. Which are the sub-population **groups** with the **greatest concentration of un-/UI children**?
3. For each group, what are the **specific systemic factors** that lead to un-/UI children?
4. For each group, what **strategies** have been attempted to improve access to, demand and utilization of immunization services, and what elements **enabled** or **hindered** the success of each strategy? Which were most successful?

Catch-up
5. For the **catch-up schedule and standard operating procedures (SOPs)**, what are the messages that are clear and what are the points of confusion?
   Probe: Among immunization programme staff, CHW, caregivers
   Probe: Screening for doses and eligibility for catch-up
   Probe: Tracking series of catch-up contacts/visits required for full catch-up (i.e. three doses of Penta and other vaccines with minimum interval between injections for an older ZD child)
6. For the **service delivery strategy for catch-up**, and what were the strengths and weaknesses of using this approach?
   Probe: Periodic intensification of RI (PIRI), fixed and mobile, integrated outreach etc.
7. How were **microplans** updated for older age groups missing vaccinations, and what were the strengths and weaknesses of microplanning for catch-up vaccination?

8. For **HW training** on catch-up, what worked well, and what could have been improved?
   Probe: topics, materials, participation of HW cadres, length/frequency, modality (in person vs virtual) training-of-trainers, etc.
9. What suggestions do you have to include reducing missed opportunities for vaccination and catch-up as part of **future pre-service and in-service training** for CHW?
10. For **data management tools**, how have these have been updated for catch-up and what kinds of issues or suggestions have come up during their use?
    a. Probe: what were changes to data management tools to capture older aged children and when were these rolled out sub nationally and nationally
    b. Were tally sheets or electronic systems updated at all, or were instructions provided on how to record/report differently?
    c. Probe: **eligibility criteria**, how it was assessed by CHW
    d. Probe about how the vaccination(s) administered were recorded in the **home-based record** (HBR) and when an HBR is missing
11. For **vaccine management**, what worked well and what could have been improved for:
    - Vaccine supply and cold chain capacity
    - Syringes and other vaccination supplies/items (handling multiple antigens)
    - Logistics
12. For **demand** for catching up older aged children who missed vaccination, please describe what worked well and what could have been improved
    Probe: community activities, social listening, mass media, materials, etc.
13. For **supervision** of catch-up activities, what worked well and what could have been improved?
14. Were there any **enablers** for catch-up activities not yet mentioned and why are these important?
15. Were there any **barriers** for catch-up activities not yet mentioned and why are these important?
16. Where are there any **budget constraints** which were challenging in implementing the catch-up activities? Which funded activities were most critical to the success?

Measles Outbreak

There was a laboratory-confirmed measles outbreak during the period from 2022 to 2024.

17. **In your opinion, what factors contributed to the measles outbreak?**
    Probe: Presence of a large number of children who have not received any vaccination
    Probe: Presence of a large number of children who have not completed vaccination
    Probe: Poor vaccine quality due to improper storage
18. **What are the reasons that lead to children not receiving or completing the measles vaccination?**
    Probe: Unavailability of vaccines (frequent stock-outs)
    Probe: Parents not bringing their children for vaccination
    Probe: Vaccination services not being provided at the health facility
    Probe: The facility being inaccessible during the rainy season

Way forward

19. What were the **biggest changes in immunization** you observed over the catch-up activities? Which of these changes are the **most important for the future strengthening of the immunization programme**?
20. What suggestions do you have for **institutionalizing reducing missed opportunities for vaccination and providing catch-up opportunities** as part of regular immunization programme for 12-23 months? 24-59 months?
21. At a global level there have been considerable shifts to the health funding and technical assistance landscape since the start of 2025. For example, some governments are cutting back their development assistance for health.
22. Have these dynamics impacted your plans for catch-up activities for 2025? Why / why not?
23. How have these new global dynamics changed your [country / organization]'s plans to institutionalize catch-up activities into regular immunization programmes? E.g., changes to funding portfolio, timeline, geographic scope, etc.

Appendix 4: Key informant interview guide – CHW

Serial Number: |__|__|__| *Pre-assigned centrally*
Date of interview: **Interview start time:**
Day: |__|__| Month: |__|__| Year: |__|__| Hour: |__|__| Minutes: |__|__|
Geographic location
Name of Health Facility: _____
County/District: _____ **Area**: _____
Name of interviewer: _____ **Supervisor**: _____

Introduction:
Hello, my name is _____. This is [Name2] and he/she/they will be taking notes and helping me.
Thank you so much for taking the time to be here today. The Ministry of Health, in collaboration with the World Health Organization and UNICEF aims to reach all children with vaccinations and recently rolled out an initiative to 'catch-up' children who missed timely doses of vaccines. Another reason we are here today is to gather information to help strengthen the technical skills of all CHW, especially those who provide immunization services. We will ask questions related to these topics and are here to listen to your views and suggestions. Before we begin, do you have any questions?

Let's start by confirming characteristics of this health facility:
A. Is this health facility? (select one response):
Public/government service ☐
Private ☐
Non-profit ☐
Faith-based ☐
Other, specify_____ ☐
B. What type health facility is this? (select one response):
Hospital ☐
Clinic ☐
Health center ☐
Health post ☐
Other, specify_____ ☐

Role and involvement in catch-up
1. What **responsibilities** do you have in this facility for vaccination? What responsibilities did you specifically perform to **catch-up vaccination of older children(12-59months)**?
   Probe: microplanning; vaccinating; following up with drop-outs; record-keeping; reporting

Vaccination services
2. What can you tell us about **vaccination services** in this health facility?
   Probe for levels of satisfaction among clients with the vaccination services they are providing
   Probe for perceptions regarding the vaccination programme among different groups including CHW
3. In some other health facilities, we have been told that there are **circumstances when children who come to the facility are not vaccinated**. Can you tell me the circumstances when you, or other staff, would not vaccinate a child in this clinic?
   Probe for: contraindications, over age, vial doses, vaccination days, no vaccines, etc.
   Did you have revised SOPs / guidelines for including and vaccinating children >24 months in the facility.
   Did you have any training or orientation on the revised guideline or SOP?

4. What are some **challenges to delivering vaccination services** at this health facility?
5. In your opinion, what are some of the **ways vaccination services can be improved**?

Timely vaccination

6. As you are aware, the national programme sets a vaccine schedule. How would you describe **compliance with vaccination schedules for on-time doses** in communities in this catchment area?
   Probe for proportion of children who receive all their recommended vaccines on time
   Probe for reasons why some of the children DO NOT receive all their vaccines at the appropriate time
   Probe for reasons why caregivers do not bring children 12m+ for vaccination
7. Which are the sub-population **groups** with the **greatest concentration of un-/UI children**?
8. For each group, what are the **specific systemic factors** that relate to un-/UI?
   Probe for confidence in vaccines and benefits (thinking and feeling); family norms (social processes), intention to vaccinate (motivation); practical issues
9. For each group, what **strategies** have been attempted to improve access to immunization services, and what elements **enabled** or **hindered** the success of each strategy?

Key questions: Catch-up

10. For the **recent initiative to catch-up older children** who had missed vaccination, please tell me about what **worked well** and what **could have been improved** for:
    [take each topic individually, gathering what worked well and what could have been improved for each]
    - Catch-up schedule and standard operating procedures (SOPs)
    - Microplanning and targets of ZD and UI children
    - Training on catch-up schedule, SOPs, screening for catch-up eligibility, giving multiple injections, tracking catch-up series
    - Data management tools for older age cohort(s), recording and reporting
    - Demand activities
    - Supply chain management

Missed opportunities & way forward

In this final group of questions, we'd like to explore how to institutionalize catch-up as part of regular immunization activities.

11. Some **children who may not be up to date on their vaccinations** may visit a health facility for a variety of reasons (immunization, nutrition, treatment of illness, accompanying an adult to the clinic/hospital) and may leave without receiving any immunizations. What is **your experience** with such children at this health facility?
    Probe: How can they be made to receive the vaccines they are eligible for when they visit the clinic?
12. What **strategies**, if any, can the Ministry of Health or this health facility employ to **improve the number of children receiving all of their recommended vaccinations on time**? To catch up when the dose is missed?
    Probe for ideas or strategies that other critical actors / entities can employ
13. In your opinion, what are the possible **barriers** to implementing any of these interventions to reduce missed opportunities?
    Probe for possible solutions to any barriers that have been mentioned
14. Are there any **additional suggestions / ideas** you would like to share at this time? Anything else to add?

Measles Outbreak

There was a laboratory-confirmed measles outbreak during the period from 2022 to 2024.

15. **In your opinion, what factors contributed to the measles outbreak?**
    Probe: Presence of a large number of children who have not received any vaccination
    Probe: Presence of a large number of children who have not completed vaccination
    Probe: Poor vaccine quality due to improper storage
16. **What are the reasons that lead to children not receiving or completing the measles vaccination?**
    Probe: Unavailability of vaccines (frequent stock-outs)
    Probe: Parents not bringing their children for vaccination
    Probe: Vaccination services not being provided at the health facility
    Probe: The facility being inaccessible during the rainy season

Thank you so much for your time and valuable suggestions!

Appendix 5: Focus group discussion guides – caregivers & community members

Serial Number: |__|__|__|__| **Pre-assigned centrally**
Date of interview: **Interview start time:**
Day: |__|__| Month: |__|__| Year: |__|__| Hour: |__|__| Minutes: |__|__|
Geographic location
Council/District: _____ **Area:** _____
GPS coordinates: _____
Name of interviewer: _____ **Supervisor:** _____

Introduction:
Hello, my name is _____ and I will be facilitating the discussion. This is [Name2] and he/she/they will be taking notes and helping me.
Thank you so much for taking the time to be here today and share your views. We will be discussing childhood vaccinations. We are interested in finding out from you what you know about vaccination of children in this community. The Ministry of Health aims to reach all children with vaccinations and recently rolled out an initiative to 'catch-up' children who missed timely doses of vaccines.

This information will be anonymized and will be treated as confidential. If at any point you do not want to continue participating in this discussion, you are free to leave the group, and we will no longer be asking you any more questions. The information discussed today will help us to understand what can be done to improve childhood vaccination programmes.

If recording: We would like to record this discussion. Even though we will be taking notes, we are not able to write everything down and want to be able to go back and listen to any information we might have missed. All notes and the recording will be kept safe and securely. Is everyone okay with recording this conversation? (Confirm that all participants consent)

We ask that you please take turns while speaking and do not interrupt anyone. We are interested in what all of you have to say, so please be respectful of each other's opinions. This discussion will last about 45 minutes.
Before we begin, does anyone have any questions?

Child health
1. What are some **health problems** that affect children in this community?
   Probe: If measles is not mentioned, ask: What about measles? And what causes measles outbreaks in communities?
2. How are your **children protected** from being affected by these health problems/diseases?
   Probe: If vaccination is not mentioned, ask: What about vaccination?

Vaccination confidence and benefits
3. How does the **community feel** about **childhood vaccination**?
   Probe for confidence in vaccines and benefits
4. What can you tell us about the **childhood vaccination services** in this community?
   Probe for levels of satisfaction with the vaccination services they receive from public and/or private clinics/hospitals, ask: What is good and what is not so good about the vaccination services?
   Probe for reasons for their satisfaction or dissatisfaction, ask: Why?
5. In your opinion, what are some of the **ways these vaccination services** can be **improved**?

Vaccine compliance
6. As you may be familiar with, the national programme sets a vaccine schedule. How would you describe **compliance with vaccination schedules** in this community? To what extent are children **vaccinated on-time**?

7. Many children do NOT receive all their recommended vaccines on time. What are some of the **reasons children do NOT receive all their vaccines** at the right time?

8. What will be your **suggestion for helping children to receive all their recommended vaccines** according to the schedule? What are your suggestions specific to a child more than 12 or 23 months old who is ZD or UI to receive all recommended vaccines?

Missed opportunities & catch-up

9. In some cases, children who visit health facilities, for different reasons, still do not get all the needed vaccines. In your opinion, what are some **reasons some CHW may not be willing or able to give children all their recommended vaccines on time**, when they visit the clinic / hospital?

10. Some children receive some, but not all the vaccines they need. In your opinion, what are some of the reasons **mothers/caregivers may not be willing or able to ensure that their children receive all their recommended vaccines** on time when they visit the clinic/ hospital?
    Probes:
    a) If your child, or a child in your community is missing some or all vaccines, do you think it is still **important for them be vaccinated (even if late?) Why?**
    b) If your child, or a child in your community is missing some or all vaccines, do you think they are still **eligible to be vaccinated? Up to what age?**
11. What **recent activities** have taken place in your community **to vaccinate older children** who missed timely doses? What has been the result?
12. Are there other **ways you would recommend to catch-up with children so** that they are still eligible? Why and how would these be effective?
14. What are the **ways you can recommend for ensuring that children receive all their recommended vaccines on time whenever they have the opportunity of visiting a clinic / hospital** for any reasons? (They may be visiting for immunization, nutrition, treatment of illness, or accompanying an adult to the clinic/hospital)?

Additional suggestions

16. Are there any **additional suggestions / ideas** you would like to share at this time? Anything else to add?

Thank the participants for their valuable points. Close on a positive message about vaccines and reducing missed opportunities!

Appendix 6: Observation – vaccination session

Serial Number: |__|__|__| *Pre-assigned centrally*
Date of interview:
Day: |__|__| Month: |__|__| Year: |__|__|
Interview start time:
Hour: |__|__| Minutes: |__|__|

Geographic location
Name of Health Facility: _____
County/District: _____ **Area:** _____
GPS coordinates: _____
Name of Observer: _____ **Supervisor:** _____
Type of vaccination session: ☐ Fixed ☐ Outreach ☐ Mobile

Observations	
1. How **many CHW** were present during the vaccination session?	|__|__|
2. Were any **community volunteers** present and assisting the session?	|__|__|
3. Do you feel **enough staff** were available to run a **high-quality** session? *If not, note number or roles that need support:*	☐ Yes ☐ No
4. Do you feel staff had **skills** to run a **high-quality session?** *If not, note reasons:*	☐ Yes ☐ No
5. Do health sector staff appear **polite** and **organized?** *If not, note reasons:*	☐ Yes ☐ No
6. Are **vaccines stored at appropriate temperatures** during the session? *If not, note reasons:*	☐ Yes ☐ No
7. Is a **register** (or adequate recording tool) available at the session for recording **on-time doses**, as well as **catch-up doses for older age groups**? *If not, note reasons:*	☐ Yes ☐ No
8. Are **vaccination/health cards** available at the session? In cases where a vaccination card is unavailable, how did the HW verify the vaccination status of the child?*Note observations:*	☐ Yes ☐ No
9. Is there a **tally sheet available** at the session and does it segregate on-time doses with catch-up doses for older children? *Note observations:*	☐ Yes ☐ No
10. Is there a **safety box available** at the session? *Note observations:*	☐ Yes ☐ No
11. Is there a system for **following-up with drop-outs/defaulters** being used? *Note observations:*	☐ Yes ☐ No

Question	Child 1	Child 2	Child 3	Child 4	Child 5
12. Was the child 12+ months **screened** for **eligibility** using HBR, register, and/or caregiver recall?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
13. Is the caregiver told **which vaccines** the child is receiving?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
14. Did the child receive **appropriate vaccines** (check card, ask age)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
15. Is each vaccine administered using the correct **route** of vaccination?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
16. Is each vaccine prepared using the **correct diluent** for the vaccine?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
17. Does the vaccinator **touch** or **recap** the needle?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
18. Are used **needles disposed** in a proper safety box after each vaccination?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
19. Is the caregiver told **when** to bring the child back for vaccination (next in series)?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
20. Is the caregiver told about **potential adverse events** following immunization?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
21. If the **caregiver** asks any **questions** are they **answered**?	☐ Yes ☐ No not answered ☐ N/A no questions	☐ Yes ☐ No not answered ☐ N/A no questions	☐ Yes ☐ No not answered ☐ N/A no questions	☐ Yes ☐ No not answered ☐ N/A no questions	☐ Yes ☐ No not answered ☐ N/A no questions
22. Is each vaccination **recorded** in the child health **card**?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
23. Is each vaccination recorded in the clinic's **registry**?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
24. Any **additional health services** received today?	☐ Growth monitoring ☐ Vitamin A ☐ Malaria intervention ☐ Curative care ☐ Other:	☐ Growth monitoring ☐ Vitamin A ☐ Malaria intervention ☐ Curative care ☐ Other:	☐ Growth monitoring ☐ Vitamin A ☐ Malaria intervention ☐ Curative care ☐ Other:	☐ Growth monitoring ☐ Vitamin A ☐ Malaria intervention ☐ Curative care ☐ Other:	☐ Growth monitoring ☐ Vitamin A ☐ Malaria intervention ☐ Curative care ☐ Other:

APPENDIX 6b: Observation results

Table 1: Councils and number of vaccination sessions observed

Council	Freq.	Percent
Arusha Dc	4	9.09
Arusha cc	5	11.36
Kaliua Dc	5	11.36
Karatu Dc	3	6.82
Kibaha MC	3	6.82
Mafia Dc	1	2.27
Magharibi A	3	6.82
Masasi DC	2	4.55
Mjini	1	2.27
Mpanda Mc	5	11.36
Mpimbwe DC	2	4.55
Nanyamba DC	1	2.27
Nzega Tc	3	6.82
Tanganyika DC	2	4.55
Wete	4	9.09
Total	**44**	**100**

Table 2: General issues observed in 44 sessions

SNO	Item	Yes	No
1	Were any community volunteers present and assisting the session?	15 (34.1)	29 (65.9)
2	Do you feel enough staff were available to run a high-quality session?	20 (45.5)	24 (54.5)
3	Do you feel staff had skills to run a high-quality session?	10 (22.7)	34 (77.3)
4	Do health sector staff appear polite and organized?	39 (88.6)	5 (11.4)
5	Are vaccines stored at appropriate temperatures during the session?	50 (50.0)	50 (50.0)
6	Is a register (or adequate recording tool) available at the session for recording on-time doses, as well as catch-up doses for older age groups?	29 (65.9)	15 (34.1)
7	Are vaccination/health cards available at the session? In cases where a vaccination card is unavailable, how did the HW verify the vaccination status of the child?	38 (86.4)	6 (13.6)
8	Is there a tally sheet available at the session and does it segregate on-time doses with catch-up doses for older children?	31 (70.4)	13 (29.6)
9	Is there a system for following up with dropouts/defaulters being used?	14 (31.8)	29 (65.9)

Table 3: Observations of practices of the vaccination sessions in 44 health facilities

SNO	Practice	Yes (n, %)	No (n, %)	Total children observed
1	Eligibility screening using HBR, register, and/or caregiver	148 (93.1)	11 (6.9)	159
2	Is the caregiver told which vaccines the child is receiving?	57 (35.8)	102 (64.2)	159
3	Did the child receive appropriate vaccines (check card, ask age)	155 (97.5)	4 (2.5)	159
4	Is each vaccine administered using the correct route of vaccination?	134 (83.7)	26 (16.3)	160
5	Is each vaccine prepared using the correct diluent for the vaccine?	159 (99.4)	1 (0.6)	160
6	Does the vaccinator touch or recap the needle?	34 (21.3)	126 (78.7)	160
7	Are used needles disposed in a proper safety box after each vaccination?	155 (96.9)	5 (3.1)	160
8	Is the caregiver told when to bring the child back for vaccination (next in)	51 (31.9)	109 (68.1)	160
9	Is the caregiver told about potential adverse events following immunization?	29 (18.1)	131 (81.9)	160
10	**If the caregiver asks any questions, are they answered?	37 (86.0)	6 (14.0)	43
11	Is each vaccination recorded in the child health card?	145 (90.6)	15 (9.4)	160
12	Is each vaccination recorded in the clinic's registry?	113 (71.1)	46 (28.9)	159

***Caregivers did not ask any questions (n=117)

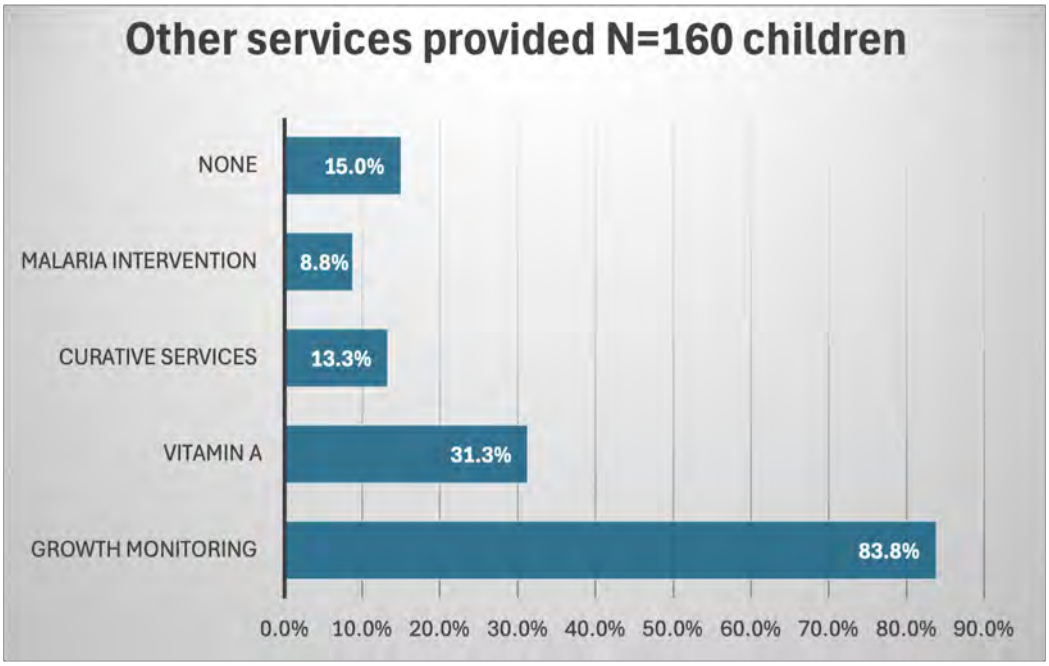
Summary scores of the observations of 12 items

Practices	Score	Total scores	% score
Acceptable practices	1309	1799	72.8
Unacceptable practices	490	1799	27.2

A total of 160 children were observed, of these 105 (65.6%) were estimated to be above one year of age.

Table 4: Other services provided during vaccination session

Services	n	%
Growth Monitoring	71	44.4
Growth Monitoring and Curative Care	1	0.6
Growth Monitoring and Malaria Intervention	10	6.3
Growth Monitoring and Others	4	2.5
Growth Monitoring and Vitamin A	24	15.0
Growth Monitoring, Vitamin A and Curative care	20	12.5
Growth Monitoring, Vitamin A and Malaria intervention	2	1.3
Growth Monitoring, Vitamin A and Others	2	1.3
Vitamin A	2	1.3
None	24	15.0
Total	**160**	**100.0**



Appendix 7: Questionnaire – caregivers & community members: English version

Serial Number: |__|__|__|__| *Pre-assigned centrally*
Date of interview:
Day: |__|__| Month: |__|__| Year: |__|__|
Interview start time:
Hour: |__|__| Minutes: |__|__|

Geographic location

County/District: _____ **Area:** _____

GPS coordinates: _____
Name of interviewer: _____ **Supervisor:** _____

Number of caregivers in the focus group: _____

Introduction:
Hello, my name is _____. This is [Name2] and he/she/they will be taking notes and helping me.
Thank you so much for taking the time to be here today and share your views. We will be discussing childhood vaccinations. We are interested in finding out from you what you know about vaccination of children in this community. The Ministry of Health aims to reach all children with vaccinations and recently rolled out an initiative to 'catch-up' children who missed timely doses of vaccines. We would like to hear your views on this topic. Please be assured that responses are anonymous.

I. CHILD'S INFORMATION

IN CASE MORE THAN ONE CHILD, CHOOSE THE CHILD AT RANDOM WITHIN TARGET AGE RANGE (12 to 59 months)

1. Date of birth: Day: |__|__| Month: |__|__| Year: |__|__|

2. Sex at birth of child: Male: |__| Female: |__|

3. When was last time you took your children to health facility? Month/Year
4. What was the reason of for taking the child to health facility
   1. For medical consultation (child is sick) ☐
   2. For vaccination ☐
   3. Healthy child visit or growth/development check-up ☐
   4. Child is only accompanying (not for treatment or vaccination) ☐
   5. Hospitalization (child was admitted or is still on admission) ☐
   6. Other, specify_____ ☐

II. CAREGIVER'S INFORMATION

5. What is your relationship to the child?
1. Mother ☐
2. Father ☐
3. Grandparent ☐
4. Uncle / Aunt ☐
5. Brother / Sister ☐
6. Other, specify_____ ☐

6. Can you read and write?
Yes ☐ No ☐

7. What level of formal education do you have?

1. No formal education ☐
2. Did not complete primary (less than 6 years) ☐
3. Completed primary ☐
4. Completed secondary ☐
5. More than secondary ☐

8. By what means of transportation do you usually use to go to the health facility?

1. Walk ☐
2. Bicycle ☐
3. Motorcycle ☐
4. Car ☐
5. Bus ☐
6. Other, specify_____ ☐

9. How long does it take you to get to the health facility?

Hour(s): |__|__| Minutes: |__|__|

II. BEHAVIORAL AND SOCIAL DRIVERS of vaccination

10. How much do you trust the CHW who give children vaccines? Would you say you trust them...

[SELECT ONE]

1. Not at all ☐
2. A little ☐
3. Moderately ☐
4. Very much ☐

11. Do you think most parents you know get their children vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

12. Do you think most of your close family and friends want you to get your child vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

13. Do you think your religious leaders want you to get your child vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

14. Do you think your community leaders want you to get your child vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

15. Has a HW recommended your child be vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

16. Have you ever been contacted about your child being due for vaccination?

1. Yes ☐
2. No ☐

17. If it was time for your child to get vaccinated, would the mother or caregiver need permission to take your child to the clinic?

1. Yes ☐
2. No ☐
3. Don't know ☐

18. Do you know where to go to get your child vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

19. Have you personally ever taken your youngest child to get vaccinated?

1. Yes ☐
2. No ☐

20. Have you ever been turned away when you tried to get your child vaccinated?

1. Yes ☐
2. No ☐
3. Don't know ☐

21. How easy is it to get vaccination services for your child? Would you say... [SELECT ONE]

1. Not at all easy ☐
2. A little easy ☐
3. Moderately easy ☐
4. Very easy ☐

22. How easy is it to pay for vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say...

1. Not at all easy ☐
2. A little easy ☐
3. Moderately easy ☐
4. Very easy ☐

23. What makes it hard to get vaccination services for your child? Would you say...
[READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]

1. Nothing, it's not hard, [IF NOTHING, SKIP REST OF RESPONSES] ☐
2. Getting to the clinic is hard ☐
3. The clinic opening times are inconvenient ☐
4. The clinic sometimes turns people away without vaccinating ☐
5. The waiting time in the clinic takes too long ☐
6. Is there something else? [RECORD ANSWER] _____ ☐

24. How satisfied are you with the vaccination services? Would you say...

1. Not at all satisfied ☐
2. A little satisfied ☐
3. Moderately satisfied ☐
4. Very satisfied ☐

25. What is not satisfactory about the vaccination services? Would you say... [READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]

1. Nothing, you are satisfied, [IF NOTHING, SKIP REST OF RESPONSES] ☐
2. Vaccine is not always available ☐
3. The clinic does not open on time ☐
4. Waiting times are long ☐

26. What is not satisfactory about the vaccination services? Would you say...
[READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]

1. Nothing, you are satisfied, [IF NOTHING, SKIP REST OF RESPONSES] ☐
2. Vaccine is not always available ☐
3. The clinic does not open on time ☐
4. Waiting times are long ☐
5. The clinic is not clean ☐
6. Staff are poorly trained ☐
7. Staff are not respectful ☐
8. Staff do not spend enough time with people, or ☐

Is there something else? [RECORD ANSWER: ☐ _____

III. USE OF VACCCINATION CARD / HOME BASED RECORD

27. Does your child have a vaccination card / booklet / home-based record

1. Yes, and I have it with me ☐ CONTINUE
2. Yes, but I do not have it with me ☐ SKIP to QUESTION 29
3. No ☐ SKIP to QUESTION 28

28. Please allow me to take a photo of your record [DATA COLLECTOR TO MARK]

1. Photo taken, note time taken_____ (for matching to interview) ☐
2. Photo not taken ☐

29. Why don't you have a vaccination passport?

1. I lost it ☐
2. I have never been given one ☐
3. I don't know ☐
4. Other, specify ☐ _____
5.

30. Could you tell me what purpose the vaccination card / home based record serves? DO NOT READ OUT OPTIONS. CHECK ALL THAT APPLY.

1. To know what vaccines the child has had and which ones are missing ☐
2. Birth certificate and / or identification ☐
3. Overall health record and growth monitoring ☐
4. Record and remind for return visit dates ☐
5. Other, specify_____ ☐
6. Don't know / No response ☐

VI. REASONS TO VACCINATE CHILDREN

31. Could you tell me the purpose of vaccines (CHECK ALL THAT APPLY. DO NOT READ)

1. To prevent illness ☐
2. So children will grow up healthy ☐
3. To cure / heal disease ☐
4. They don't do any good ☐
5. Not sure what they are for ☐
6. Other, specify_____ ☐

32. What happens if you are unable to take your child for vaccination on time? (CHECK ALL THAT APPLY)

1. HW calls/sends SMS to remind you ☐
2. HW or community HW visits home ☐
3. No reminders, but you can still take your child for vaccination, even if late ☐
4. If you wait too long, your child is no longer eligible to get vaccinated ☐
5. Other, specify_____ ☐

33. Up to what age do you think a child should be vaccinated against measles?

1. Up to 18 months ☐
2. Up to 2 years old ☐
3. Up to 5 years old ☐
4. No age limit, everyone should be vaccinated against measles ☐
5. Other, specify _____ ☐

34. Are you aware that even if the child is greater than 11 months but has missed the opportunity, he/she could still be taken to the facility for vaccination?

1. Yes ☐
2. No ☐
3. Don't know ☐

35. What challenges to do you have to bring your child to the vaccination sessions after they are over 12 months of age?

1. I am too busy ☐
2. I have other children at home ☐
3. It is difficult to have the child wait at the clinic ☐
4. Other, specify_____ ☐

36. What suggestions do you have to improve vaccination services? (CHECK ALL THAT APPLY)

1. There should be more vaccination personnel ☐
2. There should be less wait ☐
3. Hours and days when vaccination services are available ☐
4. Vaccination should remain free ☐
5. Treatment of the public and of children being vaccinated should be friendlier ☐
6. Vaccines should always be in stock ☐
7. They should provide information on the vaccines that are being given, on the disease that they prevent, and on the reactions that they produce ☐
8. More outreach services ☐
9. Child play area/entertainment in the waiting room
10. Other, specify_____ ☐
11. None ☐
12. Don't know ☐

THANK THE INTERVIEWEE. Note time interview ended.

READ THE FOLLOWING STATEMENT:

"Remember that vaccination is a right for all people. Demand this right and remember to bring your child's vaccination card to the health facility each time you visit the centre for any reason."

Interviewer remarks: _____

Appendix 8: Questionnaire – CHW

Serial Number: |__|__|__| **Pre-assigned centrally**

Date of interview:
Day: |__|__| Month: |__|__| Year: |__|__|

Interview start time:
Hour: |__|__| Minutes: |__|__|

Geographic location
Name of Health Facility: _____
County/District: _____ **Area:** _____
GPS coordinates: _____
Name of interviewer: _____ **Supervisor:** _____
Name of Informant / Respondent (HW): _____

Introduction:
Hello, my name is _____. This is [Name2] and he/she/they will be taking notes and helping me.
Thank you so much for taking the time to be here today. The Ministry of Health, in collaboration with the World Health Organization and UNICEF aims to reach all children with vaccinations and recently rolled out an initiative to 'catch-up' children who missed timely doses of vaccines. Another reason we are here today is gather information to help strengthen the technical skills of all CHW, especially those who provide immunization services. We will ask questions related to these topics and are here to listen to your views and suggestions.

Before we begin, do you have any questions?

A. Is this health facility? (select one response):
1. Public/government service ☐
2. Private ☐
3. Non-profit ☐
4. Faith-based ☐
5. Other, specify_____☐

B. What type health facility is this? (select one response):
1. Hospital ☐
2. Clinic ☐
3. Health center ☐
4. Health post ☐
5. Other, specify_____☐

I. BACKGROUND INFORMATION

Please mark the correct answer to each question:

1. Gender or sex
6. Male ☐
7. Female ☐
8. Other/prefer not to say ☐

2. Age
9. Under 20 years ☐
10. 20 to 29 years ☐
11. 30 to 39 years ☐
12. 40 to 49 years ☐
13. 50 or over ☐

3. What is your professional training?

1. Doctor ☐
2. Nurse ☐
3. Clinical Officer ☐
4. Public Health Officer ☐
5. Other, specify_____ ☐

4. Area (or department) in which you predominately work

6. In-patient Department (in admission wards) ☐
7. General Out-Patient (OPD) ☐
8. Emergency Department ☐
9. Immunization, preventive medicine, epidemiology ☐
10. Nutrition ☐
11. IMCI (Integrated Management of Childhood Illness) ☐
12. Dental / Oral Unit ☐
13. Family Planning and STI ☐
14. Ante-Natal Clinic (ANC) ☐
15. Other, specify_____ ☐

5. For how long have you been working in this profession? Year(s): |__|__| Month(s): |__|__|

6. During your basic training in nursing, midwifery, or medical school, were you trained in the control of vaccine preventable diseases?

1. Yes ☐
2. No ☐

7. Since your basic training, have you received training or participated in courses on vaccination or control of vaccine-preventable diseases?

1. Yes ☐
2. No ☐ → SKIP TO QUESTION 9

8. If YES, when were you last trained?

1. <1 year ago ☐
2. 1 to 2 years ago ☐
3. 2 to 3 years ago ☐
4. >4 years ago ☐

II. KNOWLEDGE OF VACCINATION

9. Absolute contraindications against ANY vaccine include: Please mark all correct options.

1. Local reactions to previous dose ☐
2. Light fever ☐
3. Seizures under medical treatment ☐
4. Pneumonia or other serious diseases ☐
5. None of the above ☐
6. Don't know ☐

10. Contraindications against being vaccinated with oral polio vaccine include:

1. Breastfeeding ☐
2. Axillary or rectal temperature of 37.5 C ☐
3. Mild malnutrition ☐
4. Mild diarrhoea ☐
5. None of the above ☐

11. From day to day, who should evaluate the vaccination status of children, review vaccination cards / health passports, and ensure that children are up to date according to the national schedule?

1. The child's parents ☐
2. The HW responsible for immunization ☐
3. Physicians in external consultations, inpatient services, and emergency rooms ☐
4. All of the above ☐

12. In which of the following situations should you inquire about the doses that children have received and those that are missing according to their age? PLEASE CHECK ALL THAT APPLY

1. During a child's wellness visit ☐
2. Consultation for any illness ☐
3. When a child is accompanying a caregiver during a prenatal check-up ☐
4. When a child is accompanying a caregiver visiting a health facility for any reason ☐
5. Other _____ ☐

13. Why do you think that some children are not up to date on their vaccination? PLEASE CHECK ALL THAT APPLY

1. Parents' negative beliefs related to vaccination ☐
2. Hours of vaccination incompatible with parents' busy lives ☐
3. Physicians, nurses, and CHW do not ask about their children's vaccination schedules ☐
4. Physicians, nurses, and CHW do not review children's vaccination records ☐
5. False contraindications for vaccination by CHW ☐
6. Distance from the vaccination site ☐
7. Other _____ ☐

14. Do you agree or disagree with the following statements:

a. My knowledge of vaccines is insufficient or outdated	Agree Disagree	☐ ☐
b. I am concerned about, and fear, adverse reactions from vaccines	Agree Disagree	☐ ☐
c. I am concerned about giving too many injections at the same time	Agree Disagree	☐ ☐
d. Completing vaccination recording and reporting tools (registry / tally sheets / vaccination cards) delays timely vaccination of children	Agree Disagree	☐ ☐

III. PRACTICES

15. What is the policy for catch-up/late/delayed vaccination – ask to see if there is a guideline/directive, etc.

1. HW aware of policy, documents seen ☐
2. HW aware of policy, documents not available ☐
3. HW not aware of catch-up policy ☐

16. Do you have a catch-up schedule so that you know which vaccines to give to children who start late/are missing doses/etc? – ask to see the schedule

1. Yes, schedule seen ☐
2. Yes, schedule not seen ☐
3. No ☐

17. Do you find the catch-up schedule easy to understand and follow in practice?

1. Yes ☐ → CONTINUE TO QUESTION 18
2. No ☐ → SKIP TO QUESTION 19

18. Please explain why the catch-up schedule is not easy to understand [open ended]

19. Up to what age do you think a child should be vaccinated against measles?

1. Up to 15 months (when MCV2 is scheduled) – adapt to country schedule ☐
2. Up to 2 years old ☐
3. Up to 5 years old ☐
4. No age limit, everyone should be vaccinated against measles ☐
5. Other, specify _____ ☐

20. A female infant comes to the clinic today. She is aged 3 months (~13 weeks). She has a documented history of one dose of BCG and one of OPV0, both administered at birth. The mother seeks the service to assess the child's growth and development. What vaccines would you give the child today?

1. None ☐
2. Only Polio (OPV) ☐
3. Only Pentavalent ☐
4. Measles vaccine ☐
5. Polio, Penta, Rotavirus, PCV ☐
6. Don't know ☐

21. For a 22-month-old child, if no vaccination records are available and the caregiver does not recall vaccination, should vaccination be offered?

1. Yes, but only certain vaccines, specify _____ ☐
2. No, reason_____ ☐
3. Don't know ☐

22. For a 4-year-old child, if no vaccination records are available and the caregiver does not recall vaccination, should vaccination be offered?

1. Yes, according to the catch-up schedule ☐
2. No, the child may have already been vaccinated ☐
3. Don't know ☐

NOTE: if you work in the area of immunization or provide vaccines as part of your job, please continue. If you work in other departments, please STOP HERE, share additional comments, and thank you for your time!

THIS NEXT SET OF QUESTIONS ARE ONLY FOR HEALTH CARE PROFESSIONALS WHO ADMINISTER VACCINES

23. Today, I have enough vials of vaccines for all patients who seek immunization services

1. Agree ☐ → SKIP TO 26
2. Disagree ☐ → CONTINUE
3. Don't know ☐ → CONTINUE

24. If disagree, which vaccines are you lacking? (SELECT ALL THAT APPLY)

1. BCG ☐
2. bOPV ☐
3. Penta ☐
4. Rotavirus ☐
5. PCV ☐
6. MCV ☐
7. Other(s), specify_____ ☐
8. Don't know ☐

25. Today, I have all the supplies that I need to vaccinate patients who seek immunization – including syringes, recording sheets, vaccination cards / health passports, and other materials

1. Agree ☐ → SKIP TO 26
2. Disagree ☐ → CONTINUE
3. Don't know ☐ → CONTINUE

26. If disagree, which materials are you lacking? (SELECT ALL THAT APPLY)

1. Syringes ☐
2. Recording materials ☐
3. Vaccination cards / health passports ☐
4. Other(s), specify_____ ☐

27. Under what circumstances would you tell the parent what vaccines you are administering AND provide advice regarding what to do in case the child experiences an adverse event following immunization? (SELECT ONE)

1. Only if the vaccine administered could produce a severe reaction ☐
2. Only when the parent or guardian requests this information ☐
3. Never, since this information can be counterproductive and discourage participation in the immunization programme ☐
4. Always, regardless of the vaccine used and type of reaction that might be expected ☐
5. The probability that an adverse event related to vaccination is so low that I would rarely have to provide this information ☐

28. What should be done if you notice that there are children with delayed or missed vaccines in the vaccine registry? PLEASE CHECK ALL THAT APPLY

1. Make a weekly list of children with incomplete schedules ☐
2. Contact parents or guardians by telephone, email, or any other means of communication to remind them to vaccinate their children ☐
3. Make or arrange for home visits to encourage the family to complete the child's vaccination schedule and administer missing doses while there ☐
4. All of the above ☐
5. None of the above ☐

29. At 8:00 AM, you prepare a vaccination cold box for the morning shift at the health facility. You place two vials of 10 doses of measles vaccine in the cold boxes. At 3:00 pm, a mother requests that her 14-month-old child receive one dose of measles vaccine. The child has not yet received measles vaccine but has received other vaccines for children aged < 1 year. The child has no contraindications. Only two doses from the first vial have been administered since 8:30am, when the first dose was given. Which of the two vaccine vials in the cold box would you use to vaccinate this child?

1. I would use the first open vial to prevent vaccine wastage ☐
2. I would tell the mother to return the next day, since I cannot open a new vaccine vial and there are no more children to vaccinate ☐
3. I would open the second vial of measles vaccine to immunize the child ☐
4. I would recommend that the mother take the child to another health center to be vaccinated ☐
5. None of the above ☐

30. Would your answer to the previous question be different if it were a 3-year-old child that had only received one dose of measles vaccine?

1. I would use the first open vial to prevent vaccine wastage ☐
2. I would tell the mother to return the next day, since I cannot open a new vaccine vial and there are no more children to vaccinate ☐
3. I would open the second vial of measles vaccine to immunize the child ☐
4. I would recommend that the mother take the child to another health center to be vaccinated ☐
5. None of the above ☐

31. What do you do for a caregiver that forgot the vaccination card / health passport at home:

1. I do not vaccinate the child and ask mother to return with card next time ☐
2. I issue a new card, vaccinate, and record today's vaccinations in the new card and in the register ☐
3. I issue a new card, vaccinate, and record old vaccinations from the register ☐
4. I issue a temporary card, vaccinate, record in register, and ask them to bring the old card for next visit ☐
5. I will vaccinate without the replacing card, but I will document in register only ☐
6. Other(s), specify: _____ ☐

32. If a caregiver reports that the child's card has been lost or damaged, what do you usually do?

1. I issue a new card and record all future vaccines in the new card ☐
2. I issue a new card and transcribe all previous vaccines from register ☐
3. I issue a new card and ask woman to tell me of all previous vaccinations so I can write them down ☐
4. Vaccinate without replacing card, document in register only ☐
5. Other(s), specify: _____ ☐

33. When the professional in charge of vaccination is unavoidably absent, another health care professional is available to replace him or her

1. Agree ☐
2. Disagree ☐

34. Did you recently participate in an MOH initiative to vaccinate older children to 'catch-up' these children and reduce immunity gaps?

1. Yes ☐ → CONTINUE TO NEXT QUESTION / SECTION
2. No ☐ → SKIP TO END, "ADDITIONAL COMMENTS"

IV. CATCH-UP

THIS SECTION IS ONLY FOR HEALTH CARE PROFESSIONALS WHO PARTICIPATED IN THE BIG CATCH UP INITIATIVE (REFERENCE TERM USED, IF DIFFERENT)

35. Did you recently receive training or orientation on catching-up older children?

1. Yes ☐ → CONTINUE TO NEXT QUESTION
2. No ☐ → **SKIP TO QUESTION 37**

36. Did the training provide you with the necessary information and tools to catch-up children aged 12-59 months?

1. Yes, fully ☐ → SKIP TO 37
2. Yes, partially ☐ → CONTINUE TO NEXT QUESTION
3. No ☐ → CONTINUE TO NEXT QUESTION

37. What was partially or not clear during the training for catching up older children?
SELECT ALL THAT APPLY

1. Catch-up schedule, e.g. upper ages, co-administration, intervals ☐
2. Catch-up Standard Operating Procedures (SOPs) ☐
3. Screening procedure for previous vaccination ☐
4. Data collection tools with older age group(s) ☐
5. Recording and reporting older children vaccinated ☐
6. Microplanning to identify missed older children ☐
7. Demand messages for catch-up older aged children ☐
8. Vaccine management, supply, and logistics ☐
9. Other(s), specify_____ ☐

38. During the implementation of the vaccination catch-up plan in your area, please indicate what you think was adequate (worked well), partially adequate, or not adequate (didn't work well) (PLEASE SELECT ONE FOR EACH LINE)

	Adequate	Partially Adequate	Not adequate
a. Strategy(ies) to reach older children			
b. Microplanning			
c. Training			
d. Demand activities			
e. Data collection tools			
f. Recording and reporting, data use			
g. Vaccinate management			

ADDITIONAL COMMENTS

_____
_____
_____
_____

Thank you for your time and have a wonderful day!

Appendix 9: Qualitative codes

S/N	CODES
1.	**A: Demographic characteristics of Participants** • Region • Council • Institution • Title/Position
2.	**B. Involvement in immunization catch up activities** • **Role in immunization catch-up activities** – Supply of vaccines – Strengthening RI – Respond to outbreaks
3.	**C. Situation** • Groups with un/UI children – Pastoralists – Famers – Entrepreneurs – People living far from health facilities • **Factors** that lead to un-/UI children • **Strategies** to improve access
4.	**D. Catch-up** • **Catch-up schedule and SOPs** clear message – Screening for doses and eligibility for catch-up – Tracking series of catch-up contacts/visits required for full catch-up • **Catch-up schedule and SOPs** not clear message – Screening for doses and eligibility for catch-up – Tracking series of catch-up contacts/visits required for full catch-up • **Catch-up Strategies** – Strengths/Weaknesses: – PIRI – Fixed – Mobile – Integrated outreach • **Microplans** updated for older age groups. – strengths – weaknesses • **Training** on catch-up – topics – materials – participation of HW cadres, length/frequency – modality (in person vs virtual) – training-of-trainers, • Including reducing missed opportunities for vaccination as part of **future pre-service and in-service training** • Including catch-up as part of future **pre-service and in-service training** for CHW • Data management tools, updated for catch-up – **eligibility criteria** – recording administered vaccine in the **home-based record** • For **vaccine management**, what worked well – Vaccine supply and cold chain capacity – Syringes and other vaccination supplies – Logistics • For **demand** for catching up what worked well. – community activities – social listening – mass media – materials • For **demand** for catching up what could have been improved – community activities – social listening – mass media – materials • For supervision of catch-up activities, what could have been improved • Enablers for catch-up activities • Barriers for catch-up activities • Budget constraints

5.	**E: Way Forward** • Biggest changes in immunization important for future improvement • Institutionalizing reduction of missed opportunities for vaccination • Providing catch-up opportunities in routine programmes (12–23 months, 24–59 months) • Impact of changes in health funding/technical assistance on 2025 catch-up plans • Impact of changes in funding/assistance on institutionalizing catch-up activities – changes to funding portfolio – timeline – geographic scope
6.	**F: Measles Outbreak** • Causes of measles outbreak from 2022–2024 – large number of un-vaccinated children – large number of UI children – Poor vaccine quality due to improper storage • reasons for children not receiving or completing measles vaccination – Unavailability of vaccines (frequent stock-outs) – Parents not bringing children for vaccination – Vaccination services not being provided at the health facility – The facility being inaccessible during the rainy season

Appendix 10: BCU case study survey coverage data by sex, geographical location and education

Background Characteristics	BCG	DTP-HepB-Hib			Polio				PCV			Rotavirus			IPV	MR	Coverage basic antigen	Number of children	Fully Vaccinated (12-23)	Number of children	MR2	Fully Vaccinated (18-59)	Number of children
		1	2	3	0	1	2	3	1	2	3	1	2	3	1	1							
Sex of the child																							
Male	93.8	99.5	99	96.9	67.4	84.7	82.1	77.1	98.1	96.9	94.7	93.9	93.2	79.8	68	94.3	43.6	435	39.8	166	74.7	24.8	346
Female	95.1	98.2	98.5	96.9	64.1	84.2	83.2	77.7	97.4	96.6	93.5	95.1	92.2	81.8	66.8	94.4	42	400	32	153	77.9	24.5	322
Residency of the Respondents																							
Rural	93	97.8	98.1	96.5	60	84.6	82.3	78.7	97.3	95.9	92.7	93.8	90.2	83	67.2	94.4	42.5	390	37.9	140	78.8	24.3	321
Urban	95.6	99.8	99.3	97.2	70	84.4	83	76.4	98.1	97.5	95.4	95.1	94.9	78.9	67.6	95.2	43.1	445	34.6	179	73.9	25.1	347
Mainland/Zanzibar of the respondents																							
Mainland	92.6	98.8	98.6	96.7	68.2	84.4	82.1	78.6	97.6	96.3	93.9	90.6	92.1	76	72	95.5	46.9	607	50.3	219	79.5	28.1	499
Zanzibar	99.1	99.1	99.1	97.4	59.6	84.6	84.2	74.6	98.2	97.8	94.7	96.9	94.3	73.9	56.6	93	32.5	228	20	100	66.9	14.8	169
Regions surveyed																							
Arusha	93.5	98.8	100.0	97.5	77.5	91.3	85.0	91.3	98.7	98.8	95.0	91.3	93.8	75.6	85.0	91.3	56.5	154	53.3	60	87.5	40.3	129
Tabora	88.3	98.3	96.5	94.8	44.3	72.8	71.3	70.4	97.4	93.9	93.0	92.1	90.4	89.3	64.3	93.0	26.0	86	21.1	38	77.8	10.6	66
Katavi	83.6	99.1	98.3	94.9	43.1	82.6	78.6	68.1	100.0	97.4	93.2	94.9	88.9	86.4	70.1	94.9	35.9	135	23.5	51	74.0	10.7	112
Pwani	98.0	98.0	100.0	100.0	92.2	93.1	94.1	89.2	97.0	95.1	93.1	93.0	91.0	68.0	56.9	98.0	44.1	102	50.0	34	81.9	25.6	82
Mtwara	97.7	99.0	98.1	95.2	76.2	78.1	76.2	70.5	94.1	90.5	90.5	94.1	95.0	66.0	58.1	98.1	60.0	130	72.2	36	78.2	43.6	110
Mjini-Magharibi	100	100.0	99.2	97.6	85.7	88.9	87.3	82.5	99.2	98.4	95.2	96.0	96.8	81.4	71.4	90.5	31.4	110	14.3	44	70.8	10.3	82
K. Pemba	98.3	98.8	99.4	98.2	52.8	85.9	85.9	75.5	97.5	97.5	95.1	97.5	93.3	89.7	54.6	96.9	33.6	118	27.3	56	70.6	19.5	87
Council surveyed																							
Ausha CC	100.0	100.0	100.0	100.0	75.0	86.1	83.3	91.7	100.0	100.0	100.0	91.7	94.4	73.7	88.9	94.4	66.7	36	40	15	92.6	55.6	27
Arusha DC	93.2	97.7	100.0	95.5	79.5	95.5	86.4	90.9	97.7	97.7	90.9	90.9	93.2	76.9	81.8	88.6	63.6	44	62.5	16	83.8	48.6	37
Karatu DC	90.5	98.6	95.9	97.3	62.2	90.5	90.5	86.5	97.3	94.6	95.9	94.6	95.9	88.0	67.6	93.2	47.3	74	55.2	29	80.3	29.2	65
Kaliua DC	85.4	97.6	97.6	90.2	12.2	40.0	36.6	41.5	97.6	92.7	87.8	87.5	80.0	100.0	58.5	92.7	17.1	43	15.8	19	72.7	2.9	34
Nzega TC	91.7	100.0	100.0	97.2	58.3	61.1	61.1	58.3	97.1	94.4	94.4	91.4	94.3	100.0	61.1	97.2	36.1	43	26.3	19	75.9	18.8	32

Source: Administrative data

Mpanda MC	80.0	100.0	100.0	95.6	48.9	77.8	80.0	71.1	100.0	97.8	91.1	88.9	88.9	66.7	75.6	97.8	51.1	47	36.4	22	71.8	17.5	40
Mpimbwe DC	97.5	97.6	95.1	95.1	32.5	92.3	82.9	67.5	100.0	95.1	95.1	100.0	87.8	90.9	68.3	95.1	34.1	46	23.5	17	79.4	11.1	36
Tanganyika DC	71.0	100.0	100.0	93.5	48.4	77.4	71.0	64.5	100.0	100.0	93.5	96.8	90.3	100.0	64.5	90.3	16.1	42	0	12	70.4	2.8	36
Kibaha MC	97.5	100.0	100.0	100.0	93.8	95.0	93.8	90.0	100.0	98.8	97.5	97.5	98.8	78.4	70.0	97.5	55	80	55.2	29	83.9	34.4	62
Mafia DC	100.0	90.9	100.0	100.0	86.4	86.4	95.5	86.4	85.0	81.8	77.3	75.0	60.0	38.5	9.1	100.0	4.5	22	20	5	76.2	0	21
Masasi DC	100.0	100.0	100.0	100.0	95.1	96.7	95.1	93.4	98.4	98.4	96.7	96.7	96.7	74.2	82.0	98.4	75.4	61	82.4	17	82.4	58	51
Nanyamba TC	95.7	98.6	97.1	94.2	85.5	87.0	84.1	76.8	92.4	88.4	88.4	95.5	95.5	59.5	56.5	98.6	46.4	69	63.2	19	79.3	32.2	59
Mjini	100.0	100.0	98.5	95.4	76.9	81.5	80.0	72.3	100.0	98.5	93.8	95.4	96.9	87.2	61.5	83.1	40	45	35.7	14	57.8	18.9	37
Magharibi A	100.0	100.0	100.0	95.6	66.7	91.1	73.3	75.6	97.8	97.8	93.3	97.8	93.3	86.4	60.0	97.8	29.2	65	23.3	30	75.7	20	45
Micheweni	100.0	96.6	98.3	98.3	55.2	84.5	87.9	82.8	96.6	96.6	93.1	96.6	93.1	95.0	48.3	96.6	37.9	58	20	25	78.0	14.6	41
Wete	96.7	100.0	100.0	100.0	40.0	83.3	93.3	68.3	98.3	98.3	98.3	98.3	93.3	86.7	56.7	96.7	25	60	9.7	31	60.4	6.5	46
Education of the caregiver																							
No formal	89.7	98.5	95.6	92.6	54.4	73.5	76.5	61.8	95.1	92.4	88	96.9	90.9	78	50.8	98.5	32.4	72	24.1	29	66.7	8.3	60
Primary incomplete	94.0	98.8	98.8	92.9	61.4	75.9	72.6	76.2	98.8	95.2	91.7	96.4	88.1	84.2	59.8	88.1	28.6	87	21.9	32	70.1	13	69
Primary complete	93	98.9	98.9	96.9	65.8	86.8	82.1	78.1	98.6	97.5	94.4	93.2	92.4	78.3	72.9	96.1	46.8	372	37.5	128	79.2	29.2	305
Secondary incomplete	97.6	100	100	98.8	74.1	90.6	89.4	80	97.6	98.8	98.8	96.4	96.4	90	61.7	91.8	43.5	86	39.5	43	77.1	28.6	63
Secondary and Higher	97.2	98.6	99.1	99.1	67.8	85	86.9	80.8	96.7	96.7	94.9	94.4	94.4	79.8	69.1	95.3	44.9	218	41.4	87	76.2	25.7	171

Appendix 11: Tanzania catch-up vaccination schedule

1.1 Vaccination for a below one year (<1year) child coming for immunization for the first time

Infants (children below one year) coming to the health facility having not received primary vaccination series should receive all the vaccines, according to the primary vaccination schedule and MR2 vaccine at 18 months.

Visit	When	Antigen
1st Visit	At 1st contact	BCG, Penta1, OPV1, PCV1, IPV, MR1, and Rota1
2nd Visit	Four weeks after 1st visit	Penta2, OPV2, PCV2 and Rotavac 2
3rd Visit	Four weeks after 2nd visit	Penta 3, OPV3, PCV3 and, Rotavac 3
4th Visit	Six months after birth	Vitamin A 100,000 UI

1.2 Vaccination for a child coming for immunization for the first time at age 1 - <2years

If a child comes for the first time aged 1-<2 years, it is safe to give the following vaccines: Pentavalent, OPV, PCV, MR, IPV and Rota vaccine.

Visit	When	Antigen
1st Visit	At 1st contact	Penta1, OPV1, PCV1, IPV, MR1, and Rota1
2nd Visit	Four weeks after 1st visit	Penta2, OPV2, PCV2 and Rotavac 2
3rd Visit	Four weeks after 2nd visit	Penta 3, OPV3, PCV3 and, Rotavac 3
4th Visit	At 18 months of age	MR 2

1.3 Vaccination for a child coming for immunization for the first time at age 2 - 5 years

If a child comes for the first time aged 2-5years, it is safe to give the following vaccines: Pentavalent, OPV, PCV, MR and IPV.

Visit	When	Antigen
1st Visit	At 1st contact	Penta1, OPV1, PCV1, IPV, MR1
2nd Visit	Four weeks after 1st visit	Penta1, OPV1, PCV1, IPV, MR1
3rd Visit	Four weeks after 2nd visit	Penta3, OPV3, PCV3

Appendix 12: BCU performance indicators

Indicator	Baseline	Baseline month	Target value	Target Month/year	Expected achievement by December 2024	Status at December 2024	Current status June 2025
CATCH UP							
Number of ZD at the national level	1,445,290	March 2023	0	June 2024		660,772	
Number of children reached with Penta1 in 81 priority councils	0	March 2023	1,152,681	December 2023	1,152,681	843,708	
Number of councils with confirmed measles outbreaks	37	Feb 2023	0	July 2024	0	28	
National HPV coverage for HPV2	69%		80%	Dec 2024	90		
RESTORE							
National vaccination coverage (Penta1)	90%	Feb 2023	95%	June 2025	95%	97.0%	93%
Percentage of councils with vaccination coverage (Penta1) above 90%	92%	Dec 2022	90%	June 2025	90%	68.7%	55.9%
Percentage of councils with vaccination coverage (Penta 3) above 90%	92%	Dec 2022	90%	June 2025	90%	70.2%	55.8%
Percentage of councils with vaccination coverage (MR1) above 95%	85%	Dec 2022	95%	June 2025	95%	63.6%	51.8%
Percentage of councils with vaccination coverage (MR2) above 95%	52%	Dec 2022	95%	June 2025	95%	44.6%	35.4%
SUSTAIN							
Number of councils with updated Microplan for improving immunization services	0	Feb 2023	195	June 2025	195		152
Percentage of HF with no stock out of Penta1 in month time	95	March 21	100%	June 2025	100		

*Administrative BCU data,

Appendix 13: Stakeholders' views on the findings

PORALG Feedback Meeting Report on Big Catch-Up Case Study

Date: 22-10-2025
Venue: Zoom (Virtual)
Time: 08:00-10:00

List of participants:

Sno	Name	Designation / Title	Institution / Council / Region
1	DR FLORIAN TINUGA	Immunization Coordinator	PORALG -0766368489
2	ISAYA NANGAY	Regional IDSR Focal Person	ARUSHA -0784361518
3	SERVEUS RUYOBYA KAMALA	RIVO	MTWARA-0621082770
4	WILSON L.BONIPHACE	RIVO	ARUSHA -0787946444
5	HARUNA SAIDI	Assistant DIVO	UYUI DC -0755415116
6	DR BENEDICTO NGAIZA	RMO	MTWARA - 0757940618
7	ROSALIA AROPE	PO TAMISEMI	DODOMA -0715392181
8	NOVATH BIJA	DIVO	IGUNGA DC- 0763452884
9	CLAUDIO DENIS MALINGUMU	DIVO	MONDULI DC
10	COSMAS MAKOYE	R PHARM	RAS PWANI -0753294757
11	MR SALUM ABEID HEMED	DIVO	WETE
12	KHUDHAIMA SALUM KHAMIS	IMMUNIZATION AND SUPPLY CHAIN OFFICER	IVD ZANZIBAR
13	LINDA CHATILA	IMMUNIZATION FOCAL	PORALG -0753096518
14	SYLVIA LAMECK	DIVO	MPIMBWE DC
15	KHADIJA TELLACKY	DIVO	KIBAHA DC -0717144614
16	STEPHANO KAHINDI	RIVO	KATAVI - 0762908076
17	DULLAH MAKALA	DIVO	NSIMBO DC - 0764184539
18	ANDREW NGONYANI	Assistant DIVO	MPIMBWE DC- 0758782005
19	AMANTE MALICK	DIVO	IGUNGA DC
20	EMILIANA MTEMBA	DIVO	KALIUA DC - 0744251480
21	DR KUSIRYE B. UKIO	RMO	PWANI - 0717 730 610
22	AFLRED NGOWI	RIVO	PWANI - 0715858982
23	DR LIBORI TARIMO	DMO	NGORONGORO DC
24	MOHAMED KITIVO DIWANI	DIVO	NZEGA TC - 0653733733
25	ELIAREMISA NDOSSY	DIVO	LONGIDO DC - 0753841141
26	HAMZA MAULID	RHO	RAS TABORA - 0682824434
27	MASUNGA SELEMANI	RIVO	RAS TABORA - 0657 206 677
28	KAMBARAGE MAKURI	Assistant RRCHCo	RAS TABORA
29	DR CHARLES MWAMPAMBA	RSFP	RAS TABORA - 0621169463
30	ABKOS KULULETELA	RSWO	TABORA

Sno	Name	Designation / Title	Institution / Council / Region
31	DR ELISHA NFAKAMA	RDO	TABORA
32	DR BENEDICT KOMBA	RTLC	TABORA
33	DR AMADA MALICK KASIGWA	DSFP	IGUNGA DC - 0756329978
34	AMOUR ALI LILA	DIVO	MJINI UNGUJA
35	ABDULHAMID AMEIR SALEH	PM	ZANZIBAR - 0777422028
36	BLANDINA MPUNGA	DIVO	MASASI DC - 0784956102
37	ZUWENA SALUM ABDULLA	DIVO	MAGHARIBI B
38	SOPHIA MZUMBASHA	DRCHCO	UYUI DC -0682375609
39	PROSCOVIA LWEYONGEZA	DIVO	UYUI DC-0756787526
40	DR MWANAIDI MOHAMED	RFP	RAS MTWARA - 0715690440
41	OTHMAN MASENGA	DHO	MAFIA DC -0783317009
42	NURU E MALEMA	DFP	NZEGA TC
43	JUMA OTHMAN MAKAME	DFP	TANDAHIMBA DC - 0688043560
44	JUMA MUSSA MKUDE	RIVO	NEWALA TC - 0776175218
45	GRACE SHEDRACK MWALUKASA	DIVO	Ngorongoro DC - 0622008684
46	DELPHINUS MJUNI	DATA MANAGER -IVD	MoH -0784514616
47	FRANK PATRICK JOHN	DIVO	KIBITI DC - 0762685525
48	IBRAHIM MIKIDADI	DIVO	MPANDA MC - 0763556046
49	ISMAIL RASHID ALI	DIVO	URAMBO DC - 0679075375
50	DR CHARLES RASHID MKOMBACHEPA	RMO	ARUSHA - 0755366318
51	ZUHURA ALI SAID	DIVO	Magharibi A
52	ASHURA AUSI	RRCHCO	RAS MTWARA -
53	DR MAULID MAJALA	DMO	MAFIA DC- 0718461440
54	NELSON MARO	Assistant DIVO	MTWARA MC - 0656 665955
55	SYLVERA RUGAIGANISA	DIVO	MTWARA MC - 0621907312
56	SHANI TONGA	DNO	MKURANGA DC
57	Fathiya Said Bedwi	M&E Officer	IVD Zanzibar
58	BAKAR HAMAD HAMAD	IMM COORDINATOR	IVD PEMBA - 0777493064
59	FINIHAS NDARO	DRCHCo	KIBAHA DC
60	DOCTAEL MENDE	DPHARM	KIBAHA DC
61	DR MARCO JAMES MAZANZAGAR	DMO	NANYUMBU DC
62	DR MATHEW MAJANI	DMO	LONGIDO DC -
63	AGNESS JOHN BAYNIT	DIVO	KARATU DC - 0764095187
64	ARABIA AMEIR HASSAN	IMMUNIZATION & SUPPLY CHAIN OFFICER	IVD - ZANZIBAR
65	EMMANUEL MWIGULU	ASS DIVO	NSIMBO DC- 0762540180
66	VERONICA MAPANGO	BIOMEDICAL & ELECTRICAL ENGINEER, COLD CHAIN EQUIPMENTS	KIBAHA DC
67	RUBEN MWAKILISHI	DMO	MASASI DC - 0754617123
68	CATHERINE SAGUTI	DMO	KIBAHA TC - 0754640301

Sno	Name	Designation / Title	Institution / Council / Region
69	HAWA MADUNDA	ASS DIVO	KIBAHA TC - 0769314192
70	HOPE RUTATINA	DVO	KIBAHA TC - 0714800323
71	PATRICK GHATI MALI	ASS DIVO	URAMBO DC- 0763406864
72	MASSANJA MANANE	Ag DMO	UYUI DC -0754574920
73	MUKU M.MBAGA	DIVO	SIKONGE DC -0688375996
74	LOTURIAKI NGUNYI KORIO	DFP	NGORONGORO DC
75	HADIJA TELLACKY	DIVO	KIBAHA DC -0717144614
76	EMMANUEL HENERIKO	DHO	BAGAMOYO DC
77	WILBROAD JOHN	MTUHA FOCAL	MASASI DC -0714890340
78	LILIAN SHAYO	ASS RIVO	RAS ARUSHA
79	DR HONORATA RUTATINISIBWA	RMO	TABORA - 0783270946
80	SAIDI MAAPULA	DIVO	NANYUMBU DC - 0688574846
81	HUSSEIN RAJABU	DIVO	MAFIA DC -0718295002
82	ELPHACE SEMBEI	Assistant DIVO	MAFIA DC - 0622600044
83	ALFRED KALABA	DHS	MAFIA DC -0718076886
84	RUKIA MAUMBA	Malaria Focal	MAFIA DC - 0622600044
85	HASSAN NAHADE	DHS	MAFIA DC- 0718461440
86	HIJA HIJA	DHMIS	MAFIA DC - 0782474493
87	JOSEPH MSUYA	DNO	MAFIA DC- 0682433635
88	BRUNO SALEMA	DPharm	NGORONGORO DC

Introduction

The Big Catch-Up (BCU) Case Study Dissemination Meeting was convened virtually to share key findings and lessons learned from the BCU implementation in Tanzania. The session brought together officials from the President's Office – Regional Administration and Local Government (PORALG), the Ministry of Health (MoH), Regional Medical Officers (RMOs), Regional and District Immunization and Vaccine Officers (RIVOs and DIVOs), and other subnational immunization managers.

The meeting aimed to facilitate dialogue on the performance, best practices, and challenges observed during the BCU implementation across different regions. It also provided an opportunity to reflect on how evidence from the case study can inform future immunization recovery and catch-up strategies, strengthen data-driven decision-making, and enhance coordination between national and subnational levels.

The dissemination was led by the BCU Case Study Investigators, who presented synthesized findings, highlighted emerging themes, and engaged participants in discussing practical implications for sustaining immunization gains and reaching ZD and UI children. A presentation was made by the Principal Investigator, covering the study's scope and methodology, BCU coverage and achievements, implementation experiences, institutionalization progress, and key recommendations.

The presentation provided an evidence-based overview of how the BCU initiative contributed to improving immunization performance and reaching previously missed children, while also highlighting areas requiring further strengthening at both national and subnational levels.

Overall, the stakeholders confirmed that all findings are the true reflection regarding BCU planning, implementation and performance

Discussion from presentation:

i. The discussion session commenced with opening remarks from the coordinator of Immunization President's Office, Regional Administration and Local (PORALG), who commended the evaluation team for their comprehensive presentation of findings. He raised a critical concern regarding inconsistencies between administrative, the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) data and survey data with administrative data reporting higher coverages, some above 100%. In addition, he suggested that the recommendations regarding targets should focus on monitoring the revised targets in use since 2024 and evaluate its performance and associated challenges for improvement. The data should be triangulated with other data(survey data, Vaccine preventable diseases surveillance data) to objectively assess the accuracy of new data. The evaluation should also consider if the immunizations strategies are effective to reach previously missed children strategies are effectively reaching previously missed children.

The triangulation of the immunization coverage and disease outbreaks into a unified monitoring framework for decision-making was recommended to ensure a comprehensive assessment of the programme at council and national level.

ii. The issue of training mentors needs to be considered because district mentor system requires resources(funds, transportation) to ensure mentors can move from one health facility to another. It was noted that the mentorship approach can not work in all councils and routine supervision and training modalities(inviting CHW for training and updates) should continue. It was further suggested that there is a need to ensure that practical immunization trainings are embedded during pre-service training for all health professionals' cadres to reduce reliance on short-term capacity-building among a limited number of staff.

iii. The use of digital tools and ICT was highly recommended to ensure quality data and reduction of the workload of HCWs. It was further noted that the digital immunization modules under GOTHOMIS and TIMR are ready for rollout, which is expected to improve real-time data reporting and reduce workload.

v. The other issue discussed was immunization services availability. It was concluded that, there is a need policy-level direction regarding caregiver request for additional vaccination days and practical implementation strategies that will be contextualized based on the health facilities volume of services and capacity.

vi. Regarding the reported lack of trust in healthcare workers operating in refugee camps. It was recommended to further explore more information to answer why from client perspective.

Closing Remarks:

- The stakeholders encouraged the evaluation team to use these findings as a basis for advocating funding for cascade (didactic) mentoring training in all councils.
- The stakeholders commended the team for the detailed quality findings that has documented the BCU implementation in Tanzania showing the success, challenges opportunities and lesson learned.
- The evaluation team acknowledged the contributions of participants and reiterated the importance of the evaluation findings in guiding future program improvements.

Issues raised in table summary:

#	Key area	Key observations from participants	Recommendations
1	HCWs Mentorship	Trained staff often move or are reassigned, weakening institutional capacity. The Ministry noted the successful District Mentorship model (Morogoro and Kilimanjaro), where mentors are assigned by given health facilities and visit facilities regularly. However, mentors face challenges due to workload at their primary stations and long travel distances between facilities.	The District Mentors model should be explicitly reflected in the BCU Case Study recommendations to demonstrate the importance of contextualizing interventions. The model highlights how region-specific approaches such as providing financial support to mentors to facilitate regular facility visits can enhance the sustainability and effectiveness of capacity-building efforts
2	Documentation	Poor documentation of BCU activities and outcomes was noted at facility and district levels. Some reports are incomplete or not systematically archived, making it difficult to trace progress.	The final report should provide clear guidance on strengthening documentation practices for immunization activities.
3	Data Quality and Target	Data quality remains a challenge, with observed inconsistencies between administrative and survey data. There are also cases of "data adjustments" to meet targets. Participants emphasized the need for more realistic targets and stronger verification mechanisms.	The final report should provide detailed guidance on measures to minimize data inconsistencies between administrative and survey data, outlining approaches for alignment, validation, and routine triangulation.
4	Service Delivery	Although the immunization schedule recommends daily services, many facilities provide immunization on limited days due to staffing or workload constraints.	Emphasize the importance of daily immunization or, where not feasible, the context specific schedule should be developed and ensure communities are clearly informed about vaccination days.
5	Training and Human Resource	Limited clarity on which cadres receive immunization-related training.	The BCU final report should recommend the inclusion of immunization training in pre-service curricula for all relevant health cadres, including clinicians
6	Refugee and Special Populations	The study mainly interviewed service providers in refugee-hosting areas but did not include camp administrative perspectives, limiting understanding of coordination challenges.	Include both service providers and administrative authorities in future assessments to better capture coordination and resource allocation for refugee immunization services.
7	Funding for Training a		The final report should advocate for dedicated funding to support the implementation and sustainability of the District Mentor model,