

Human Resources-Geographical Information Systems Data Development and Systems Implementation for the Christian Social Services Commission of Tanzania: Final Report

May 2009

Scott Todd, IMA World Health
Glen Brubaker, Consultant/IMA World Health
Sarla Chand, IMA World Health
Charles Franzén, IMA World Health
Craig Hafner, Capacity Project/IMA World Health
Adeline Kimambo, Christian Social Services Commission of Tanzania
Petro Pamba, Christian Social Services Commission of Tanzania



The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Acknowledgements

First, we acknowledge the Christian Social Services Commission of Tanzania (CSSC) leadership and staff for their hard work and the enthusiasm with which they approached this project. In particular we want to recognize Dr. Adeline Kimambo, CSSC director, for her insight to commit significant time and resources toward this technology effort. We also thank the CSSC zonal secretaries (Dr. Narcissus Kibozi, Irenius Lyimo, Dr. Richard Mbwambo, Simeon Kasoga and Fr. Lucas Komba) for their diligence in learning to apply the geographic information system (GIS) tools for local implementation, and for their initial and ongoing enthusiasm to collect and maintain the information in these systems.

In addition, we want to acknowledge the significant accomplishment and contribution of former zonal coordinators (Dr. Charles Mwanji, Dr. Mganga Kipuyo and Dr. Edwin Kiula and former CSSC Technical Officer Dr. Simon Haule) for their hard work in deploying and administering the first round of data collection that achieved nearly 70% coverage in the first six months. We appreciate the early leadership of Dr. Fredrick Kigadye of the Tanzania Episcopal Conference, and the support of diocesan and other faith-based organizations in the CSSC network for providing keen insight and feedback on the workings, accomplishments and challenges of the project from initial stakeholder meetings through systems implementation and training.

We also wish to acknowledge and thank the Access Project for its opening investments into this project that were a primary catalyst for its inception. Also, Frank Baer's involvement catalyzed the project initially by promoting the value of mapping technologies, and later by galvanizing ongoing support for this project. He also educated and involved stakeholders, guided initial survey design and systems development and advised the entire team throughout project execution.

Further, we are grateful to IMA World Health leadership for having faithful courage to start a multiyear, unconventional project without committed long-term funding, and also for the sustained leadership, advisory and technical support of Sarla Chand, Charles Franzén, Craig Hafner and Judy Gilbert. In addition, we appreciate IMA Tanzania Director Dr. Daniel Nyagawa and the staff for ongoing in-country support of this project as well as recurrent preparations and hospitality during and throughout every visit from US-based staff.

Finally, the authors thank the Capacity Project leadership and staff who supported this project. We also gratefully appreciate the ongoing commitment of USAID to support the Capacity Project's efforts through IMA World Health and the CSSC over the past three years. Without the Capacity Project, the human resources GIS could not have achieved such success.

Table of Contents

Abbreviations and Acronyms	v
EXECUTIVE SUMMARY	1
I. INTRODUCTION	2
1.1 BACKGROUND	2
1.2 PROBLEM	2
1.3 PURPOSE.....	3
1.4 CONCEPTS.....	4
1.4.1 Faith-Based Information Integration	4
1.4.2 Information Technology for Health Systems Strengthening.....	4
1.4.3 Data-Driven Decision-Making (DDDM).....	5
1.4.4 HR Health Geography.....	5
1.4.5 Assisting National Information Systems Development.....	6
2. PROJECT EVENTS.....	7
2.1 HR-GIS TECHNICAL APPROACH	7
2.2 PRELIMINARY EVENTS.....	8
2.3 CAPACITY PROJECT CSSC HR-GIS YEAR ONE (JULY 2006 TO JUNE 2007)	8
2.4 CAPACITY PROJECT CSSC HR-GIS PROGRAM YEAR TWO (JULY 2007 TO JUNE 2008).....	9
2.5 CAPACITY PROJECT CSSC HR-GIS PROGRAM YEAR THREE (JULY 2008 TO JUNE 2009)	9
3. KEY PROJECT THEMES.....	11
3.1 FBO INFORMATION INTEGRATION.....	11
3.1.1 National Health Assets and HR.....	11
3.1.2 Data Sharing MOU.....	11
3.1.3 FBO/MOHSW Collaboration in Health Facilities Information.....	11
3.2 HEALTH SYSTEMS STRENGTHENING	12
3.2.1 ICT Strengthening Health Systems	12
3.2.2 CSSC Zonal Structure.....	12
3.2.3 CSSC Zonal Secretaries	12
3.3 DDDM	13
3.3.1 Understanding Information.....	13
3.3.2 Data Demand for Information Use.....	13
3.3.3 Zonal Decision-Making.....	14
3.4 HR GEOGRAPHY	15
3.4.1 Mapping for Visual Data Development.....	15
3.4.2 HR and Facility Asset Visualization by Mapping.....	15
3.4.3 Matching HR Strength with Program Needs	15
3.5 ASSISTING NATIONAL SYSTEMS	17
3.5.1 Collaboration.....	17
3.5.2 Population Demographics and Health Facility Data Gaps.....	17
3.5.3 Responding to Decentralized Health Systems.....	18
4. PROJECT ACCOMPLISHMENTS.....	20
4.1 INFORMATION INFRASTRUCTURE.....	20
4.2 TECHNOLOGY TRANSFER	21

4.3	CAPACITY-BUILDING	21
4.4	COLLABORATION	21
4.5	SUSTAINABILITY	22
5.	PROJECT LESSONS LEARNED.....	23
5.1	FAITH BASED HRH IN TANZANIA.....	23
5.2	ICT INFRASTRUCTURE FOR HEALTH SYSTEMS STRENGTHENING	23
5.3	DECISION-DRIVEN DESIGN FOR DATA DEVELOPMENT	23
5.4	HEALTH FACILITIES FOR LOCATING HRH.....	23
5.5	DECENTRALIZED FRAMEWORK FOR HRH INFORMATION.....	23
	REFERENCES.....	25
	ANNEX A: MEMORANDUM OF UNDERSTANDING BETWEEN THE MOHSW AND CSSC	27
	ANNEX B: TERMS OF REFERENCE FOR THE MOHSW MAPPING TASK TEAM.....	32
	ANNEX C: PAPER-BASED SURVEY COLLECTION FORMS	33
	ANNEX D: TERMS OF REFERENCE FOR CSSC ZONAL SECRETARIES.....	39
	ANNEX E: FBO CLINICAL STAFF ANALYSIS CHARTS AND MAPS.....	41
	ANNEX F: PROTOCOL FOR ESTABLISHING PARAMETERS FOR UNIQUE HEALTH FACILITY ID	43
	ANNEX G: CONTACT LIST	45

Abbreviations and Acronyms

ANC	Antenatal Care
ARHAP	African Religious Health Assets Program
CCHP	Comprehensive Council Health Plan
CCIH	Christian Connections for International Health
CHA	Christian Health Association
CSSC	Christian Social Service Commission
DDDM	Data-Driven Decision-Making
DDIU	Data Demand and Information Use
ESRF	Economic and Social Research Foundation
ESRI	Environmental Systems Research Institute
FANC	Focused Antenatal Care
FBO	Faith-Based Organization
GIS	Geographic Information System
GMI	Global Mapping International
GRHAM	Global Religious Health Assets Mapping
GTZ	German Technical Cooperation
HC	Health Center
HF	Health Facility
HIS	Health Information System
HMIS	Health Management Information System
HR	Human Resources
HRH	Human Resources for Health
HRIS	Human Resources Information Systems
ICT	Information Communication Technology
IHRDC	Ifakara Health Research and Development Centre
IMA	Interchurch Medical Assistance
M&E	Monitoring and Evaluation
MEDA	Mennonite Economic Development Associates
MIP	Malaria in Pregnancy
MOHSW	Ministry of Health and Social Welfare
MOU	Memorandum of Understanding
MSD	Medical Stores Department
MTT	Mapping Task Team
NACP	National AIDS Control Programme
NBS	National Bureau of Statistics
NGO	Nongovernmental Organization
NIMR	National Institute for Medical Research
NMCP	National Malaria Control Program
PNP	Private Not-for-Profit
PEPFAR	President's Emergency Plan for AIDS Relief
REPOA	Research on Poverty Alleviation
TACAIDS	Tanzania Commission for AIDS
TEC	Tanzania Episcopal Conference
TGPSH	Tanzanian German Program to Support Health
TOR	Terms of Reference
WHO	World Health Organization

Executive Summary

Current estimates indicate that between 30% and 70% of health care services in Africa are operated by faith-based organizations (FBOs) (Karpf, 2007). However, these resources are not effectively integrated into national health information systems. While most partners providing health care in sub-Saharan Africa agree that FBOs play an important role in providing health services, there are few comprehensive data about the scope and scale of their contribution (ARHAP, 2008). Additionally, the absence of up-to-date and compatible personnel information in both the public and FBO health sectors is problematic, obscuring development of a clear picture on these issues.

Since 2006, the USAID-funded Capacity Project has engaged in programs designed to bolster more effective human resources for health (HRH) information and facilitate more intrasector data-sharing. As part of the Capacity Project consortium team, IMA World Health (IMA) with the Christian Social Service Commission (CCSC) developed a human resources-based geographic information system (HR-GIS) with a database containing multivariate information on 850 FBO health facilities and over 15,000 personnel.

The project partners collected facility location and personnel information to support the mapping and database development processes. They designed systems and procedures for maintaining the data that utilized the information as a part of routine decision-making scenarios. Targeted training and technical assistance provided by IMA to the CCSC central office and five zonal secretaries also served to upgrade CCSC's internal capacity for providing technical assistance to local partners. The information developed through this project provides new insight into the geographic distribution of FBO HR across Tanzania. Overall, this project has created compatible human resources information systems that can be integrated and used to assist with national health assets planning and policy development, improve health care service provision and reduce disparities in service delivery between FBOs and public facilities.

The implementers learned several key lessons during the three years of the project: 1) the CCSC and the Ministry of Health and Social Welfare of Tanzania have a long history and great capabilities for working together; 2) the recent work of both organizations makes clear that information technology is a basic requirement for effective health systems strengthening in the 21st century; 3) when information is presented visually and decision-makers invest time and resources into understanding that information, it greatly increases both the capacity for making good decisions and the demand for good data upon which decisions can be made; 4) health systems personnel at all levels can readily understand and become engaged in higher-level GIS analysis of health system issues when information is presented on a map; and 5) it appears that decentralization of government authority has fundamentally changed the operating paradigm in Tanzania, yet this realization seems not yet fully realized in some ministries. As a result, the projects that progress more easily are those targeted at the local level that also seek buy-in from the central level.

I. Introduction

I.1 Background

Many of the earliest health facilities throughout sub-Saharan Africa (SSA), especially those in remote areas, were built and supported by Christian mission agencies. In the 19th century and continuing through World Wars I and II, European nations established more formal hospitals to care for European soldiers, officers and settlers. Over the last half of the 20th century, after African nations gained their independence, many of these health facilities were either handed over to larger church institutions or nationalized by governments ready to assume political control over basic services. As with other infrastructure components that are expensive to maintain, hospitals and health facilities began to decline. While national health systems and basic health indicators deteriorated, exacerbated by changes in international funding models, various agencies and donors provided support to both health facilities and single disease control programs. Indigenization of basic service facilities such as hospitals and schools and the general decline in overseas church funding mean that formerly well-resourced facilities find themselves completely dependent on regular government subsidies or fee-for-service structures in order to survive.

Since ownership, management, staffing and funding for faith-based organization (FBO) facilities are sometimes provided by different institutions, government ministries have difficulty implementing policies over these organizations uniformly. This can ultimately hinder equitable distribution of funds and support for human resources. It also means that there is no parity in employment conditions for health workers at FBO and government health facilities. This causes problems with recruitment and retention of staff, and results in compromised quality of care (ARHAP, 2008).

As fledgling governments nationalized mission hospitals and health facilities, many of the faith-based institutions that owned and managed them expanded the original purposes of their earlier health facility associations in order to advocate for equitable representation and inclusion of the FBO community. In the 1970s and 1980s these networks of facilities and providers came to be known as Christian Health Associations (CHAs). In 1992, Tanzania's two largest CHAs—the Christian Council of Tanzania and the Tanzania Episcopal Conference (TEC)—established a memorandum of understanding (MOU) with the Government of Tanzania, thus establishing the Christian Social Services Commission of Tanzania (CSSC) as an ecumenical nonprofit agency. In 1994 the CSSC became incorporated as a legal entity.

The CSSC focuses on improving quality, accessibility and availability of health and education services by following three strategies: 1) fostering partnerships and institutional development; 2) capacity-building; and 3) lobbying and advocacy. Its primary roles and activities are ecumenical cooperation, advocacy and lobbying, capacity-building, applied research and dissemination of information, program work, consultancy and support services. In fulfilling these roles it supports both provision of health and education services, coordinating implementation of various projects such as the HIV/AIDS Project (Global Fund), the Malaria Communities Program (USAID), the Pay for Performance Project (Cordaid) and the Construction and Rehabilitation of school and health facilities (German Development Bank).

I.2 Problem

The CSSC estimates that FBOs in Tanzania manage 40% of hospitals and approximately 26% of all health facilities and provide 50% of health services in rural areas. However, these resources are poorly integrated into national and global health information systems (HIS). For example, WHO has mapped health facilities in many countries that received funding from the President's Emergency Plan for AIDS Relief (PEPFAR) in recent years, but until recently, most FBO facilities were not included.

In 2006, WHO commissioned another study that found that FBOs play a much larger role in disease prevention, care and treatment in SSA than previously realized. This report concluded that as much as

70% of Africa's health infrastructure is currently owned by FBOs, yet there is often little cooperation between religious organizations and mainstream government health programs. Because they are so ubiquitous, health services often go unnoticed and FBOs continue caring for people, as they have done for the past 150 years (Karpf, 2007). These statistics show that FBOs must be better integrated into global and national HIS in order to improve their internal functioning and collaboration with health ministries, international donors, nongovernmental organizations (NGOs) and even the churches under which they operate.

Additionally, in terms of HRH, substantial international funding has been provided to PEPFAR countries in recent years as a response to the HIV/AIDS crisis. Most of these countries applied a large portion of these funds to increase the public health workforce, but often this process simply moves qualified personnel from FBO to MOH facilities. This "brain drain" needs to be better understood and addressed; however, absence of current, compatible personnel information in both the MOH and FBO sectors is problematic, obscuring development of a clear picture of these issues. FBOs, government health programs and other health care agencies need enhanced coordination and communication.

1.3 Purpose

From 2006-2009, IMA World Health (IMA), with the support of the Capacity Project and in collaboration with the CSSC, developed the HR-GIS. The purpose was to establish a solid basis for recognition of FBO contributions in health care provision, and to support integration of FBO information within the broader global and national information infrastructure. The HR-GIS contains a relational database with multivariate information on over 850 FBO health facilities and 15,000 personnel.

Through the design and development of this system, the project team recognized the need for CSSC ownership and opportunities for building its capacity by providing technical assistance in information communication technology (ICT) strengthening. Therefore CSSC personnel were intimately involved in the design and development of the system by establishing a clear goal and objectives to reach it. The goal of the CSSC in this project is to promote improved health care services delivery through a human resources information system (HRIS). In addition, this project sought to include the use of GIS technology to enable ongoing analysis, monitoring and evaluation of health programs. The CSSC objectives are to:

1. Develop CSSC databases for HR and facilities
2. Integrate the CSSC health database into the national system and CSSC website
3. Build capacity for health management information systems (HMIS) and HRIS
4. Implement sustainable maintenance and quality assurance for information systems.

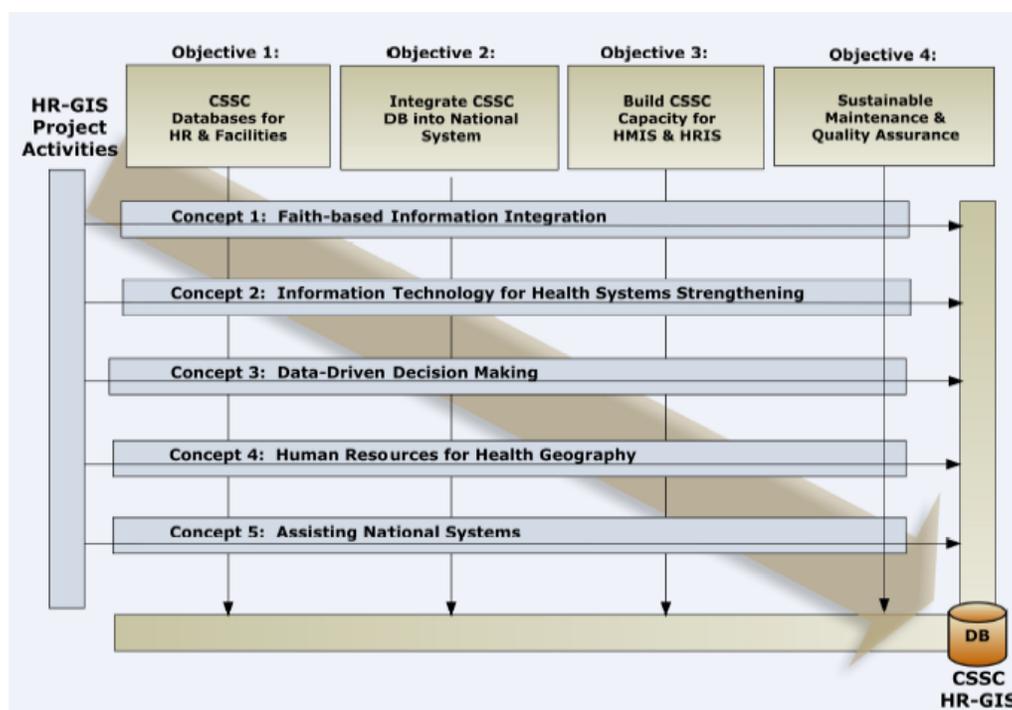
The HR-GIS project represented a massive data collection effort, requiring complex and dedicated collaboration among several teams. The CSSC had a lead role in managing data collection, while the central office coordinated five teams in each of five zones using global positioning system (GPS) receivers to locate many of the facilities and three survey instruments to collect facility and HR data on hospitals, health centers and dispensaries.

Over the course of the project's execution, these objectives helped the team maintain a clear direction for system development. This approach provided current data to document FBO contributions to health care provision, and enhanced internal capabilities for developing, operating and managing an information system across multiple levels of the organization. Finally, the project team gained recognition as ICT experts for health facilities and HR systems in Tanzania.

1.4 Concepts

In addition to pursuing the defined CSSC objectives through systems implementation, the project team recognized opportunities where technical assistance could provide further health system strengthening at various levels and through various agents of the CSSC network. The team applied five additional concepts, cutting across each of the CSSC-defined objectives. Through coincident application of these cross-cutting concepts (see Figure 1) for system design and data development, the team maintained the CSSC objectives and captured additional opportunities for health system strengthening.

Figure 1. Cross-cutting System Design and Data Development Concepts



1.4.1 Faith-Based Information Integration

By using an integration-oriented approach, the team sought to promote representation through integration of FBOs in national and global contexts, and in so doing, realized additional benefits by applying this concept through system design and data development. First, it is not possible to understand the resources of a national health system by looking at it from only one perspective. Since the government, FBO, NGO and private not-for-profit (PNP) sectors operate in Tanzania, it is impossible to effectively plan, allocate or distribute resources without bringing information together on all of them. Second, while this project intended to document FBO information and health care contributions, it also intended to promote the integration of FBO information within the larger national information infrastructure. The driving concept here was that collaborative opportunities for data-sharing would arise, and further connections with new and existing partners would emerge around the subject of health information. Finally, this integration-oriented approach also intended to elevate the level at which CSSC collaborates and create further opportunities for FBO participation in other existing health programs in Tanzania.

1.4.2 Information Technology for Health Systems Strengthening

Another cross-cutting concept was that the information being developed, and the technologies for using it, should be primarily promote overall health systems strengthening. This meant that systems and data should assist CSSC in its operations as the FBO health provider network, and that systems and data also

needed to assist the individual FBO health providers in directly strengthening the overall health care systems. This concept is apparent in the database design, and was emphasized to CSSC officers at the central and zonal levels through ongoing dialogue and training materials.

The HR-GIS project also targeted capacity-building of key individuals, namely the five zonal secretaries. The zonal secretaries are positioned both to be connected nationally and to operate locally in coordinating and supporting the needs of diocese and FBO facilities within their respective zones. In order to create a sustainable system, the key individuals needed to understand the information, utilize it and make it available for planning and decision-making, thereby creating additional demand to fuel its ongoing utilization and maintenance as part of their routine operations. In their locally decentralized yet nationally integrated capacity, the zonal secretaries were the ideal candidates for performing this function. Therefore, CSSC zonal secretaries were trained to become technology trainers in order to pass along tools and techniques to the local district and health facility personnel in their respective zones.

1.4.3 Data-Driven Decision-Making (DDDM)

The concept of DDDM means that systems are designed and data are developed to support making better decisions for improved outcomes. Following this ideal, the key directions to shape database design should support the kinds of questions that system planners and decision-makers want to ask. However, many times it is impossible to know what questions to ask without understanding the information available. Therefore, health system planners and decision-makers need to be educated about the information contained in their systems in order to utilize it for asking questions and then making decisions based on the informed answers.

Once the information is understood well enough to be utilized, additional tools can be developed to assist in planning and decision-making functions that are most critically important and will be most commonly used. In order for these tools to support DDDM, they must focus on key information that will be in highest demand. Activities that foster a concept known as data demand and information use (DDIU) involve a systematic approach that applies proven best practices and tools to help increase demand for health system data and ensure that the information is used in an evidence-based decision-making process.

1.4.4 HR Health Geography

Geography is a science that studies the earth and its life; it describes the location, distribution and relationships of physical features and biotic life, including people and the places where they live and operate. The primary tool of geography is a map. Therefore a fourth cross-cutting concept for strengthening overall health systems was to apply geographic methods (maps) to human resources for health (HRH) in order to visualize the location, distribution and relationships between health providers and those who need health care. This concept of HRH geography not only improves understanding of where facilities are located, it also highlights what programs are in operation relative to where health workers are located and what their professional capabilities are. Maps provide a clear picture of the FBO health system in Tanzania and reveal gaps in coverage, an important tool when addressing issues of equity and access with the Ministry of Health and Social Welfare (MOHSW) and donors.

One of the most important reasons for using GIS in this project was to highlight the fact that people provide health care at facilities. While this may seem apparent, most efforts to acquire HR information do not visually connect health workers to the places where they are located as part of data development. One of the great strengths of applying this concept in data development is that it allows people to see data collection progress on the map as it is being accomplished. This visual factor in data

development promotes understanding of project intent, value and the need for ongoing maintenance as an integral function of system utilization.

1.4.5 Assisting National Information Systems Development

The cross-cutting concept of collaboration to assist in developing the national health information infrastructure was a recurring focus applied to every CSSC objective. This ties together all the concepts of FBO representation, health systems strengthening, decision-driven data and HR geography. In addition, the engaging nature of mapping (and the generalized approach to data development that incorporates multiple layers of information) greatly enhances opportunities for open dialogue in discussing collaborative approaches to developing national systems for health facility and HR information.

Collaboration also provides credibility for reasoned engagement by all parties in sharing information. Through partnering, stakeholders work toward shared goals required for improving the national health information infrastructure for the sake of strengthening the entire state of health care in Tanzania. Health systems and HR cannot be understood or strengthened within the FBO sector alone; reasonable decisions cannot be made on the exclusive basis of FBO data, and an HR geography that only shows FBO facilities and people is incomplete for effectively describing the national state of either.

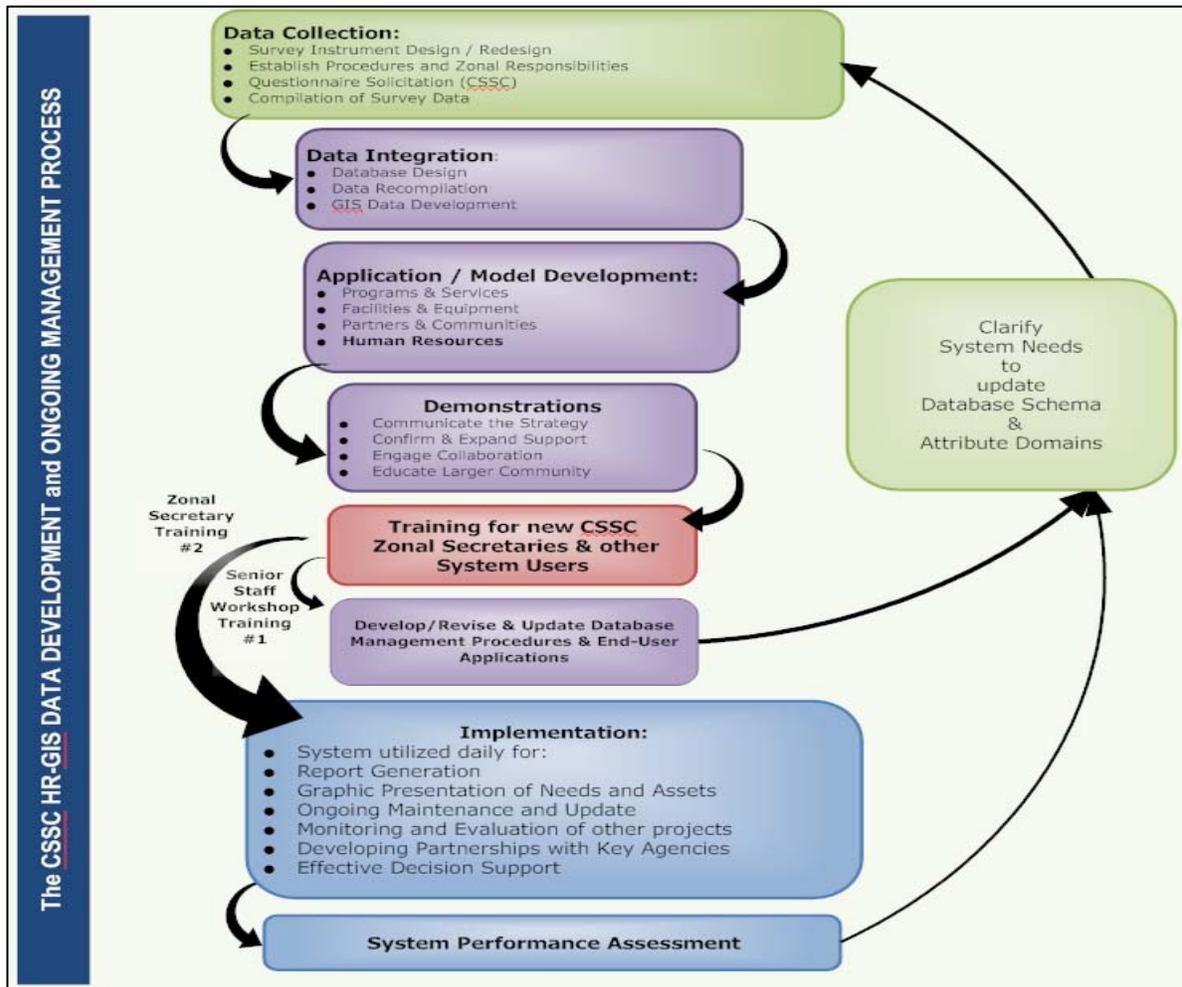
Finally, the concept of collaboration to assist in the development of national HIS applies at both the central and local levels. The Tanzanian health system is decentralized; therefore, collaboration must be pursued at regional, district and local levels of government and private practice. This collaborative concept successfully drove the development of the CSSC system at both the central and local levels. Collaboration at all levels will likely need to be applied in order for any public information infrastructure efforts to create sustainable systems and promote ever-expanding demand and effective utilization of health information at the national, regional, district and local levels in the future.

2. Project Events

2.1 HR-GIS Technical Approach

Throughout the project a widely varied course of events transpired, some according to the original plan and others as unexpected opportunities that were capitalized upon as possible. Overall, the technical approach in any information system development must be planned as iterative, with some phases needing to be revisited and procedures refined over the course of systems implementation. The following model (Figure 2) illustrates the process in this project.

Figure 2: HR-GIS Data Development and Ongoing Management Process



This general approach illustrates the overall process and methodology; however, there were also several key events that unfolded to support HR-GIS system development. In the following sections, program years are used as headings for organizing these key events in order to support a clearer description of the details in this iterative process.

2.2 Preliminary Events

In 2002, the Interfaith Health Program held a Global Religious Health Assets Initiatives meeting in Atlanta, Georgia, where health facility and program asset mapping were discussed. Christian Connections for International Health (CCIH) took the lead in health facilities assets mapping. This evolved into Global Religious Health Assets Mapping (GRHAM).

In 2005, a renewed interest in FBOs, CHAs and mapping resulted from:

- IMA's engagement in FBO coordination in both the Access Project and the Capacity Project
- The Capacity Project's provision of core funding for GRHAM development
- Development of the GRHAM website to share existing information from CHA databases
- WHO's funding of African Religious Health Assets Program (ARHAP) for Lesotho and Zambia
- The Partnership for Quality Medical Donations' mapping of medical donations.

Early in 2006, various events and IMA interests converged on mapping and HRIS in Tanzania with the CSSC:

- The Access Project provided primary initial funding to support initiation of the HR-GIS including: a data entry person with CSSC technical supervision; funding for stakeholder interviews and survey instrument design; data collection training and IMA technical assistance and coordination; and all travel costs for three separate visits. In addition, the Access Project provided funding for seven laptops and seven sets of GIS software from Global Mapping International (GMI) via an FBO discount to CSSC for GIS base data and to improve coordination of focused antenatal care/malaria in pregnancy (FANC/MIP) activities in FBO health facilities.
- The Capacity Project's FBO coordinator informed IMA of the Capacity Project IT team's plans for an HRIS system with the MOHSW in Tanzania
- IMA sent a senior advisor to Tanzania for technical assistance to CSSC to prepare an action plan and comprehensive budget for CSSC health facilities mapping
- CSSC and stakeholder input were solicited for initial project design and identification of data elements, definition of content for survey and data collection instruments
- IMA provided technical assistance to CSSC for planning, budgeting and managing the initial data collection campaign across five zones throughout the country
- The IMA technical advisor assisted in developing survey instruments for data collection and provided preliminary training to CSSC technical officers.

2.3 Capacity Project CSSC HR-GIS Year One (July 2006 to June 2007)

- September 2006: IMA technical advisor traveled to Tanzania to provide CSSC training of zonal teams in data collection, GPS instrumentation and data entry
- September 2006: IMA consultant from GMI performed initial GIS data collection
- October 2006: Refined specific procedures for GPS instrument operation and coordinated data entry logistics and refining Microsoft Excel tables for data entry
- November 2006: Initial round of data collection completed within six months; all basic information in all five CSSC zones yielded over 65% collection of attribute and mapping data; all attribute data elements and map feature layers further expanded and integrated into GIS project

workspaces to assess both content and completion of all data; defined queries and map variables and assesses potential for spatial analysis to establish of referral health areas

- December 2006: IMA team performed additional data cleaning and recompilation; relational database development in Microsoft Access; facilities and site HR-GIS data set development
 - January 2007: IMA presented the CSSC HR-GIS at the CHA annual conference in Bagamoyo and held a meeting to present system capabilities and updates on project progress
 - February 2007: Refined database and clarified required attribute domains and coded values
 - March 2007: Presentation designed, training materials developed, trainer provided first Zonal Coordinator Training in Dar es Salaam
 - April 2007: Another iteration of attribute variables defined
 - May 2007: Explored options for open-source GIS adoption
- June 2007: IMA assisted the CSSC in developing the MOU for facilities data-sharing with the MOHSW.

2.4 Capacity Project CSSC HR-GIS Program Year Two (July 2007 to June 2008)

- July 2007: Held first meeting of the Mapping Task Team and CSSC secondary data collection budget
- August 2007: Began secondary data collection campaign
- September 2007: Terms of reference (TOR) developed for full-time zonal secretary, all positions filled in early 2008
- October 2007: Secondary cleaning, recompilation and GIS data set adjustment
- November 2007: Reports generated on data quality and collection status
- December 2007: Held preliminary discussions for CSSC engagement of the Capacity Project's iHRIS Manage software
- January 2008: Completed design and development of newly versioned Environmental Systems Research Institute (ESRI) GeoDatabase to integrate and contain all systems data; all non-GPS CSSC facility locations plotted via populated place data
- February 2008: IMA worked on design and development of system utilization and maintenance routines
- March 2008: Secondary training planned for three user levels (decision-maker, query, maintenance technician and training of trainers for ArcExplorer free GIS)
- April 2008: Held secondary training and installed updated data and new GIS tools; CSSC director requested iHRIS Manage implementation for CSSC; IMA coordinated collaborative workshop with the MOHSW and other stakeholders in Dar es Salaam
- June 2008: CSSC and the MOHSW signed MOU for facility data-sharing.

2.5 Capacity Project CSSC HR-GIS Program Year Three (July 2008 to June 2009)

- July 2008: CSSC conducted the ICT needs assessment process for each of the five zonal offices; IMA assisted CSSC in writing the GIS chapter in Cordaid's *Quest for Quality*

- August 2008: Planned the iHRIS Manage CSSC implementation; IMA began remote coordination of remaining data collection with zonal secretaries; MOHSW requested IMA and CSSC attendance at Geocodes Workshop in Kibaha; IMA sent Scott Todd, Daniel Nyagawa (IMA-Tanzania office director) and Petro Pamba (CSSC ICT officer)
- September 2008: CSSC developed TOR for new ICT officer to assist with iHRIS Manage software customization; conducted first consultation for iHRIS Manage
- October 2008: Data management and analysis routines to prepare four-week travel to zonal offices; CSSC completed ICT needs assessment to prepare for zonal office relocations
- November 2008: All CSSC zonal secretaries acquired dedicated office space; IMA provided technical assistance for new office ICT systems installation and networking; assisted in setup and configuration of broadband Internet at each location; performed HR-GIS system updates and follow-up training to zonal secretaries and assistants for full system-wide data update routines; provided iHRIS Manage information and demo software to anticipate future iHRIS installation at zonal offices
- December 2008: CSSC hired ICT officer for iHRIS software customization
- January 2009: Capacity Project staff conducted second consultation and installation of central office iHRIS Manage server and software customization; tested new mini-server (intended for each zonal office) to check compatibility with primary central office server
- February 2009: IMA provided remote technical assistance to zonal secretaries for data utilization and maintenance updates; reinforced collection of remaining HR data from selected hospitals
- March 2009: Capacity Project staff prepared for the third consultation and installation of upgraded central office server and provision of iHRIS Manage mini-servers and software updates for future CSSC installation in each zonal office.

3. Key Project Themes

Taken together, the key events of this project contributed to an application of the cross-cutting concepts, in order to meet each of the CSSC-defined objectives: 1) develop CSSC databases for HR and facilities; 2) integrate the CSSC health database into the national system and CSSC website; 3) build CSSC capacity for HMIS, including HRIS; and 4) implement sustainable maintenance and quality assurance for information systems. This section details how the technical assistance provided by the Capacity Project team helped the CSSC realize those objectives through ICT for strengthening health systems, DDDM, understanding the geography of HRH and assisting national systems as integral parts of the project philosophy and approach.

3.1 FBO Information Integration

3.1.1 National Health Assets and HR

In order to establish a balanced understanding of Tanzania's national health system, information on all the health assets and HR must be considered in totality. This requires not just looking at these assets and resources from the government perspective alone. In order to understand resource distribution, allocation and planning, and to reduce disparities between these sectors and public facilities in service delivery to the country, the FBO, NGO and PNP sectors must be included. Pursuing this need to share and integrate information across sectors and nationwide, the Capacity Project began specific activities with this end in mind.

3.1.2 Data-Sharing MOU

The CSSC has long had a strong connection and history of working with the MOHSW, yet until this project there were no explicit initiatives to promote the integration of any FBO information within the national information infrastructure, aside from basic reporting through the existing structures. A key event of this project was the establishment of a vision for nationally integrated health information by the signing of an MOU between the CSSC and the MOHSW. The MOU specified that they would create "an integrated and shared database of health facility information that both organizations will update through a collaborative process" (see Annex A). While initial guidance and development of the MOU was provided by the Capacity Project team for CSSC, its modification, adaptation and execution was jointly owned and applied by both parties.

3.1.3 FBO/MOHSW Collaboration in Health Facilities Information

The establishment of an MOU between the CSSC and the MOHSW created a basis for FBO inclusion in other national-level health facilities information development efforts. From this formalized understanding, a Mapping Task Team (MTT) formed with the purpose of "further coordinating, defining data collection, sharing policy and designating responsibilities as part of the comprehensive collaborative national database development process." Key participants in the MTT came from a wide variety of FBO, NGO and public sector agencies. The organizations officially designated with representation on the MTT include the MOHSW, CSSC, National Institute for Medical Research (NIMR), National Malaria Control Program (NMCP), IMA, Mennonite Economic Development Associates (MEDA) and Jhpiego. Other organizations identified as key stakeholders who use or conduct geocoding activities included Ifakara Health Research and Development Centre (IHRDC), National Bureau of Statistics (NBS), Tanzania Commission for AIDS (TACAIDS), National AIDS Control Programme (NACP), Research on Poverty Alleviation (REPOA)/ Economic and Social Research Foundation (ESRF), German Technical Cooperation/Tanzanian German Programme to Support Health (GTZ/TGPSH), Ardhi University and MOHSW/WHO (SAM).

The representation of agents from public, FBO, NGO and PNP sectors has also created further opportunities for FBO participation in existing programs operating at the national level. It indicated the

commitment and desire of these parties to work together in developing shared national health information, and in strengthening all operating health systems in Tanzania. The TOR for the MTT are included as Annex B.

3.2 Health Systems Strengthening

3.2.1 ICT Strengthening Health Systems

The CSSC objective to build capacity for HMIS, including HRIS, was reinforced by the concept that the information developed and the technologies for using it were fundamentally intended to promote overall health systems strengthening. Therefore, the systems and data developed also needed to assist FBO health providers directly to strengthen the health care systems. In order to accomplish this, the Capacity Project team provided training and technical assistance to the CSSC and its FBO members to upgrade the CSSC's internal capacity for providing technical assistance to local facilities. Initially individuals from these organizations worked collaboratively to collect facility location and personnel information to support the mapping and database development process.

The primary data collection initiative began in March 2006, when an IMA consultant visited Tanzania to help prepare an action plan and comprehensive budget for the project. In April, the IMA technical advisor trained the five zonal teams in data collection, GPS instrumentation and data entry. In September, a follow-up team facilitated data collection and provided quality assurance. At this time the project team decided that rather than using computerized data capture that would potentially require high-level technical support in the field, they would instead use simple paper forms (see Annex C). While this required subsequent office-based data entry, it also allowed more flexibility in data collection, substantially increasing user proficiency in spite of requiring moderate data cleaning during recompilation efforts.

By December 2006, in-country teams had completed 75% of the data collection for all CSSC health facilities, and 50% for health personnel data. IMA provided technical assistance to clean the data for subsequent recompilation and conversion to an Access database. This was followed by further conversion into an ESRI geo-database to permit mapping and analysis with ArcGIS software. In January 2007, IMA presented preliminary results of the mapping and database development during a regional conference of CHAs in Bagamoyo. In March 2007, IMA trained the zonal teams to use the GIS software.

3.2.2 CSSC Zonal Structure

During the initial stages of development, each of the CSSC's five zones was represented by a part-time zonal coordinator who generally operated out of a diocesan office, a health facility or his/her home. In the fall of 2007, through financial assistance from Cordaid, CSSC was able to create five full-time zonal secretary positions. In the spring of 2008, these full-time zonal secretaries received follow-up classroom training in the use of the HR-GIS as a resource and tool for performing a wide variety of tasks. One of their first assigned tasks was to locate suitable office space for representing the activities of CSSC within their respective zones. In November 2008, IMA provided technical assistance to each of the five CSSC zonal offices (Morogoro, Arusha, Mwanza, Tabora, Mbeya); all were made operational with the HR-GIS and Internet connectivity, and all five zonal secretaries (and one assistant each) received additional on-site HR-GIS training.

3.2.3 CSSC Zonal Secretaries

CSSC zonal secretaries are the frontline representatives who facilitate the flow of information and understanding of requirements between MOHSW structures (regional and district levels) and FBO structures (diocese and health facilities). They provide assistance with reporting, budget and workplan development; coordinate training; inform and educate on policy; provide technical assistance; advocate for the FBO sector; work across CSSC social sectors and perform other FBO representative activities

within their operational zones. The CSSC TOR for zonal secretaries is included as Annex D. An overarching concept has been that maintenance of the HR-GIS database should not be approached in a way that will create additional data documentation tasks for zonal secretaries; instead it should function as an information resource to support their day-to-day core activities and fuel expansion of health information development efforts. This was represented in terms of the database application design and emphasized to CSSC officers at the central and zonal levels through ongoing dialogue and training materials. Additionally, to further assist in health systems strengthening, technology training was provided to zonal secretaries using basic-level, freely available GIS applications (ESRI ArcExplorer and ArcReader) so that they can pass along tools and techniques to the district and health facility personnel.

3.3 DDDM

3.3.1 Understanding Information

After the first round of data development, during the initial system deployment the project team requested that CSSC decision-makers provide sample questions for testing. This exercise revealed that in order for hypothetical queries to be derived from intended system users, actual data would need to be generated in order to better illustrate the system's potential. Therefore a midterm training for high-level decision-makers was also provided concurrent with the second round of zonal secretary training. This higher-level training promoted continued support and adoption at the CSSC central office and served to further leverage the utilization of system data for a wide variety of purposes such as assessment of subordinate proposals for in-country travel, feasibility of new program proposals and financial monitoring of other program activities.

3.3.2 Data Demand for Information Use

When decision-makers understand the information available and how it can assist them, demand for the information and systems for providing it is created. Once the information available is understood well enough to be utilized, additional tools can be developed to assist in planning and decision-making functions that are most important and will be most commonly used.

In order for this to occur, the focus of information to support DDDM must be placed upon key information to support those most important and common decisions. System tools that increase local demand for information and facilitate its use enhance evidence-based decision-making and help make the health system more effective. Activities that foster DDIU involve a systematic approach that applies proven, effective best practices and appropriate tools to help increase demand for health system data and ensure that the information is used in an evidence-based decision-making process. DDIU is a strategy developed by Measure Evaluation through support from USAID to identify opportunities for, and constraints to, effective and strategic data collection, analysis, availability and use. This strategy begins with an assessment that helps stakeholders, policy-makers and monitoring and evaluation (M&E) practitioners determine points of entry for DDIU intervention. Once specific needs are identified, DDIU core tools and approaches can be utilized to stimulate data demand, build capacity and enhance evidence-based decision-making (Measure DDIU).

Decision-makers are normally not positioned to be the ones who manage, maintain and provide the information; therefore, key individuals must be targeted to fill this role. Additionally, systems and procedures for maintaining the data must then be designed to operate by utilizing the information as a part of routine decision-making scenarios. Therefore, once systems were deployed and use began, CSSC zonal secretaries were interviewed to gain a clearer understanding of how the operational systems could be further utilized to foster additional data demand from higher levels such as diocese head offices and to further strengthen health systems at lower facility-based levels.

3.3.3 Zonal Decision-Making

Zonal secretaries were previously described as the key individuals targeted for capacity-building to understand the information, utilize it and make it available for planning and decision-making, and thereby to create additional demand to fuel its ongoing utilization and maintenance as part of their routine operations. During interviews with zonal secretaries, areas where the concept of DDDM could be most fully applied were determined and their primary HR-GIS system utilization functions were discussed at length. Maintaining the HR-GIS data as described in the TOR refers to continuing to “update and maintain data on an ongoing basis” and “collect, compile, analyze, update, maintain, store and retrieve the data for utilization.” This includes using the system “for developing reports, graphics and to coordinate among member organizations;” and to “track and monitor ongoing health facility and human resource data collection.” In this context, maintenance essentially translates into zonal secretaries possessing the skills to work with data in a wide variety of formats, applications and ways to translate it into information that is further applied to various analysis, reporting or decision-making functions.

Based on interviews, IMA determined that zonal secretaries fill a crucial function in terms of coordinating the transfer of policy and reporting requirements between MOHSW structures and FBO structures within their zone. Interactions operate in terms of zonal secretaries:

- Informing FBOs about MOHSW requirements
- Assisting FBOs to prepare MOHSW reports according to requirements
- Assisting FBOs to prepare MOHSW applications for ongoing funding
- Advocating to the MOHSW on behalf of the FBO community.

Zonal secretaries provide information to health facility officers to help them understand new MOHSW-assigned salary ranges, providing them with circulars and guidelines and assisting them to assemble and document information required for reporting on:

- Personnel meeting standard establishment; required versus available
- Number of beds (for approval and direction of funding)
- Personnel qualified eligible for increases and/or training.

The CSSC receives public funding to support scholarships for health worker training (up to 70% of funds required). Therefore, zonal secretaries utilize HR information from the HR-GIS database to assist personnel managers in developing applications based on employee qualifications. They must follow up to document training qualifications and promotions by entering data into the HR-GIS on an ongoing basis after training is received.

The Comprehensive Council Health Plan (CCHP) is a district-level planning tool and document that health providers must submit as part of their application for basket funds. The CCHP is now used as the document to support eligibility. All CCHP requirements are specified at the district level; therefore, all are different. Zonal secretaries assist and coordinate between the various diocesan member organizations. Diocesan offices assist their facilities in preparing the CCHP specific to the requirements of their own district and also represent their facilities at district levels. They assist in developing the CCHP using facility information from the HR-GIS database based on requirements. For example, requirements for the health information system known as MTUHA (*Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya*) include information on patients served, programs operated, drugs consumed from the Medical Stores Department (MSD) and the top ten diseases reported in each district. All of this information needs to be provided in the CCHP, along with details on programs such as maternal and

child health and reproductive health to support the CCHP. Zonal secretaries also recently provided a diocesan workshop to educate facility managers and diocese personnel regarding these new requirements and procedures for developing and submitting the CCHP.

In addition to these core health functions, the zonal secretaries provide support to other social sectors such as education. There is also great interest from CSSC for technical assistance to zonal secretaries in order to start developing educational facility mapping and database development. In these and other areas the CSSC zonal secretaries are learning to use the HR-GIS as a tool to assist them in performing their core functions.

3.4 HR Geography

3.4.1 Mapping for Visual Data Development

The information developed through this project provides new insight into the geographic distribution of FBO assets and HR across Tanzania. A theme fueled by the geographic approach for understanding HR distribution was that people provide health care at facilities. In order to understand where HR are adequate or inadequate, in terms of number or capability, it is essential to see and compare where they are located in the health system. Visualization of HR usually takes the form of a tabular approach to data development that can later be leveraged into charts, graphs and summary tables. As a result of this geographic approach, concepts of place, resource distribution and programmatic relationship (relative to service population density) were readily apparent to all members of the project team. This visualization assisted the CSSC team members in their comprehension of project intent, value and need for ongoing maintenance as an integral function of system utilization. Prior to project inception, the value of mapping to assist in data development was not fully realized; it occurred as a response to progress tracking. However, the high level of comprehension of system intent contributed to the focus on subsequent data collection and accelerated the process considerably.

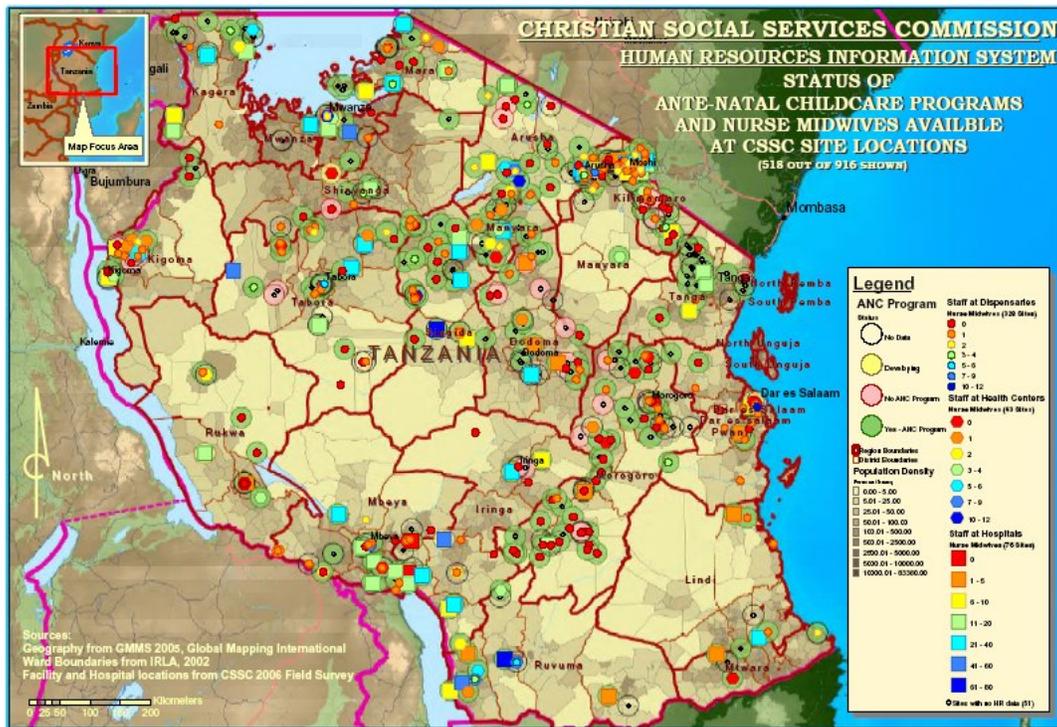
3.4.2 HR and Facility Asset Visualization by Mapping

During preliminary data evaluations, implementers acquired insights regarding the distribution of HR in various regions around the country. While these insights (modified as additional data) were brought into the system, many early observations were later confirmed. While the mapping aspect of the system provides a key to visualization that resonates with those who know the systems and geography best, there is also a great deal of insight to be gained by the nature of geographically-oriented attribute (tabular) information. Annex E illustrates an analysis of the various aspects of HR related to quantity of service by region. These charts show a strong HR level in regions where large FBO hospitals are present. Taking the HR information to the next level by studying staff levels according to clinical staff categories (cadres) provides even further insight into the composition of the FBO workforce in various regions. Of note is that the number of medical attendants—a cadre with little training required and whose members often perform a wide variety of functions where few nurses are available—is off the scale with Standard Establishment target levels exceeding 100% in 13 out of the 20 regions. With the exception of Dar es Salaam, where fewer FBO facilities exist, nearly all of these low HR level facilities are in rural regions of the country. Alternatively, both medical officers and nursing officers, two of the highest trained cadres, occupy levels below 25% of the Standard Establishment target in both cases together. Individually one or the other of these cadres is below 25% in all but two regions, those regions being among the areas of highest tourist activity in the country. This example illustrates the importance of considering geographic factors in health systems and HR analysis.

3.4.3 Matching HR Strength with Program Needs

Figure 3 provides another view of HR and health facility data. In this case, both the existence of a health facility antenatal care (ANC) program and nurse midwives, the primary cadre required for dispensing the program, are overlaid.

Figure 3: Nurse Midwives Available to Support ANC Programs at FBO Health Facilities



This map shows FBO facilities in Tanzania color-coded by ANC program status (green for yes, pink for no). On top of the program layer are HR cadre data indicating the number of nurse midwives currently working at each facility. Large squares represent hospitals, medium-sized pentagons represent health centers and small circles represent dispensaries. In each case the lowest numbers of staff are color-coded red in a range up to the highest staff levels in blue. This analytical mapping technique highlights the lack of trained personnel available, in many cases where there is an existing qualified program in place, to administer this critical care function. Mapping emphasizes the potential for using GIS to analyze the depth and extent of the HR crisis in Tanzania.

In order to support further analyses of this nature, the overall data content of the CSSC database contains information on 36 other program areas, including variables dealing with maternal and child health issues, HIV/AIDS, malaria and a host of other health crisis areas for the more than 850 CSSC health facilities. While the personnel data shown here highlight the availability of nurse midwives, the database also includes 80 additional cadres in hospitals, health centers and dispensaries. The HR tables contain over 15,000 personnel records covering over 20 HR variables along with facility-based HR information. In addition to program and HR information, the database includes infrastructure and equipment available at facilities, data on funding partners, and the existence of complementary community-based programs and non-facility-based programs.

The CSSC appreciated the map-based data analysis tools. In response to the question “Why mapping?” the Capacity Project FBO coordinator replied:

The mapping makes the data easy to follow and understand; it captures people’s attention. It is attractive, like a photo (a picture is worth a 1000 words); it provides a clear picture of the whole country and it shows the gaps in coverage very clearly. This is important when addressing issues of equity and access. The maps are most helpful at the CSSC headquarters level to use for advocacy with MOHSW and donors. It can show population versus services and where there are gaps. It will also be

important at the zonal and or district level in illustrating gaps and coverage and finally, even at the facility level.

3.5 Assisting National Systems

3.5.1 Collaboration

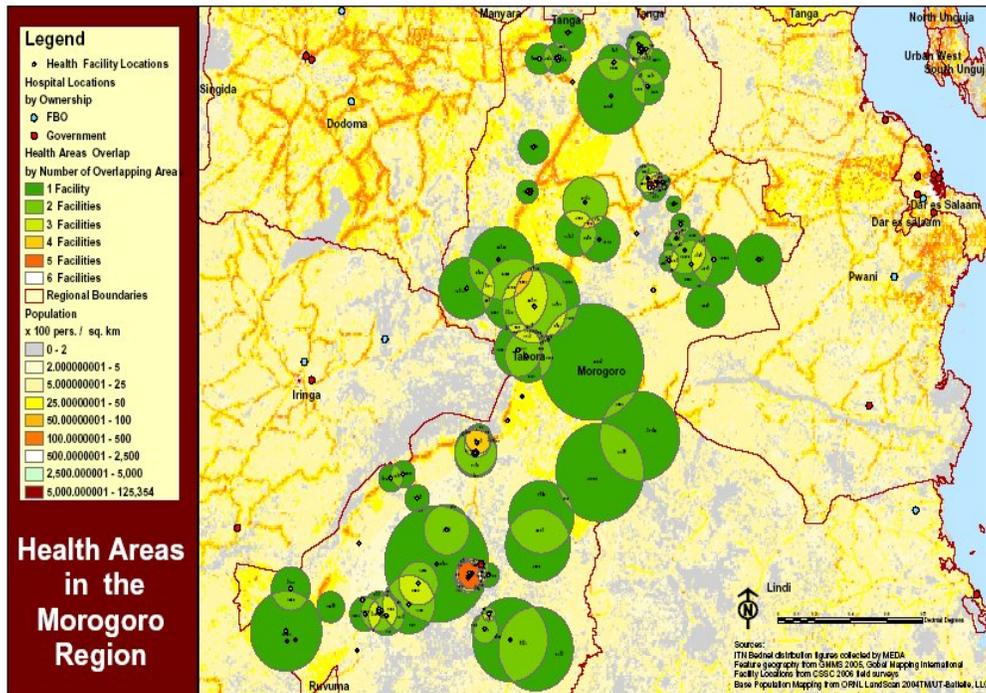
This project facilitated the creation of compatible HRIS that can be readily integrated with other data sets locally and used to assist with national-level health assets decision-making, planning and policy development. Collaboration was important in all stages of project implementation, and each member of the project team pursued opportunities for reaching out to national-level players and initiatives at the MOHSW. This was the case with other public agencies, NGOs and health programs operating at local and national levels. The engaging nature of mapping, and the generalized approach to data development that incorporates multiple layers of information, greatly enhanced opportunities for open dialogue between CSSC and the MOHSW in developing national systems. The strengths of using GIS for developing a clearer understanding of system attributes also interested the MOHSW decision-makers who requested CSSC assistance on various occasions.

Three such occasions of interest by the MOHSW occurred within the last year. The first was during a phone call between CSSC director Dr. Adeline Kimambo and an MOHSW director-level colleague. Another occasion was during a Capacity Project-coordinated collaborative workshop in Dar es Salaam in April 2008 where several members of the MOHSW and other local NGO health systems professionals were invited to attend a presentation of the CSSC HR-GIS, a demonstration of the Capacity Project iHRIS Manage application and a presentation on the AfyaMtandao initiative being pursued by CSSC. The third occasion was via the invitation of CSSC, IMA and GMI personnel to a Capacity Project-sponsored gathering of key stakeholders to discuss and plan for development of the national health database survey data collection instruments during the Geocodes Workshop at Kibaha in August 2008.

3.5.2 Population Demographics and Health Facility Data Gaps

Another illustration of the strength of geographic analysis for studying health systems strengthening intentions and needs is the map provided in Figure 4. This map shows a detailed analysis where referral health area (RHA) coverage is studied to determine actual population numbers within a hypothetical catchment area. In this case, RHAs are determined by a generalized radius from the health facility and sized according to facility (in-patient bed) capacity. The circular RHAs are then overlaid onto a population data set that allows for high-level GIS analysis to interpolate specific numbers of people living within each facility's RHA (Landscan, 2004). The estimated number of people within each RHA intersect area (where two facility catchment areas overlap) is labeled on the map and each area is color-coded according to the number of other RHAs intersected at any given intersecting location. The number of intersected RHAs is color-coded with light green indicating only one RHA overlap, orange showing an overlap with five other facility RHAs. This particular analysis is rather gross in specificity given that RHAs are unlikely to occur in a circular pattern, but rather would follow natural and man-made features of the landscape like mountains, rivers and roads. However, there is still considerable value in using this technique for beginning to determine health areas commensurate with health facility capacity and also relative to identifying overlaps and gaps in service coverage.

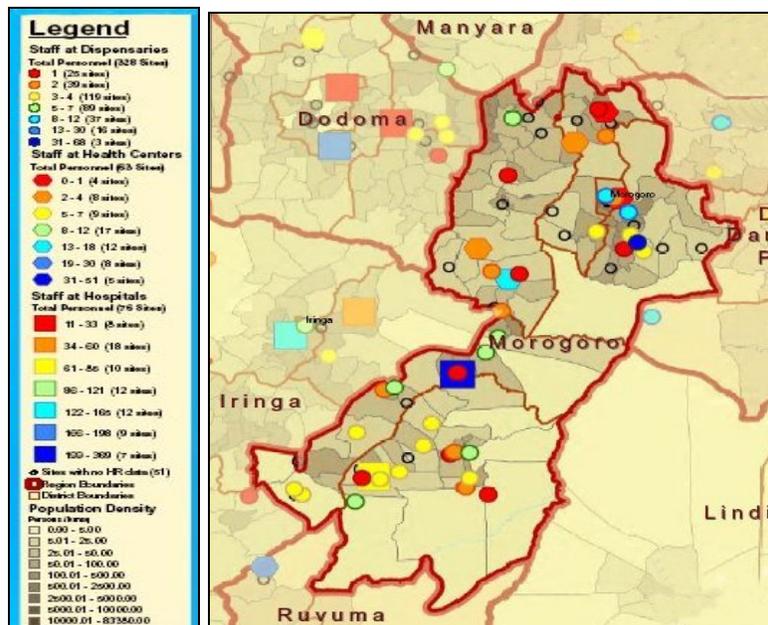
Figure 4: Referral Health Areas in the Morogoro Region



3.5.3 Responding to Decentralized Health Systems

The Tanzanian health system is decentralized, thus collaboration must be pursued at all levels of public, FBO, NGO and private practice. Figure 5 shows a detailed local map of health facilities in the Morogoro region overlaid on top of a population density map layer. Overall numbers of staff are displayed in the red to blue range, and the map reflects facilities located in areas of more dense population.

Figure 5: Detailed Map of Health Facilities in the Morogoro Region



As CSSC zonal office personnel became more comfortable and proficient with systems, they grew more interested in reaching out at the local and district levels to support a decentralized framework for ongoing collaborative data development and system implementation with MOHSW agents. These factors point to the growing potential for collaboration with regard to the information discussed, the questions raised and the analyses performed. The interest and need for movement in this direction does not solely rest with FBOs. This was shown to be an area of interest behind the adoption of the MOU focused around the subject of collaborative data development and information sharing with regard to health facilities.

4. Project Accomplishments

The headings outlined in this section do not align specifically with CSSC objectives. These headings describe larger and more comprehensive accomplishments that include and, in many cases, exceed the original project intent. However, given that CSSC objectives were driving factors behind the overall project direction, each subsection provided here explains how the objectives were also met in tandem with the substantive additional accomplishments.

4.1 Information Infrastructure

The results of implementing the CSSC HR-GIS accomplished measurable results in terms of meeting the first three of CSSC's original objectives. First, the project successfully developed CSSC databases for HR and health facilities. Second, while the CSSC database has not yet been integrated into the national system or the CSSC website, it is poised for those events, and prior to the end of Capacity Project-funded work the entire CSSC database will be fully available for both of those purposes. Third, the CSSC capacity for HMIS, HRIS and mapping has been strengthened to a significant degree and the current database maintained by CSSC could readily be leveraged to support any third-party HMIS and/or HRIS, with considerable mapping already produced and able to be replicated by various CSSC staff members. On that basis, the first three objectives were accomplished, representing a fairly substantial level of completion. Estimated status of data completion currently stands at 90% for facility attribute data, with all facilities geo-referenced; approximately 40% of those were GPS-derived with the remainder based on populated place location. Estimates of HR data completion currently stand at over 85%. Additionally, with CSSC zonal secretaries now fully trained and equipped, the remaining data is intended for completion as part of ongoing system maintenance.

Additionally, since one of the basic concepts that guided project intent was for information to be useful and potentially sharable with the entire Tanzanian health sector, the design concept behind database development needed to be for ongoing planning and decision-making at a national scale and context, not just geared to the needs of FBO facilities or those of a specific project. While the basic intent of this approach was to supply quality data for decision-making purposes, the key to realizing that intent was an initial design guided by the concepts of DDDM and creating DDIU. As a result, the CSSC now has an information resource enabling it to overlay and assess multiple layers of data spanning a wide array of attributes on health facilities and HR.

In terms of specific database content, health facility information is now available to support decisions regarding administrative functions, geographic location specified down to the populated place level, facility-based program and service provision, infrastructure and equipment, funding partner composition and even some community based programs. HR decisions can also be made on the basis of information related to individual health workers in terms of their age, gender, staff category, qualifications and recent employment and training.

An additional contribution to national information infrastructure resulted from meetings and discussions with members of the Health-DB Group that was established following the efforts of members involved in the August 2008 Geocodes Workshop. The members of the Health-DB Group include two representatives from the MOHSW, two consultants from the Government of Tanzania, one staff member from NIMR, one from NBS, two from IMA and one from the CSSC. A key contribution provided by the Capacity Project personnel was the establishment of a protocol for unique identifier creation to be utilized for defining the future national health facilities database. The guiding document developed by members of the Health-DB Group is included with this report in Annex F. Based upon follow-up discussions from those efforts, Benjamin Mayala of NIMR compiled a complete and cleaned list of all Tanzanian health facilities, with plans to proceed with calculation of the unique ID code based upon this protocol.

4.2 Technology Transfer

The efforts related to technology transfer also contributed substantially to accomplishing two of the CSSC objectives, those being supported by the development of the CSSC databases for HR and facilities and also the building of CSSC capacity for HMIS, HRIS and mapping. Specific accomplishments considered as technology transfer included the provision of technical assistance and direction in the design and administration of data collection instruments, along with training and provision of both GPS receivers and several instances of training new and existing data collection personnel in their use and application. Additionally, while some CSSC staff members previously possessed reasonable proficiency with Microsoft Office applications, for others, additional training was required. In those cases training to bring the additional CSSC personnel up to speed represented significant technology transfer. The additional Office applications for which training was provided included Excel, Access and PowerPoint. In all cases of CSSC staff, the primary applications of note in terms of technology transfer were those associated with learning to apply and utilize the Global Ministry Mapping System software provided by GMI and the ArcGIS software that included ArcView, ArcExplorer and ArcReader GIS. Additionally, while no formal training was provided by the Capacity Project staff in the utilization of iHRIS Manage software, precursory orientation regarding the overall functions and intent was provided to CSSC zonal secretaries in order to prepare them for the upcoming technology training.

4.3 Capacity-Building

Nearly all technical assistance efforts provided by the Capacity Project staff can be considered capacity-building. Foremost among these are the training and technical assistance provided to CSSC zonal personnel that built their competence with systems and data management. It is important to point out that their promotion from part-time coordinators to full-time secretaries was financially supported by another organization. Additionally, the substantial efforts of the zonal secretaries and the CSSC ICT officer played the most significant role in the elevation of their status. The progress achieved in terms of their comprehension and growth as part of HR-GIS project activities contributed to their capacity for taking on the expanded responsibilities of their new posts, especially with so many aspects of their formal TOR being based upon their ability to operate, maintain and manage the HR-GIS.

In addition to the capacity-building contributions, during the November 2008 zonal visits IMA staff provided substantial ICT support with hardware and software set up and configuration of broadband Internet and e-mail capabilities at each of the four new zonal offices and the one existing zonal office. Finally, the adaptation and application of HR-GIS data being used in the Presidents Malaria Initiative-Malaria Communities Program provided additional capacity-building support in terms of assisting with data preparations to support pending integration of the CSSC health database into the national system and CSSC website, along with training and technical assistance to prepare the CSSC personnel for maintenance and quality assurance of information contained in the HR-GIS.

4.4 Collaboration

Collaboration was a recurrent theme during the course of the three-year HR-GIS project. Collaborative opportunities emerged around the subject of health information and the tools for its development and ongoing use. Additionally, as has been described in other sections of this report, many of these were new connections and many were related to strengthening collaborative relationships with existing partners. The fairly standard events and/or venues where collaboration occurred were generally in scheduled GIS training where collaborating organizations were invited and/or requested to be included.

One prominent collaboration events was the collaborative workshop held in Dar es Salaam in April 2008; several members of the MOHSW attended for the technology demonstrations. This event also included a series of roundtable discussions focused on collaboration in data development and sharing. Another significant event was the invitation to attend the MOHSW Geocodes Workshop at Kibaha; for

the purpose of this event the MOHSW requested IMA's and CSSC's participation in consultative discussions aimed at collaborative development and selection of content for inclusion in the national health facilities database. Contact information for many of these engagements is provided in Annex G. Finally, and most notably, was the Capacity Project support that assisted and backstopped the ultimate signing of a collaborative data development and data-sharing MOU between the CSSC and the MOHSW.

4.5 Sustainability

A final area of accomplishment connects with the efforts aimed at CSSC sustainability of the overall HR-GIS data development and ongoing data management and maintenance program. While it remains to be seen if an adequate level of sustainability has been incorporated into the project, considerable effort has been expended with that aim in mind. All four CSSC objectives were addressed through one of the following: database development in HR and facilities that evolved over the last three years; integration of the CSSC health database into the national system and CSSC website that is scheduled; and the building of CSSC capacity for HMIS, HRIS and mapping through two zonal staff trainings at the CSSC headquarters in Dar es Salaam and also via the follow-up trainings that occurred late in 2008.

5. Project Lessons Learned

5.1 Faith-Based HRH in Tanzania

Involvement in a three-year project of this scope and scale provided valuable lessons learned. Project implementers and stakeholders gained insight regarding previously existing situations and captured results from project efforts. One lesson was the realization of the strength of the relationship between the CSSC and the MOHSW. While there were difficult aspects in attaining the MOU signing, the two organizations reflected strong interest in maintaining a compatible and collegial working relationship. Additionally, much in the Tanzanian and global health sector interplay has changed since this project began relative to African FBOs being more equitably recognized as important contributors to health. While this recognition did not result from HR-GIS project activities, some contribution may be relevant in Tanzania.

5.2 ICT Infrastructure for Health Systems Strengthening

The results of this project indicated that access to information and capabilities for utilizing IT tools contributes significantly to overall health systems strengthening. Equally important is the growing indication that opportunities for making positive contributions to strengthen health systems through technical assistance in ICT are growing for those with skills and knowledge.

5.3 Decision-Driven Design for Data Development

Two areas of learning emerged through HR-GIS implementation. First, decision-makers must understand the data available in their systems in order to utilize it effectively. Not only must technicians be trained to understand data, but decision-makers must become more familiar with aspects of information use; visualization greatly enhances that capacity. Second, the concept of implementing demand-driven data systems is greatly enhanced with GIS. Once system users and decision-makers see the information displayed visually on a map, they can better understand the issues connecting the who, what, why and how with the critical aspect of where activities occur.

5.4 Health Facilities for Locating HRH

Another area of learning was that health facilities are a key component for understanding the wide variety of health system attributes of HR distribution and allocation. HRH geography not only improves understanding of where facilities are located, it also highlights what programs they operate relative to where health workers are located and what their professional capabilities are. Maps provide a clear picture of the FBO health system in Tanzania and reveal gaps in coverage, which is important in addressing issues of equity and access, as well as for advocacy with MOHSW and donors.

5.5 Decentralized Framework for HRH Information

Based on the CSSC experience, a proposed strategy for implementing a public sector HRIS should target a more local approach, rather than proposing initiatives for the MOHSW at the central level. However, since the central-level MOHSW expressed a strong desire in facility-based information (in line with interests expressed via the Geocodes meeting in August 2008), there is potential that, while HR activities might achieve results being directed at the local level, facility-oriented data and systemwide structural support might be viable at the central or regional levels, and could potentially elicit early buy-in from them as a result.

Finally, the concept of collaboration to assist in development of national health information systems applies at the central level and locally. The Tanzanian health system is decentralized; therefore, collaboration must also be pursued at regional, district and local levels of government and private practice. This collaborative concept successfully drove the development of the CSSC system at both the central and local levels. If collaboration is pursued at all of these levels in the development of the

Tanzanian national health information infrastructure, efforts to create sustainable systems and promote demand and utilization of health information at the national, regional, district and local levels can be realized in the future.

References

African Religious Health Assets Programme. Appreciating assets: the contribution of religion to universal access in Africa, Report for The World Health Organization. Cape Town, South Africa: ARHAP, 2006, Available at:
<http://www.arhap.uct.ac.za/publications.php>

Karpf T. Community realities in Africa show FBO partnership key to global scale-up. Global Health Council: AIDSLink [website]: 2007:103. Available at:
<http://www.globalhealth.org/publications/article.php?id=1667>

MEASURE Evaluation, Data Demand and Information Use Tools. MEASURE Evaluation [website]. Accessed 15 February 2009 at:
<http://www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/ddiu-tools>

Additional Sources

Adjei G, Maniploe B, Dokotala, TB, Kahabi J, Mpoza IK, Pamba PM, Pearl E. Quest for quality: Interventions to improve human resources for health among faith-based organizations. The Hague, The Netherlands: Cordaid, The Royal Tropical Institute, 2009. Available at:
<http://www.medicusmundi.org/en/contributions/reports/2009/quest-for-quality/q4q>

Baer F. FBO health networks and renewing primary health care. White paper. IMA World Health, 2006. Available at:
http://renewingphc.org/fbos/FBOs_and_Renewing_PHC.pdf

Bandy G, Crouch A. Building from common foundations: the World Health Organization and faith-based organizations in primary healthcare. Geneva Switzerland: World Health Organization and Geneva Global, 2008.

Chand S, Patterson J. Faith-based models for improving maternal and newborn health. Access Program, 2007. Available at:
http://pdf.usaid.gov/pdf_docs/PNADK571.pdf

Christian Social Services Commission. Development of a motivation package for volunteer association hospitals the Lake Zone of Tanzania. CSSC, September 2006.

Hafner C. Working with faith-based organizations to strengthen human resources for health. Capacity Project, 2007. Available at:
<http://www.capacityproject.org/images/stories/files/fbo.pdf>

International Health Facility Assessment Network. Profiles of health facility assessment methods. Arlington, VA: MEASURE Evaluation, 2008. Available at:
<http://www.cpc.unc.edu/measure/publications>

Kintaudi L. FBOs and the Ministry of Health in DR Congo. Global Health Council, 2005. Available at:
http://www.globalhealth.org/images/pdf/conf_2006/presentations/b5_kintaudi.pdf

MEASURE Evaluation, World Health Organization. The signature domain and geographic coordinates: a standardized approach for uniquely identifying a health facility. Health Facility Assessment Technical Working Group, January 2007. Available at:
<https://www.cpc.unc.edu/measure/publications/pdf/wp-07-91.pdf>

Ministry of Health and Social Welfare Tanzania Mainland, Ministry of Health and Social Welfare, Zanzibar. Tanzania Service Availability Mapping 2005-2006. Geneva, Switzerland: World Health Organization, 2007. Available at:
http://www.who.int/healthinfo/systems/SAM_CountryReport_Tanzania.pdf

Schmid B, Thomas E, Olivier J and Cochrane JR. The contribution of religious entities to health in sub-Saharan Africa. Bill & Melinda Gates Foundation, African Religious Health Assets Programme, 2008. Available at:
<http://www.arhap.uct.ac.za/publications.php>

Schneider G. Capacity Building: What Does It Mean? Millennium Development Goal 6: Malaria, HIV a/o. Presentation to Christian Health Association's Conference: CHAs at a Crossroad Towards Achieving Health Millennium Development Goals. April 12, 2007. Available at:
http://www.hrresourcecenter.org/trip_search?keys=Schneider#

Simba D, Mwangi M. Factors influencing quality of health management information system (HMIS) data: the case of Kinondoni District in Dar es Salaam Region, Tanzania. *East African Journal of Public Health*, 2006;1:28-31. Available at:
<http://ajol.info/index.php/eajph/article/view/38967>

Technical Working Group on Human Resources for Health Mini-Forum. Planning, developing and supporting the faith-based health workforce: African Christian Health Associations' Human Resources for Health Mini-Forum. Nairobi, Kenya. 27 February – 1 March 2006. Workshop brief I. Capacity Project, 2006. Available at:
http://www.capacityproject.org/images/stories/files/wsbrief_1.pdf

Tugwell P, Robinson V, Morris E. Mapping global health inequalities: challenges and opportunities. Center for Global, International and Regional Studies. Mapping Global Inequalities - conference papers, 2007. Available at:
<http://repositories.cdlib.org/cgirs/mgi/mgi-22>

United Nations Population Fund. Culture matters: lessons from a legacy of engaging faith-based organizations. United Nations Population Fund, 2004. Available at:
<http://www.unfpa.org/publications/detail.cfm?ID=172>

**Annex A: Memorandum of Understanding Between the
MOHSW and the CSSC**

MEMORANDUM OF UNDERSTANDING

***FOR STRENGTHENING THE DEMOGRAPHIC SURVEILLANCE
SYSTEM***

BETWEEN

***THE MINISTRY OF HEALTH AND SOCIAL WELFARE
(MOHSW)***

AND

CHRISTICIAN SOCIAL SERVICE COMMISSION

DATED THISDAY OF2008

This Memorandum of Understanding (MOU) is made on this day of 2008 between the MINISTRY OF HEALTH AND SOCIAL WELFARE of P.O. Box 9083 Dar es Salaam, (hereinafter referred to as MOHSW) and the CHRISTIAN SOCIAL SERVICES COMMISSION of P.O. Box 35062 Dar es Salaam, (hereinafter referred to as CSSC).

1. PREAMBLE

WHEREAS

The MOHSW of The United Republic of Tanzania is responsible for providing health services of high quality, effective and accessible to all, delivered by a well performing and sustainable national health system. The Ministry has to ensure that health employees and providers deliver health services for the achievement of improved health status of the public;

WHEREAS

The CSSC strives to support delivery of social services through partnership, lobbying and advocacy in a manner that will ensure transparency, quality, equity, availability and accessibility. Its vision is to see an enlightened and well-educated community that is enjoying quality life and free from the diseases of poverty;

WHEREAS

The MOHSW delivers health services through a network of more than 5000 health facilities in all districts of Tanzania;

WHEREAS

The CSSC through its faith-based membership delivers health services through over 800 health facilities spread across the country;

WHEREAS

The MOHSW and the CSSC are jointly committed to the goal of improvement of the national health information system;

WHEREAS

The CSSC is involved in and shall continue the process of collecting comprehensive data on all of its health facilities including services offered, human resources and Global Positioning Satellite (GPS) location and this database is now in an exchangeable and flexible format;

AND WHEREAS

The MOHSW and CSSC have for many years collaborated in improvement of service provision, training, data collection and data dissemination.

NOW THEREFORE IT IS AGREED:

2. PRELIMINARY PROVISIONS

- 2.1 That the database will be owned by the MOHSW and being utilized by the CSSC;
- 2.2 The MOHSW and the CSSC agree to create an integrated and shared database of health facility information that both organizations will update through a collaborative process,
- 2.3 That the integrated database will be developed and shared collaboratively in a spirit of understanding which will be expressed in a further MOU with each of the supporting partners;
- 2.4 That the database will, at a minimum, include the basic identification information for health facilities, including GPS coordinates, to permit digital mapping using a variety of software;
- 2.5 That the MOHSW and the CSSC will jointly participate and support a Mapping Task Team whose basic Scope of Work will be to further coordinate, define data collection and sharing policy and designate responsibilities as part of the comprehensive collaborative national database development process.
- 2.6 That the MOHSW and CSSC will share resources in order to strengthen Public Private Partnership for the improvement of health information system;
- 2.7 The MOHSW will collaborate with CSSC in reviewing the data collection tools.

3. COPYRIGHTS

All rights over the documents, notes, papers, records or other publications of whatsoever nature in any materials produced under the provisions or in the execution of this Memorandum are protected by copyrights laws and shall be vested exclusively on the Health Information and Research section of the MOHSW.

4. REPORTING REQUIREMENTS

The CSSC shall be required to furnish a report to the parties on semi-annual and annual basis. The report among other things shall provide the details of the activities done, success and problems encountered and how they were solved with ostentatious examples. The CSSC will advise the MOHSW on the best and cost effective means of solving the unsolved problems. The parties may provide requirements as to the contents of the report and shall be complied thereof.

5. DOMICILLIUM

All notice and other communication requires or permitted to be given or made under or made under this agreement shall be given or made in writing by fax, facsimile transmission, dispatches or by registered airmail, postage prepared address as follows:

Permanent Secretary
MINISTRY OF HEALTH AND SOCIAL WELFARE
P.O. BOX 9083
DAR ES SALAAM

Director
CHRISTIAN SOCIAL SERVICES COMMISSION
P.O. BOX 35062
DAR ES SALAAM

6. DURATION OF THE MEMORANDUM

This Memorandum shall last for a period of five (5) years from the commencement date, and may be subject to two (2) years interim review and or renewal upon successful completion of the term of the MOU.

7. COMMENCEMENT DATE OF THE MEMORANDUM

This Memorandum shall come into force at such date as the Parties will sign it unless otherwise expressly stated by the parties at such time when signing this memorandum.

8. TERMINATION OF CONTRACT

That the Memorandum shall be terminated where there is fundamental breach of terms and conditions of these presents. That either party to the MOU may terminate it after serving the other party a three (3) months notice; stipulating the reasons thereof and terms of termination negotiated.

9. DISPUTE SETTLEMENT

The parties shall use their best effort to settle amicably any dispute, controversy or claim arising out of or relating to this MOU. Unless any such dispute, controversy or claim between the parties arising out of or relating to this agreement the breach, termination, or invalidity thereof is settled amicably within 60 days after receipt by one party of the other party request for such amicable settlement, such dispute, controversy or claim shall be referred to an external individual elected by both parties to mediate and facilitate resolution of the dispute. The decision of mediator shall be final and shall be the sole and exclusive remedy between the parties regarding any claims, counterclaims, issues or accountings fees, including attorney's fees and expenses.

10. APPLICABLE LAWS

This memorandum shall be governed by Tanzania laws in force

In witness where of the parties here have executed these presents on the day, year and in manner hereinafter appear.

ENTERED INTO, in good faith this Day of2008

For the Ministry of Health and Social Welfare

Name: Mr. Wilson Mukama

Title: Permanent Secretary

For the Christian Social Services Commission

Name: Dr. Adeline Kimambo

Title: Director

Signature_____

Signature_____

Annex B: Terms of Reference for the MOHSW Mapping Task Team

Guiding Principles for the Mapping Task Team (MTT)

1) CSSC and the MOH Collaboration in Mapping: Effective planning, coordination and mapping of health care require a comprehensive database that includes all “public” health facilities, including those of the MOH and CSSC. In this end we are encouraging the establishment of a MOU between the MOH and CSSC along the following lines:

The Ministry of Health and Christian Social Services Commission agree to create an integrated and shared database of health facility information that both organizations will update and share periodically. The database will be developed collaboratively; with further authorization to collaborate applying to each organization’s supporting technical partners. It shall, at a minimum, include the basic identification information for health facilities, including GPS coordinates, to permit digital mapping using a variety of software. The MOH and CSSC agree to create a Mapping Task Team (MTT) to assist with this process.

2) The Mapping Task Team (MTT): The compilation of a complete database to include the GPS coordinates of all health facilities (MOH and CSSC) is something that can best be done by a collaboration of partners interesting in mapping. To this end the Mapping Task Team (MTT) establishes that collaboration and should (eventually) be documented with its own MOU:

In accordance with MOU#, dated _____ between the Ministry of Health and the Christian Social Services Commission, we agree to work together collaboratively to support both organizations in the development of an integrated, shared database of health facility information. This will include data collection, data sharing and other tasks as required. Each partner agency agrees to designate a technical person to participate on a “Mapping Task Team” to define and coordinate respective responsibilities for this collaboration.

3) Data Collection of GPS coordinates: The MTT is mandated to compile a complete basic database for the MOH and CSSC. This begins with the identification of health facilities with missing GPS coordinates and establishing procedures for a coordinated data collection of information. For example, as CSSC zonal coordinators collect data for CSSC facilities, they should also collect location and contact (position, not person) information whenever possible for MOH facilities that lack GPS coordinates in the database. It is important that agents of CSSC, the MOH, MEDA, and other collaborating partners have an official mandate to collect this information. The MOH-CSSC MOU should establish that mandate, but it also needs to be known and documented.

4) The Basic Health Facility Database: The basic health facility database should be based on a subset of fields that are common to both the MOH and CSSC database (as well as to the databases of partners). Having a unique uniform and shared identifier for each facility is essential to creating and maintaining a shared database. The MTT will work towards the creating this uniform database format for data sharing, as well as procedures for data entry, sharing, and updating information periodically.

Annex C: Paper-Based Survey Collection Forms

CSSC Hospital Questionnaire			TECF-02	CSSC ID#	Current data	Resp Code
			Current data	Response Code	4. Facility-Based Activities: indicate which health services are provided by this facility	
I General Information						
1.01	Regis# (MOH)	#N/A			4.01	EPI at facility #N/A Y,D,N
1.01b	Regis# (CSSC)				4.02	Ante-natal Care #N/A Y,D,N
1.02	Name of Facility	#N/A			4.03	New Born Care #N/A Y,D,N
1.03	Organization	#N/A			4.04	Growth monitoring at facility #N/A Y,D,N
1.04	Zone	#N/A			4.05	Deliveries #N/A Y,D,N
1.05	Region	#N/A			4.06	Supplementary Feeding #N/A Y,D,N
1.06	District	#N/A			4.07	Intermit. Preventive Malaria Treatment #N/A Y,D,N
1.07	Contact person	#N/A			4.08	Family Planning (natural methods) #N/A Y,D,N
1.07b	Contact person/position				4.09	Family Planning (modern methods) #N/A Y,D,N
1.08	TelNo.	#N/A			4.10	ITN bednet distribution at facility #N/A Y,D,N
1.09	MobileNo.	#N/A			4.11	VCT #N/A Y,D,N
1.10	E-mail	#N/A			4.12	PMTCT #N/A Y,D,N
1.11	Location / Address	#N/A			4.13	Anti-Retroviral Treatment HIV #N/A Y,D,N
1.12	Nearest town	#N/A			4.14	TB #N/A Y,D,N
1.13	Distance/Direction from town	#N/A			4.15	Lab #N/A Y,D,N
1.19	Type of Facility	#N/A			4.16	blood transfusion #N/A Y,D,N
1.2	Status (active, closed, etc)	#N/A			4.17	X-ray #N/A Y,D,N
1.21	Ownership	#N/A			4.18	Ultrasound #N/A Y,D,N
1.22	Population served	#N/A			4.19	OPD treatm. severe malnutrition #N/A Y,D,N
1.23	GPS N/S (if known)	#N/A			4.20	ITN bednet distribution at facility #N/A Y,D,N
1.24	GPS E/W (if known)	#N/A			4.21	Health Education at facility #N/A Y,D,N
2. Infrastructure and Equipment						
2.01	Safe water within 100 m	#N/A	Y,N		4.22	INH prophylaxis for HIV patients #N/A Y,D,N
2.01b	Latrine available at facility	#N/A	Y,N		4.23	Treatment opportun. Infect. HIV #N/A Y,D,N
2.02	Telephone (type) available	#N/A	Y,N		4.24	Minor surgery #N/A Y,D,N
2.03	Radio available	#N/A	Y,N		4.25	Eyelid surgery #N/A Y,D,N
2.04	Internet Access	#N/A	Y,N		4.26	Physio-occup-therapy #N/A Y,D,N
2.06	Bicycles	#N/A	Y,N		5. Community-Based Health & Control Programs	
2.07	Motorcycles	#N/A	Y,N		5.01	Growth monitoring (outreach) #N/A Y,D,N
					5.02	TBA program #N/A Y,D,N

2.08	Ambulance	#N/A	Y,N	5.03	HIV Awareness	#N/A	Y,D,N												
2.09	??	#N/A	Y,N	5.04	Home Based Care, HIV/AIDS	#N/A	Y,D,N												
3. What local partners have provided financial/in-kind				5.05	Patient Group (e.g PLWA)	#N/A	Y,D,N												
3.01	OFDA	#N/A	Y,N	5.06	Water/Sanitation programs	#N/A	Y,D,N												
3.02	Global Fund Malaria	#N/A	Y,N	5.07	TB Control	#N/A	Y,D,N												
3.03	Global Fund HIV/AIDS	#N/A	Y,N	5.08	Schistosomiasis	#N/A	Y,D,N												
3.04	VOM	#N/A	Y,N	5.09	Guinea Worm Control	#N/A	Y,D,N												
3.05	EED	#N/A	Y,N	5.10	Onchocerciasis Control	#N/A	Y,D,N												
3.06	ICCO	#N/A	Y,N	5.11	Trachoma Control	#N/A	Y,D,N												
3.07	Miserior	#N/A	Y,N	5.12	ITN distribution in community	#N/A	Y,D,N												
3.08	Cordaid	#N/A	Y,N	5.13	Trypanosomiasis (fly traps)	#N/A	Y,D,N												
3.09	EU	#N/A	Y,N	5.14	Leprosy Control	#N/A	Y,D,N												
3.10	Other:	#N/A		5.15	Social Marketing ITN (for cash)	#N/A	Y,D,N												
3.11	Other:	#N/A		5.16	Social Marketing Condoms (for cash)	#N/A	Y,D,N												
3.12	Other:	#N/A		6. In-patient beds															
7. In patient surgical care				6.01	Total number of in-patient beds	#N/A													
7.01	Obstetric Surgery	#N/A	Y,I,N,N/A	6.02	Total number of approved beds	#N/A													
7.02	General Surgery	#N/A	Y,I,N,N/A	6.03	Occupancy rate	#N/A													
7.03	Eye Surgery	#N/A	Y,I,N,N/A	6.04	Number of maternity beds	#N/A													
7.04	Other specialised surgery	#N/A	Y,I,N,N/A	6.06	Occupancy rate (mat)	#N/A													
8. Specialised in-patient care				<table border="1"> <tr> <td>HRH records</td> <td>#N/A</td> <td>No. of records</td> </tr> <tr> <td>Missing records</td> <td>#N/A</td> <td>#REF!</td> </tr> <tr> <td>[in sections 2 to 8]</td> <td></td> <td>#N/A</td> </tr> <tr> <td></td> <td></td> <td>completed</td> </tr> </table>				HRH records	#N/A	No. of records	Missing records	#N/A	#REF!	[in sections 2 to 8]		#N/A			completed
HRH records	#N/A	No. of records																	
Missing records	#N/A	#REF!																	
[in sections 2 to 8]		#N/A																	
		completed																	
8.01	TB	#N/A	Y,D,N																
8.02	Leprosy	#N/A	Y,D,N																
8.03	Schistosomiasis	#N/A	Y,D,N																
8.04	Sleeping sickness	#N/A	Y,D,N																
8.05	Malnutrition	#N/A	Y,D,N																
8.06	Other	#N/A																	
Please fill in all the blank boxes. Y=Yes, N=No, I=Intermittent, D=Developing program, N/A=not available																			

CSSC Hospital Questionnaire

CSSC ID#

ACMO-01

#N/A

#REF!

Please complete information for Fulltime Health Staff employed by this health facility. (Add additional pages if needed)

CSSC_ID	ID Number	Name	M / F	Year of Birth	Staffing Category	Employed by:	Highest Prof. Qual	Year of Quali- cation	Nbr Yrs at this Facility	Paid by ??	Yr of Last Promotion	Last Training Received Year	Last Training - Topic

CSSC Facility Questionnaire

CSSC Facility Questionnaire		SDMW-01	CSSC ID#	Current data	Current data	Resp Code	
I General Information		Current data	Response Code	4. Facility-Based Activities: indicate which health services are provided by this facility			
1.01	Regis# (MOH)	#N/A		4.01	EPI at facility	#N/A	Y,D,N
1.01b	Regis# (CSSC)			4.02	Ante-natal Care	#N/A	Y,D,N
1.02	Name of Facility	#N/A		4.03	New Born Care	#N/A	Y,D,N
1.03	Organization	#N/A		4.04	Growth monitoring	#N/A	Y,D,N
1.04	Zone	#N/A		4.05	Deliveries	#N/A	Y,D,N
1.05	Region	#N/A		4.06	Supplementary Feeding	#N/A	Y,D,N
1.06	District	#N/A		4.07	Intermit. Prev Malaria Rx	#N/A	Y,D,N
1.07	Contact person	#N/A		4.08	FP (natural methods)	#N/A	Y,D,N
1.07b	Contact person/position			4.09	FP (modern methods)	#N/A	Y,D,N
1.08	TelNo.	#N/A		4.10	ITN bednet distrib at facility	#N/A	Y,D,N
1.09	MobileNo.	#N/A		4.11	VCT	#N/A	Y,D,N
1.10	E-mail	#N/A		4.12	PMTCT	#N/A	Y,D,N
1.11	Location / Address	#N/A		4.13	Anti-Retroviral Rx HIV	#N/A	Y,D,N
1.12	Nearest town	#N/A		4.14	TB	#N/A	Y,D,N
1.13	Distance/Direction from town	#N/A		4.15	Other	#N/A	Y,D,N
1.19	Type of Facility	#N/A		4.16	Other	#N/A	Y,D,N
1.2	Status (active, closed, etc)	#N/A		4.17	Other	#N/A	Y,D,N
1.21	Ownership	#N/A		5. Community-Based Health & Control Programmes			
1.22	Population served	#N/A			Growth monitoring	#N/A	Y,D,N

1.23	GPS N/S (if known)	#N/A	
1.24	GPS E/W (if known)	#N/A	
2. Infrastructure and Equipment			
2.01	Total # of in-patient beds	#N/A	
2.01b	Total # of approved beds	#N/A	
2.02	# of maternity beds	#N/A	
2.03	Safe water within 100 m	#N/A	Y,N
2.04	Latrine available at facility	#N/A	Y,N
2.06	Telephone (type) available	#N/A	Y,N
2.07	Radio available	#N/A	Y,N
2.08	Internet Access	#N/A	Y,N
2.09	Bicycles	#N/A	Y,N
2.10	Motorcycles	#N/A	Y,N
2.11	Ambulance	#N/A	Y,N
2.12	??	#N/A	Y,N
3. What local partners have provided financial and/or in-kind support during 2005			
3.01		#N/A	
3.02		#N/A	
3.03		#N/A	
3.04		#N/A	
3.05		#N/A	
3.06		#N/A	

5.01	(outreach)		
5.02	TBA program	#N/A	Y,D,N
5.03	HIV Awareness	#N/A	Y,D,N
5.04	Home Based Care, HIV/AIDS	#N/A	Y,D,N
5.05	Patient Group (e.g PLWA)	#N/A	Y,D,N
5.06	Water/Sanitation programs	#N/A	Y,D,N
5.07	TB Control	#N/A	Y,D,N
5.08	Schistosomiasis	#N/A	Y,D,N
5.09	Guinea Worm Control	#N/A	Y,D,N
5.10	Onchocerciasis Control	#N/A	Y,D,N
5.11	Trachoma Control ITN distribution in	#N/A	Y,D,N
5.12	community	#N/A	Y,D,N
5.13	Trypanosomiasis (fly traps)	#N/A	Y,D,N
5.14	Leprosy Control	#N/A	Y,D,N
5.15	Other:	#N/A	Y,D,N
5.16	Other:	#N/A	Y,D,N

HRH records	#N/A	No. of records
		#REF!
Missing records	#N/A	#N/A
[in sections 2,4& 5]		completed

Please fill in all the blank boxes.

Y=Yes, N=No, D=Developing program, N/A=not available

Please complete information for Fulltime Health Staff employed by this health facility. (Add additional pages if needed)

Nbr.	ID Number	Name	M / F	Year of Birth	Staffing Category	Employed by:	Highest Prof. Qual	Year of Qualification	Nbr Yrs at this Facility	Paid by ??	Yr of Last Promotion	Train. Rec Year	Topic
SDMW-01		Person Name	M	1965	PH Specialist	C	MS	2003	7	D			
SDMW-01		Person Name	F	1964	AMO	C	AD	2002	9	D			
SDMW-01		Person Name	F	1966	CO	C	D	1989	5	D			
SDMW-01		Person Name	M	1968	CO	C	D	1995	6	D			
SDMW-01		Person Name	F	1959		C	C	1984	6	D			
SDMW-01		Person Name	F	1963	LA	C	C	1996	9	D			
SDMW-01		Person Name	F	1963	NA	C	C	1997	9	D			
SDMW-01		Person Name	F	1963	NA	C	C	1997	9	D			
SDMW-01		Person Name	F	1965		C	C		5	D			
SDMW-01		Person Name	F	1982		C	C	2002	4	D			
SDMW-01		Person Name	F	1981		C	C	2004	2	D			
SDMW-01		Person Name	F	1976	DA	C	D	1997	2	D			
SDMW-01		Person Name	F	1979		C	D	2005	1	D			
SDMW-01		Person Name	F	1980		C	D	2005	1	D			
SDMW-01		Person Name	M		SG					D			
SDMW-01		Person Name	M		SG					D			
SDMW-01		Person Name	M	1977	PHA	C	C	2003	1	D			
SDMW-01		Person Name	M	1974	CO	C	C	2000	4	D			
SDMW-01		Person Name	M	1958	AC	C	C	2006		D			

Annex D: Terms of Reference for CSSC Zonal Secretaries

Job description of a full time Zonal Secretary

Job Title: Zonal Secretary

Job Summary: Zonal secretary shall assume full time job of day to day activities of the respective CSSC zone. The secretary shall be responsible for management and administration of the zone in accordance with the guidelines given by the CSSC director and zonal policy forum chairperson. Facilitate provision of social services by the churches in the zone and collaborate with zonal coordinators and FBOs doing similar activities related to health or education. He/she shall be in charge of HRIS and GIS within the zone and avail the information to CSSC central office.

Qualification: **Basic university degree with Masters in Social Sciences, or with Master in Education or Public Health and able to use English and Swahili languages fluently and accurately on all levels

Accountability: Reports to the director of CSSC but will work closely with the chairman of the zonal policy forum

Duties and Responsibilities:

- He/she shall be the secretary of the zonal policy forum meetings
- Provide management and administrative services of the zone
- Prepare work plan and budget of the zonal policy forum and zonal activities in collaboration with the zonal coordinators
- He/she together with the zonal coordinators shall carry out policy advocacy and technical support services work
- Facilitate promotion of ecumenism and partnership
- Coordinate capacity building activities in the zone
- Liaise with the CSSC relevant social sectors
- Facilitate initiative of Income generating activities
- Compile reports of activities from zonal coordinators and submit them to the zonal policy forum chairperson and copy to CSSC
- Update and maintain the HRIS data ongoing basis. Collect, compile, analyze, update, maintain, store and retrieve the data for utilization
- Use the HRIS/GIS for developing reports, graphics and coordinate among member organizations
- Track and monitor facility and human resources data collection
- Carry out any other duties which by definition belong to the domain of the zonal secretary.

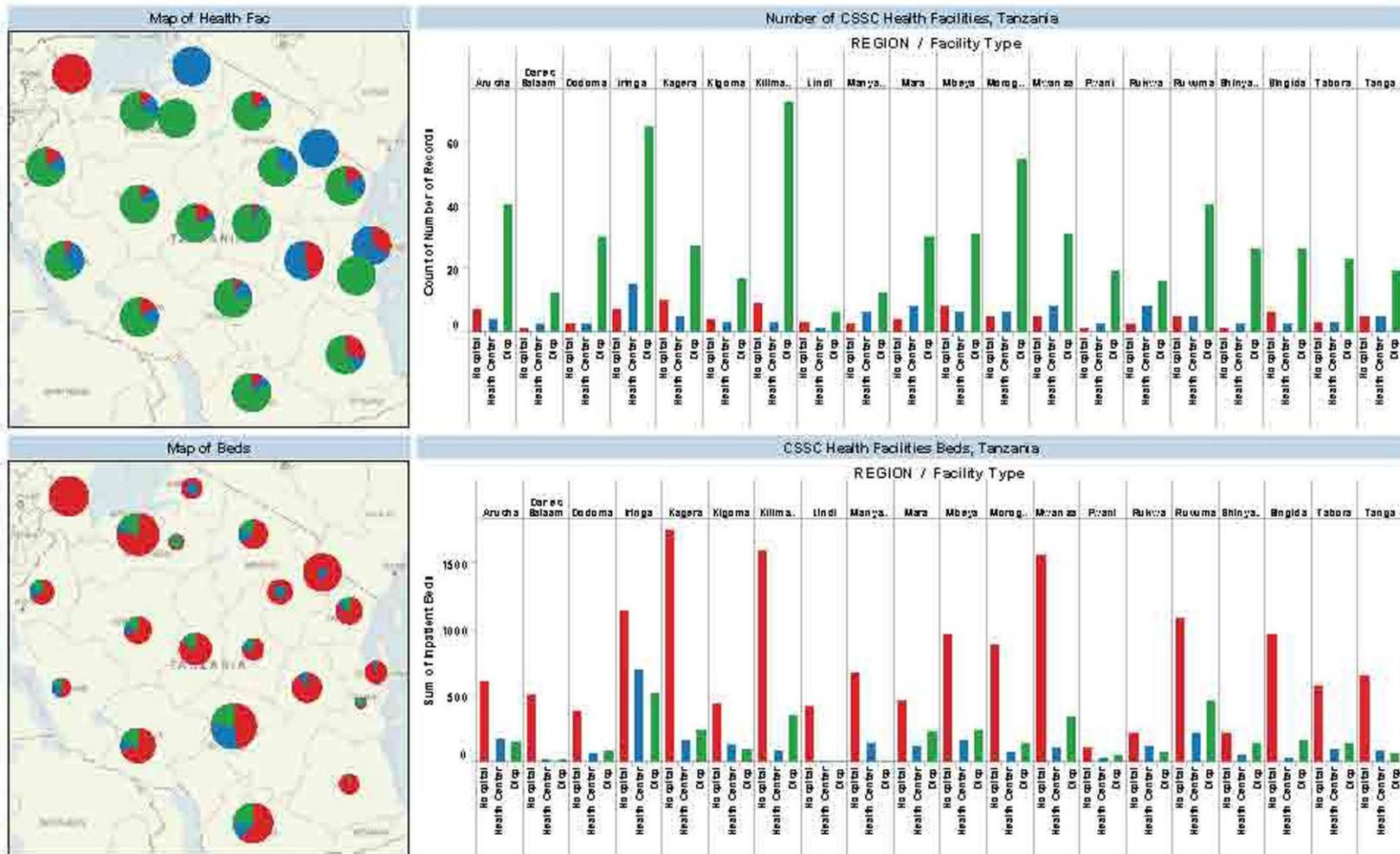
Relationship/Interactions:

CSSC health and education sectors, information and technology, accounts section, administration, zonal chairman, zonal coordinators and local development partners/organizations. The zonal secretary will also collaborate with the regional and districts authorities in their respective zones.

****Skills**

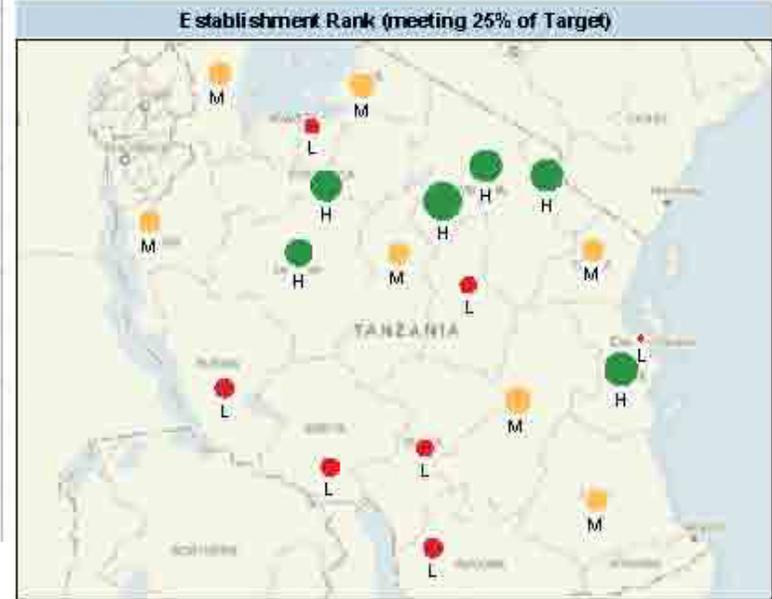
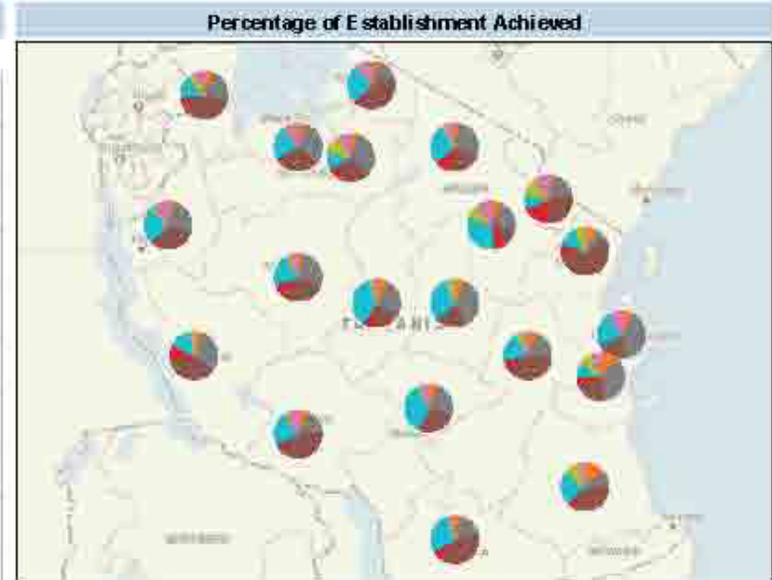
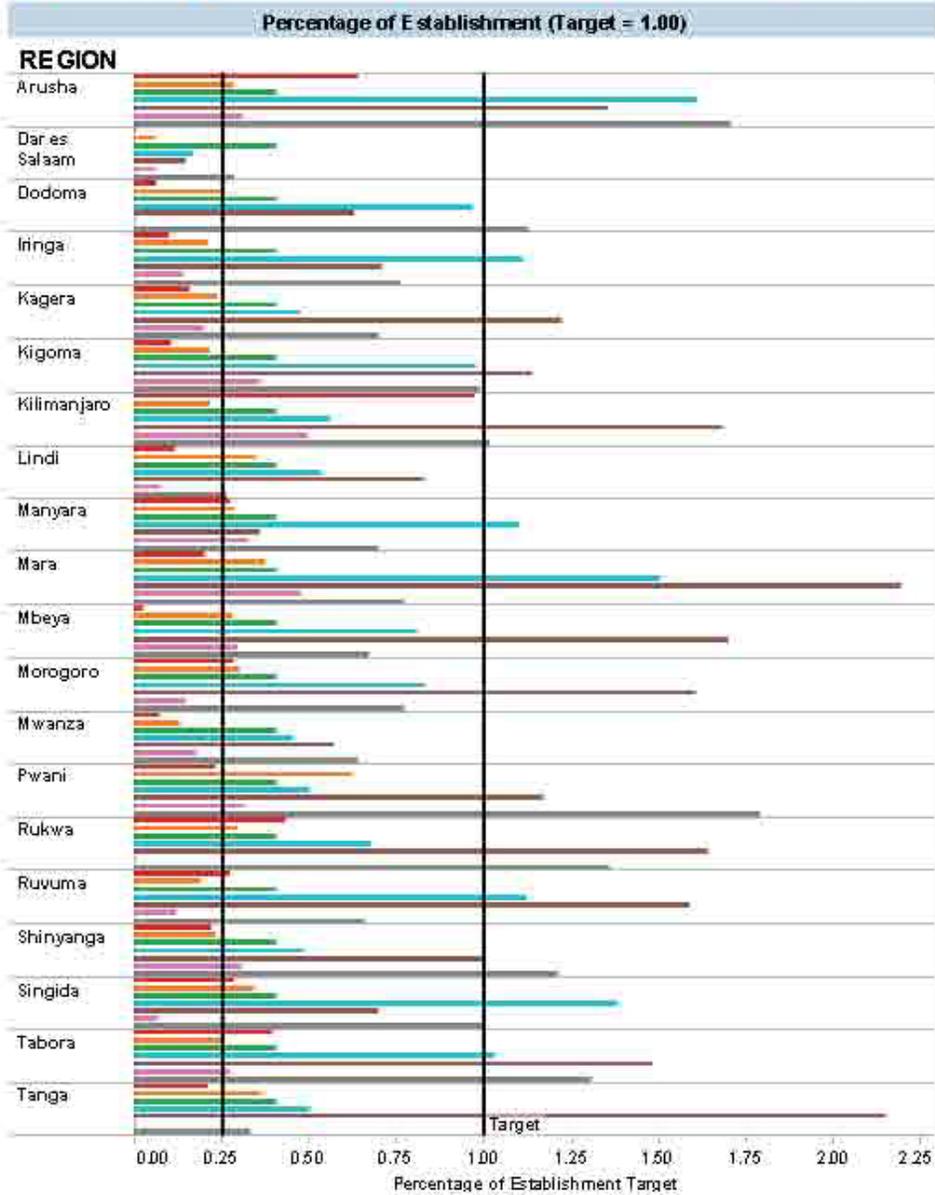
- Project management/planning/development
- Evaluator, systems management
- Public relation
- Communication skills
- Basic knowledge in research
- Advocacy and lobbying skills
- Managerial skills
- Computer application skills (Excel, Excel, Word, Access and PowerPoint).

Annex E: FBO Clinical Staff Analysis Charts and Maps



Measure Names

■ Medical Officer
 ■ Assist. Med. Offi...
 ■ Nursing Officer
 ■ Nurse Midwife
 ■ Medical Attendant
 ■ Pharmacy Staff
 ■ Laboratory Staff



Annex F: Protocol for Establishing Parameters for Unique Health Facility ID

National Health Facilities Database of Tanzania Unique ID Coding System Structure

The following summarizes a discussion regarding the Unique ID Coding System Structure that occurred on August 28, 2009 at the NIMR offices. This meeting was held as an MoHSW approved follow up to the MoHSW Geo-codes workshop that occurred at Kibaha on August 25 & 26. The following information components were determined as being required in the construction of a Unique Health Facility Identification Code to be used in uniquely identifying every health facility in the future National Health Facilities Database:

Structure Elements:

Region – 2 digit number

District – 2 digit number

Ward – 3 digit number

*Type of Facility – A (Afya)

**Unique – three digit within Ward

Qualifier (H.F. Type) H = Hospital
 C = Health Center
 D = Dispensary

*Type Note: Other Health Facility *Type codes may be added via coordination with the MoHSW. Additional new *Type (place) codes may eventually be developed for other important social or public facility places (like Schools, Orphanages, transportation facilities, etc. – see Other Example below)

**Unique Note: Existing DMO assigned MTUHA numbers will be used for the **Unique (three digit within Ward) part of the code for existing facilities. In the future, a new system of code assignments for this 3 digit part of the code will be developed by the MOHSW (for any new facilities to be added). The current plan is that the new 3-digit unique number will be assigned based upon requirements for the new DHIS system being currently developed as an improvement to the old system.

Example of Unique ID code Structure for a specific health facility:

Region:	Mbeya	=	12
District:	Chunya	=	01
Ward:	Ifumbo (U)	=	121
Type:	Health	=	A
Unique:	Ifumbo Disp	=	019 (existing number assigned by DMO)
Qualifier:	Dispensary	=	D

Therefore the **Unique ID** for **Ifumbo Dispensary** is: **1201121_A019D**

Other Example: Ifumbo Primary School: I201121_E####P

(In the above example #### would be a different unique 3-digit code assigned for this Primary School facility by the TZ Ministry responsible for managing educational facilities)

Those present at this meeting included: Benjamin Mayala (NIMR), Marcus Mzeru (MoHSW), Mr. Valentine (MoHSW), Stefanie Henke (TFB), Ronny Poppschotz (TFB), Daniel Nyagawa (IMA World Health-TZ), and Scott Todd (IMA World Health-US)

Annex G: Contact List

GIS Training	Full Name	Institution / Organization	Designation / Position	Postal Address	E-mail	Mobile No.	Telephone No.
Yes	Dr. Frederick C. Kigadye	Tanzania Episcopal Conference	Executive Secretary (Health)	Box 21333, DSM, TZ	fcigadye@yahoo.com	754 605 042	022-2860375
No	Dr. Adeline I. Kimambo	CSSC - HQ	CSSC Director	Box 9433, DSM, TZ	akimambo@cssc.or.tz	744 304 267	022-2112918
Yes	Petro Masatu Pamba	CSSC - HQ	Information & Technology Officer	Box 9433, DSM, TZ	ppamba@cssc.or.tz	754 770 866	022-2112918
Yes	Dr. Godwin Ndamugoba	CSSC - HQ	Policy Analyst - Health	Box 9433, DSM, TZ	gndamugoba@cssc.or.tz		022-2112918
Yes	Dr. Jane Kahabi	CSSC - HQ	Technical Support Services	Box 9433, DSM, TZ	jkahabi@cssc.or.tz		022-2112918
Yes	Dr. Narsassus MluQe Kibozi	CSSC - Eastern Zone	Zonal Secretary	Box 260, Morogoro, TZ	nkibozi@cssc.or.tz	754 388 137	022-2112918
Yes	Mr. Castro	CSSC - Eastern Zone	Zonal Assistant	Box 260, Morogoro, TZ	easternzone@cssc.or.tz	784 517 270	
Yes	Dr. Richard Mbwambo	CSSC - Lake Zone	Zonal Secretary	Mwanza, TZ	rmbwambo@cssc.or.tz	754 442 379	
Yes	Deogratius Katonyella	CSSC - Lake Zone \ DHMIS	Zonal Assistant \ Tech Manager	Mwanza, TZ	deokatonyella@gmail.com	713 465 667	
Yes	Irenius Lyimo	CSSC - Northern Zone	Zonal Secretary	Arusha, TZ	ilyimo@cssc.or.tz	754 539 484	
Yes	Dennis Louis Laizer	CSSC - Northern Zone	Zonal Assistant	Arusha, TZ	northernzone@cssc.or.tz	756 778 832	
Yes	Simeon Kasoga	CSSC - Western Zone	Zonal Secretary	Tabora, TZ	skasoga@cssc.or.tz	787 217 410	
Yes	Swalleh Clement	CSSC - Western Zone	Zonal Assistant	Tabora, TZ	westernzone@cssc.or.tz	754 432 947	

GIS Training	Full Name	Institution / Organization	Designation / Position	Postal Address	E-mail	Mobile No.	Telephone No.
Yes	Fr. Lucas Komba	CSSC - Southern Zone	Zonal Secretary	Mbeya, TZ	lkomba@cssc.or.tz	762045787	
Yes	Dafroza Mabula	CSSC - Southern Zone	Zonal Assistant	Mbeya, TZ	southernzone@cssc.or.tz	755 813 722	
Yes	Dr. Simon Haule	CSSC - HQ	Former Technical Support Services Officer (H)	Box 9433, DSM, TZ	haule@cssc.or.tz	756 747 984	022-2112918
Yes	Dr. Charles Mbwanji	CSSC - Southern Zone	Former Zonal Coordinator, Southern Zone	Box 9433, DSM, TZ	mbwanji@yahoo.com	754 295 726	025-2502307
Yes	Dr. Mganga Asheli Kipuyo	CSSC - Northern Zone	Former Zonal Coordinator, Northern Zone	Box 3164, Arusha, TZ	kipuyo@gmail.com	713 254 297	027-2509973
Yes	Dr. Edwin Kiula	CSSC - Western Zone	Former Zonal Coordinator, Western Zone	Box 86, Manyoni, TZ	act-drv@maf.or.tz	787 710 666	026-2540270
Yes	Paschal Chacha	MEDA	Voucher Tracking System Officer	Box 10817, DSM, TZ	paslifechosen@yahoo.com	755 481 785	022-2701313
Yes	Mercv Kiologwe	MEDA	Voucher Tracking System Officer	Box 10817, DSM, TZ	marciena2@yahoo.com	786 358 248	022-2701313
No	Ombeni Mwerinde	MEDA	Area Regional Coordinator	Box 10817, DSM, TZ	okmwerinde@yahoo.com		022 270 1313
Yes	Victor Mponzi	JHPIEGO	Data Analyst	Box 9170, DSM, TZ	vmponzi@jhpiego.net	754 860 094	022-2771346
No	Gregory Kabadi	JHPIEGO	M&E Officer	Box 9170, DSM, TZ	gkabadi@jhpiego.net	0784 909 067	
Yes	Joel Lubebe	IMA / ACCESS	FBO-Coordinator	Box 9260, DSM, TZ	joellubebe@Interchurch.org	787 034 516	022-2772728
Yes	Mathew Luepheng	USAID	Intern	USAID Embassy, DSM, TZ	mluepheng@usaid.com		

GIS Training	Full Name	Institution / Organization	Designation / Position	Postal Address	E-mail	Mobile No.	Telephone No.
No	Josiberte J. Rubona	MoHSW Tanzania	Head HMIS and Research Section	DSM, TZ	mkerebe@yahoo.co.uk	787 381 449	
No	John Claud	MoHSW Tanzania	HMIS	DSM, TZ	claudjohnk@yahoo.com	754 279 211	
No	Dr. Bruno Masumbuko	GTZ	Technical Advisor	Box 1519, DSM, TZ	bruno.masumbuko@gtz.de	762 437 774	
No	Ronny Poppshotz	Technische Fachhochschule Berlin	Civil Engineering and Geo Information	Berlin, GE	ropgeo@web.de		49 30 4504 2573
No	Stefanie Henke	Technische Fachhochschule Berlin	Civil Engineering and Geo Information	Berlin, GE	henke@tfh-berlin.de		49 30 4504 5441
No	Benjamin Mayala	NIMR Tanzania	Geographic Information Specialist	DSM, TZ	benjaminmayala@yahoo.com	732 432 161	
No	Benedict Mugambi	NBS Tanzania	Former Head of Geoinformation	DSM, TZ	Benedict_mugambi@yahoo.com	13 307 519	
No	Vincent C. Mugaya	NBS Tanzania	Head of Geoinformation	DSM, TZ	vinmugaya@nbs.go.tz	784 272 121	713 272 121
No	Nicholas Moens	iiCD	Country Manager - Tanzania	The Hague, NL	nmoens@iicd.org		70 311 7311
No	Bernadette Huizinga	iiCD	Officer Capacity Development	The Hague, NL	bhuizinga@iicd.org		70 311 7311
No	Sr. Rita Toutant	TNCHF	CEO	Box 7146, DSM, TZ	network@tnCHF.or.tz		022-2122063
No	Euniace Bandio	TCMA		Muhumbilli Univ. CHS	ebandio@muhas.ac.tz		

The Capacity Project is an innovative global initiative funded by the United States Agency for International Development (USAID). The Capacity Project applies proven and promising approaches to improve the quality and use of priority health care services in developing countries by:

- Improving workforce planning and leadership
- Developing better education and training programs for the workforce
- Strengthening systems to support workforce performance.

The Capacity Project Partnership



The Capacity Project

IntraHealth International, Inc.
6340 Quadrangle Drive
Suite 200
Chapel Hill, NC 27517
Tel. (919) 313-9100
Fax (919) 313-9108
info@capacityproject.org
www.capacityproject.org