



Ministry of Health
Federal Democratic Republic of Ethiopia

National Health Information System Road Map

2005 - 2012 E.c.
(2012/13 - 2019/20 G.c.)

2012

CONTENTS

	Page
CONTENTS	i
LIST OF TABLES	III
LIST OF FIGURES	III
ACRONYMS	IV
FOREWORD	2
EXECUTIVE SUMMARY	4
CHAPTER 1: INTRODUCTION	1
1.1. COUNTRY BACKGROUND	1
1.2. HEALTH POLICY, HEALTH SYSTEMS AND HEALTH STATUS	1
CHAPTER 2: HEALTH INFORMATION SYSTEM IN ETHIOPIA	5
2.1. POPULATION BASED HIS	5
2.2. ROUTINE HIS	6
2.3. COMMUNITY HEALTH INFORMATION SYSTEM	7
2.4. THE LINKAGE AND COMPREHENSIVE HIS	7
CHAPTER 3: METHODOLOGY	8
CHAPTER 4. ASSESSMENT FINDINGS	11
4.1. HIS RESOURCES:.....	11
4.2. INDICATORS.....	13
4.3. DATA MANAGEMENT	14
4.4. DATA SOURCES	14
4.5. INFORMATION PRODUCTS	19
4.6. DISSEMINATION AND USE.....	20
4.7. PRIORITY PROBLEMS OF HIS	21
CHAPTER 5: HIS ROAD MAP OBJECTIVES	24
5.1. VISION	24
5.2. OBJECTIVES	24
5.3. OPPORTUNITIES.....	24
CHAPTER 6: KEY INTERVENTIONS TO ACHIEVE THE HIS ROAD MAP OBJECTIVES	25
OBJECTIVE 1. INTERVENTIONS TO STRENGTHEN GOVERNANCE, REGULATION, COORDINATION & LEADERSHIP	25
OBJECTIVE 2. INTERVENTIONS TO INSTITUTIONALIZE, IMPROVE AND STRENGTHEN HIS RESOURCES	26
OBJECTIVE 3. INTERVENTIONS TO IMPROVE HEALTH DATA COVERAGE	27
OBJECTIVE 4. INTERVENTIONS TO IMPROVE HEALTH DATA MANAGEMENT & QUALITY	30
OBJECTIVE 5. INTERVENTIONS TO STRENGTHEN AND INSTITUTIONALIZE INFORMATION DISSEMINATION AND USE.....	30
CHAPTER 7. ACTIVITIES AND RESPONSIBILITIES	31
CHAPTER 8. HIS ROAD MAP IMPLEMENTATION FRAMEWORK, ASSUMPTIONS AND CHALLENGES	47

8.1.	HIS ROAD MAP IMPLEMENTATION FRAMEWORK	47
8.2.	GOVERNANCE ROLES AND RESPONSIBILITIES	49
8.3.	RESOURCE MOBILIZATION	51
8.4.	CRITICAL ASSUMPTIONS AND CHALLENGES	51
CHAPTER 9: MONITORING AND EVALUATION OF THENATIONAL HIS ROAD MAP		52
9.1.	PURPOSE	52
9.2.	PRINCIPLES AND METHODS	52
9.3.	DATA SOURCES FOR M&E	52
9.4.	M&E RESULTS DISSEMINATION AND UTILIZATION MECHANISMS	53
9.5.	HISROAD MAP MONITORING AND EVALUATION MILESTONE	54
ANNEX 1. LIST OF PARTICIPANTS OF NATIONAL HIS ASSESSMENT, VALIDATION AND PLANNING WORKSHOPS.		55
ANNEX 2. MEMBERS OF THE CORE TECHNICAL WORKING GROUP.....		56
ANNEX 3. M&E INDICATORS DEFINITION.....		57
ANNEX 4. NATIONAL HIS ROAD MAP M&E INDICATORS REFERENCE TABLE		61
ANNEX 5. GLOSSARY		64

LIST OF TABLES

	Page
Table 1. Summary Assessment Scores of HIS in Ethiopia, Sept. 2011.	12

LIST OF FIGURES

	Page
1. The HMN Framework for HIS Development	8
2. Overview of the National HIS Road Map Implementation Framework	46

ACRONYMS

CBN	Community Based Nutrition
CDC	United States Center for Disease Control and Prevention
CHIS	Community Health Information System
CSA	Central Statistical Agency
DHS	Demographic and Health Survey
DSS	Demographic Surveillance Systems
EHNRI	Ethiopian Health and Nutrition Research Institute
FMHACA	Food, Medicines and Healthcare Administration and Control Authority
FMOH	Federal Ministry of Health
GPS	Geographic Positioning System
HAPCO	HIV AIDS Prevention and Control Office
HC	Health Centre
HEW	Health Extension Worker
HF	Health Facility
HHM	HSDP Harmonization Manual
HIS	Health Information System
HIT	Health Information Technician
HMIS	Health Management Information System
HMN	Health Metrics Network
HP	Health Post
HR	Human Resource
HRD	Human Resource Development
HRIS	Human Resources Information System
HSDP	Health Sector Development Program
ICD	International Classification of Diseases and other Conditions
ICT	Information Communication & Technology
IDSR	Integrated Disease Surveillance and Response

IFMIS	Integrated Financial Management Information System
IHRMIS	Integrated Human Resource Management Information System
JSI/MEASURE Evaluation	John Snow Incorporated/ Measure Evaluation
LIS	Laboratory Information System
LMIS	Logistics Management Information System
MARPs	Most At Risk Populations
MOE	Ministry of Education
MOJ	Ministry of Justice
NAC	National Advisory Committee
NHA	National Health Accounts
PFSA	Pharmaceutical Fund and Supply Agency
PHC	Primary Health Care
PHCU	Primary Health Care Unit
PHEM	Public Health Emergency Management
PPFGD	Policy Plan and Finance General Directorate
RHB	Regional Health Bureau
RIS	Regulatory Information System
SRS	Sample Registration System
TU	Tulane University
VR	Vital Registration
WHO	World Health Organization
WorHO	Woreda Health Office

FOREWORD

The National Health Information System Road Map 2005-2012 E.c. (2012/13-2019/20) is the first of its kind for Ethiopia. It is developed at the time when evidence based decision making and accountability has become top in the agenda of governments and development partners. Accountability has become one of the reasons for developing strong and transparent Health Information System (HIS) and Monitoring and Evaluation (M&E) systems. Ethiopia had been strongly committed to harmonize sector development program planning, financing, monitoring and evaluation. The HSDP Harmonization Manual (HHM) developed in 2007 which aims to harmonize the sector development program through one plan, one budget and one report is a major step towards realization of this commitment.

Fragmented and vertical reporting, multitudes of donor-driven M&E systems, numerous and unmanageable lists of indicators required by programs and donors, duplications and redundancy had been frustrating the producers and confusing the managers of HIS and M&E. The overload results in late, incomplete and poor quality reports compromising decisions and allocation of the already scarce resource.

The Federal Ministry of Health (FMOH) in collaboration with partners had been engaged in addressing the problems seen in Health Management Information System (HMIS) over the past five years and saw considerable improvements. This national health information system road map will consolidate the benefits demonstrated by the scale up of the new HMIS and enhance evidence based decision making at all levels in the country. It is designed based on comprehensive assessment of the current health information system and future needs. It is the joint work of stakeholders represented by Directorates and Agencies of Ministry of Health, Central Statistical Agency, Ministry of Justice and Core Technical Working Group composed of CDC, WHO, JSI/MEASURE Evaluation, Tulane University, Italian cooperation, USAID.

The FMOH and CSA have been closely working on filling the information gaps that could be filled from population based sources. Inclusion of key indicators relevant for the health sector during the recent population and housing census and Demographic and Health Survey (DHS) were the reflections of such close collaborations. Development of this comprehensive national HIS road map will further consolidate

the linkage. The contents of the HIS road map will guide the MOH, CSA and partners to focus on commonly agreed priority HIS issues during resource allocation, and technical support.

To make the vision and objectives of the national HIS road map come true; the HIS road map needs to be endorsed with supporting legislation and regulations. Secondly, it needs to be adequately funded and supported by government agencies and health development partners. Thirdly, it is vital that organizations and stakeholders involved in the implementation of the plan maintain a functional network and adopt the necessary coordination mechanisms. Involvement of stakeholders at all levels of the assessment and planning process was mandatory to ensure shared ownership and successful implementation of the strategic plan. It is believed that a comprehensive National HIS road map will provide a platform to ensure more consistent, integrated and standardized approach to managing health and health related data and information. The FMOH and CSA in collaboration with partners will widely disseminate the National HIS road map for common understanding, shared ownership and active contribution and involvement in its implementation. It is hoped that the HIS road map will serve as a means to support more effective policy and action at all levels.

The FMOH and CSA call up on the various sectors and agencies of the government and health development partners to own and commit to the plan and to the key principles of harmonization and alignment in resource allocation, support the implementation of interventions of this HIS road map and ongoing activities.

Finally the FMOH and CSA want to extend their gratitude and appreciation for the partners who have been supporting the assessment and planning process, the participants of the workshops and the agencies they represented. Special thanks go to the members of core Technical Working Group (TWG) for their unreserved efforts in designing and finalizing the HIS road map.

Federal Ministry of Health

EXECUTIVE SUMMARY

The National Health Information System Road Map 2012/13-2019/20 is the first comprehensive Health Information System Road Map for the country. It is developed based on a comprehensive assessment of the current situation of national HIS and its needs in the near future.

HIS assessment was done using the Health Metrics Network (HMN) framework, tools and guidelines. The findings were discussed and validated during series of meetings involving wider stakeholder's forum. The HIS road map is also developed following the national HIS strategic planning guide developed by HMN. Out of the six components of HIS of the HMN framework, this HIS road map addresses four main components found to have scored low during assessment and validation. These are: 1) HIS resources, 2) Data management, 3) Data sources, and 4) Dissemination and use while the two components; indicators and information products were considered adequate.

Vision of the HIS road map is "timely, complete and accurate health and health related information from an integrated data repository made available and used for evidence based decision making at all levels in the country". There are five strategic objectives to achieve during and by the end of the eight year period. These are 1) to strengthen HIS governance, legislation, coordination and Leadership 2) to improve, strengthen and institutionalize HIS resources, 3) to improve health data coverage , 4) to improve health data management and quality , and 5) to strengthen and institutionalize information use for evidence based planning, performance monitoring, feedback and action at all levels. Under these objectives 31 key interventions are identified for implementation over the next eight years. The interventions are further split in to specific activities, implementation plan specifying immediate products, time frame, and responsibilities.

CHAPTER 1: INTRODUCTION

1.1. COUNTRY BACKGROUND

Ethiopia is a Federal Democratic Republic with nine Regional States and two City Administrations, further divided into 837 administrative Woredas (districts), two "special" Zones and seven "special" Woredas all further subdivided in to 16,253 local administrations called Kebele. Ethiopia is situated in the Horn of Africa bordered by Eritrea on the north and northeast, by Djibouti and Somalia on the east, Kenya on the south, the Republic of South Sudan on the southwest and Sudan on the west.

Based on projections from the 2007 census, the population of Ethiopia in 2012 is 82 million. The average household size is 4.7, the population age and sex pyramid is predominately young, and sex ratio is almost equal.

Ethiopia's economy depends heavily on the agricultural sector which accounts for 83.4% of the labor force, 43.2% of the Gross Domestic Product (GDP) and 80% of exports. Despite numerous challenges, Ethiopia had been showing a significant economic growth over the last decade. During 2005/06- 2008/09, the country's average economic growth had been a double digit of 11.8% per annum. Poverty Head Count Index has declined from the 1996 level of 45.5% to 32.7% in 2007/08.

1.2. HEALTH POLICY, HEALTH SYSTEMS AND HEALTH STATUS

1.2.1. HEALTH POLICY AND SYSTEMS

Following the change of government, the first national health policy was developed in 1991. The core principles of the health policy are democratization and decentralization of the health care system; developing preventive, promotive and curative components of health care; assurance of accessibility of health care for all parts of the population; and encouraging private and Non Governmental Organization (NGO) participation in the health sector. The health sector follows a five year rolling plan as part of the national development plan. Since 1997/98, three consecutive

phases were completed and currently the country is implementing the fourth comprehensive Health Sector Development Plan (HSDP).

Devolution of power to Regional governments initially and ultimately to the Woredas with clear guidelines on sharing decision making processes, powers, duties and responsibilities has resulted in largely shifting the decision making for public health service delivery to Regions and Woredas. The Federal Ministry of Health (FMOH) and the Regional Health Bureaus (RHBs) focus more on policy and strategy matters and technical support while Woreda Health Offices (WorHO) manage and coordinate the operation of the Woreda health system under their jurisdiction.

The health system has made a huge transformation over the past two decades and dramatically improved potential access to care through accelerated expansion of health facilities. Various strategies and guidelines including Making Pregnancy Safer strategy (2000), Reproductive Health Strategy (2006), Adolescent and Youth Reproductive Health Strategy (2006) and Revised Abortion Law (2005), strategies on free service for key Maternal, Neonatal and Child Health (MNCH), and Health Care Financing Strategy were developed and implemented during the last fifteen years.

Innovative community level health service called Health Extension Program (HEP) was introduced by training and deployment of female Health Extension Workers (HEWs) and institutionalizing community health care at Health Post (HP) level. Training and deployment of Health Officers (HOs) and training in Integrated Emergency Obstetrics and Surgery skills at Master's level had been introduced.

The government of Ethiopia gave priority to the expansion of health facilities, especially those of primary health care (PHC) for the last decade. The government planned and achieved 100% of the planned 15,000 HPs construction and 83% of the planned construction of 3,200 Health Centers (HC). The number of hospitals which was 103 in 2000 more than doubled to 212 in 2011. In order to expand comprehensive obstetric care services further to the community level, the gov-

ernment has now put a plan for accelerated expansion of primary hospitals for each Woreda, and aims to build more than 800 in the coming three years.

Recently, the health sector introduced a three-tier health care delivery system. Level one is a Woreda health system comprised of a primary hospital (for 60,000-100,000 people), health centers (for 15,000-25,000 population) and their satellite Health Posts (for 3,000-5,000 population) connected to each other by a referral system. The primary hospital, HC and HP form a Primary Health Care Unit (PHCU). Level two is a General Hospital for 1-1.5 million people; and level three is a Specialized Hospital for 3.5-5 million people. Over the past two decades, the private sector and mainly private for profit sector had rapidly expanded contributing heavily to public/private partnership in health and boosting health service coverage and utilization.

The current ongoing five year health sector strategic plan, the HSDP IV (2011/12- 2014/15) is a component of the five year national development plan called Growth and Transformation (GTP). HSDP IV is designed based on core elements of the health policy and in line with the priorities of the five year GTP. Priorities of the HSDP-IV are improving maternal and newborn care, improving child health, reversing and maintaining the prevalence of HIV/AIDS, TB and Malaria. The themes of HSDP IV are excellence in health service delivery, in leadership and governance and in health infrastructure and resources. It is planned to attain ten strategic objectives. These are to 1) improve access to health services, 2) improve community ownership, 3) maximize resource mobilization and utilization, 4) improve quality of health services, 5) improve public health emergency preparedness and response, 6) improve pharmaceutical supply and services, 7) improve regulatory system, 8) improve evidence based decision making by harmonization and alignment, 9) improve health infrastructure, and 10) improve human capital and leadership.

1.2.2. HEALTH STATUS

The major health problems of the country are largely preventable communicable diseases and nutritional disorders. More than 90% of child deaths are due to pneumonia, diarrhea, malaria, neonatal problems, malnutrition and HIV/AIDS, and often a combination of these conditions.

Through the above mentioned reforms, strategies and interventions; most of the health status indicators have been improving over years. Infant and child mortality has dropped significantly and the country is on course to achieve the MDG targets as a result of focused intervention on priority services. The most recent vital health indicators from the Demographic and Health Survey (DHS) 2011 showed life expectancy of 59 years (53.4 years for male and 55.4 for female). Infant Mortality Rate (IMR) dropped to 59/1000 LB, as compared to 77/1000 LB of 2005 and 101/1000LB fifteen years ago. Under-five mortality rate dropped to 88/1000 LB as compared to 123 of 2005 and 166/1000/LB fifteen years ago. The average lifetime fertility has declined in the past 15 years from the 1990 level of 6.4 births per woman to 5.4 births in 2005 and further down to 4.8 in 2011.

Maternal Mortality Ratio (MMR) declined from 871 of 2000 to 673/100,000 in 2005, and remained at 676/100,000LB in 2011 which is among the world's highest. The major causes of maternal death are obstructed prolonged labor (13%), ruptured uterus (12%), severe preeclampsia/eclampsia (11%), malaria (9%) and 4% attributable to complications of abortion.

CHAPTER 2: HEALTH INFORMATION SYSTEM IN ETHIOPIA

HIS in Ethiopia is run under different authorities. While the routine Health Management Information System (HMIS) is managed primarily by the MOH, population based information comes predominantly from CSA. Ethiopian Nutrition and Health Research Institute (ENHRI), Universities and individuals conduct various research activities, the former in line with the priority research needs identified by the MOH.

2.1. POPULATION BASED HIS

CSA is the major source of population based statistics in the country. The main objective of CSA are 1) to collect, process, analyze and disseminate the necessary socio-economic and demographic statistical data through censuses, sample surveys, continuous registration and administrative recording systems; 2) to provide technical guidance and assistance to government agencies and institutions in their endeavor to establish administrative recording, registration and reporting system; and 3) to build the capacity required for providing directives and consultations in database creation and development of administrative records and registration systems.

Based on its mandates, CSA had been conducting censuses every ten years, DHS every five to six years and various sample surveys related to health and beyond. CSA had also been implementing registration of small scale vital events mainly through Sample Vital Registration (SVR). These population based surveys and census are done in close consultation with and involvement of the MOH and key partners which had become more inclusive over time. For example, the priority population based information needs of the health sector including HIV/AIDS, Malaria and nutrition that could not be available from routine system were collected as part of the most recent DHS 2011 and census.

The Department of Community Health of Addis Ababa University had been running Demographic Surveillance Systems (DSS) for over two decades in the central part of Ethiopia while Gonder in the North, Jimma in the South West Haramaya in the East, Mekelle in the North, Hawassa, and Arbaminch Universities in the South are also currently implementing the same. Re-

cently these universities are attempting to set up a network of university DSS sites to standardize, and share results both within each other and with potential users.

Recently the Ministry of Justice (MOJ) had been working on the necessary legal framework to introduce and institutionalize Vital and Civil Registration System (VCRS) in the country.

2.2. ROUTINE HIS

The FMOH receives service, diseases and administrative reports from RHBs, from agencies, and federal hospitals. Different process owners and hospitals under FMOH and RHBs are expected to submit activity reports regarding achievement of targets stated on the annual core plan of the Ministry. In addition to the report on core plan, RHBs and hospitals are expected to deliver quarterly activity reports. Likewise, the RHBs receive quarterly reports from Woreda and Regional hospitals while WorHOs receive service, disease and administrative reports from primary hospital, HC and HP. Routine data collection and aggregation process at all levels of the health system produce summary statistics that can be used during performance monitoring meetings and planning.

Strengthening the national HIS had long been a priority of the FMOH since the introduction of HSDP whereby HMIS and Monitoring and Evaluation (M&E) were among the components of the four HSDPs. In the current HSDP IV, one of the strategic objectives is to improve evidence based decision making by harmonization and alignment. As indicated by the review reports of consecutive HSDP, the MOH had been engaged in reforming HMIS and M&E as priority agenda over the past years. Accordingly assessment of HMIS was conducted between June and September 2006 to determine its performance capacity, efficiency and effectiveness in preparation for a new design. Among the major gaps identified were that; HMIS had been cumbersome with too much data elements, shortage of skilled professionals particularly at the periphery levels, lack of adequate skills in data collection and analysis, fragmentation of information flow, and complicated parallel reporting system with no integration among the various subsystems resulting in redundant and conflicting reports. Based on these finding, a number of reforms have been introduced, piloted and being implemented since 2007. The ongoing reforms include: standardization of procedures in data collection, analysis and reporting, application of user manuals to standard-

ize data collection, analysis and interpretation, selection of sector-wide and programmatic indicators with the involvement of all stakeholders, design of simplified formats, and integrated and unified flow of information. Evaluation of the design and piloting as well as early observations indicated that still there is still demand and push by some partners for parallel recording and reporting which needs further work.

2.3. COMMUNITY HEALTH INFORMATION SYSTEM

The MOH has introduced a Community Health Information System (CHIS) to capture basic health and health related information by Health Extension Workers (HEW) at household and individual level. The CHIS collects data on basic demographic statistics, health service delivery and utilization based on the health extension package. This is done by using a family folder which is a family centered tool designed for HEW to manage and monitor her work in educating households and delivering an integrated package of promotive, preventive and basic curative health services.

2.4. THE LINKAGE AND COMPREHENSIVE HIS

The need to develop a comprehensive medium to long term HIS Road Map that addresses wider scope of HIS beyond HMIS had been considered a top priority among policy makers, managers and professionals for better informed decision making in policy development, program or intervention planning, monitoring and evaluation of health sector performance at all levels. Hence, while the MOH has continued scaling up the new reform in the routine HMIS, the MOH, CSA and HMN/WHO jointly conducted comprehensive assessment of the broader national HIS in 2007 and identified gaps in the various components of HIS that require intervention. Based on this the exercise on the development of national HIS road map started in 2011.

CHAPTER 3: METHODOLOGY

The national HIS road map for Ethiopia is developed jointly by the MOH, CSA, and MOJ of the FDRE with active involvement of key HIS producers, users and financier partners and agencies. The plan was guided by the results of a national HIS assessment conducted in 2007 and validated in 2011.

Assessment was carried out following the HMN frame work and standards for country HIS, 2nd edition (WHO, June 2008) and the assessment tool for national HIS version 4.00 (WHO, 2008). The HMN framework describes HIS in terms of components, standards, principles, process and tools for HIS strengthening, and indicates the goal of strengthening HIS to be increasing the availability, accessibility, quality and use of health information vital for decision-making at country and global levels (Figure 1). The national HIS assessment and development of the HIS road map is carried out in the same principle.

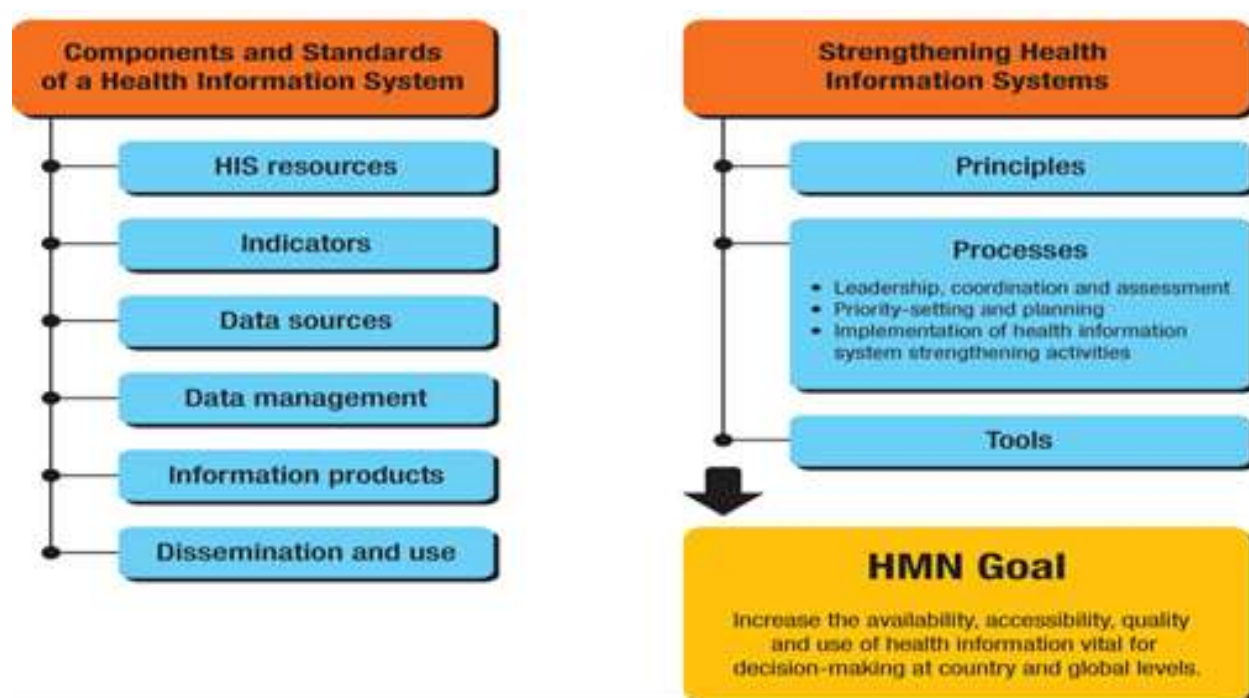


Figure 1. The HMN Framework for HIS Development

The assessment tool and assessment guide describe the essential activities and steps of the assessment process. According to the guide the aim of the national HIS assessment is to arrive at an understanding of users' current and perceived future requirements for statistical information; their assessment of the adequacy of existing statistics and of where there are gaps in existing and planned data; their priorities; and their ability to make effective use of statistical information. The need for involving and engaging all major stakeholders including producers, users and financiers of health information and other social statistics at various levels during the assessment and designs of the national HIS planning is emphasized. The Ethiopian HIS assessment and planning process took this into consideration and applied fully.

Accordingly; a wide range of experts from directorates and agencies of the MOH, CSA, MOJ, and other sectors and development partners active in the area of HIS and M&E were involved throughout the assessment, validation and planning process (annex 1). A core expert Technical Working Group (TWG) representing MOH, CSA, WHO, CDC, JSI/MEASURE Evaluation, Tulane University, Italian Cooperation, and USAID was given the task of overall coordination and detailed work of both the assessment and plan (Annex 2). During this process, the TWG had been closely guided and supported by the Policy, Plan and Finance Directorate General (PPFDG) of the FMOH

During the assessment workshop, participants were grouped to assess questions related to their area of expertise and work responsibilities following the group builder which is part of the assessment guide. Each group of experts discussed each question assigned to the group and gave scores ranging from 0 to 3 by consensus, while the average of individual scores was recorded when there was no consensus. The score given is 3 when the country situation regarding the question and HIS component is highly adequate, 2 when adequate, 1 when present but not adequate and 0 when it is not adequate at all. Reasons behind the scores were also recorded to elaborate the overall results and to serve as the basis of HIS road map interventions and activities.

Six HIS components were assessed using 197 questions designed by HMN. These were 1) HIS resources which covers HIS policy and planning, institutions, human resources, financing, and HIS infrastructure, 2) HIS indicators, 3) HIS data sources which covers census, vital statistics,

population based surveys, health and disease records, service records, and resource records, 4) Data management, 5) information products and 6) dissemination and use. Following the validation and updating of the earlier (2007) results of assessment scores in 2011, and after specifying and updating the reasons behind low scores, the TWG proceeded to the planning stage.

The planning process was also guided by the HMN guidance for HIS planning process version 6 (HMN 2009). The core TWG identified priority problems by HIS components, and defined the national HIS vision statement. Following this, an inventory of planned and ongoing HIS activity was done. The HIS objectives for the plan period were defined based on the gaps and priorities of HIS identified by the assessment. Major interventions were listed for each objective, implementation phasing and detailed activity plan developed followed by costing and outlining monitoring and evaluation plan.

CHAPTER 4. ASSESSMENT FINDINGS

National HIS of Ethiopia was assessed in 2007 and validated in 2011 using the HMN framework and assessment tool. According to the validated assessment results, among the six components of HIS, four components scored low. Data management scored as “not functional” (13%), and three components, HIS resources (42%), dissemination and use (48%) and data sources (52%) were found to be present but not adequate. Indicators (83%) and information products (73%) were considered adequate. The major aspects of the assessment findings are discussed below and summary of scores by the six components and subcomponents shown in table 1.

4.1. HIS RESOURCES:

4.1.1. HIS GOVERNANCE AND PLANNING

Legal, regulatory and planning context of health information is a key resource for effective HIS. It enables the establishment of mechanisms to ensure data availability, exchange and quality. The assessment found that although there is fragmented legislation providing the framework for health information covering specific components, such as notifiable diseases, private sector data, confidentiality, fundamental principles of official statistics, and vital statistics etc, there is no strong HIS policy, legislation and procedures for turning the fundamental principles of official statistics into practice, and for ensuring the integrity of national statistical services

However; CSA has national plans for statistical development covering the needs of all sectors, and this serves as means of guiding the national statistical development. On the other hand it is concluded that national coordination mechanism is weak. Lack of clearly defined roles and responsibilities and lack of appropriate structure to guide proper planning and implementation of HIS components is noted. Also the country does not have a regular system for monitoring the performance of HIS. There is central HIS unit in the Ministry of Health which plays a significant role in coordinating, strengthening and maintaining the national HIS, and the ongoing HMIS reform. However, it has very limited functional capacity and undertakes few HIS strengthening

activities, lacks adequate resources to effectively maintain and upgrade the status of HIS to a level that meets the health information requirements of the country.

Table 1. Summary Assessment Scores of HIS in Ethiopia, Sept. 2011.

Component	Percent score	Description of Result
Total for the Six Components		
Data Management	13%	Not functional
Resources	42%	Present, but not adequate
Data sources	52%	Present, but not adequate
Indicator	83%	Adequate
Information Products	73%	Adequate
Dissemination & Use	48%	present, but not adequate
Dissemination and Use		
Implementation/action	56%	Present, but not adequate
Analysis and use	56%	Present, but not adequate
planning and priority setting	56	Present, but not adequate
Resource allocation	42%	present, but not adequate
policy and advocacy	33%	not adequate
Data Sources		
Vital statistics	18%	Not Functional
Health & Disease Records	53%	present, but not adequate
Administrative Records	52%	present, but not adequate
Health Service Records	61%	Adequate
Census	81%	Highly Adequate
population-based surveys	85%	Highly Adequate
HIS Resources		
HIS Infrastructure	56%	Present, but not adequate
HIS institutions Human ad finance)	41%	Present, but not adequate
Policy guidelines and planning	33%	Not adequate
Quality of information products by type of indicators		
Risk Factors	48%	Present, but not adequate
Mortality	64%	Adequate
Health systems	64%	Adequate
Health status	73%	Adequate
Morbidity	89%	Highly adequate

4.1.2. HIS INFRASTRUCTURE, HUMAN AND FINANCIAL RESOURCES:

Networks (WAN and LAN), computers, internet access, databases and transport facilities are required to ensure data quality, to enhance feedback, information use and greatly facilitate the ability of health information systems to produce timely, relevant and high quality information. The HIS assessment finding showed that computer availability is adequate and availability of basic communication infrastructure is highly adequate. Lack of integrated ICT infrastructures for HIS, limited use of available computers for health information purpose within the health sector, and limited access to internet at sub national level is noted. There is no strong support system for Information Communication Technology (ICT) equipment maintenance.

On the positive side, CSA has sufficient skills and experience for census, DHS and various surveys being conducted and mobilizes resources for necessary infrastructure particularly for census and DHS.

There is shortage of skilled human resource for HIS, the professional mix is poor and the attrition rate is very high particularly in the health sector. In general it is concluded that the human resources capacity in core health information sciences to meet health information needs is limited.

4.2. INDICATORS

Assessment of indicator components refers to the presence of national minimum core indicators for national and sub national levels, covering all categories of health indicators (determinants of health; health system inputs, outputs and outcomes; and health status), presence of regular reporting mechanisms and presence of clear and explicit official strategy for measuring each of the health-related MDG indicators relevant to the country.

In this regard it was found from the assessment exercise that this component of HIS is adequate with a total score of 83%. As part of the HMIS reform a total of 108 core indicators have been identified for use in monitoring and evaluation of the HSDP. These were identified through discussions and consultations with stakeholders and cover determinants of health, health system and

health status. However; early reviews indicate that some essential indicators for tracking key health programs were not covered in the reformed HMIS, but it is agreed to implement the system nationwide and address these limitation after a comprehensive evaluation.

4.3. DATA MANAGEMENT

Countries are expected to have a centralized data repository (preferably in electronic format) that brings together information from all parts of the HIS; and that it is accessible and available to all stakeholders. The HIS assessment found that the situation of data management in general would be considered “not functional” with very low score (13%).

CSA has standard procedures for data management and data warehouse for different demographic and socio-economic surveys that were conducted so far; but other institutions have no complete national data standards. CSA has procedure and guideline to collect, compile, store and exchange data & information at various levels for its own use but this had not been applied widely in the national HIS. Also CSA has data quality assurance mechanisms at various levels although it is not widely used covering comprehensive HIS

FMOH and sub national units lack integrated data ware house. Although the Ministry of ICT has prepared data management tools, there is no standard definition (Meta data dictionary) and data warehouse at national and sub-national level in the country.

4.4. DATA SOURCES

The leading data collection methods covered in the tool and assessed were: Health and Disease Records (including disease surveillance systems) Census, Vital Statistics, Population-based Surveys, Health Service Records, and Administrative Records. The present assessment exercise tried to investigate each data collection method against core dimensions of data collection platforms, i.e., contents, capacity and practices, dissemination and integration and use. In general data sources were assessed to present but not adequate with a score of 52%.

4.4.1. CENSUS:

The third national population and household census conducted in May 2007 included mortality questions not covered in the former census. The capacity of the country to collect, process and analyze census data is highly adequate. The census results were presented showing the population distribution by age, sex and residence by Woreda and Kebele level and reports were made available for all levels. Universities and individuals can access the census data and tables easily from CSA link (www.csa.gov.et). Population projections are also available for the current year and for consecutive years in the future. Accordingly among the sources of data, the capacity for census is considered highly adequate (81%)

4.4.2. VITAL STATISTICS

Vital statistics system helps to generate reliable information on births and deaths and helps to update the population structure of the country. There is no reliable source of nationwide vital statistics in Ethiopia so far. CSA had been exercising SVR for some years, documented and shared the lessons, and also designed verbal autopsy tools for use in the future.

The assessment showed that there is no strong legal provision towards the registration of vital statistics. The MOJ had been working on the law for vital and civil registration over the past years, and draft law had been submitted to the parliament but not yet approved. Although it is difficult to objectively assess the capacity and practice because cause of death registration not exercised, other than some experiences of CSA due to the experience in SVR, it can be concluded that it may need huge capacity building efforts in order to establish and run vital and civil registration system in the country. With regards to integration both mortality rates and cause of death information are not used for national and sub-national analyses.

There are limited numbers of DSS sites run by universities. However their coverage and representativeness is not satisfactory, their output is not made available for use in planning and policy making . Currently there is an attempt to link them with each other, to expand the sites and link with the MOH. In general there is no reliable source of nationwide vital statistics: civil registra-

tion or sample registration system (SRS). Accordingly this source of information is considered not functional (18%)

4.4.3. POPULATION-BASED SURVEYS

Population based surveys including nationally representative population-based labor force survey aimed at measuring the prevalence of disability and DHS by CSA, Behavioral Surveillance Survey (BSS), drug use among target groups (students and teachers) and malaria indicator survey by MOH to mention some have been done. Household Consumption, Expenditure and Welfare Monitoring Surveys were conducted in 2011 by CSA, and the result is disseminated. It is concluded that the country has highly adequate capacity (85%) to conduct, process and analyze population based survey data.

4.4.4. HEALTH SERVICE BASED SOURCES

Shortage and/or lack of health information officers at Woreda levels, weak capacity and efforts to triangulate data from various sources, limited use of the findings from surveys and DSS to complement and assess the consistency of health service data is a major gap. The MOH had been engaged in major reforms in HMIS for years and some encouraging results documented. In general this component of data sources is considered adequate (65%).

4.4.4.1. HEALTH AND DISEASE RECORDS:

In Ethiopia, primarily the communicable diseases and more recently non communicable diseases too are considered to have substantial epidemiological and public health importance. For key epidemic prone diseases, appropriate case definitions have been established and cases are reported following a standard format developed for Integrated Disease Surveillance and Response (IDSR). The IDSR covers 21 epidemic prone and notifiable diseases. Due to the nature of epidemics and surveillance, and the need for timely action, the reporting of IDSR is not integrated to the centralized and integrated HMIS. The capacity, particularly at the sub Regional level to record and report cases of notifiable diseases, to transmit complete and timely data, to analyze, plan public health interventions and respond to outbreaks are limited. It is noted that currently the system heavily relies on partners and mainly WHO surveillance officers for such purpose which poses concern on its sustainability. Bulletin on surveillance data is not produced and

shared regularly. Because the latest international statistical classification of diseases and related health problems (ICD) is not in use, it is difficult to standardize recording and reporting.

4.4.4.2. HEALTH SERVICE RECORDS

The health services based information system has not effectively brought together data from all private facilities. So far, only a few aspects of the data on private facilities are covered in the annual publications. Currently, attempts are being made to integrate these as part of the HMIS reform. In the present situation, there are no health information specialists who have at least two years of training placed at the Woreda level. The situation in the RHB is also not satisfactory.

The MOH regularly publishes health and health related indicators annually, policy and practice bulletin on quarterly basis and annual summary of health service statistics which is shared at annual review meetings. Major administrative regions also publish annual summary of health service statistics. Effort to triangulate data from different sources, including surveys and DSS to complement and also to monitor the consistency of health service data doesn't exist. However following the user manuals of the new HMIS, data obtained from the health service records are used for planning, to estimate and monitor the coverage of key health services and make management decisions and actions.

4.4.4.3. ADMINISTRATIVE RECORDS

- **Database/Mapping of Infrastructure and Health Services**

Availability of standard geographic and Health Facility (HF) identifiers helps to summarize and also triangulate available data. The current assessment showed that there is no national roster of public and private sector health facilities. There is no up-to-date Geographical Positioning System (GPS) data for HF and for service availability mapping. The availability of human resources and equipment for maintaining and updating the database is limited. Maps which show the location of health infrastructure are available in almost all Woredas although not specified by coordinates.

- **Geographic Information Systems (GIS) for Health**

GIS is a system that enables the collection, storage, management, analysis, retrieval, modeling and visualization of spatially referenced information. Its use builds the capacity of the health sector to undertake the spatial tasks needed to improve monitoring of the spread of disease, modeling the future diffusion of the disease and planning of timely allocation of resources to improve public health conditions in a community.

CSA has captured the required spatial data during the Population & Housing Census, and the FMOH has provided technical assistance and necessary resources to finalize the data entry. In 2009, the FMOH has continued with data cleaning and further incorporating the missing spatial data. Training on GIS has been provided to health workers in RHBs to link with the new HMIS in order to improve the quality of information for decision making in the Regions.

- **Human Resources for Health Information System (HRIS)**

HRIS makes available timely and accurate information about the size, composition, skill sets, training needs, and performance of the health workforce which is critical for planning and for making key decision about human resources.

HRIS software version 1 has been developed by FMOH in consultation with stakeholders. In line with the FMOH institutional arrangement, the software has two major components: HRIS-License and HRIS-Manage. The HRIS-License serves for Regulatory services while the other serves for the management of the human resource at the health sector. Currently the HRIS software is deployed and in use at the Federal and Regional levels. In all regions the profile of all health workforces is being collected, to establish the human resource data base. Prior to each deployment, assessment had been conducted on human resource and ICT infrastructure availability. Based on the assessment, training and ICT infrastructure support has been provided. Preparation of training manual for each software is completed for scale up.

- **Electronic Health Record**

An electronic health record (EHR) is a system designed to enable better patient care and to make effective and efficient reporting from health facilities to the highest level. The system improves patient care and provide accurate data for informed decision making at all levels.

Assessment showed that various efforts are being applied in different regions and levels and it is believed that review and harmonization of these is mandatory. In general, lack of coordination and standardization among various efforts, and lack of clear long term plan to move the whole system is a major concern. In one of the cases adaption of information technology in the health sector EHR-Smart Care have been used by utilizing basic telecommunication infrastructure (Ordinary Phone or CDMA) and computer to send and receive reports and software updates. Early benefits of this have been the creation of a central repository of information leading to better coordination between departments particularly between care provider, laboratory and pharmacy, and capturing financial information at each service point thereby reducing the number of times a patient/client has to go to a cashier.

- **Information on Health Financing and Expenditure**

The financial records for external expenditure are usually incomplete. NHA provides information about the sources, agents, providers, functions of health care financing. There are no adequate numbers of qualified, long –term staff devoted to work on National Health Accounts (NHA). In most cases, the task is done by external technical support. Also NHA doesn't give complete information on health expenditure by administrative and geographical areas.

- **Information on Equipment, Supplies and Commodities:**

Each facility is required to report annually on the inventory of equipment and physical infrastructure. Assessment showed absence of medical equipment inventory system, untimely and incomplete records and reports on commodities, equipments and physical infrastructure. The limited reporting on equipment and physical infrastructure as well as on health comodites is concluded to be incomplete and untimely.

4.5. INFORMATION PRODUCTS

Quality of information products was assessed using seven criteria, data collection methods, timeliness, periodicity, consistency, representativeness, disaggregation methods, and adjustment methods. Health status indictors (Mortality and morbidity), health systems indictors and risk

factor indicators were assessed with these criteria. The assessment of information products shows that data quality in general is adequate (72%). Specifically quality of risk factor indicators was 67%, health status 74%, health systems indicators 72% all of them adequate, while among health status indicators mortality indicators (67%), is adequate and morbidity indicators (86%) is highly adequate.

4.6. DISSEMINATION AND USE

Available information needs to be timely disseminated and used for strategic decision making at all levels of the health system. Otherwise its availability becomes meaningless and useless. Dissemination and use component was assessed in terms of analysis and use of information, for policy and advocacy, planning and priority setting, resource allocation, implementation and action. The HIS assessment showed that all sub categories under dissemination and use are present, but not adequate. Dissemination and use of information for resource allocation, and advocacy, performance monitoring and feedback mechanism is weak.

4.7. PRIORITY PROBLEMS OF HIS

The following is the list of the major priority problems by HIS components that were considered in the design of strategic objectives and interventions of the national HIS road map.

<p>1. HIS Resources</p>	<p>1.1. HIS Governance, Legislation, coordination and Leadership:-</p> <ul style="list-style-type: none"> • Lack of strong HIS governance /HIS Road map • Limited legislation and procedures for turning the fundamental principles of official statistics into practice, and for ensuring the integrity of national statistical services • Weak national HIS co-ordination mechanism for HIS development, and M&E of HIS • Lack of clearly defined roles & responsibilities in terms of HIS production, management, dissemination and use • Lack of appropriate structure to guide planning & implementation of HIS components <p>1.2. HIS Infrastructure, Human and Financial Resources</p> <ul style="list-style-type: none"> • Shortage of skilled human resource, high turnover, and attrition and absence of motivation and retention schemes • Shortage/Lack of health information officers at Woreda levels • Limited capacity (shortage and poor professional mix) in core health information sciences • Limited capacity building activities at national and sub national level • Shortage of finance and ICT equipment maintenance & support for HIS • Weak integrated ICT infrastructures for HIS • Limited HIS budget lines at all levels
<p>2. Data Management</p>	<ul style="list-style-type: none"> • Unavailability of standard definition (Meta data Dictionary) • Lack of clearly documented common guideline to collect, compile, store and exchange data & information at various levels and sectors covering comprehensive HIS

	<ul style="list-style-type: none"> • Weak data quality assurance mechanisms at various levels and sectors covering comprehensive HIS • Lack of integrated data ware house that covers all sources at MOH and sub national level interfacing with other data sources that creates a platform for information sharing • Lack of clearly defined Enterprise Architecture for HIS • Lack of data exchange standards between HIS components • Inadequate capacity building for data management at all level
<p>3. Data sources</p>	<p>3.1. Health Services Data Sources</p> <ul style="list-style-type: none"> • Limited capacity to record, report, analyze, and transmit complete and timely data, plan interventions, respond on notifiable diseases & outbreaks at sub national level • Lack of latest ICD to standardize recording & reporting • Weak efforts to triangulate data from various sources <p>3.2. Administrative Records</p> <ul style="list-style-type: none"> • Lack of national rosters of public and private sector health facilities • Incomplete GPS data, • Poorly coordinated HF and service availability mapping • Limited human resource data base and system to track the number and professional mix both in public or private sector, • Absence of medical equipment inventory system • Incomplete records & reports on health commodities, equipments & physical infrastructure, • Incomplete financial records on expenditure from external sources, • Shortage of qualified long term staff in NHA within MOH • NHA lacks complete information on health expenditure by geographic areas <p>3.3. Population Based Sources</p> <ul style="list-style-type: none"> • Limited use of survey & DSS reports to complement and monitor consistency of routine data and to track population based events timely. • Limited number and coverage of DSS sites, and lack of linkage between

	<p>the existing sites with the health sector</p> <ul style="list-style-type: none"> • Lack of a reliable source of nationwide vital statistics, nor SRS due to absence/delay of legal provision towards the VR and CR • Lack of capacity to carry out VR esp. mortality rates, and cause of death information for analysis
4. Dissemination and use	<ul style="list-style-type: none"> • Weak analysis, dissemination and use of information mainly at point of collection of routine information for planning, resource allocation and priority setting. • Weak performance monitoring and feedback mechanism

CHAPTER 5: HIS ROAD MAP OBJECTIVES

5.1. VISION

The vision of HIS road map is having timely, complete and accurate health and health related information made available from an integrated data repository and used for evidence based decision making at all levels in the country.

5.2. OBJECTIVES

The following five strategic objectives are defined with corresponding interventions to address the priority problems identified during the assessment.

1. To Strengthen HIS governance, regulation, coordination and leadership
2. To institutionalize, improve and strengthen HIS Resources
3. To improve health data coverage
4. To improve health data management and quality
5. To strengthen and institutionalize information dissemination and use at all levels

5.3. OPPORTUNITIES

The following opportunities are considered relevant to implement the HISSP and achieve the strategic objectives.

- Strong government and stakeholders interest to strengthen the Ethiopian HIS, and M&E and harmonization and alignment.
- Presence of a National Advisory Committee (NAC) that could be revived and strengthened to take the lead in coordination of HIS road map implementation, encourage working relationship & collaboration with stakeholders,
- Ongoing health sector reform and decentralization demanding standardization, as well as accountability and quality information,
- Increasing demand for accountability and evidence based decision making in health and all sector related to global initiatives

CHAPTER 6: KEY INTERVENTIONS TO ACHIEVE THE HIS ROAD MAP OBJECTIVES

Strategic interventions are defined to realize each of the above objectives and in accordance with the problems identified and elaborated during the assessment. List of proposed interventions to address the identified priority problems of national HIS are summarized as follows. MOH and CSA as well as agencies have plans to implement some activities corresponding the objectives and interventions identified in this HIS road map.

Also already ongoing or planned activities corresponding to the objectives and interventions identified during this planning process are listed. Unless major weaknesses and gaps are identified regarding these planned and ongoing HIS strengthening interventions, no more plan is considered under this HIS Road Map and it is assumed that these interventions will be implemented as planned earlier and therefore considered to be part of the national HIS Road Map. The costing of this HISSP also didn't include resources needed for these planned and ongoing assuming that it is secured. These ongoing and planned activities corresponding to the objectives are listed under each objective.

OBJECTIVE 1. INTERVENTIONS TO STRENGTHEN GOVERNANCE, REGULATION, COORDINATION & LEADERSHIP

- 1.1. Establish an interagency body to work on governance, legislation, procedures, guidelines and coordination system
- 1.2. Review and update legislation, and procedures related to HIS to support improved recording and reporting of health and health related data from public and from private sector
- 1.3. Review and strengthen the current HIS related structure in each organization at every level (FMOH, EHNRI, CSA, etc...)
- 1.4. Revitalize and strengthen national coordinating committee, as a policy and technical instrument for intersectoral and intrasectoral coordination, including private sector

- 1.5. Organize regular dissemination workshops (of information sharing forums of research, survey/ surveillance, assessment findings and report) and web based information sharing system and bulletins at national and sub national levels
- 1.6. Develop and distribute e-health governance/policy guidelines, protocol, and standards for the health sector
- 1.7. Use recognized methodologies to further strengthen HIS development through the introduction of Enterprise Architecture
- 1.8. Enforce and strengthen legal framework for civil registration

**ONGOING AND PLANNED HIS STRENGTHENING EFFORTS CORRESPONDING TO
OBJECTIVE 1**

SN	Activity Description	Implementing Agency
1	Development of EQA guidelines, manuals, and formats, on laboratory quality & referral linkage	FMOH-EHNRI
2	Production of MOH ICT policy	FMOH- infrastructure directorate
3	Organizing system assessment for NSS members and stockholders	CSA
4	Production of catalogue for the NSS and connect with other websites	CSA
5	Development of national statistics system	CSA

OBJECTIVE 2. INTERVENTIONS TO INSTITUTIONALIZE, IMPROVE AND STRENGTHEN HIS RESOURCES

- 2.1. Build the human resource capacity for HIS including review and monitoring of curriculum for HIT, surveillance, epidemiology, biostatistics, health informatics, demography, public health etc, institutionalize training and build the capacity of training institutions.
- 2.2. Strengthen the capacity of staff involved in HIS through in-service training
- 2.3. Ensure adequate budgetary allocation for HIS within each program line item
- 2.4. Ensure availability of appropriate infrastructure, standards and tools for HIS

**ONGOING AND PLANNED HIS STRENGTHENING EFFORTS CORRESPONDING TO
OBJECTIVE 2.**

SN	Activity description	Implementing agency
1	HIT training	FMOH-HRD
2	Health M&E Training (MSC)	HRD-FMOH, Jimma University
3	Health informatics training	AAU
4	Bio statistics /informatics training	HRD-FMOH, Mekele University
5	Field epidemiology training	HRD-FMOH, AAU
6	Biostatistics training	Jimma, Bahir Dar and Gonder Universities
7	Training of DHMT on performance monitoring and integrated quality management	FMOH, RHB /WorHO
8	Training of professionals on data base management	FMOH/PPD
9	Expansion and strengthening of knowledge center	FMOH/PPD

OBJECTIVE 3. INTERVENTIONS TO IMPROVE HEALTH DATA COVERAGE

- 3.1. Review the reformed HMIS to make it complete in both public and private sector, addressing the essential needs of programs and partners
- 3.2. Strengthen and Expand Implementation of Community HIS
- 3.3. Review and expand e-HMIS
- 3.4. Strengthen an Integrated Human Resource Information Management System (IHRMIS)
- 3.5. Develop Health Infrastructure Information System (HIIS)
- 3.6. Establish and strengthen Integrated Logistics Management Information System (ILMIS)
- 3.7. Expand and Strengthen Laboratory Information System (LIS)
- 3.8. Establish and Strengthen Health Regulatory Information System (HRIS)
- 3.9. Strengthen Public Health Emergency (PHEM) Information System (Information System)
- 3.10. Implement Integrated Financial Management Information System (IFMIS)
- 3.11. Establish and Regularly Update Health GIS
- 3.12. Establish Environmental Protection Information System (EPIS)
- 3.13. Improve the Coverage and Use of DSS
- 3.14. Establish and Strengthen Survey Mapping System
- 3.15. Establish Vital Registration System
- 3.16. Make all routine HIS interoperable (HMIS, facility mapping, HRHIS, LMIS, infrastructure IS, and IFMIS, LIS, RIS, mhealth etc)

ONGOING AND PLANNED HIS STRENGTHENING EFFORTS, CORRESPONDING TO OBJECTIVE 3

S.N	Title and Subject of the Strengthening Activity	Responsible Office
1.	Set up public health emergency DB	FMOH-EHNRI
2.	Set up stock DB	FMOH-EHNRI
3.	HMIS rollout	FMOH-PPFGD
4.	Expand and strengthening DSS sites	EHNRI, Universities, CSA,
5.	Internal migration Data- Lab our force survey	CSA/Ministry of Justice
6.	Inter-censual demographic survey	CSA
7.	Mapping of HF, laboratory, facilities for referral testing	FMOH-EHNRI
8.	Assessment of health care delivery quality, of coverage & delivery of ANC service	EHNRI
9.	Facility based retrospective study on non communicable diseases	EHNRI
10.	Evaluation of referral system linkage at different levels of health facilities	EHNRI
11.	Study to identify the most effective individual, family and community level interventions for preventing, treating mental illness	EHNRI
12.	Evaluation of the methods to enhance the protection of privacy and confidentiality in health care delivery	EHNRI
13.	Assessment of the existing practices of health workforce development and identification of the best approach	EHNRI
14.	Evaluation on the coverage of vaccination programs	EHNRI
15.	Study on delivery and utilization of rabies interventions	EHNRI
16.	HF assessment	EHNRI
17.	Study on basic health supplies tracking system & stock management	EHNRI
18.	Assessment of the health system and policy environment as critical complement to tracking intervention coverage for maternal and child health	EHNRI
19.	Customer satisfaction survey at selected health facilities	EHNRI
20.	Research on Infectious Diseases, community nutrition	
21.	Immunological, virological & bacteriological consequences of TB & HIV infections	EHNRI
22.	Study on the association between infectious and non infectious diseases	EHNRI
23.	Study to determine the impact of disease co infection on diagnosis and treatment	EHNRI
24.	Molecular epidemiology on HIV, TB and malaria	EHNRI

25.	Study on toxic chemicals & contaminants	EHNRI
26.	Study on hazard analysis and critical control points of selected food industry	EHNRI
27.	Study on the implementation of community based nutrition	EHNRI
28.	Study on the role of nutrition in chronic health problems (hypertension & DM)	EHNRI
29.	Study on the interaction of nutrition and major diseases (HIV, Malaria & TB)	EHNRI
30.	Iodine retention study on Iodated salt	EHNRI
31.	Study on safety of vegetables grown in Addis and surrounding areas	EHNRI
32.	Malaria Indicator survey	EHNRI
33.	Pastoralist Livelihood Survey	CSA
34.	Rural Socio Economic Survey	CSA
35.	Environmental Statistics Survey	CSA
36.	Water Harvesting Filtration and Distribution Information Compilation	CSA
37.	Cottage Industry and Informal Sector Survey	CSA
38.	Household Consumption and Expenditure Survey	CSA
39.	Employment and Unemployment Survey	CSA
40.	Labor Force Survey – Including Urban and rural Labor situation	CSA
41.	Survey of Street Children	CSA
42.	Livelihood Security Indicator Survey	CSA
43.	Time Use Survey – Gender related Survey	CSA
44.	Gender Statistics Data Compilation	CSA

OBJECTIVE 4. INTERVENTIONS TO IMPROVE HEALTH DATA MANAGEMENT & QUALITY

- 4.1. Develop Standardized Data Management System
- 4.2. Develop, update, publish and institutionalize national health data quality assurance mechanisms (Strengthening integrated supervision, feedback, and periodic assessments focused on data quality standard adherence and HIS resources including tools, materials, ICT, HR)
- 4.3. Enhance and strengthen the development and use of ICT system for health data management and Communication (developing metadata dictionary, data repository, interoperability)

ON-GOING AND PLANNED HIS STRENGTHENING EFFORTS CORRESPONDING TO OBJECTIVE 4

SN	Title and Subject of the Strengthening Activity	Responsible Office
1.	Rollout EMR and patient information system and (eHMIS) data aggregation and reporting software	FMOH-PPFD
2.	Expansion and strengthening Telemedicine	
3.	Connecting CSA Branch Offices with Wide Area Network	CSA
4.	Improving Data Collection, Processing and Dissemination Methodologies	CSA
5.	Starting Data Processing with in Branch Office Level	CSA
6.	Strengthened Ethiopian National Data Archive (ENADA)	CSA

OBJECTIVE 5. INTERVENTIONS TO STRENGTHEN AND INSTITUTIONALIZE INFORMATION DISSEMINATION AND USE

- 5.1. Strengthen and ensure functionality of performance monitoring teams at all levels
- 5.2. Strengthen information dissemination mechanisms

ONGOING AND PLANNED HIS STRENGTHENING EFFORTS CORRESPONDING TO OBJECTIVE 5

	ACTIVITY	Responsible agency
1.	Quarterly health policy and practice bulletin	FMOH/PPD
2.	Annual health and health related indicators	FMOH/PPD
3.	Annual performance report	FMOH/PPD
4.	Upgrading and improving CSA web site for better access and information sharing	CSA
5.	Improving and strengthening web based connectivity at national and sub national level	FMOH

CHAPTER 7. ACTIVITIES AND RESPONSIBILITIES

No	Description of activities	Primary output	Schedule		Responsible
			start	complete	
Objective:1	To Strengthen HIS governance, regulation, coordination and leadership				
1.1	Establish an interagency body to work on the governance, legislation, procedures, guidelines and coordination system				
1.1.1.	Prepare concept note on intersectoral working group for developing policy, legislation, procedures and coordination guidelines, and present to intersectoral higher official forum	Approved concept note with TOR	Nov, 2012	Dec, 2012	PPF-FMOH development partners)
1.1.2.	Establish intersectoral working group	Working group formed	Nov, 2012	Dec, 2012	FMOH,CSA, MOJ, EPA, MOE, MOFED
1.1.3.	Hold the initial meeting to agree on a work plan based on the TOR	Work plan with deliverables agreed upon	Nov, 2012	Dec, 2012	Intersectoral Governance working group
1.2	Review & update legislation and procedures related to HIS to support improved recording & reporting of health & health related data from public & for private sector				
1.2.1.	Conduct situational assessment of governance, legislation and procedures related to HIS and conduct consultative workshops	Assessment report	Jan, 2013	Apr, 2013	Governance working group
1.2.2	Prepare draft HIS governance, legislations and procedures based on the recommendation and submit for approval	HIS governance adopted by government	Apr, 2013	Jun, 2013	& Governance working group
1.2.3	Printing and distribution of the HIS governance and advocacy of managers and professionals on HIS governance framework and regulation	Advocacy workshops held, materials Printed & distributed	Jul, 2013	Aug, 2013	FMOH

1.3	Review and strengthen the current HIS related structure in each organization at every level				
1.3.1	Review current HIS structures in related organizations, and documents on other countries	Review and recommendation document	Feb, 2013	Apr, 2013	FMOH/ Inter-sectoral WG
1.3.2	Propose recommendations to MOH, EHNRI, HAPCO, FMHACA, MOE, MOJ, Universities, RHBs, PFSA, CSA leadership	Recommendation on organizational structure, job descriptions and co-ordination mechanisms approved by JCF	May, 2013	Jul, 2013	FMOH/ Inter-sectoral TWG/
1.3.3	Every organization adopts the approved recommendations according to their respective situation	Functional HIS structure in place	Jul, 2013	Jul, 2014	Respective agency and sector ministries
1.4	Revitalize and Strengthen national coordinating committee, as a governance and technical instrument for intersectoral and intrasectoral coordination, including private sector				
1.4.1	Review and revise composition and TOR of the existing intra and intersectoral HIS technical working group	TWG approved by JCF	Jan, 2013	Feb, 2013	FMOH/NAC
1.4.2	Develop working guidelines & plan for action	guidelines & plan of action	Mar, 2013	May, 2013	FMOH/NAC
1.4.3	Implement the plan of action		Jul, 2013	Ongoing	FMOH/NAC
1.5	Organize/revitalize regular dissemination workshops (of information sharing forums of research, survey/ surveillance, assessment findings and report) web based information sharing system and bulletins at national and sub national levels				
1.5.1	Conduct inventory of ongoing and planned surveys, assessments, research and evaluation schedules and distribute among stakeholders	Ongoing and planned surveys/researches identified	Jan, 2013	Ongoing	FMOH, CSA, Universities, FMOH agencies,
1.5.2	Organize dissemination workshops to discuss survey ,surveillance, research and related findings at national level	Survey/research findings workshops held	Apr, 2013	Ongoing	FMOH, CSA, Universities, FMOH agencies,
1.5.3	Improve capacity of MOH web site for better web based linkage, production, accessing and sharing of health and related information	MOH web site redesigned	Ongoing	Ongoing	FMOH/Partners

1.6	Develop and distribute e-health governance/policy guideline, protocol and standards for the health sector				
1.6.1	Establish technical working Group for e-health governance and Strategy	Functional TWG	Dec, 2012	Dec, 2012	FMOH, CSA, MICT, Partners
1.6.2	Develop draft national e-Health governance guideline and strategy	E-health governance guideline document	Jan, 2013	Jun, 2013	FMOH, CSA, MICT, Partners
1.6.3	Conduct workshop and stakeholders meeting on e-health policy guideline	Final e health policy guideline for mgt approval	Jul, 2013	Aug, 2013	FMOH, CSA, MICT, Partners
1.6.4	Implement the e-Health governance and strategy		Set, 2013	Ongoing	FMOH, CSA, MICT, Partners
1.7	Use recognized methodologies to further strengthen HIS development through the introduction of EA				
1.7.1	Set standards for enterprise architecture and conduct national HIS components assessment.	Agreed upon standards	Jul, 2013	Dec, 2013	FMOH, MICT, Partners
1.7.2	Develop Ethiopian Enterprise Architecture for HIS systems	strategy document	Dec, 2013	Mar, 2014	FMOH, MICT, Partners
1.7.3	Create awareness on the national Ethiopian HIS Enterprise Architecture for all Health information users.	Established system and reference document	Apr, 2014	ongoing	FMOH, MICT, Partners
1.8	Enforce and strengthen legal framework for civil registration				
1.8.1	Develop TOR and MOU to facilitate the establishment of coordinating mechanism between MOH and CSA and MOJ in vital and civil registration	Application of MOU to work according to the TOR	Jan, 2013	Feb, 2013	MOJ, CSA, FMOH
1.8.2	Review current law and civil registration and vital statistics collection procedures and revise it as per the international requirement	Updated CVRS procedures	Mar, 2013	Aug, 2013	MOJ, CSA, FMOH
1.8.3	Organize advocacy and sensitization/ awareness creation on the new law/regulation and procedures at all levels	Workshops conducted according to plans	Sep, 2013	Ongoing	MOJ, CSA, FMOH
1.8.4	Organize periodic consultation meetings with stakeholders and partners to get additional inputs with regards to existing vital and civil registration law /regulation gaps, weaknesses	Revision of CVRS law and regulation.	Jan, 2014	ongoing	MOJ, CSA, FMOH

Objective:2	To institutionalize, improve and strengthen HIS Resources				
2.1	Build human resources capacity for HIS including review and monitoring of curriculum for HIT, surveillance, epidemiology, biostatistics, health informatics, demography, public health etc, institutionalize training and build the capacity of training institutions.				
2.1.1	Train in MSc in health informatics epidemiology biostatistics and M&E	Graduated professionals with MSc in Health Informatics, M&E, field epidemiology	Ongoing	Ongoing	MOE, FMOH, Universities
2.1.2	Train HIT professionals in Regional TCH , 10+3:	Graduated HITs	Ongoing	ongoing	MOE, FMOH, Universities
2.1.3	Train accelerated HIT (+1):	Graduated HITs	Jan, 2013	ongoing	MOE, FMOH, Universities
2.1.4	Train population data managers (CSA)	Graduated population data managers	Sep, 2013	ongoing	MOE Universities, CSA
2.1.5	Train surveillance officers	Trained officers	Sep, 2013	ongoing	MOE, FMOH, Universities, EHNRI
2.1.6	Integrate HIS components into Pre-service education (PSE) of all- health professionals	HIS components integrated in the curriculum of health professionals training	Jan, 2013	Dec, 2013	MOE, FMOH, Universities
2.2	Strengthen the capacity of staff involved in HIS through in-service training				
2.2.1	Provide in-service training/short course for relevant professionals on LMIS, LIS, IFMIS, HRIS, regulatory information system (RIS), field epidemiology, experts on data management	Health workers received planned specific in service trainings	Ongoing	Ongoing	FMOH, Agencies, Partners, Universities
2.2.2	In-service training to CSA staff on surveys VR, and other topics	Professionals trained	Jan, 2013	Ongoing	MOJ, CSA, FMOH
2.2.3	Train ICT experts (data managers, network administrator)	ICT experts received planned in-service trainings at all levels	2013	ongoing	
2.3	Ensure adequate budgetary allocation for HIS within each program line item				
2.3.1	Organize advocacy workshop at Federal/Regional and Woreda level	Awareness created on budget allocation for HIS at all level	Jun, 2013	Aug, 2013	MOFED, FMOH

2.3.2	Engage program managers at planning phase to create HIS funding window	Awareness created at program managers level	Sep, 2013	Dec, 2013	MOFED, FMOH
2.3.3	Allocate budget for HIS within each program line item	Budget allocated for HIS at all levels within each program line item	Jul, 2014	Ongoing	MOFED, FMOH, Agencies, RHB, Universities, CSA, MOJ, MOE, EPA
2.3.4	Create M&E modalities for resource use	M&E modalities created	Jul, 2014	Aug, 2014	MOFED, FMOH, Agencies, RHB, University, CSA, MOJ, MOE, EPA
2.4	Ensure availability of appropriate infrastructure, standards and tools for HIS				
2.4.1	Review current HIS infrastructure and conduct situational assessment	Report and recommendation	Aug, 2013	Dec, 2013	FMOH, FMHACA, MCIT,
2.4.2	Prepare HIS standards	HIS standards	Jan, 2014	Jun, 2014	FMOH, FMHACA, MCIT
2.4.3	Ensure appropriate ICT infrastructure and appropriate power sources support for data capturing, storing, processing, transferring, reporting and sharing.	Institutions which meet the HIS infrastructure standard	ongoing	ongoing	FMOH, FMHACA, MCIT, Partners
2.4.4	Ensure and strengthen the availability of human resource capacity at all levels	Institutions which meet the HIS HR standard	ongoing	ongoing	FMOH, FMHACA, MCIT,
Objective 3:	To improve health data coverage				
3.1	Review reformed HMIS to make it complete in both public and private sector, addressing the essential needs of programs and partners				
3.1.1	Review and update existing HMIS	Revise HMIS indicators, tools & procedures	Mar, 2013	ongoing	FMOH, RHB, intersectoral working body
3.1.2	Print and distribute the updated HMIS tools, guidelines and procedures	Health facilities received revised HMIS tools & procedures.	Aug, 2013	ongoing	FMOH, RHB, partners
3.1.3	Provide refresher training to health workforce (private, public)	Trained health workforce	Aug, 2013	ongoing	FMOH, RHB, partners
3.1.4	Expand HMIS to newly inaugurated public facilities	Newly starting public health facilities imple-	Oct, 2013	ongoing	FMOH, RHB, partners

		menting HMIS			
3.1.5	Assess the existing HMIS (recording and reporting activities) in the private health sector	Current status of private sector identified & recommendation	Nov, 2012	Jan, 2013	FMOH, RHB, TWG (inter-sectoral working body),
3.1.6	Introduce HMIS in private health sectors	Private health facilities implementing HMIS	Apr, 2013	ongoing	FMOH, RHB,
3.1.7	Follow up and supportive supervision	Health institutions received continuous supervision	ongoing	ongoing	FMOH, RHB, TWG (inter-sectoral working body),
3.2	Strengthen and Expand Implementation of Community Health Information System				
3.2.1	Standardize and align CHIS/CIS	Standardize and aligned CHIS/CIS	ongoing	ongoing	FMOH, RHB, intersectoral working body, HAPCO
3.2.2	Print and distribute the updated CHIS tools, guidelines and procedures	Health posts received revised CHIS tools & procedures.	ongoing	ongoing	FMOH, RHB,
3.2.3	Provide training to health extension workers and supervisors	Trained HEWs and supervisors	ongoing	ongoing	FMOH, RHB,
3.2.4	Scale up implementation of CHIS	Health posts implementing CHIS	ongoing	Dec, 2013	FMOH, RHB,
3.2.5	Follow up and supportive supervision	Health Posts received continuous follow up and supervision	ongoing	ongoing	FMOH, RHB,
3.3	Review and Expand e-HMIS				
3.3.1	Review the existing e-HMIS	Identified gaps e-HMIS	ongoing	ongoing	FMOH, MICT, RHB,
3.3.2	Develop requirement definition and standard	Availability of RSD & Standard	Feb, 2013	Jul, 2013	FMOH, MICT, RHB,
3.3.3	Standardize & Update e-HMIS	Standardized and updated e-HMIS	Aug, 2013	ongoing	FMOH, MICT, RHB,
3.3.4	Print and distribute the updated e-HMIS guidelines and procedures	Health institutions received revised e-HMIS guidelines & procedures.	Aug, 2013	ongoing	FMOH, RHB,

3.3.5	Provide training to health workforce at all levels	Trained health workforce	Sep, 2013	ongoing	FMOH, RHB,
3.3.6	Implementation of standardized e-HMIS at all levels	Health Institutions implementing standardized e-HMIS	Dec, 2013	ongoing	FMOH, RHB,
3.4	Strengthen an Integrated Human Resource Information Management System (IHRMIS)				
3.4.1	Review and update the existing IHRIS	Identified gap analysis & updated IHRIS	Nov, 2012	Mar, 2013	FMOH/MOE/universities
3.4.2	Prepare, print and distribute the updated IHRIS manuals and guidelines	printed and distributed manuals and guidelines	May, 2013	Oct, 2013	FMOH/MOE/universities
3.4.3	Conduct awareness creation session at all levels and provide training to responsible personnel	No of trained responsible person	May, 2013	Oct, 2013	FMOH/MOE/universities/
3.4.4	Implementation of IHRIS in health institutions at all level and universities, colleges	Health Institutions, universities & colleges implement IHRIS	Jul, 2013	ongoing	FMOH/MOE/universities
3.5	Develop Health Infrastructure Information System (HIIS)				
3.5.1	Develop a concept note and framework for health infrastructure information system	Developed HIIS concept note and frame work	Sep, 2013	Oct, 2013	FMOH/FMHA CA
3.5.2	Conduct assessment on existing health infrastructure information system	Identified gaps, recommendations	Nov, 2013	May, 2014	FMOH/FMHA CA
3.5.3	Establish a comprehensive information system for health infrastructure	Developed HIIS	Jun, 2014	Jun, 2015	FMOH/FMHA CA
3.5.4	Pilot the comprehensive information system for health infrastructure	Pilot finding, & recommendations	Jul, 2015	Jul, 2016	FMOH/FMHA CA
3.5.5	Prepare, print and distribute the HIIS manuals and guidelines	Printed, distributed manuals & guidelines	Sep, 2016	Jan, 2017	FMOH/FMHA CA
3.5.6	Conduct awareness creation session at all levels and provide training to personnel	Trained responsible person	Sep, 2016	Jan, 2017	FMOH/FMHA CA
3.5.7	Deploy and implement HIIS for health administration units at all levels	All health administration units implementing HIIS	Nov, 2016	Nov, 2017	FMOH/FMHA CA
3.6	Establish and Strengthen Integrated Logistics Management Information System (ILMIS)				

3.6.1	Conduct assessment on existing logistic management information system	Identified availability & gap	May, 2013	Jul, 2013	PFSA/FMOH
3.6.2	Update the integrated logistics management information system	Developed ILMIS	Aug, 2013	Aug, 2014	PFSA/FMOH
3.6.3	Prepare, print and distribute ILMIS manuals and guidelines	Printed & distributed guidelines, tools	Oct, 2014	Apr, 2015	PFSA/FMOH
3.6.4	Conduct awareness creation session at all levels and provide training	Trained responsible person	Oct, 2014	Apr, 2015	PFSA/FMOH
3.6.5	Deploy and implement the updated ILMIS at all levels	health institutions implementing ILMIS	Jun, 2015	Jun, 2016	PFSA/FMOH
3.7	Expand and Strengthen Laboratory Information System (LIS)				
3.7.1	Conduct assessment on existing lab information system	Identified availability and gap	Apr, 2013	Sep, 2013	EHNRI/FMOH
3.7.2	Develop Laboratory information system	Developed LIS	Oct, 2013	Oct, 2014	EHNRI/FMOH
3.7.3	Develop and print guidelines & tools for implementation of LIS	Printed, distributed guidelines & tools	Jan, 2015	Jun, 2015	EHNRI/FMOH
3.7.4	Conduct awareness creation session at all levels and provide training	Trained responsible person	Jan, 2015	Jun, 2015	EHNRI/FMOH
3.7.5	Deploy and implement the lab information system	Health facilities implementing LIS	Mar, 2015	Mar, 2017	EHNRI/FMOH
3.8	Establish and Strengthen Health Regulatory Information System (HRIS)				
3.8.1	Conduct assessment on existing health regulatory information system	Identified gaps and recommendations	Apr, 2013	Dec, 2013	FMHACA /FMOH /MOE
3.8.2	Establish a comprehensive information system for health regulatory activities	Developed HRIS	Jan, 2014	Mar, 2015	FMHACA /FMOH /MOE
3.8.3	Pilot the comprehensive HRIS at all levels	Pilot finding & recommendations	Apr, 2015	Apr, 2016	FMHACA /FMOH /MOE
3.8.4	Prepare, print and distribute the HRIS manuals and guidelines	Printed, distributed manuals & guidelines	May, 2016	Jun, 2016	FMHACA /FMOH /MOE/
3.8.5	Conduct awareness creation session at all levels & training to responsible personnel on HRIS	Trained responsible person	May, 2016	Sep, 2016	FMHACA /FMOH /MOE
3.8.6	Deploy and implement HRIS for health administration units at all levels	health administration units implementing	Jul, 2016	Ongoing	FMHACA /FMOH /MOE

		HRIS			
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3.9 Strengthening PHEM/surveillance information system					
3.9.1	Review and update existing situation of PHEM information system	Gap analysis and revised PHEMIS	Apr, 2013	Sep, 2013	EHNRI/FM OH
3.9.2	Establish a comprehensive information system for surveillance system	Developed SIS	Oct, 2013	Dec, 2014	EHNRI/FM OH
3.9.3	Pilot the comprehensive SIS at all levels	Pilot finding and recommendations	Jan, 2015	Jan, 2016	EHNRI/FM OH
3.9.4	Prepare, print and distribute the SIS manuals and guidelines	printed & distributed manuals & guidelines	Jan, 2016	Apr, 2016	EHNRI/FM OH
3.9.5	Conduct awareness creation session at all levels and provide training on SIS	Trained responsible person	Jan, 2016	Jun, 2016	EHNRI/FM OH
3.9.6	Deploy and implement PHEM IS/SIS for health institutions at all levels	health institutions implementing PHEM IS/SIS	Mar, 2016	ongoing	EHNRI/FM OH
3.10 Implement Integrated Financial Management Information System (IFMIS)					
3.10.1	Finalize SOPs, database, checklists & pilot IFMIS	Tested and functional IFMIS	ongoing	Dec, 2013	MO-FED/FMO H
3.10.2	Update and maintain the system (IFMIS)	Updated IFMI system	ongoing	ongoing	MO-FED/FMO H
3.10.3	Prepare, print and distribute the IFMIS training manuals and guidelines	printed and distributed manuals and guidelines	Apr, 2014	Sep, 2014	MO-FED/FMO H
3.10.4	Conduct awareness creation session at all levels & provide training to personnel on SIS	Trained responsible person	May, 2014	Oct, 2014	MO-FED/FMO H
3.10.5	Deploy and implement IFMIS for health institutions at all levels	All health institutions implementing IFMIS	Jul, 2014	ongoing	MO-FED/FMO H
3.10.6	Enrich NHAs by developing tools & guidelines that helps generate information that are not covered yet by previous NHAs	updated NHAs with all required financial information	Ongoing	Ongoing	MO-FED/FMO H

3.11	Establish and Regularly Update Health GIS				
3.11.1	Review the status of health GIS implemented by agencies & RHBs. to date	gaps identified	Jan, 2013	Jun, 2013	FMOH, CSA,
3.11.2	Standardize and harmonize GIS activities among agencies and regions	Standardized and harmonized GIS	Jul, 2013	Dec, 2013	FMOH, CSA,
3.11.3	Establish GIS information sharing among agency and region	Availability of interface	Jan, 2014	Jan, 2015	FMOH, CSA,
3.11.4	Regularly Update GIS data	Updated GIS data	Mar, 2014	ongoing	FMOH, CSA,
3.11.5	Deploy and implement Health GIS in all RHBs, agencies and universities, FMOH, CSA, MOFED, MOE, MOJ, EPA,	Harmonized health GIS implemented	Mar, 2015	ongoing	FMOH, CSA, Universities, RHB, Agencies, MOFED, MOE, MOJ, EPA,
3.12	Establish Environmental Protection Information System (EPIS)				
3.12.1	Develop a concept note and framework for Environmental Protection information system	Developed concept note and framework of EPIS	Aug, 2013	Oct, 2013	FMOH, EPA,
3.12.2	Conduct assessment on existing Environmental Protection information system	Identified availability and gap	Nov, 2013	Apr, 2014	FMOH, EPA,
3.12.3	Develop standards and comprehensive information system procedural manual for Environmental Protection	Availability of standards and procedures	May, 2014	May, 2015	FMOH, EPA,
3.12.4	Establish a comprehensive EPIS	Developed EPIS	Sept, 2014	Sept, 2015	FMOH, EPA,
3.12.5	Pilot the comprehensive Environmental Protection information system	No of health institution piloted for HIIS	Oct, 2015	Oct, 2016	FMOH, EPA,
3.12.6	Prepare, print and distribute the HIIS manuals and guidelines	Printed, distributed manuals, guidelines	Nov, 2016	Mar, 2017	FMOH, EPA,
3.12.7	Conduct awareness creation session at all levels and provide training on HRIS	Trained responsible person	Nov, 2016	Mar, 2017	FMOH, EPA,
3.12.8	Deploy and implement HRIS for health administration units at all levels	Health admin. units implementing HRIS at all level	Jan, 2017	Ongoing	FMOH, EPA,
3.13	Improve the Coverage and Use of DSS				

3.13.1	Conduct situational assessment of the DSS sites (adequacy, capacity, data relevance, institutionalization)	No of DSS sites assessed	Apr, 2013	Oct, 2013	FMOH, Universities,
3.13.2	Standardize the tools and procedures	Availability of tools standards & procedures	ongoing	Mar, 2014	FMOH, Universities,
3.13.3	Expand the DSS program into existing public universities	DSS sites expanded in public universities	Apr, 2014	ongoing	FMOH, Universities,
3.13.4	Establish a coordination & data sharing mechanism	coordination mechanism established	Jan, 2014	Aug, 2014	FMOH, Universities,
3.14	Establish and Strengthen Survey Mapping System				
3.14.1	Develop a concept note and framework for survey mapping system	Developed concept note & frame work	Nov, 2012	Dec, 2012	FMOH, EHNRI, CSA,
3.14.2	Conduct assessment on existing survey mapping system	Identified availability and gap	Jan, 2013	Jun, 2013	FMOH, EHNRI, CSA,
3.14.3	Develop standards and comprehensive survey mapping system	Availability of standards and procedures	Sept, 2013	Sept, 2014	FMOH, EHNRI, CSA,
3.14.4	Develop a comprehensive survey mapping system	Developed information system	Jan, 2014	Jan, 2015	FMOH, EHNRI, CSA,
3.14.5	Conduct inventory of ongoing and planned surveys, assessments, research & evaluation schedules and update	Ongoing and planned surveys/researches captured	Jan, 2015	Sept, 2015	FMOH, EHNRI, CSA,
3.14.6	Pilot the comprehensive survey mapping system	No of health institution piloted	Jan, 2015	Sept, 2015	FMOH, EHNRI, CSA,
3.14.7	Prepare, print and distribute the HIIS manuals and guidelines	Printed, & distributed manuals & guidelines	Oct, 2015	Jan, 2016	FMOH, EPA,
3.14.8	Conduct awareness creation session at all levels and provide training on survey mapping system	Trained responsible person	Oct, 2015	Jan, 2016	FMOH, EPA,
3.14.9	Deploy and implement survey mapping system at Federal and Regional level	health admin units implementing HRIS	Jan, 2016	Jan, 2017	FMOH, EPA,
3.15	Establish Vital Registration System				
3.15.1	situational assessment for the establishment of VR system	Assessment report & recommendation	Aug, 2013	Jan, 2014	MOJ, CSA, FMOH,

3.15.2	Develop comprehensive VR system and establish unique identifier for VR	Vital registration system developed	Feb, 2014	Feb, 2015	MOJ, CSA, FMOH,
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3.15.3	Pilot vital registration system	Pilot findings & recommendations	Mar, 2015	Mar, 2016	FMOH, EHNRI, CSA,
3.15.4	Prepare training materials and Train professionals working on VR on verbal autopsy (VA)	Final versions of Training manuals and trained health workers on VA	Apr, 2016	Sept, 2016	MOJ, CSA, FMOH,
3.15.5	Implement VRS at Kebele level	Kebeles implement VRS	Oct, 2016	ongoing	MOJ, CSA, FMOH,
3.16	Make all routine HIS interoperable (HMIS, facility mapping, HRHIS, LMIS, infrastructure IS, IFMIS, LIS RIS, mhealth)				
3.16.1.	Define enterprise architecture to ensure interoperability	EA defined	Jan, 2013	Jan, 2016	FMOH, MCIT
3.16.2.	Conduct assessment of the different software used in HIS for interoperability	Assessment conducted	Jan, 2013	Jan, 2016	FMOH, MCIT
3.16.3.	Organize expert group for the assessment of the different software used in HIS for interoperability	Established TWG	Jan, 2013	Jan, 2016	FMOH, MCIT
3.16.4.	Develop & implement mechanism to ensure interoperability	Ensured interoperability	Jan, 2013	Jan, 2017	FMOH, MCIT,
Objective 4:	To improve health data management and quality				
4.1	Develop standardized data management system				
4.1.1	Conduct situational assessment of data management for HIS	Report on current situation & POA	May, 2016	Nov, 2016	FMOH, TWG (intersectoral working group)
4.1.3	Standardize data recording tools and procedures	Tools and procedures	Dec, 2016	Dec, 2017	FMOH, TWG (intersectoral working group)
4.1.4	Develop standard procedures for data analysis, reporting and information sharing	Standardized procedure tools manuals	Dec, 2016	Dec, 2017	FMOH, TWG (intersectoral working group)
4.1.5.	Develop & monitor implementation of the standard data management tools and procedures	Standard procedures implemented	Dec, 2017	ongoing	FMOH, TWG (intersectoral working group)
4.2	Develop, update, publish and institutionalize national health data quality assurance mechanisms (strengthening integrated supervision, feedback, and periodic assessments focused on data quality standard adherence and HIS resources including tools, materials, ICT, HR)				

4.2.1	Review and update EDQAF to include all the health and health related data sources	Updated, EDQAF	Jan, 2013	Jun, 2014	FMOH, CSA, TWG (intersectoral working group)
4.2.2	Develop /update existing guidelines and tools for quality assurance in each of the HIS components based on EDQAF	Up to date quality assurance guidelines and tools	Jul, 2014	Mar, 2015	FMOH, CSA, TWG (intersectoral working group)
4.2.3	Print and distribute guidelines and tools	Distributed guidelines and tools	Apr, 2015	Jun, 2015	FMOH, CSA, TWG (intersectoral working group)
4.2.4	Provide data quality assurance training for the respective people	Trained people	May, 2015	ongoing	FMOH, CSA, TWG (intersectoral working group)
4.2.5	Ensure the application of data quality assurance mechanisms in each of the HIS components	Appropriate data quality assurance mechanism applied for all HIS component	Aug, 2015	ongoing	FMOH, CSA, TWG (intersectoral working group)
4.3	Enhance and strengthen the development and use of ICT system for health data management and communication (develop metadata dictionary, data repository, interoperability)				
4.3.1	Define ICT requirements for data capturing, processing, dissemination, repository, connectivity and retrieval of HIS at each level (HF, Woreda, Zone, Region, Federal) (The requirements needs to include all subsystems of HIS)	ICT requirement for HIS definition document	Jan, 2013	Jan, 2014	FMOH, MCIT,
4.3.2	Conduct situational analysis of use of ICT system for HIS	Report on the current ICT for HIS	Mar, 2013	Oct, 2013	FMOH, MCIT,
4.3.3	Prepare a detailed plan on designing, developing, updating, establishing, maintenance & expansion of HIS ICT	Plan of action	Jan, 2014	Mar, 2014	FMOH, MCIT,
4.3.4	Design, develop, update, maintain and expand ICT systems and tools for HIS	Established ICT systems & tools	ongoing	ongoing	FMOH, MCIT,
4.3.5	Prepare manuals and tools for management of ICT tools & infrastructures	Manuals and tools	Apr, 2014	Jun, 2014	FMOH, MCIT,
4.3.6	Establish/implement ICT system of all HIS components at all levels	Implemented ICT for HIS	Mar, 2014	ongoing	FMOH, MCIT,

4.3.7	Establish an enhanced web based connectivity and information sharing among all stakeholders at all levels	web based connectivity & information sharing developed	Mar, 2014	Mar, 2017	FMOH, MCIT,
4.3.8	Monitor and continuously improve ICT system for HIS	Implemented ICT for HIS	ongoing	ongoing	FMOH, MCIT,
Objective.5	To strengthen and institutionalize information dissemination and use at all levels				
5.1	Strengthen and ensure functionality of performance monitoring team at all levels				
5.1.1	Hold a national consultative workshop to develop SOP on using information for different decision making purposes	SOP developed	Mar, 2013	May, 2013	FMOH, TWG (intersectoral working group)
5.1.2	Review and update the guidelines for performance monitoring teams at all levels	Updated guidelines	Jun, 2013	Dec, 2013	FMOH, TWG (intersectoral working group)
5.1.3	Conduct training for data managers/HMIS focal person level by level	Trained data managers/ & focal persons	Jan, 2014	Jun, 2014	FMOH
5.1.4	Train performance monitoring teams at all levels	Trained PM teams	Jan, 2014	Jun, 2014	FMOH
5.1.5	Institutionalizing and strengthening feedback mechanism at all levels	regular & timely feedback received at all level	Jul, 2014	Ongoing	FMOH, TWG (intersectoral working group)
5.2	Strengthen information dissemination mechanisms				
5.2.1	Establish an accessible interfaces to HIS sub system for information dissemination	information available at common interface	Jan, 2017	Jan, 2018	FMOH, MICT,
5.2.2	Improve capacity of MOH web site for better web based linkage, production, accessing and sharing of health and related information	MOH web site re-designed	Jan, 2018	Ongoing	FMOH, MICT,

CHAPTER 8. HIS ROAD MAP IMPLEMENTATION FRAMEWORK, ASSUMPTIONS AND CHALLENGES

8.1. HIS ROAD MAP IMPLEMENTATION FRAMEWORK

The HIS Road Map implementation framework depicted in Figure 2 below describes the fundamental organization of the system, components, standards and principles governing its design and evolution.

Leadership, coordination and assessment will be a continuous process to give guidance to the implementation, monitoring and evaluation and reassessment over time. The intersectoral HIS working body at national level will be responsible to oversee the overall governance and implementation of the strategic plan at the national level. Within the FMOH, Policy, Plan and Finance Directorate General will be the central unit responsible for overall coordination and implementation of the strategy. However, the overall implementation of HIS Road Map requires full participation, coordination and collaboration of partners and stakeholders at all levels (see below section 8.2). At national level a strengthened NAC will monitor the progress of the implementation of HISSP and reports to intersectoral HIS working body.

Initial planning and priority setting is done with this national HIS Road Map. This will be updated annually and detailed planning and costing of the five year plan will be carried out as part of the next HSDP. Data sources will be both population and service based. The list will include, electronic health/medical record (EHR), eHMIS, CHIS, Health Geographic Information System (HGIS), IHRMIS, IFMIS, Telemedicine and Tele-education , mobile health services, Census, Vital Registration, Population Surveys including DHS, Health Development Army (HDA) services, LMIS, LIS, IMIS, EPIS, etc

The information from various sources will be kept in an integrated data warehouse and repository for easy access, triangulation, and made accessible to all as per the policy. Out of this self generated reports and analytical reports will be produced by responsible agencies and disseminated. Data exchange standards will be implemented in the various HIS components to enable interoperability among the different systems. The result will be used of for planning and decision making at levels and for research. In or-

der to realize this necessary policy, rules, regulations and guidelines will be issued and infrastructure will be developed. The ongoing and upcoming broad national reform agendas and principles including BPR will be adhered to.

The HIS should have in place appropriate measures to ensure data security as well provisions for data confidentiality. It has to be based on appropriate legislation and/or policies that aim to protect the privacy of patients and healthcare providers. It includes consent for both information storage and use. Privacy in health, however, needs to be considered in line with broader cross-sector privacy imperatives.

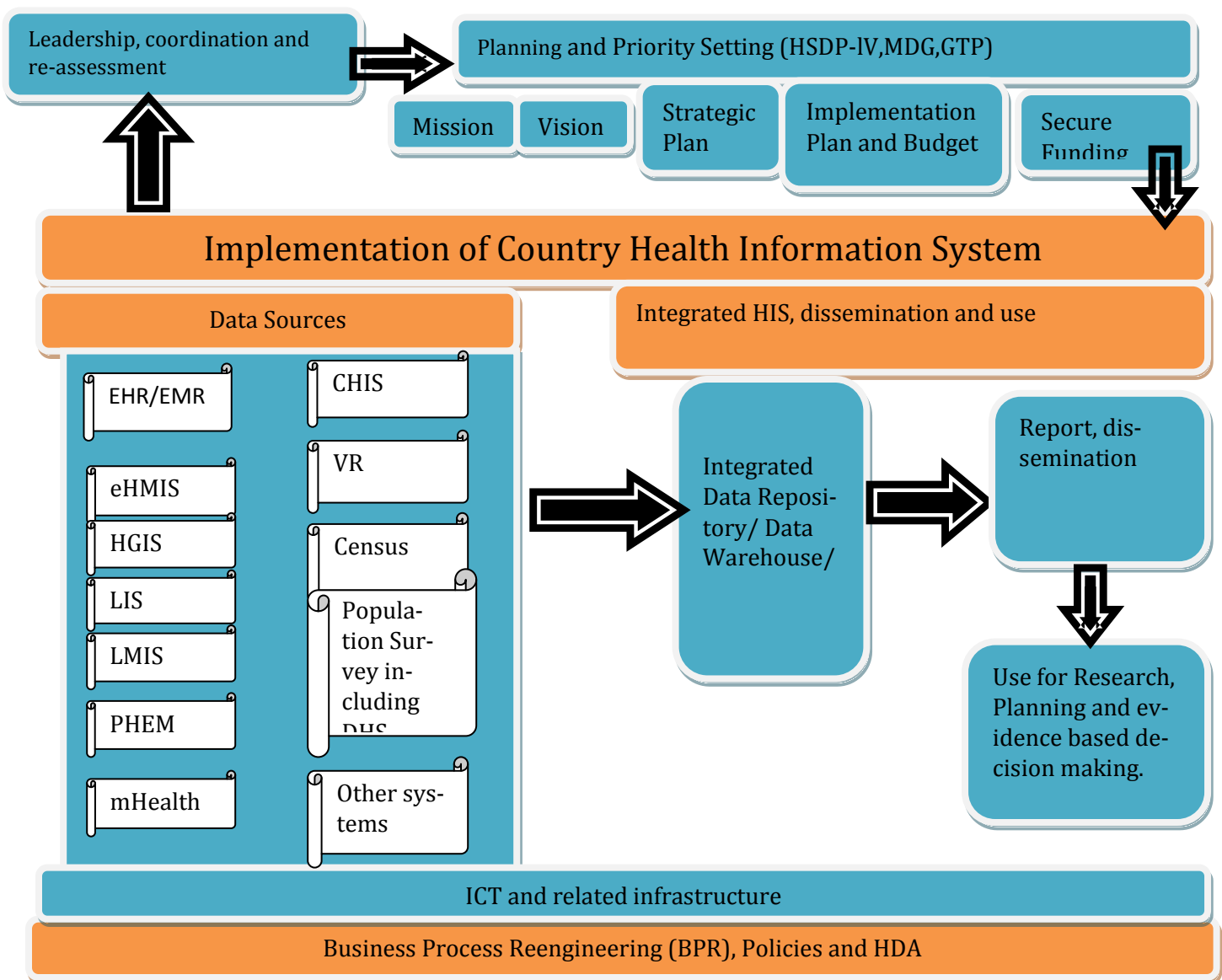


Figure 2. Overview of the HIS Road Map Implementation Framework

8.2. GOVERNANCE ROLES AND RESPONSIBILITIES

Stakeholder	Stakeholders Responsibilities
National intersectoral HIS working body	<ul style="list-style-type: none"> ➤ Provide guidance to ministries, agencies and other stakeholders for the proper implementation of HIS roadmap; ➤ Review among others HIS M&E activity reports biannually ; ➤ Mobilize resource ➤ Endorse the allocation of adequate resources for HIS M&E;
HIS NAC	<ul style="list-style-type: none"> ➤ Review among others HIS M&E activity reports frequently; ➤ Promote a culture of using information for decision-making; ➤ Advise the national intersectoral HIS working body
FMOH	<ul style="list-style-type: none"> ➤ Develop data collection and reporting formats ; ➤ Develop annual work plans for HIS road map M&E activities; ➤ Coordinate/attend the national HIS technical working group and meetings; ➤ Produce periodic information products, such as semiannual and annual HIS reports ➤ Coordinate and conduct annual supportive supervision at Federal and Regional level; ➤ Coordinate and establish integrated National data warehouse; ➤ Coordinate and chair the National HIS review meetings ; ➤ Develop interoperable e-HMIS, EMR, Infrastructure IS, health GIS and HRIS according to the national ICT standard ➤ Implement e-HMIS and EMR at HC, hospital, Woreda, Zone and region level and monitor its implementation ➤ Implement EMR at hospital level and monitor its implementation ➤ Implement Infrastructure IS and health GIS at Woreda, Zone and Region level and monitor its implementation ➤ Implement HRIS at HCs, hospitals, Woreda, Zone, region and Federal level and universities and monitor its implementation ➤ Coordinate and facilitate workshops on the standardization of DSS data along with universities ➤ Coordinate and develop survey mapping system
CSA	<ul style="list-style-type: none"> ➤ Coordinate and conduct different surveys such as EDHS, WMS, etc ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in National and Regional supportive supervision ➤ Coordinate and develop survey mapping system
MOJ	<ul style="list-style-type: none"> ➤ Develop interoperable Vital and Civil Registration System (CVRS) ➤ Coordinates the civil registration system ➤ Coordinate MOH, CSA and other actors on the technical guidelines development for CVRS ➤ Once implemented set up mechanisms for transfer of vital registration and cause of death data to MOH and CSA ➤ Implement Vital and civil registration system and monitor its implementation ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB
MOFED	<ul style="list-style-type: none"> ➤ Guide and support development of interoperable IFMIS according to the national ICT standard ➤ Implement IFMIS at Woreda, Zone and Regional level and monitor its implementation ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision

	<ul style="list-style-type: none"> ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB
MOE	<ul style="list-style-type: none"> ➤ Prepare and share semiannual and annual reports on human resources training to FMOH and RHB ➤ Participate in HIS review meetings and TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Participate in the development of HRIS
RHB	<ul style="list-style-type: none"> ➤ Establish Regional HIS Technical Working Groups, define mandates, duties and responsibilities; ➤ Prepare and distribute semiannual and annual Regional HIS report; ➤ Conduct annual supportive supervision at region level; ➤ Monitor the establishment of integrated Regional data warehouse; ➤ Coordinate and conduct Regional HIS review meetings
PFSA	<ul style="list-style-type: none"> ➤ Develop interoperable LMIS according to the national ICT standard ➤ Implement LMIS at HC, hospital, Woreda, Zone and Region level & monitor its implementation ➤ Participate in HIS review meetings ➤ Prepare and submit semiannual and annual HIS reports to FMOH and RHB
FMHACA	<ul style="list-style-type: none"> ➤ Develop interoperable Regulatory IS according to the national ICT standard ➤ Implement Regulatory IS at Woreda, Zonal and Regional level and monitor its implementation ➤ Develop health institution standards ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Prepare and submit semiannual and annual HIS reports to FMOH and RHB
EHNRI	<ul style="list-style-type: none"> ➤ Develop interoperable SIS and LIS according to the national ICT standard ➤ Implement SIS & LIS at Woreda, Zonal, Regional level and laboratories and monitor implementation ➤ Prepare and submit semiannual and annual HIS reports to FMOH and RHB ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Coordinate and develop survey mapping system
HAPCO	<ul style="list-style-type: none"> ➤ Prepare and submit semiannual and annual HIS reports to FMOH and RHB ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision
Universities	<ul style="list-style-type: none"> ➤ Participate in the standardization of DSS data ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB ➤ Participate in the development of survey mapping system
MICT	<ul style="list-style-type: none"> ➤ Develop ICT standards for all levels ➤ Participate on HIS review meetings and HIS TWG meetings ➤ Participate on national and Regional supportive supervision ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB
EPA	<ul style="list-style-type: none"> ➤ Develop interoperable Environmental Protection IS according to the national ICT standard ➤ Implement and monitor the implementation of Environmental Protection IS ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision ➤ Prepare and share semiannual and annual HIS reports to FMOH and RHB
Associations	<ul style="list-style-type: none"> ➤ Participate in HIS review meetings and HIS TWG meetings ➤ Participate in national and Regional supportive supervision
Partners	<ul style="list-style-type: none"> ➤ Support the development and implementation of all HIS sub-systems ➤ Participate on HIS review meetings and HIS TWG meetings ➤ Participate on national and Regional supportive supervision ➤ Adhere to integrated and unified HIS, and avoid parallel systems

8.3. RESOURCE MOBILIZATION

Once the national HIS road map is approved and endorsed, a resource gap will be defined and resource mobilization forum will be organized with local and international partners. It is hoped that partners will identify their areas of interest in the plan for their annual and midterm commitment and allocation. Resource mobilization will not only be on direct financial contribution, but technical support, provision of equipments and other infrastructural support will be entertained. The resource required for the current national development period will be mobilized as soon as possible. Resources required for the remaining five year period will be secured over the next three years and will be considered as part of the next five year national development plan resources.

8.4. CRITICAL ASSUMPTIONS AND CHALLENGES

Successful implementation of the HIS Road Map depends on the following major assumptions:

1. The strategy needs to be fully endorsed with supporting legislation and mandates.
2. It needs to be adequately funded and supported by health development partners.
3. It is vital that Organizations and stakeholders involved in the implementation of the plan maintain a functional network and adopt the necessary coordination mechanisms.
4. The plan needs to be widely communicated to, and understood by stakeholders,
5. It must act as a means to support more effective policy and action at national and sub national levels.
6. It has to provide a platform to ensure a more consistent, integrated and standardized approach to managing health and health related data and information.
7. Development partners' support to activities related to the HIS road map will continue in the future,
8. The observed commitment, collaboration and coordination among stakeholders, during HIS road map Planning process will continue into implementation.
9. Finally, it should be fully implemented so that it can deliver the information required for informed decision making at all levels.

CHAPTER 9: MONITORING AND EVALUATION OF THENATIONAL HIS ROAD MAP

9.1. PURPOSE

The main purpose of the national HIS road map M&E framework is to provide the necessary data that are essential to track the progress made regarding the implementation of national HIS Road map, to facilitate proper planning, coordination, and implementation of the HIS; and to ensure accountability of the various stakeholders.

9.2. PRINCIPLES AND METHODS

The most important principles for the national HIS framework includes *Standardization, Integration, Simplification and Institutionalization* which helps to avoid duplication of efforts among partners/ stakeholders and to create accountability at all levels. The focus is to collect quality (*relevant, timely, complete, accurate and consistent*) data required to compute the selected indicators for tracking the progress of HIS road map implementation. Regarding data collection methods, routine data collection using standard formats from all stakeholders, periodic joint review meetings, supervision reports, rapid assessment reports, administrative reports, different legislative documents and special surveys will be used.

9.3. DATA SOURCES FOR M&E

Though, implementation level varies starting from lower Kebele level to higher Federal level, most of the data collection will be done at National and Regional level. Thus, Regional and national agencies and stakeholders need to produce the data regularly which helps to monitor the progress of the system

development and to compute outcome indicators. The M&E indicators definition and reference table is shown under Annex 3 and 4.

9.4. M&E RESULTS DISSEMINATION AND UTILIZATION MECHANISMS

The following events and information products will be used for M&E the HIS road map implementation.

1. ***Semiannual Performance Reports:*** biannual performance report will be produced by FMOH and RHBs respectively.
2. ***Annual Performance Report:*** This report includes aggregation of bi-annual reports and human resource report. Unlike the semi-annual report, this shows a comprehensive overview of the annual performance and encompasses almost all indicators included in HIS M&E framework except those which need to be collected by survey. Moreover, this report includes challenges faced in the past one year along with the way forward for better implementation and improvement of the system.
3. ***National and Regional Annual HIS Review Meeting:*** These meetings will be organized by FMOH and RHB respectively. All HIS stakeholders will participate in the meeting. Moreover, representatives from private sectors, professional associations, donors, implementing partners and health facilities will be participated. The main purpose of this meeting is reviewing the performance of each HIS sub-system and identifying the strengths, gaps and challenges of each sub-system. This will be followed by putting practical and feasible recommendations based on the available evidences and assigning responsible body to perform the activity.
4. ***Biannual HIS National Advisory Committee (NAC) Meeting:*** The NAC will meet biannually and review the progress, discuss and give guidance on the solutions.
5. ***Supportive Supervision Reports:*** It is planned to have Regional and Federal level HIS supportive supervision which will be conducted on yearly basis. All the stakeholders at all levels will be involved in the supervision. The aim of this supervision and report is to review the activities at the ground level and to provide timely feedback for the respective organization.
6. ***Survey, Research or Evaluation Reports:*** There will be some indicators which need to be collected through surveys. A report will be produced every 3 years covering all surveys, researches and evaluations conducted in this period.

9.5. HISROAD MAP MONITORING AND EVALUATION MILESTONE

<i>Narrative summary</i>	<i>Indicators</i>	<i>Means of Verification</i>	<i>Assumptions</i>	
Vision				
<i>Timely, complete and accurate health and health related information from an integrated data repository made available and used for evidence based decision making at all levels in the country.</i>	<ul style="list-style-type: none"> ➤ Report timeliness by HIS sub-systems ➤ Data accuracy by HIS sub-systems ➤ Presence of national data repository and data warehouse ➤ Institutions with functional performance monitoring team by category 	<ul style="list-style-type: none"> ➤ Periodic Assessments ➤ Administrative reports 	<ul style="list-style-type: none"> ➤ Budget allocation ➤ Leadership commitment at every level ➤ Mobilizing appropriate expertise 	
Objectives				
<i>1. To Strengthen HIS governance, regulation, coordination and leadership</i>	<ul style="list-style-type: none"> ➤ HIS governance/regulation including e-Health in place ➤ Functional intersectoral HIS working body¹ 	<ul style="list-style-type: none"> ➤ Administrative reports 		
<i>2. To institutionalize, improve and strengthen HIS Resources</i>	<ul style="list-style-type: none"> ➤ Identified HIS positions filled as per the national standard ➤ Woredas /HIS sub systems with a budget line for HIS activities 	<ul style="list-style-type: none"> ➤ Administrative reports ➤ NHA Survey 		
<i>3. To improve health data coverage</i>	<ul style="list-style-type: none"> ➤ Proportion of Kebeles implementing VR ➤ Functional HIS subsystems in place 	<ul style="list-style-type: none"> ➤ Administrative report 		
<i>4. To improve health data management and quality</i>	<ul style="list-style-type: none"> ➤ Report completeness by HIS sub-systems ➤ Data accuracy by HIS sub-systems 	<ul style="list-style-type: none"> ➤ Periodic assessment 		
<i>5. To strengthen and institutionalize information dissemination and use</i>	<ul style="list-style-type: none"> ➤ Institutions that conduct supportive supervision and provide feedback as per the standard to their next lower level 	<ul style="list-style-type: none"> ➤ Special Survey 		

¹ Functional inter-sectoral HIS working body is a formal interagency structure representing FMOH, CSA, FMHACA, HAPCO, EHNRI, MOE, MOJ, EPA, PFSA and others to be included as deemed necessary which has TOR, meets periodically with documented minutes. It engages in producing HIS policy documents and follows HIS policy and plan implementation, may delegate task to technical working group and advises the sectors in overall HIS and M&E development and implementation.

Annex 1. List of Participants of National HIS assessment, validation and planning workshops.

Name	Institution
1. Dereje Mamo	PPD of FMOH, Chair person
2. Teshome Mergia,	CSA,
3. Yezihalem Kassa,	CSA,
4. Yohannes,	MoJ,
5. Dr Habtamu Argaw	HMN/WHO,TA
6. Dr.G/Kidan Mesfin	WHO ,
7. Dr. Tariq Azim	JSI HMIS project Chief of party,
8. Dr Alemayehu Belayneh	JSI
9. Hailemariam Kassahun,	JSI-HMIS project,
10. Dr.Belaineh Girma,	WHO,
11. Tibebe Akalu,	Italian cooperation,
12. Sandro Sarcoze,	Italian cooperation,
13. Gadissa Lemecha,	TUTAPE,
14. DR Abiyou Kiflie,	TUTAPE,
15. Getachew Sahilu,	WHO ,
16. Ashenefi Haile,	CDC,
17. Dr Dan Rosen	CDC
18. Dr Sisay Alemayehu	CDC
19. Mohamod Reshid,	HPDP,
20. Abebaw Derso,	MSD,
21. Hirut Andargie,	HR,
22. Abduljelil Reshad,	FMOH Infrastructure Directorate
23. Mengistu Kifle,	FMOH Infrastructure Directorate
24. Esubalew,	FMOH Infrastructure Directorate
25. Wondwosen Shiferaw,	FMOH Infrastructure Directorate
26. Isayas Getahun,	LAD,
27. Dr Amir Aman	HPDP,
28. Abebe A lemu,	EHNRI,
29. Muluneh Yigzaw,	EHNRI,
30. Hana Taye,	FHAPCO,
31. Sara Alemayehu,	MECT-PPD,FMOH,
32. Hajira Mohamod,	MECT-PPD,FMOH,
33. Israel Lema	FMOH-PPD(MECT)
34. Oli Kaba-	FMOH-Infrastructure Directorate
35. Emawayish Birhanemeskel,	MECT-PPD,FMOH,
36. Roman Gebreyes,	MECT-PPD,FMOH,
37. Alemitu Seyoum,	MECT-PPD,FMOH,
38. Hailu Dawo,	MECT-PPD,FMOH,
39. Mengesha Hidego,	MECT-PPD,FMOH,
40. Mebrahtu Mahtsentu,	MECT-PPD,FMOH,
41. Tsega Hailu,	MECT-PPD,FMOH,
42. Fekadu Negussie,	MECT-PPD,FMOH,
43. Habtamu Tesfaye,	MECT-PPD,FMOH,

ANNEX 2. MEMBERS OF THE CORE TECHNICAL WORKING GROUP

Name	Institution
1. Dereje Mamo	PPD of FMOH, Chair person
2. Sara Alemayehu,	MECT-PPD,FMOH, Secretary
3. Hajira Mohamed,	MECT-PPD,FMOH,
4. Dr.G/Kidan Mesfin	WHO ,
5. Dr. Tariq Azim	JSI HMIS project Chief of party
6. Dr Alemayehu Belayneh	JSI
7. Tibebe Akalu,	Italian cooperation,
8. Gadissa Lemecha,	TUTAPE,
9. Dr Habtamu Argaw	WHO/ TA

ANNEX 3. M&E INDICATORS DEFINITION

Strategic Objective	Indicators	Definition	Definition of numerator and denominator	Method of data collection
To Strengthen HIS Governance, Regulation, Coordination and leadership	Functional inter-sectoral HIS working body at national level	Availability a formal interagency structure representing FMOH, CSA, FMHACA, HAPCO, EHNRI, MOE, MOJ, EPA, PFSA and others to be included as deemed necessary, has TOR, meets periodically with documented minutes, engaged in producing HISgovernance/ policy guidelines, follows HIS governance/ policy guideline implementation, may delegate task to technical working group and advises the sectors in overall HIS and M&E development and implementation		Meeting minute
	legislation governing the collection, processing and dissemination of health information in place	HIS legislation approved by the parliament		Published in Negarit Gazette
	HIS governance/ in place including e-Health	Availability of HIS and e-Health governance regulation		The HIS governance /including ehealth
To Institutionalize, Improve and Strengthen HIS Resources	Identified positions filled by professionals as per the national standard	Proportion of identified positions which require HIS professionals and filled by appropriate professionals as per the national standard guideline	Numerator: Number of positions filled by HIS professionals as per the standard Denominator: Total number of identified positions	Administrative report/Survey
	Woredas/HIS sub systems with a budget line for HIS activities	Proportion of Woredas/HIS sub systems with a budget line for HIS activities (<i>printing, supportive supervision, HIS review meeting,)</i>	Numerator: Number of Woredas/HIS sub-systems with budget line for HIS activities Denominator: Total number of Woreda/HIS sub-systems	Administrative report/NHA Survey

	Health facilities meet the national HIS infrastructure standard by category and ownership	Proportion of health facilities meet the national HIS infrastructure standard by category and ownership.	Numerator: Number of health facilities that meet the national HIS infrastructure standard by category and ownership Denominator: Total number of health facilities by category and ownership	Regulatory Health Information System/ Special survey
	National data repository and data warehouse	Availability of national data repository and data warehouse linking all individual database of HIS sub-systems		Administrative report
To Improve Health Data Coverage	Kebeles implementing Vital Registration System	Proportion of Kebeles implementing Vital Registration System	Numerator: Number of Kebeles implemented VR system Denominator: Total number of Kebeles	Administrative report
	Health Institutions with functional e-HMIS by category (HC, Hospital, WorHO, ZHD, RHB)	Proportion of health Institutions producing HMIS reports using e-HMIS (electronic record system which is used for HMIS data entry, aggregation and reporting), by category (HC, Hospital, WorHO, ZHD, RHB)	Numerator: Number of HC/Hospital/ WorHO/ ZHD/ RHB with functional e-HMIS Denominator: Total number of HCs/ Hospitals/ WorHOs/ ZHDs/ RHBs	HMIS reports
	Health Administration levels with functional SIS by category (WorHO, ZHD, RHB)	proportion of health Administration levels with SIS (electronic record system for Integrated Disease Surveillance data aggregation and reporting) and generating weekly surveillance reports, by category (WorHO, ZHD, RHB)	Numerator: Number of WorHO/ ZHD/ RHB with functional SIS Denominator: Total number of WorHOs/ ZHDs/ RHBs	Routine
	Health Institutions with functional ILMIS by category (HC, Hospital, WorHO, ZHD, RHB)	proportion of health Institutions with ILMIS (electronic record system for drugs and supplies data management and reporting) and generate reports on the stock levels, by category (HC, Hospital, WorHO, ZHD, RHB)	Numerator: Number of HC/Hospital/ WorHO/ ZHD/ RHB with functional ILMIS Denominator: Total number of HCs/ Hospitals/ WorHOs/ ZHDs/ RHBs	Routine
	Health institutions with functional IHRIS by category (HC, Hospital, Universities, WorHo, RHB, ...)	proportion of health institutions with IHRIS (electronic record system for health human resource data management and reporting) generating human resource data, by category (HC, Hospital, Universities, WorHo, RHB,)	Numerator: Number of HC/Hospital/ WorHO/ ZHD/ RHB with functional IHRIS Denominator: Total number of HCs/ Hospitals/ WorHOs/ ZHDs/ RHBs	Routine
	Hospitals with functional LIS	Hospitals with functional LIS (electronic record system used to manage laboratory and related data) generating lab. reports	Numerator: Number of Hospitals generating laboratory report using LIS Denominator: Total number of	Routine

		Hospitals	
Health Administration levels with functional Health Regulatory IS by category (WorHO, ZHD, RHB)	Health Administration levels with Health Regulatory IS (electronic record system used to capture licensing of health professionals, institutions and food establishments, and controlling the quality of products, etc) generating health regulatory report, by category (WorHO, ZHD, RHB)	<i>Numerator:</i> Number of WorHO/ ZHD/ RHB with functional Health regulatory IS <i>Denominator:</i> Total number of WorHOs/ ZHDs/ RHBs	Routine
Health Administration levels with functional Infrastructure IS by category (WorHO, ZHD, RHB)	Health Administration levels with Health Infrastructure IS (electronic record system used to capture health infrastructure data) generating health infrastructure reports, by category (WorHO, ZHD, RHB)	<i>Numerator:</i> Number of WorHO/ ZHD/ RHB with functional Health Infrastructure IS <i>Denominator:</i> Total number of WorHOs/ ZHDs/ RHBs	Routine
Health Administration levels with functional IFMIS by category (WorHO, ZHD, RHB)	Health Administration levels with IFMIS (electronic record system used to capture health financial data) generating financial reports, by category (WorHO, ZHD, RHB)	<i>Numerator:</i> Number of WorHO/ ZHD/ RHB with functional IFMIS <i>Denominator:</i> Total number of WorHOs/ ZHDs/ RHBs	Routine
Interlinked DSS systems using common standard tools	DSS systems using standard tools and able to access other DSS site databases	<i>Numerator:</i> Number of DSS sites using the standard tools <i>Denominator:</i> Total No of DSS sites	Routine
Health Administration levels with functional Environmental Protection IS by category (WorHO, ZHD, RHB)	Health Administration levels with Environmental Protection IS (electronic record system used to capture environmental activity data), generating environmental activity reports, by level (WorHO,ZHD, RHB)	<i>Numerator:</i> Number of WorHO/ ZHD/ RHB with functional Environmental Protection IS <i>Denominator:</i> Total number of WorHOs/ ZHDs/ RHBs	Routine
Health Administration levels with functional Health GIS by category (WorHO, ZHD, RHB)	Health Administration levels with Health GIS (electronic record system used to map health & health related data) and generating health GIS reports, by category (WorHO,ZHD, RHB)	<i>Numerator:</i> Number of WorHO/ ZHD/ RHB with functional Health GIS <i>Denominator:</i> Total number of WorHOs/ ZHDs/ RHBs	Routine

	Regions with Survey mapping system	Regional Health Bureaus with Survey mapping system and generating survey maps	Numerator: Number of regions with functional survey mapping system Denominator: Total number RHBs	Routine
	Report timeliness by HIS sub-systems	Proportion of reports received on time as per the standards by HIS sub-systems	Numerator: Number of reports received on time as per the standards for each sub-system Denominator: Total number of reports expected for each sub-system	Routine
To Improve Health Data Management and Quality	Report completeness by HIS sub-systems	Proportion of reports received out of those expected as per standard, by HIS sub-systems	Numerator: Number of reports received for each sub-system Denominator: Total number of reports expected for each sub-system	Routine
	Data accuracy by HIS sub-systems	Proportion of reports with data matching the data from source documents or databases by HIS sub-systems	Numerator: Number of reports with data matching the data from source documents or databases by HIS sub-systems Denominator: Total number of reports expected for each sub-system	Survey
To Strengthen and Institutionalize Information Use for Evidence Based Decision Making	Institutions with functional performance monitoring team by category (HC, Hospital, WorHO, ZHD, RHB, Agencies, ...)	Proportion of institutions with performance monitoring team meeting and review their performance as per the standard, by category (HC, Hospital, WorHO, ZHD, RHB, Agencies, ...) as per the standard	Numerator: Number of institutions (under each HIS sub-systems) with functional PMT as per the standard Denominator: Total number of institutions under each HIS sub-systems	Survey

ANNEX 4. NATIONAL HIS ROAD MAP M&E INDICATORS REFERENCE TABLE

S. N	Indicators	Type	Baseline 2012	Yearly Target				Source	Periodicity	Level of data collection	Responsible Body
				2013	2014	2015	2016				
SO 1: To Strengthen HIS Policy Framework, Regulation, Coordination and Governance											
1	Functional national inter-sectoral HIS working body	Input	None		100%	100%	100%	Meeting reports	Bi-annual	National level	FMOH
2	Legislation governing collection, processing and dissemination of health information in place	Input	HIS legislation		100%			Legislative documents, meeting reports	Bi-annual	National level	FMOH
3	HIS governance including e-Health policy guideline in place	Input	None		100%			policy guideline/governance documents meeting reports	Bi-annual	National level	FMOH
SO 2: To Institutionalize, Improve and Strengthen HIS Resources											
1	Identified positions filled by trained professionals as per the national standard guideline	Output	Unknown		50%	65%	80%	Administrative report /Special Survey	Annually/ 2 yearly	All levels	All
2	Woredas/HIS sub systems with budget line for HIS activities	Input	Unknown		10%	35%	60%	Administrative report /NHA Survey	Annually/ 2 yearly	Administrative levels	FMOH/MO-FED
3	HF meet the national HIS infrastructure standards by category and ownership	Outcome	Unknown		50%	75%	100%	Administrative report /Special Survey	Annually/ 2 yearly	Health institutions	FMOH/FMHA CA
SO 3: To Improve Health Data Coverage											
1	National data repository and data warehouse	Output	No data warehouse		2 sub-systems	6 sub-systems	10 sub-systems	Admin Report	Bi-annual	National level	FMOH
2	Kebeles implementing VR system	Output	0				10%	Administrative report / Survey	Every 1 & 2 years	Kebele level	MOJ/CSA /FMOH
3	Health Institutions with functional e-HMIS by category (HC, Hospital, WorHO, ZHD, RHB)	Output	0	RHB=100 ZHD=50 WorHO=25 Hosp=50 and HC=1	ZHD=100 WorHO=50 Hosp=100 and HC=20%	WorHO=10 and HC=50%	HC=100%	Administrative report	Bi-annual	Health institutions at all level	FMOH

				0%							
4	Health Administration levels with functional SIS by category (WorHO, ZHD, RHB)	Output	0				RHB=50%	Administrative report	Bi-annual	Health administration levels	EHNRI
5	Health Institutions with functional ILMIS by category (HC and Hospital)	Output	0			RHB=100% ZHD=10% Hosp=50%	ZHD=50% WorHO=20% Hosp=100%	Administrative report	Bi-annual	HF	PFSA
6	Health institutions with functional HRIS by category (HC, Hospital, Universities, WorHo, RHB, ...)	Output	0	Universities,25 RHB,100 ZHD,25 & Hospital,25%	Universities,75, ZHD,50 WorHO,10 Hospital,100%	Universities & ZHD 100 WorHO25%	WorHO=50% HC=5%	Administrative report	Bi-annual	Health institutions at all levels and Universities	FMOH
7	Hospitals with functional LIS	Output	0			25%	50%	Administrative report	Bi-annual	Hospitals	EHNRI
8	Health Administration levels with functional Health Regulatory IS by category (WorHO, ZHD, RHB)	Output	0				RHB=100% ZHD=20%	Administrative report	Bi-annual	Health administration levels	FMHACA
9	Health Administration levels with functional Infrastructure IS by category (WorHO, ZHD, RHB)	Output	0				RHB=10%	Administrative report	Bi-annual	Health administration levels	FMOH
10	Health Administration levels with functional IFMIS by category (WorHO, ZHD,RHB)	Output	0		RHB=100% ZHD=20%	ZHD=50% WorHO=10%	ZHD=100% WorHO=30%	Administrative report	Bi-annual	Health administration levels	MO-FED/FMOH
11	Interlinked DSS sites using standard tools	Output	0		50%	75%	100%	Admin. report	Bi-annual	Universities	Universities
12	Health Administration levels with functional Environmental Protection IS by category (WorHO, ZHD, RHB)	Output	0					Administrative report	Bi-annual	Health administration levels	EPA/FMOH
13	Health Administration levels with functional Health GIS by category	Output	0			RHB=100%	ZHD=50% WorH	Administrative report	Bi-annual	National level	FMOH/CSA

	ry						O=10				
14	Survey mapping system	Output	0				25%	Administrative report	Bi-annual	National & Region	FMOH/ CSA/ EHNRI
SO 4: To Improve Health Data Management and Quality											
1	Report timeliness by HIS sub-systems	Outcome	Unknown	80%	90%	90%	90%	Routine report	Biannually	All levels	All HIS sub systems
2	Report completeness by HIS sub-systems	Outcome	Unknown	80%	90%	90%	90%	Routine report	Biannually	All levels	All HIS sub systems
3	Data accuracy by HIS sub-systems	Outcome	Unknown	80%	90%	90%	90%	Routine report	Biannually	All levels	All HIS sub systems
SO 5: To Strengthen and Institutionalize Information Use for Evidence Based Decision Making											
1	Institutions with functional performance monitoring team by category (HC, Hospital, WorHO, ZHD, RHB, Agencies, ...)	Outcome	Unknown		RHB=100% ZHD=40% WorHO=45%	RHB=100% ZHD=100% WorHO=85%	RHB=100% ZHD=100% WorHO=100%	Administrative report /Special Survey	Annually/Every 2 years	All levels (Kebele to Federal)	All HIS sub systems
2	Institutions that conduct supportive supervision and provide feedback as per the standard to their next lower level (HC, Hospital, WorHO, ZHD, RHB, Agencies, ...)	Outcome	Unknown		RHB=100% ZHD=40% WorHO=45%	RHB=100% ZHD=100% WorHO=85%	RHB=100% ZHD=100% WorHO=100%	Administrative report /Special Survey	Annually/Every 2 years	All HIS sub systems at all levels	HIS sub component owners

1. **Civil Registration**

Civil registration is the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events (live births, deaths, foetal deaths, marriages and divorces) and other civil status events pertaining to the population as provided by decree or regulation, in accordance with the legal requirements in each country. Civil registration establishes and provides legal documentation of such events and is also the best source of vital statistics.

2. **Data warehouse**

Data warehouse is an integrated information-storage area that consists of a data repository bringing together multiple databases from various data sources, and a report-generating facility.

3. **Demographic Surveillance System (DSS)**

DSS also called Demographic and Health Surveillance System (DHSS) is the continuous demographic monitoring of a geographically defined population with timely production of data on all births, deaths and migration. DSS sites cannot provide nationally representative indicators because of their circumscribed geographical representation. However efforts can be made to provide estimates that can be generalized using several existing DSS sites as resources for training, quality control and supervision.

4. **Enterprise Architecture (EA)**

EA is a comprehensive description of all of the key elements and relationships that make up an organization. It is used to define the alignment of an organization's mission, goals and objectives with information systems. Since its development in 1984 the EA approach has been applied by many companies, governments and other institutions worldwide in order to improve their business process.

For HIS it can be used to describe the methods for designing health information systems in terms of a well defined set of building blocks, and showing how the building blocks fit together and how the communication between the building blocks can be achieved. An EA approach to health information systems development allows for important interrelationships to

be identified, including which components need to be aligned to which parts and in so doing reduce the risks and incentives of fragmentation, and duplication, and lack of interoperability and reduce the risk of costly mistakes from applying diverse information and communication technologies in an unplanned and unstructured manner, while they accelerate the evaluation and adoption of emergent technologies in a way that benefit the whole system.

5. Health Information System (HIS)

HIS is a set of components & Procedures organized with the objective of generating information that will be used to improve health care management decisions by making available, timely and relevant information required for rational and effective decision making at all levels of the health system. A country HIS integrates data from civil/vital registration, censuses, population surveys, facility surveys, individual records, service records and resource records for policy making and efficient management of health services. The main population-based sources of health information are census, household surveys and (sample) vital registration systems. The main HF-related data sources are public health surveillance, health services data (also sometimes referred to as health management information system or routine HIS and health system monitoring data (e.g. human resources, health infrastructure, financing).

6. Health Management Information System (HMIS)

HMIS is a routine system of generating information on the routine activities. HMIS like any other Management Information System (MIS) generates information and increases knowledge on the inputs, processes, and outputs of projects or programs. The primary objective of the MIS is to provide operational information on policy implementation and to lead to decisions. In general MIS concentrates on the “in-house activities”.

Thus the routine information (HMIS) by its own can generate the input, process and outcome indicators and use it in order to assess its performance and the effect of health sector. Although not as frequent as the HMIS, the community based information will also be required to assess and monitor outcome and impact indicators to which the sector contributes to and yet other factors could also have an effect. HMIS is in- built to the service system; and generates timely information on a continuous basis, and without huge additional cost.

7. Information and Communications Technology (ICT)

ICT includes the computers, software, data-capture devices, wireless communication devices, and local and wide area networks that move information, and the people that are required to design, implement and support these systems.

8. Integration of HIS.

Integration of various components of HIS regarding technical, infrastructure, user interface, data, semantic content, and functionality

9. Interoperability

Interoperability is the term initially used to define IT, but it can be seen broadly as property of a product or system, whose interfaces are completely understood, to work with other products or systems, present or future, without any restricted access or implementation. It describes the extent to which systems and devices can exchange data, and interpret that shared data. For two systems to be interoperable, they must be able to exchange data and subsequently present that data such that it can be understood by a user. Standards provide a common language and set of expectations that enable interoperability between systems and/or devices. These systems include, computerized systems standards, data exchange standards, vocabulary and communications standards, medical device and implants standards, public health reporting standards.

10. Metadata Dictionary

Metadata is “data about data”. To relate data from multiple sources, it is essential to develop common definitions and understand the characteristics of each data element. The tool for achieving this is the metadata dictionary. It covers definitions of data elements or variables, their use in indicators, data-collection method, and time period of data-collection, analysis techniques used, estimation methods and possible data bases.

11. Sample Vital Registration System (SRS).

SRS is longitudinal enumeration of demographic events, including cause of death via verbal autopsy, in a nationally representative sample of clusters. **Sentinel Demographic Surveillance System (SDSS)** is similarly a longitudinal enumeration of all demographic events, including cause of death via verbal autopsy, but in a geographically defined population which may not be nationally representative.

12. Service Availability and Readiness Assessment

A HF assessment conducted using a tool to assist countries to assess and monitor service availability and readiness of the health sector and to generate evidence to support the planning and managing of a health system

13. Vital Event

Vital event is the occurrence of a live birth, death, foetal death, marriage, divorce, adoption, legitimation, recognition of parenthood, annulment of marriage, or legal separation.

14. Vital Registration (VR)

VR is all sanctioned modes of registering individuals and reporting on vital events.

15. Vital Statistics

Vital Statistics include data on vital events drawn from all of sources of vital events data.

Particularly in developing country settings, where civil registration functions are poor or not at all, the United Nations acknowledges that a variety of data sources and systems are used to derive estimates of vital statistics.

16. Vital Statistics System

Vital Statistics System is the total process of (1) collecting information by civil registration or enumeration on the frequency of occurrence of specified and defined vital events as well as relevant characteristics of the events themselves and (2) of compiling, processing, analyzing, evaluating, presenting and disseminating these data in statistical form.