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SOUTHERN SUDAN HEALTH SYSTEM ASSESSMENT

July 2007

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The Health Systems 20/20 cooperative agreement, funded by the U.S. Agency for International Development (USAID) for the period 2006-2011, helps USAID-supported countries address health system barriers to the use of life-saving priority health services. Health Systems 20/20 works to strengthen health systems through integrated approaches to improving financing, governance, and operations, and building sustainable capacity of local institutions.

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Submitted to: Karen Cavanaugh, CTO
Yogesh Rajkotia, co-CTO
Health Systems Division
Office of Health, Infectious Disease and Nutrition
Bureau for Global Health
United States Agency for International Development

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Abt Associates Inc. | 4550 Montgomery Avenue | Suite 800 North
| Bethesda, Maryland 20814 | P: 301.347.5000 | F: 301.913.9061
| www.healthsystems2020.org | www.abtassociates.com

In collaboration with:
| Aga Khan Foundation | BearingPoint | Bitrán y Asociados | BRAC University
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SOUTHERN SUDAN HEALTH SYSTEM ASSESSMENT

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ACRONYMS

AFP	Acute Flaccid Paralysis
AMREF	African Medical and Research Foundation
ANC	Antenatal Care
BPHS	Basic Package of Health Services
CPA	Comprehensive Peace Agreement
CPR	Contraceptive Prevalence Rate
DFID	Department for International Development
DPT	Diphtheria, Pertussis, and Tetanus
EPI	Expanded Program on Immunization
EWARN	Early Warning and Response Network
FBO	Faith-Based Organization
GoNU	Government of National Unity
GoS	Government of Sudan
GoSS	Government of Southern Sudan
HHP	Home Health Promoters
HIS	Health Information System
HR	Human Resources
HSS	Health Systems Strengthening
IDA	International Dispensary Association
IDP	Internally Displaced People
IDSR	Integrated Disease Surveillance and Response
IMCI	Integrated Management of Childhood Illnesses
ITN	Insecticide-Treated Net
JAM	Joint Assessment Mission
MCH	Maternal and Child Health
M&E	Monitoring and Evaluation
MDTF	Multi-Donor Trust Fund
MoH	Ministry of Health
MoF	Ministry of Finance
NGO	Nongovernmental Organization

NID	National Immunization Day
OFDA	Office for Foreign Development Assistance
PHC	Primary Health Care
PHCC	Primary Health Care Center
PHCU	Primary Health Care Unit
RDF	Revolving Drug Fund
RED	Reaching Every District
RIEP	Rapid Impact Emergency Project
SAFE	World Health Organization developed a series of interventions to control trachoma known by the acronym SAFE: Surgery, Antibiotics, Facial cleanliness, and Environmental improvement
SIA	Supplementary Immunization Activities
SMoH	State Ministry of Health
SPLA	Sudan People's Liberation Army
SPLM	Sudan People's Liberation Movement
TA	Technical Assistance
TB	Tuberculosis
UNFPA	United Nation's Population Fund
UNICEF	United Nation's Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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EXECUTIVE SUMMARY

The objective of this U.S. Agency for International Development (USAID) Southern Sudan Health System Assessment was to determine the health systems obstacles to the delivery of health care services. Originally intended to inform the Government of Southern Sudan (GoSS) application for the GAVI Alliance health systems strengthening (HSS) grant, the assessment examined the following building blocks of the health system: governance, health financing, human resources, service delivery, health information systems, and pharmaceutical and health commodity management. The assessment findings show that, in most areas of the Southern Sudan health system, strong will and commitment to improvement have not been matched with appropriate actions to implement change. The system is characterized by lack of skilled workers and limited resources at the state and county levels, inadequate flow of finances from the top down, and poor coordination between central, state, and county levels, nongovernmental organizations (NGOs), and partners. These factors have obstructed the Ministry of Health's (MoH's) ability to operationalize its National Health Strategy. These obstacles are to some extent a function of the limited amount of time the MoH has had to develop and implement its health policy and strategy since its formation in 2007. Financing and human resources challenges are further impediments to providing strong, decentralized care throughout South Sudan.

Note: Because this assessment was originally intended to inform the GoSS's application for the GAVI Alliance's HSS grant, the recommendations of the assessment team are reflective of this objective and of the GAVI HSS budget for Southern Sudan.

GOVERNANCE AND FINANCE

The Southern Sudanese health system is organized into counties, 10 states, and the central MoH. The central level is responsible for policy development and guidance, the state level is responsible for providing policy guidance and oversight to its counties, and the county level is responsible for overseeing service delivery. The GoSS MoH has developed an organizational structure, produced major policy documents, formed working groups, and created a framework to provide national leadership of the health system within a time frame of less than three years. However, although early development of health care policies and community ownership of health care are strong and active in some areas, they do not operate in a consistent manner across Southern Sudan. There is a perceived lack of clarity in state-, county-, and central-level duties, and uneven capacity for strategic planning at the state and central levels. Very little financial support has been budgeted for the county level; therefore, most counties are not yet functional. The majority of positions in the MoH, particularly lower-level staff, remain vacant, and the organizational structure does not clearly establish or document associated roles, responsibilities, or lines of authority. The degree of authority the state has vis-à-vis the central level is unclear, and staff lack critical resources and skills necessary to their work, including basic skills in financial management and bookkeeping, auditing and accounting, and planning and administration. The MoH has difficulty meeting its many partner organizations' demands and coordinating the partner initiatives. The lack of coordination between community and county teams is aggravated by a dearth of basic communications infrastructure (e.g., Internet connections, telephone). Procedures and processes for coordination have not yet been well-established or developed.

The presence of the Multi-Donor Trust Fund, a multilateral financing channel of major donor funding for health with a wide range of active partners involvement and support for Southern Sudan, is a very positive accomplishment for the GoSS. Unfortunately, funds are disbursed slowly from national and international sources. Southern Sudan is highly dependent on external resources, and the MoH faces considerable challenges in effectively coordinating funds to ensure efficient use of resources. The GoSS has declared that basic health and emergency services should be provided free of charge to all Southern Sudanese citizens, including both public facilities and NGO providers. Out-of-pocket payments are commonplace, though no studies yet exist to determine the extent to which user fees are prevalent. Although government expenditure on health as a percentage of total public spending is on par with other sub-Saharan countries, at approximately 8 percent, health indicators are markedly inferior. Interviews suggested that contributing factors include inefficient and vertical NGO provision of care, high unit costs, poorly allocated MoH resources, unexecuted budgets, and spending on infrastructure and development, which will demonstrate long-term but not immediate-term impact. The budgeting process for health is intended to be a bottom-up system, but in practice much of the financial system is not yet functional. States assess their needs without consulting their counties, and their methods of determining budgetary needs are unclear. Some states have not submitted their budgets to the MoH, while those that have received considerably less than they requested.

Recommendations:

The MoH supports integration of existing vertical programs into the resource pool and management structures of the mainstream health system, and strengthening management capacity. To achieve these objectives, the assessment team recommends improving management and coordination systems by providing technical assistance to form state- and county-level management committees, and establishing processes and procedures for regular communication to strengthen coordination across decentralized levels. This technical assistance should focus on developing roles and responsibilities, empowering teams with the appropriate tools, and training teams on the appropriate procedures and processes to increase functionality. The assessment team also recommends increasing the monitoring and evaluation (M&E) workforce at the county level to begin the management, monitoring, auditing, and information-sharing process that will lay the groundwork for bottom-up budgeting for health. In addition, the establishment of processes and procedures for regular communication between all levels of the health system will ensure fast and coordinated actions to improve health services delivery, quality of outbreak surveillance, availability of drug, vaccine, and commodities, as well as personnel issues. The team further recommends provision of program design and procurement support to the central MoH to allow for quick procurement of critical interventions and to greatly increase the MoH's ability to implement health programs.

HEALTH WORKFORCE AND SERVICE DELIVERY

Southern Sudan has few trained health personnel, and limited human resource policy. While some areas (particularly where supported by NGOs) boast strong and active community health teams that can advocate for transparency, appropriate resource allocations, increased commodities, better treatment by health workers, and higher quality of care, such committees do not operate in a consistent manner across Southern Sudan. Many areas have less than one health worker per 1,000. Most health staff is concentrated in the largest cities, and primary health care facilities are understaffed while tertiary hospitals and training institutions are overstaffed. Health workers are migrating out of the health sector in search of better pay and working conditions, a problem exacerbated by unequal distribution across the country, due to the difficulty of deploying health workers to remote areas. Health worker retention is therefore a grave challenge for the MoH. Service delivery is further impeded by poor or non-existent

infrastructure, such as facilities, electricity, water, roads, and communications. Staffing, supplies, equipment, and funding for recurrent costs are inadequate. NGOs provide most health care, and states have limited capacity to manage, regulate, and coordinate services. Only 30 percent of the population of Southern Sudan is covered by health services.

Recommendations:

The assessment team recommends that poor quality of care and coverage be addressed by giving technical assistance, operational training, and tools to community health teams to develop a strong, cost-effective, and scalable model. A scalable community outreach model would include a cadre of community health promoters in select pilot counties to increase demand for health care by delivering key health prevention messages to their communities. The team also recommends strengthening human resources by increasing and improving the strategic planning workforce through recruiting and financing strategic planners at the state level to increase salary support and bottom-up budgeting for health services. Further, training and retaining primary health care workers through non-financial incentives and clinical collaboratives, both established as highly successful methods for enhancing skills and improving motivation, will greatly improve quality of care.

HEALTH INFORMATION SYSTEM AND PHARMACEUTICAL AND HEALTH COMMODITY MANAGEMENT

The MoH/GoSS is committed to developing a M&E program and health information system (HIS) to inform decision-making at each level of the health system; however, as a post-conflict country, the existing HIS is not yet developed. The lack of good health management information and the poor capacity to analyze and use data for decision-making are important factors limiting states' ability to develop strong strategic plans. Strategic planning is even more limited at the county level, due to limited-to-non-existent budgets for salaried staff, as well as difficulty recruiting qualified staff and a low education level among primary data collectors. NGOs provide most health care services, and as such are a critical data source. However, they do not transmit their data to the central or state levels.

The regulatory system for pharmaceutical and health commodity management that the MoH has developed in the past two years is a tremendous achievement. However, many challenges bar the implementation of this system. There is a critical lack of staff, infrastructure, and training on existing policies. Slow procurement leads to major stock shortages in the public system throughout country, and although essential drugs are intended to be provided for free to patients by the central MoH, most Southern Sudanese pay out-of-pocket and rely on NGOs and informal drug vendors. The limited capacity of states and counties to forecast needs, the weak or absent distribution system, the lack of qualified staff in pharmaceutical management, and the lack of management systems and of information technology are obstacles preventing patient access to medicines and quality care.

Recommendations:

The health assessment team recommends addressing the problems of HIS and pharmaceutical and health commodity management by recruiting, financing, and training strategic planners at both the state and county levels. Increasing and improving the strategic planning workforce would allow states are to engage counties in bottom-up budgeting, to adequately assess and forecast their resource needs, and to engage in other critical planning exercises.

1. BACKGROUND AND INTRODUCTION

Since independence in 1956, Southern Sudan has suffered from civil war with only a decade of troubled peace from 1972 to 1983. The civil war period, characterized by devastation of the health system, has left the health status of the Southern Sudanese people among the poorest globally.

The Government of Southern Sudan (GoSS) and its development partners agree that a successful, sustainable transition will require the rapid development of a strong health system. This will involve everything from investments in infrastructure to investments in management processes. While financing such as the Multi-Donor Trust Fund (MDTF) exists (see Section 5.2.4 for more detailed information on the MDTF), gaps in health services and systems are numerous and significant. But given the time scale and the complexity of challenges in Southern Sudan, the MDTF is one element of a greater plan and development process. Setting up a health system and recruiting the GoSS Ministry of Health (MoH) and State Ministry of Health (SMoH) staff who will be the implementers will take time.

This assessment was done in the context of Southern Sudan's application for the GAVI Alliance Health Systems Strengthening (HSS) window. GAVI HSS application guidelines recommend that if a health systems assessment does not exist, one should be done before applying for HSS support. In the case of Southern Sudan, a health sector assessment was particularly needed due to the early stage of health system development. If the critical weaknesses that hamper Southern Sudan's absorptive capacity and service delivery are targeted early on, success in steering toward a successful outcome is much more likely.

Recognizing the importance of the assessment, the GoSS requested technical assistance from the United States Agency for International Development (USAID) to conduct it. A three-person team performed the assessment from June 16 to 30, 2007. The team comprised team leader Stephanie Boulenger, of the Health Systems 20/20 project, USAID health systems and financing specialist Yogesh Rajkotia, and Willa Pressman, USAID Global Health Africa Team Lead and Sudan Country Team Lead. The MoH, World Bank, World Health Organization (WHO), UNICEF, and other partners also played a critical role in this assessment.

This assessment report of Southern Sudan's health care system is organized in the following way. Section 2 explains the methodology that was used to carry out the assessment, analyze the information, and organize the data. Section 3 is the country overview and provides contextual information on the country's history, politics, and economy. This is to help the readers understand the origins and causes of the health system's weaknesses. Section 4 describes the health policies and health status of the population, including the main diseases and comparing certain indicators to the whole of Sudan and to sub-Saharan Africa. The main findings of the assessment are presented in Section 5, which is organized around six themes, corresponding to the functions of the health care system, namely governance, health financing, human resources, service delivery, health information system (HIS) and pharmaceutical and health commodity management. The last section, 6, then provides recommendations for future HSS activities, based on the assessment findings and results.

2. METHODOLOGY

The health system assessment's goal was to identify the key health system strengths, weaknesses, and barriers that impact health services and prioritize "gaps" in current health system development efforts to formulate recommendations.

The data and information sources for this assessment were obtained from (1) a review of all existing health systems assessments conducted in Southern Sudan[1]; (2) a review of other Southern Sudan health sector documents; (3) participation in the National Health Assembly; and (4) interviews with key stakeholders.[2]

A National Health Assembly attended by all state ministers of health and entitled "Towards a Decentralized Health Care System in Southern Sudan" was held in Juba, the capital of Southern Sudan, on June 19–21, 2007. The objectives of the assembly were to present the current status of the health care system in each state, specifically in regard to infrastructure, human resources for health, logistic systems (warehouses), and equipment (computers, telephones, printers, etc.), and to commonly set goals and strategies for the system's future at the national and state level in the context of a decentralized system. It is important to note that most of the information presented at the assembly was from reports prepared for the assembly by a field team over a period of one month. These reports are some of documents that the World Bank assisted the MoH to prepare.

Data were analyzed using USAID's Health System Assessment Approach (Islam 2007), an indicator-based approach for rapid assessment of the health system. It allows diagnosis of health system performance by identifying system strengths and weaknesses and guiding development of strategies and recommendations based on an understanding of priorities and programming gaps in the country.

The information reviewed and analyzed resulted in the identification of key health systems barriers to the delivery of health services within the areas of governance, finance, human resources, service delivery HIS, and pharmaceutical and commodities management.

In response to the barriers identified, the assessment team was tasked with delineating key interventions for strengthening the health system along four criteria:

1. *Assessment based*: The options first need to address weaknesses identified in the health care sector via a review of the literature and interviews.

2. *Consistent with GoSS health strategy*: The options need to be consistent with the MoH health strategies, direction, and implementation arrangements.

3. *Synergy with other donor investments*: The options, in addition to addressing system barriers to improving immunization, must complement current funding (public or partners/donors). See Annex C for a full donor map.

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[1] The documents consulted are listed in the Bibliography.
[2] The list of people interviewed is available in Annex A.

4. *MoH owned and led*: The MoH must design the HSS activities proposed and be the owner of the ideas and activities put forward.

3. COUNTRY OVERVIEW

3.1 HISTORICAL AND POLITICAL CONTEXT

In January 2005, the Government of Sudan and the southern Sudan-based Sudan People's Liberation Army (SPLA) signed the Naivasha Protocols, also known as the Comprehensive Peace Agreement (CPA), which ended the 21-year second Sudanese civil war and made the country's three southern-most provinces semi-autonomous. The fighting, which took place mostly in the south, killed an estimated 1.5 to 2 million people and displaced another 4 million (Lefkow 1995), and left the region without a functioning economy, physical infrastructure, or social services. The new government for Southern Sudan – also called South Sudan and New Sudan – is building a country, including a health system, practically from scratch.

3.1.1 FROM NUBIA TO SUDAN

What is now Sudan has for millennia been a transition area between northern and southern Africa, with the original Nubian area alternately occupied by Egypt and Arab Muslims from the north, and multiple black African groups – Bari, Dinka, Funj, Shilluk, Nuer, Azand/Ubangi, and others – from the south. Starting in the late 19th century, Britain ruled Sudan in conjunction with Egypt. Egypt and Britain granted Sudan self-government in 1953, independence in 1956.

The new nation, the largest country in Africa – at 2.4 million square kilometers, Sudan is about one-quarter the size of the United States – continued to experience friction between its peoples. The major divide is between the Arab north, approximately 40 percent of the population, and the black African animists and Christians in the south (53 percent), but, especially in the south, tensions also exist between ethnic and tribal groups, along nomadic/pastoralist and sedentary/agriculturalist lines (Box 1).

Box 1: South-South Rivalries

While the divide between north and south Sudan is well known, there are also inter- and intra-group rivalries within the south. If it is to succeed, the GoSS must develop institutional structures and capacity to reconcile these tensions.

- Although Southern Sudan's mineral and oil wealth lie primarily in Nuerland in Southern Sudan's Unity and Upper Nile states, the Nuer people are underrepresented in the GoSS, which continues the Dinkas' long domination of the south's political arena. Dinkas include both the late Dr. John Garang de Mabiour, SPLA/M's founder and Government of National Unity (GoNU) vice president, and the current GoSS president and GoNU vice president, SPLA co-founder General Salva Kiir Mayardit.
- During the second civil war, negotiations with the government were hampered by internal divisions in rebel forces including the SPLA-Nasir faction founded by Dr. Riek Machar, who later joined the SPLA and now is GoSS Minister of Housing, Land and Public Utilities, and the Bahr-al-Ghazal faction, formed by Carabino Buany Bol, an SPLA founder.
- Fighting among the Dinka Agar, Dinka Atuet, and Jur intensified in March 2006, due to continued tensions over pasture, water access, and cattle raiding and possibly the transfer of Mvolo County from Lakes State into Western Equatoria State. Fighting exacerbated the isolation of displaced persons in certain payams and increased their need for protection, food, and shelter, as well as access to medical care to treat diarrhea, eye infection, fever/coughing, scabies, and respiratory infection.

Sources: Wikipedia (2007); Interagency Rapid Needs Assessment of Internally Displaced Persons in Mundri and Mvolo Counties, W. Equatoria.

One report estimates the country to have as many as 597 ethnic groups and 400 languages and dialects (South Sudanese Friends International Inc. n.d/). The largest ethnic group is Dinka (group of tribes inhabiting the swamplands of the Bahr el Ghazal region of the Nile basin, Jonglei and parts of southern Kordufan and Upper Nile regions), followed by Nuer (confederation of tribes located in Southern Sudan and western Ethiopia). See Annex B for a map of Sudan.

3.1.2 INDEPENDENCE AND CIVIL WAR

Since gaining independence, Sudan has been affected by conflict. A civil war that started in 1955, shortly before independence, is estimated to have killed 500,000 and displaced several thousand more (Intelligence Resource Program. n.d.). It continued until 1972, when the national government and the Southern Sudan Liberation Movement signed the Addis Ababa peace accords that promised more equal access to national resources, economic development, and political power. Nevertheless, the national government in Khartoum continued its neglect of the south in terms of political decision-making and economic development – especially biting as strategic minerals and petroleum were discovered in the south in the 1970s. The failure to implement the pluralism envisioned in the Addis agreement, increased centralization of power in Khartoum, competition for land and water resources, access to weapons by tribal militia, and, finally, President Numeiri's adoption of *sharia* (Islamic) law in 1983 led to the breakout of Sudan's second civil war (JAM [Joint Assessment Mission] Sudan 2005). Fighting was led by the largely secular SPLA, formed by southern Sudanese soldiers. The civil war devastated the south – infrastructure and social services, already neglected when fighting broke out, deteriorated even further.

3.1.3 ESTABLISHMENT OF SOUTHERN SUDAN

The CPA ending the civil war was signed in January 2005 by the Government of Sudan and the Sudan People's Liberation Movement (SPLM), the SPLA's political wing. It committed the country to wealth and power sharing. The interim national constitution established Sudan as one country with two systems. A Government of National Unity (GoNU) administers North Sudan and also provides services normally the responsibility of a national government, such as defense and foreign affairs. The GoSS administers 10 states, some 90 counties, and other local governments, and it has a cabinet of ministers separate from that of the GoNU. The SPLM became a political party; it is the main constituent of the GoSS, including holding the presidency and 70 percent of seats in the legislature, and it gained about one-third of GoNU positions. GoSS President Salva Kiir Mayardit serves as Sudanese vice president and the SPLM's Lam Akol is Sudan's foreign minister. A Ceasefire Political Commission, with representatives from north and south, monitors the implementation of the ceasefire and security arrangements of the CPA.

Southern Sudan consists of the 10 states that formerly composed the provinces of Equatoria (Central Equatoria, East Equatoria, and West Equatoria), Bahr el Ghazal (North Bahr al Ghazal, West Bahr al Ghazal, Lakes, and Warab), and Upper Nile (Jonglei, Unity, and Upper Nile). See map in Annex B.

The onset of peace has created expectations for a return to normality, including the provision of health services. As a result, refugees and internally displaced people (IDPs) are increasingly returning.

In January 2011, six years after the signing of the CPA, Southern Sudanese will vote to remain part of Sudan or to form their own country.

3.2 SOCIAL AND ECONOMIC CONTEXT

Southern Sudan's approximately 650,000 square kilometers – slightly smaller than France, or the U.S. state of Texas – are mostly tropical savannah. About 71 percent of the land is suitable for agriculture and livestock, 24 percent is forested, and 5 percent is arid/semi-arid. The rainy season lasts 7-8 months in the south, 5-6 in the north. During the rainy season, flooding is common.

Southern Sudan has one of the least-developed economies in the world due in great part to traditional neglect by the central government, and to devastation wrought by the civil war, during which physical infrastructure, human resources, and social services suffered. Households have few assets and no access to markets – upon independence there were no paved roads outside of the major cities of Juba, the capital, Wau, and Malakal, and river traffic had all but ceased. Agriculture, mostly subsistence, and livestock form the livelihood for 90 percent of the population (Sudan Tribune 2007). Crops, which include sorghum, bananas, mangoes, lemons, and vegetables, are raised by hand and are readily affected by the amount of rain that falls during the growing season. Agricultural production is also limited by the fact that many fields and water points cannot be used because they contain landmines and unexploded ordnance; while long-term residents have become aware of dangerous areas, the mines pose a particular risk to new returnees.[3]

Much skilled labor was lost during the civil war: as noted above, the war killed as many as 2 million people and displaced an estimated 4 million. Ninety percent of the population lives on less than $1 per day (JAM 2005); estimates for North Sudan are 60-75 percent (MoH/GoSS, n.d.). Only one-fifth of children are enrolled in primary school, and only about 20 percent of those enrolled are girls[4] (see Table 1). To end Southern Sudan's historical isolation and poverty, investment is needed in roads (including de-mining) and river and air transport; in energy, especially rural electrification; and in education and training.

TABLE 1: SOCIO-ECONOMIC INDICATORS, SUDAN AND SOUTHERN SUDAN

	Sudan	Southern Sudan
Population (million)	38	Estimations range between 8 and 12
Annual population growth (%)	2.1	3 (2003)*
Urban population (%)	24	2% (2003)*
Poverty rate (%)	60-75	90 (2003)*
School enrollment, primary (%)	60.4	20 (2000)**
Primary school completion (grades 1-5), total (%)	49.7	28 (2000)**
Ratio of girls to boys in primary school	89.0	40 (2003)**
Literacy rate, adult total (% 15 years and over)	60.9 (2000)	31.0**

Sources: WHO Core Health Indicators (2007), latest data, except where noted. * MoH/GoSS (2007). ** SPLM and The New Sudan Centre for Statistics and Evaluation (2004)

The economic picture is not all bleak, for Southern Sudan has great economic potential. It has some of the best farmland, water resources, and mineral and other natural resources in Africa – 85 percent of Sudan's 1.6 billion barrels of proven oil reserves are located there (there is a revenue-sharing plan with the GoNU, and oil revenues currently represent most domestic revenue). And 2007 saw a 4 percent

[3] The United National Mine Action Office reports nearly 2,400 landmine casualties occurred in the 2002-07 period and estimates many more went unreported. Mine clearing of agricultural land is hampered by the fact that neither northern Sudanese forces nor SPLA can provide information about where mines were buried, partly due to the guerilla nature of the civil war, and government policy is to clear roads first (IRIN News Organization 2007).

[4] An interim report on Millennium Development Goals (MDGs) says 40 percent are girls (SPLM/New Sudan Centre for Statistics and Evaluation).

increase in food production, though in Juba it has been hard for local farmers to compete with products brought in from Uganda (IRIN Humanitarian News and Analysis 2007).

Southern Sudan is undergoing a major transition from relief to development. This transition involves building strong government capacity to manage and deliver services. The GoSS is under significant pressure to make rapid and visible progress toward this goal in order to establish its legitimacy with the people of Southern Sudan. It also is under moral pressure to help people rise from the abysmal health status that has characterized Southern Sudan for decades. (High Level Forum on the Health MDGs 2005)

4. HEALTH STATUS AND HEALTH SECTOR POLICIES

4.1 HEALTH SECTOR POLICIES

Currently, four main financing channels support the health sector: (1) MoH public budget for health; (2) the GoSS/MDTF Umbrella Program for Health; (3) multilateral donors; and (4) bilateral donor mechanisms. A more comprehensive description of health financing is provided in Section 5.2 of this report.

The World Bank is the administrator for MDTF-South (for Southern Sudan) and MDTF-North (for Northern Sudan). These two trust funds were established in 2005 following the CPA, which established the GoNU and the GoSS. The MDTF-South and the GoSS are co-financing a health sector development program that totals US$ 225 million for three years (MDTF US$ 75 million, GoSS US$ 150 million). This three-year program focuses on development of core capacities and components of the health system, while at the same time supporting rapid expansion of service delivery and selected high-impact preventive health interventions. (Ministry of Finance and Economic Planning 2006, World Bank 2007)

Among the UN agencies, WHO has been active in supporting disease surveillance and technical assistance on health policy and systems development, while UNICEF and the UN Population Fund (UNFPA) support child and reproductive health programs in focus areas. The other UN agencies focus predominantly on humanitarian interventions.

Among bilateral agencies, USAID, since 1998, has funded humanitarian health activities through the Office of Foreign Disaster Assistance (OFDA), supporting NGOs to provide primary health care (PHC) services, the training of health care workers, the rehabilitation of health care clinics, guinea worm initiatives, and emergency feeding programs; providing basic water and sanitation services; and piloting an HIV/AIDS prevention activity. OFDA provides relief food commodities for feeding programs (supplementary and therapeutic feeding programs) that are provided through the Food for Peace Office to the World Food Program or through NGOs. USAID began supporting an integrated health sector development project to reach a total of 20 (of a reported 90) counties to improve access to high-impact services; develop capacity to deliver and manage health services; increase demand for PHC services and practices; improve access to safe water and sanitation; increase access to HIV/AIDS service; and develop monitoring and evaluation (M&E) systems. See Annex C for a map of donor activities in the health sector.

Other multilateral donors, including the European Union, WHO, and UNICEF, have also been on the front line of humanitarian assistance in the past decade. Italian Cooperation is supporting decentralization activities, rehabilitation of health facilities, emergency support to Rumbek hospital,[5] and financial support to the MDTF. The United Kingdom's Department for International Development (DFID) has also committed US$ 30 million over two years through the DFID Basic Services Fund, which

[5] Figures on number of facilities in Southern Sudan vary by source: the number of hospitals ranges between 19 and 29, the number of primary health care centers between 103 and 111; the number of primary health care units is 551.

supports basic services to improve access to: water and sanitation, primary education, and PHC services in Southern Sudan (Ahmed Noor 2007). Humanitarian programs, implemented by international and Southern Sudanese NGOs, continue to account for the largest proportion of resources in the health sector in Southern Sudan.

To build a single unified health system instead of continuing to operate as multiple individual projects, the MoH/GoSS advocates for integration of existing vertical programs into the resource pool and management structures of the mainstream health system.

The MoH has moved ahead quickly in developing its health policy and strategy, and a Basic Package of Health Services for Southern Sudan (BPHS).

As stated in the Southern Sudan National Health Policy (MOH/GoSS 2006e), the objective is to reduce mortality and morbidity through a strategic approach under the overall stewardship of the MoH that ensures:

- Improving the delivery of accessible, acceptable, affordable, sustainable, and cost-effective maternal and child health (MCH) interventions and nutrition programs;
- Enhancing and accelerating disease prevention and control programs;
- Strengthening the health system at all levels through adequate and fair financing, good governance, and accessible health services;
- Developing a comprehensive approach to human resource development including planning, training and continuous education, and management of personnel; and
- Institutionalizing effective partnerships with other stakeholders through coordination and other collaborative mechanisms.

The BPHS profiles the services, infrastructure, equipment, essential drug supply, and human resources at five levels in the health system – community, primary health care unit (PHCU), primary health care center (PHCC), state and county hospital, and county health department. The development of the BPHS was guided by the values defined in the MoH Policy Paper, namely: the right to health, equity, pro-poor, community ownership, and good governance. The existence of the BPHS is assisting NGOs to standardize services, staffing, and functions.

Although the goal is decentralizing authority to the states, the central MoH was only constituted in 2007 and state ministers of health were appointed in 2006. In 2007, only Western Bahr El Gazal had a five-year health plan, which includes infrastructure development, organization capacity building, a HIS, and a public health and hygiene program. The National Health Assembly held in Juba in June 2007 brought together state and county officials, NGOs, and civil society members from each of the 10 states. At the assembly, state ministers of health voiced their enthusiasm for managing health services once financing and human resources problems are resolved.

All levels of the MoH are determined to make health services work in Southern Sudan. They recognize there is only a small window of opportunity to gain the confidence of the Southern Sudanese people.

4.2 HEALTH STATUS

By 1991, health care in Southern Sudan had all but disintegrated. The civil war had destroyed virtually all medical facilities except those that the SPLA rebuilt to treat their own wounded and the hospital in the three major garrison towns controlled by government forces (Malakal, Wau, and Juba). Life expectancy, which stood at 39 years in 1960, had by 2005 increased to 57 years in all Sudan but only 42 years in the south (in 2003). As war and population movements increased the ratio of adult women to men in Southern Sudan (to just over 2.1), women took on a greater role in the economic survival of families and communities.

Health services in Southern Sudan remained extremely weak during and after the war, causing the health status of the population to plummet to one of the poorest globally (see Table 2): the maternal mortality ratio is estimated at 2,037/100,000, the infant mortality rate at 150/1,000, the child mortality rate at 250/1,000, and the fertility rate at 6.7. These figures are appreciably less than Sudan's and sub-Saharan African countries' averages. Diseases that are controlled elsewhere in the world and malnutrition are endemic in Southern Sudan.

TABLE 2: KEY HEALTH INDICATORS FOR SOUTHERN SUDAN, SUDAN AND SUB-SAHARAN AFRICA

	Southern Sudan	Sudan	Sub-Sahara Africa (avg)
Total population (million)	Estimates range from 8 to 12 million	38	15
Life expectancy at birth (years)	42*	57	48.45
Physicians (per 100,000 population)	2	2	2
DPT3 coverage	15%	78%	67%**
Under 5 mortality rate (per 1,000)	250	90	151
Infant mortality rate (per 1,000)	150	62	93
Children under 5 sleeping under insecticide-treated nets	<1	<1	n.a.
Measles immunization (% 12-23 months)	25	67Error! Bookmark not defined.	n.a.
Maternal mortality rate (per 100,000 live births)	2,037	590	855
Fertility rate	6.7*	4.2	5.19
Contraceptive prevalence (%)	<1%	7%	21.4%
Births assisted by skilled attendant	6%	57%	51.7%

Sources: (MOH/GoSS, UNICEF 2006, World Bank 2006, UNICEF 2007, WHO 2006a) and National Health Assembly presentations *SPLM, MoH/GoSS, USAID, JSI (2006), **WHO/AFRO

Diseases and other aspects of maternal and child health are particular problems. Problems like high fertility, sexual violence, malaria, and poor coverage of skilled delivery care are detrimental to maternal health. Diarrheal and respiratory infections as well as vaccine-preventable diseases account for high levels of child morbidity and mortality. The MoH reports that "[t]he prevalence of diarrhea in under-fives is 45%, [the] …acute respiratory infection figure is 30% and for fever is 61%." (SOH 2004) Between January and March 2006, a total of 8,923 cases and 238 deaths (case-fatality rate, 2.67 percent) from acute water diarrhea were reported (WHO 2006b).

Health service coverage is estimated at 30 percent, with routine immunization coverage at 12 percent; vitamin A distribution at 5 percent; contraceptive prevalence at less than 1 percent; and births assisted by a skilled attendant reported at 6 percent. (MOH/GOSS 2007) Subclinical vitamin A deficiency affects one of seven children and goiter is common.

Chronic malnutrition among children under five years of age was estimated at up to 20 percent in 2000 (Decaillet et al. 2003). Access to clean water and sanitation is limited, contributing to the aforementioned diarrheal diseases and problems such as guinea worm (see Box 2). North and West Bahr El Ghazal States suffers from recurrent drought and under-five wasting rates are at emergency levels. Low birth weight is reported at 30–40 percent of babies born and exclusive breastfeeding rates are low. Only about 30 percent of the population use water from a protected source and only about 20 percent reported having received any hygiene/sanitation information.

Box 2: The Need to Control Preventable Diseases

Infectious diseases are the leading cause of morbidity and mortality in Southern Sudan. Some of the diseases are diarrheal and respiratory diseases, malaria, tuberculosis (TB), schistosomiasis, river blindness (onchocerciasis) and trypanopsomiasis (sleeping sickness). Others include the following.

- The majority of vaccine-preventable child deaths in Southern Sudan are due to measles. In November 2005, UNICEF estimated that only 20 percent of children in Southern Sudan were vaccinated against measles, compared to 67 percent in the rest of Sudan. That same month, UNICEF, along with WHO and the GoSS, launched a massive immunization campaign, aimed at vaccinating 4.5 million children under the age of 15. In October and November 2007, 816 measles cases and 36 deaths (4.4 percent mortality rate) were reported in Lakes and Unity States; in response, agencies carried out a vaccination campaign in multiple locations (USAID 2007).
- An estimated 70-80 percent of the world's remaining cases of guinea worm disease (dracunculiasis) occur in Southern Sudan. The Carter Center began efforts to improve water safety to combat the disease there in the mid 1990s, but these were constrained by the civil war, which made many areas inaccessible. With renewed post-war efforts, the GoSS hopes to eradicate the disease by 2009 (MoH/GoSS 2006 and The Carter Center 2007).
- A May 2005 survey in Mankien payam found trachoma, primarily a disease of women and children, to be the cause of 35.3 percent of blindness, 10 times its proportion globally (Buchan 2006 and The Carter Center, n.d.). It also found a trachoma prevalence rate of 63.3 percent in children 1-9 years and trichiasis in 19.2 percent in people over 15 years; the respective WHO thresholds for declaring these conditions a public health problem are 10 percent and 1 percent. Researchers observed poor facial hygiene in children, many flies on children's faces, and a lack of water and sanitation. Adoption of the SAFE strategy – surgery, antibiotics, facial cleanliness, and environmental change – prevents trachoma and the trichiasis and blindness to which it leads. A three-year SAFE intervention by Lions Clubs International Foundation in four Southern Sudan districts (pop. 250,000) reduced unclean faces by 87 percent and active trachoma by up to 92 percent (The Carter Center 2007).

Malaria

Both UNICEF and WHO classify malaria as the number one cause of under-five mortality. Several studies suggest that resistance in Southern Sudan is emerging to both chloroquine and sulphadoxine-pyrimethamine (SP). Use of insecticide-treated bed nets (ITNs) and intermittent presumptive treatment for pregnant women is very low.

The government has developed a strategic plan (for 2006-2011) for malaria. Prevention focuses on the use of ITNs and long-lasting insecticide nets, targeted at pregnant women and children under 5. (Prior to development of the plan, only 5 percent of children under 5 slept under an ITN.) There are no plans to resume spraying, used prior to the civil war. For treatment, the MoH has adopted the use of Artesunate + Amodiaquine as first-line treatment, Artemether/Lumefantrine as second-line treatment, and quinine as third; treatment guidelines have been written and staff training begun. With this much more expensive treatment option, there is need to increase capacity to correctly diagnose malaria, to avoid unnecessary treatment.

Immunization

According to the BPHS, the concept of Integrated Management of Childhood Illnesses (IMCI) is to be implemented as widely as possible. Integrated routine Expanded Program on Immunization (EPI) has to be strengthened, and made more efficient and sustainable. Box 3 lists key activities per level of the health care system (refer to Figure 1 and section 5.1.1 for a detailed description of the health care system) for EPI as defined in the BPHS.

Box 3: Key Activities for EPI per Level of the Health Care System (MOH/GOSS 2006c)

1. Home health promoters (HHP)
    a. Promoting EPI services among the population and mobilizing for planned campaigns
2. PHCUs
    a. Vaccinating on the fixed days with vaccines made available from PHCCs (in cold boxes and/or vaccine carriers)
    b. Promoting EPI services among the population and mobilization for campaigns
    c. Organizing/participating in outreach services: outreach EPI, pulse campaigns, returnees/IDPs where applicable, National Immunization Days (NIDs)
    d. Providing supportive supervision to HHPs
    e. Reporting
3. PHCCs
    a. Daily vaccination
    b. Promoting EPI services among the population and mobilizing it for campaigns
    c. Organizing/participating in outreach services: outreach EPI, pulse campaigns (e.g., for nomadic populations passing through), NID
    d. Providing supportive supervision to PHCU staff
    e. Maintain a mini-cold chain store through a kerosene/solar/gas-powered refrigerator to support PHCUs and routine outreach services
    f. Reporting
4. State and county hospital outpatient departments
    a. Same as in PHCCs
5. County health departments
    a. Identification and registration of target population
    b. Development of county-level micro plan for EPI activities
    c. Training on Reach Every District (RED) strategy for health workers
    d. Maintaining cold chain store with equipment and vaccines
    e. Requesting, storing, and distributing vaccines and other material
    f. Promoting EPI services among the population and mobilizing it for planned campaigns
    g. Providing training support for staff at PHCC and PHCU levels
    h. Supportive supervision for staff at PHCC, PHCU, and HHP levels
    i. M&E
    j. Reporting

Funding for EPI in Southern Sudan is reliant upon donors, including Australia, United Kingdom/Northern Ireland, USAID/OFDA, and Canadian International Development Agency. A total of US$ 6,246,477 was available for EPI in 2006. Thirty-six agencies implemented routine EPI in 43 counties in addition to the services provided by the 10 states and a few county health departments.

A total of 1,233,441 children between 6 months and 15 years of age were vaccinated against measles in 2006 through a mass measles campaign that started in December 2005. The number of children receiving three doses of DPT increased from 39,171 in 2005 to 52,019 in 2006. This translates into an increase in DTP3 coverage rates of about 12 percent in 2005 to 15 percent in 2006. (MOH/GOSS and UNICEF 2006)

The immunization services are provided through fixed sites (facilities that have a cold chain, mostly hospitals and health centers), outreach activities, and mobile strategies (mainly through accelerated campaigns).

To boost routine immunization, supplementary immunization activities (SIAs) that adopt the RED strategy are implemented in selected counties. Three types of SIAs are implemented, namely, polio, measles, and maternal and neo-natal tetanus campaigns. Results of the SIAs range from 68 percent to 100 percent coverage in those selected counties.

Routine immunization services are absent in about 60 percent of Southern Sudan, and of the routine immunization services available, most are provided by NGOs. According to interviews and review of documents, the low immunization coverage in Southern Sudan can be attributed to several factors that reflect underlying health system weaknesses (MOH/GOSS and UNICEF 2006): absence of functioning health facilities; absence of a policy document and a comprehensive five-year operational plan for EPI in Southern Sudan, which slows the implementation of routine immunization at the national level; absence of or difficulty maintaining cold chain; high wastage; unreliability of population data used for computing coverage figures; inadequate quality and quantity of administrative personnel and health staff at all levels due to limited supply of qualified people, poor working conditions, and inadequate remuneration; inadequate logistics and transport to implement routine EPI activities in all 10 states; inadequate funding at all levels; lack of security (land mines in particular, e.g., on outskirts of Juba, Malakal, and Wau), which still limits access to many locations.

Among other initiatives is the autumn Polio NIDs, which reached coverage of 100 percent. Surveillance for polio continued and the zero case status was maintained. This certainly argues for exploiting the approach that is being used for polio to deliver other health interventions.

5. KEY FINDINGS

The health system of Southern Sudan was analyzed along six key functions where the health system must perform, namely governance, financing, human resources, service delivery, HIS, and pharmaceutical management. See Box 4 for a definition of each of these functions.

Box 4: Definition of Health Systems Functions

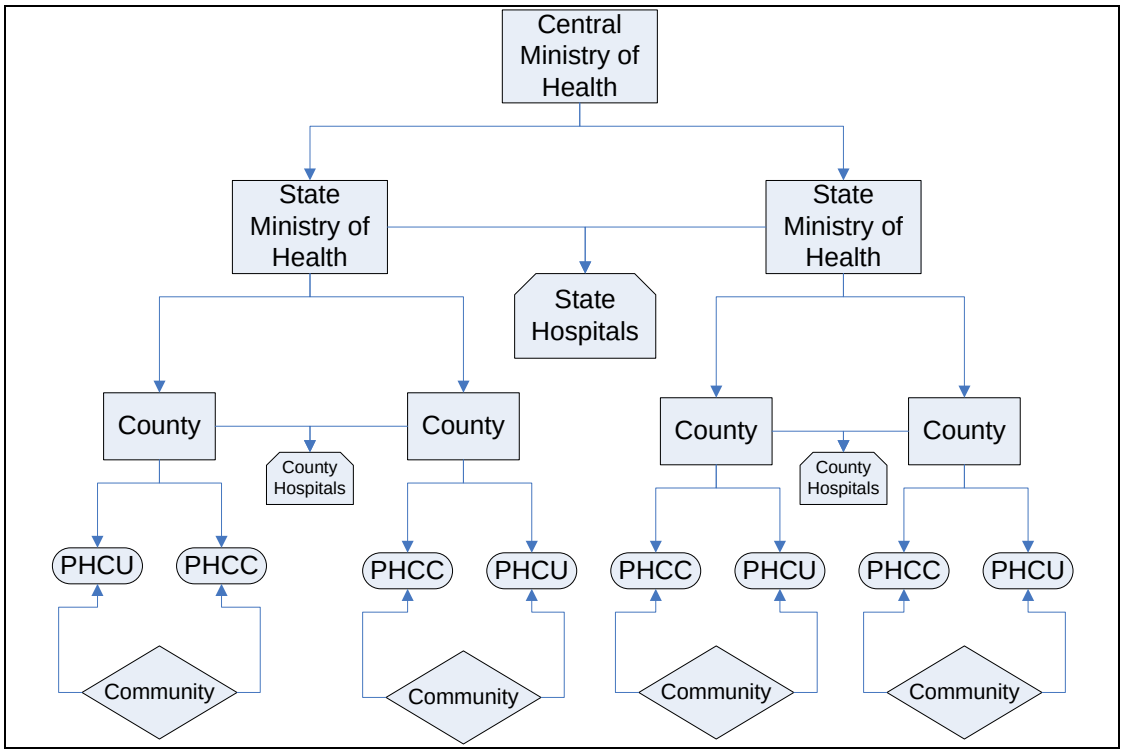
- **Governance**: The set of traditions and institutions by which authority in a country is exercised. This definition encompasses: (1) the process by which governments are selected, monitored, and replaced; (2) the capacity of the government to effectively formulate and implement sound policies; (3) the respect of citizens, private organizations, and the state for the institutions that govern economic and social interactions among them.
- **Health financing**: The mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system. (WHO 2000)
- **Human resources for health**: All people engaged in actions whose primary intent is to enhance health (WHO 2006).
- **Service delivery**: The way in which inputs are combined to allow the provision of a series of interventions or health actions (WHO 2001).
- **Health information system**: The set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system (Lippeveld et al. 2000)
- **Pharmaceutical and commodity management:** The set of practices aimed at ensuring the timely availability and appropriate use of safe, effective, quality medicines, health products, and services in any health care setting.

5.1 GOVERNANCE

5.1.1 OVERVIEW

The Southern Sudanese health system is decentralized into four major levels – the central, state, county, and community – as illustrated in Figure 1.

FIGURE 1: STRUCTURE OF SOUTHERN SUDAN'S HEALTH CARE SYSTEM



The Southern Sudan National Health Policy broadly lays out the roles and responsibilities at each level, as described in Box 5.

According to interviews and document reviews conducted by the JAM (JAM 2005), The SPLM has a strong commitment to establish a vibrant climate of local governance, with communities and traditional structures having a positive involvement in local decisions and in the oversight, management, and support of an appropriate range of social and public services. This includes helping counties to establish relatively simple, basic management and financial systems to perform their functions, handle and account for block grants and local revenue, and oversee contracting of selected local services.

Box 5: Roles and Responsibilities of Each Health System Level, as described in Southern Sudan National Health Policy

Central Level, Juba

- Leadership, governance, stewardship sector-wide
- Development of a strategic, regulated, accountable, transparent organization
- Selective decentralization and effective delegation
- National health and disease policies, strategies and plans
- Human resources capacity development
- Planning, monitoring, evaluation, and information systems and research
- Regulation and legislation
- Setting national-level priorities, standards, and guidelines
- Sector-wide and interministerial coordination
- Health financing and management of financial resources
- Contracting services

State Level

- Leadership
- Joint assessments, planning, M&E, and operational research
- Sectoral and intersectoral coordination
- Annual management work plans
- Implementation of government health care and services
- Supervision and guidance including of contracted-out services
- Referral system
- Epidemiological surveillance

County and municipality levels

- Health coordination
- Assessment and analysis of local health and managerial needs
- Joint strategic planning based on local needs and problems
- Monthly management work plans
- Implementation of health care and services
- Supervision, guidance, and monitoring including of contracted out services
- Referral system
- Epidemiological surveillance

Community level (PHCC, PHCU, and communities)

- Implementation of BPHS
- Community participation
- Referral system
- Weekly work plans by health centers and units
- Outreach

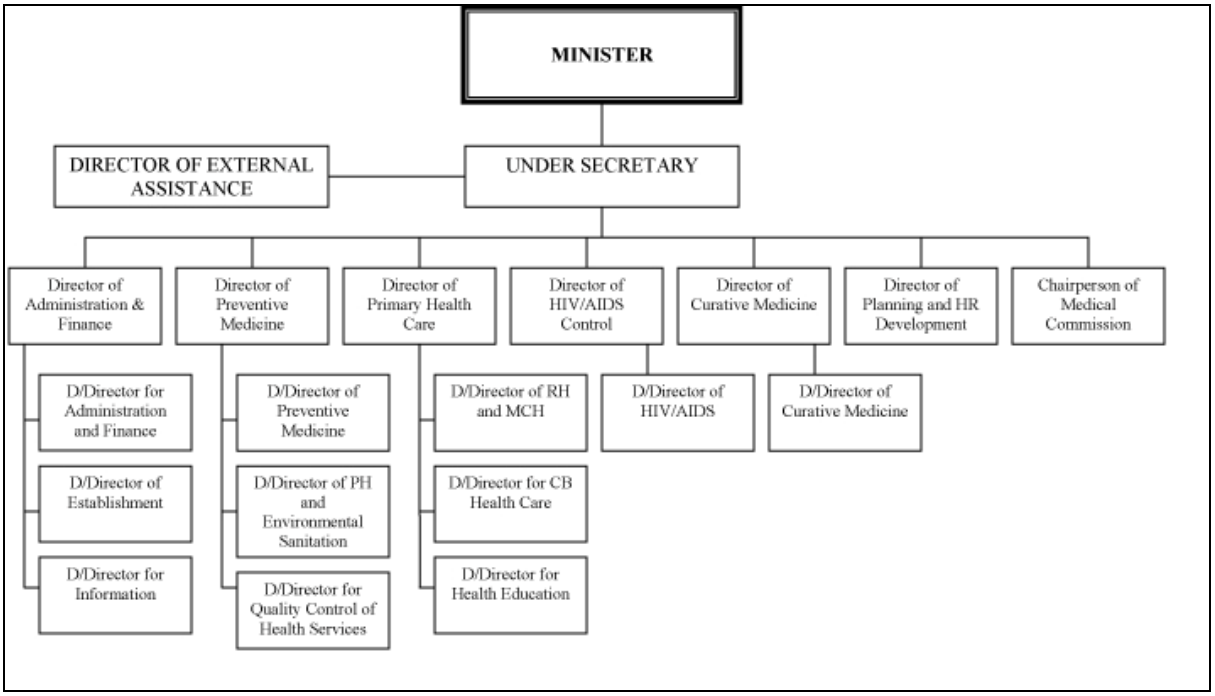
Source: MOH/GOSS (2006e)

5.1.2 MANAGEMENT CAPACITY

Central level

The central MoH has made impressive progress in the short time since its formation. The organizational structure is delineated (Figure 2), nine directors general have been appointed, and positions within each directorate are rapidly being staffed. Additionally, the MoH has produced seven major policy documents as well as the Southern Sudan National Health Policy and the BPHS strategy. It has formed working groups to tackle major issues such as M&E and human resources and committees such as the Country Coordinating Mechanism of the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the Nutrition and Health Committee. Thus, the MoH is rapidly developing a strong capacity to provide national leadership of the health system.

FIGURE 2: MOH ORGANIZATIONAL STRUCTURE



Note: HRD=human resource development, RH=reproductive health, PH=public health, CB=community based

Despite early work in capacity development, a majority of positions in the MoH, especially lower-level staff, remain vacant and, while the organizational structure is in place, the associated roles, responsibilities, and lines of authority are still not clearly established or documented. Processes and procedures have become more developed since the MoH's inception, but much still remains ad hoc. The combination of these issues negatively impacted the MoH's ability to operationalize its Health Plan. Lack of staff and expertise in project design and procurement has resulted in slow disbursement of finances. Though a Directorate of External Assistance is established, the demands of partner organizations are many, and with a skeletal staff, the MoH's ability to coordinate partner initiatives is weak. Finally, communication between the central and state levels is weak. Decisions made by the MoH are not always conveyed to the state level, according to state-level officials interviewed at the National Health Assembly.

State level

As described in the National Health Policy, the state level is responsible for the overall management of county health services. Specifically, this task includes monitoring, evaluating, and auditing contracts with NGO health providers; managing public providers; allocating resources; doing strategic planning; and coordinating the different actors within the health system.

Interviews with state-level officials reveal that there is considerable confusion as to the degree of authority the state level has vis-à-vis the central level. All states interviewed were familiar with the roles and responsibilities set out in Box 5; however, they also commented that they were unclear on how to operationalize those roles, and that there was significant overlap between certain state-, county-, and central-level duties. States also commented that they lack the critical resources needed to accomplish their roles, including basic skills in financial management and bookkeeping, auditing and accounting, and planning and administration. According to our interviews, the dearth of skilled staff was due to limited and irregular finances flowing from the central level for salary support. Thus, all but one state (Central Equatoria) has a functional director of planning. State health management committees are intended to form the backbone of planning, monitoring, and evaluation of state health activities; however, most states do not have functional committees that meet on a regular basis. In those states where committees do exist, the committee members are unclear of their roles, responsibilities, and mandate, and lack the critical management tools such as supervisory checklists to carry out their functions.

During the war and its immediate aftermath, the weak capacity at the state level was mitigated by the fact that most health care was financed, managed, and delivered by independent NGOs. However, Southern Sudan is now in the process of transition, and development of the state-level management function is critical. The process of implementing the MDTF Umbrella Program for Health has recently begun to move rapidly, and a key part of the program involves contracting with NGOs and faith-based organizations (FBOs) to provide services. States will be responsible for managing these contracts to ensure appropriate delivery of PHC, including immunization; therefore, the development of management capacity is essential.

County level

One of the conclusions that emerged from Sudan's first National Health Assembly was the critical role of the counties in implementing the BPHS strategy. Counties, being the closest unit to the health facilities and to the communities, are responsible for supervising, monitoring, and guiding health service delivery. They also serve as the main vehicle to identify local needs, both at the facility and community level, to feed into the strategic planning process at the state level. Counties are to serve as the main implementing arm of the states, and will be critical in the day-to-day management of service delivery contracts with NGOs, FBOs, or other organizations at the facility level.

Figure 1 (above) shows where counties are placed within Southern Sudan's health care system.

Our interviews with state officials revealed that very little financial support, including salary support, has been budgeted for the county level. As a result, most counties are not yet functional because they have no budget. Exceptions to this are counties that receive support from NGOs and, in some cases, from communities.

Community level

Community ownership of health care has been a part of the traditional structure of the Southern Sudanese health system, even during times of war. At the community (*payam and boma*) level, community health teams, usually made up of community members, health facility representatives, and other stakeholders, often exist to provide voice and input into the functioning of PHCUs and PHCCs. These teams can serve as a critical force in ensuring that health facilities are providing high-quality services that serve the needs of the local community. They can serve as a powerful voice against corrupt practices, inappropriate resource allocation, lack of commodities, poor treatment by health workers, and overall poor quality of care. For example, if health facilities are routinely stocking out of drugs, are not regularly immunizing children, or are charging informal fees, community health teams can directly address these issues as well as inform the county level.

Our interviews with NGOs and state officials reveal that community health teams are not operating in a consistent manner across Southern Sudan. In some areas, they are strong and active, particularly where NGOs are supportive of the committees. In other areas, they meet on an ad hoc basis, and, in other areas, they are non-existent. Though the development and strengthening of these teams is an important part of the BPHS strategy, there is no national strategy to address this issue.

5.1.3 STRATEGIC PLANNING

Strategic planning is a core function at all levels of the government. At the central level, a Director General for Planning and Human Resource Development has been established, with several supporting staff. The Director General is engaged in most key strategic activities. While the demands on the directorate are many, it is well placed within the organizational structure and capable of carrying out its duties.

There is far less capacity for strategic planning at the state level. Most state-level administrations do not have a designated office for strategic planning, and often staff with limited strategic planning experience and technical know-how are tasked with these duties. This situation is attributable to the lack of salary support in the financial transfers from the central level, as well as difficulty in finding qualified staff to fill planning roles. The lack of good health management information is also an important factor limiting states' ability to develop strong strategic plans. The Sudan National Health Policy designates states as the main stewards of the health sector; thus, the development of strategic planning capacity is essential.

County levels, being the closest administrative level to the communities, must be able to feed information from community health teams to the state level and participate in joint planning exercises with the state. However, strategic planning capacity at the county level is even more limited than at the state level. Again, the lack of capacity is due to the limited-to-non-existent budget for salary staff, as well as the difficulty in recruiting qualified staff.

5.1.4 COMMUNICATION AND COORDINATION

One of the fundamental ingredients to achieving successful management and strategic planning capacity at the county and state levels is strong coordination and communication capacity. States must be able to coordinate the activities of all of its counties, its service providers (public, NGO, and FBO), and other actors in the health system. Without adequate communication, state and county health management teams cannot fulfill their role oversight role. Finally, it is important that officials within county and state administrations are adequately organized to ensure coherent policy development and implementation.

Similar to state and county health management teams, community health teams also need to coordinate within their team as well as with the county level. Our interviews with NGO and state officials suggest that the degree of coordination within the teams varies with how active the teams are. However, most community teams do not coordinate with the county teams.

Development of coordination and communication capacity involves processes and procedures, as well as basic infrastructure. According to presentations given by the state ministers of health at the National Health Assembly, basic communications infrastructure is lacking (see Table 3). Most states do not have Internet connections and few have telephone connections. In terms of organizational development, our interviews find that most state governments are still nascent, and thus many procedures and processes for coordination have not yet been well established or developed. The dearth of staff at the decentralized levels has also made the establishment of state and county coordination units difficult.

TABLE 3: STATE COMMUNICATION INFRASTRUCTURES

	Telephones	Internet	Computers	Number of PHC facilities
Warap	1	0	1	n.a.
Central Equatoria	2	0	11	192
Jonglei	0	0	3	220
Upper Nile	5	?	4	185
Western Equatoria	0	?	6	211
Western Bahr el Ghazal	0	0	0	81
Northern Bahr el Ghazal	0	0	0	83
Unity	?	?	?	35

How does improved governance and management at various levels affect the delivery of health services?

- Strong state and county management capacity is essential to transition to a sustainable health care system.
- Strong strategic planning can allow for more rational and focused efforts on improving health services coverage, especially in poorly performing regions.
- Communities with strong management teams can serve as first responders when health facilities do not appropriately deliver health services.
- Communities with strong management teams can serve as a critical liaison between civil society, health facilities, and county governments to ensure prioritization of health services.

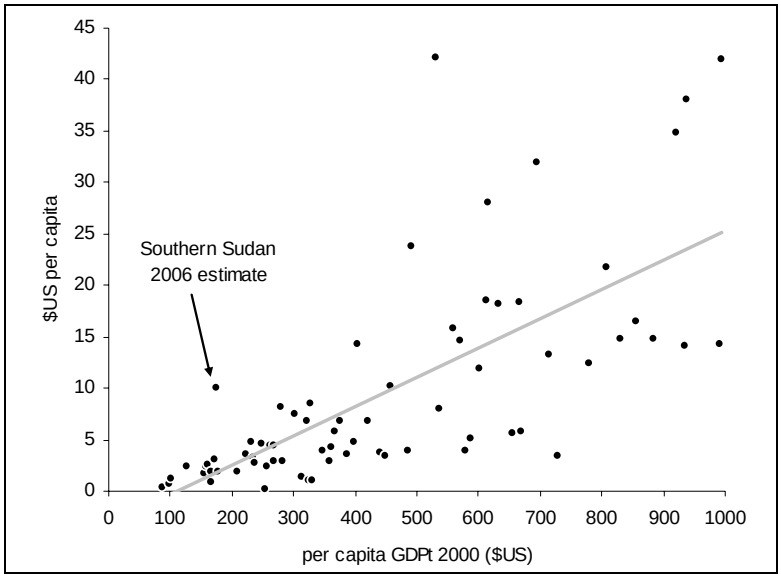
5.2 HEALTH FINANCING

5.2.1 OVERVIEW

Though no accurate resource tracking system exists, a review of documents suggests that total health spending in Southern Sudan was approximately US$ 130 million in 2006. (JAM 2005, MOH/GOSS 2006d) Of this, it is estimated that US$ 60 million is from relief and development partners, US$ 62 million in direct spending from the MoH, and US$ 8 million from MDTF-GoSS (World Bank 2007). Taking these

figures into account and using a population base of 10 million, it is estimated that US$ 13 per capita was budgeted (though not necessarily disbursed) for health in 2006 (see Figure 3). If these funds were all disbursed, this level of funding would be significantly more than many countries with similar per capita gross domestic product, especially among post-conflict countries. But a challenge faced by the MoH is to effectively coordinate those funds to ensure efficient use of resources. While this needs the commitment and cooperation of bilateral donors, NGOs, and UN agencies, the current needs are vast and beyond what is currently available.

FIGURE 3: HEALTH SPENDING PER CAPITA IN 2006 (US$)



The GoSS has declared that basic health and emergency services should be provided free of charge to all Southern Sudanese citizens. This declaration applies to all public facilities as well as NGO providers. However, our interviews with state officials and NGO representatives indicate that out-of-pocket expenses are commonplace.

The World Bank estimates that government expenditure on health as a percentage of total public spending is approximately 8 percent, which is on par with other sub-Saharan countries.(World Bank 2007) As Southern Sudan is emerging from a long history of civil war, health indicators are still markedly inferior than for the sub-Saharan region, despite the level of health spending.

Many officials interviewed attributed Southern Sudan's poor performance relative to sub-Saharan Africa as follows:

1. The GoSS did not fulfill its pledge for Phase 1 of the project. US$ 8 million was deposited in the MDTF account of the US$ 40 million pledged.
2. The NGO sector is providing care inefficiently, in an ad hoc and often vertical manner.
3. Unit costs in Southern Sudan are much higher than in most neighboring countries.
4. MoH resources have not been strategically allocated to strengthen PHC: "specialized materials and supplies" absorbed two-thirds of non-salary recurrent costs, and "scholarships" and "training" account for half of the remainder (World Bank 2007).

5. Initial spending has been on infrastructure and development (54 percent of MoH budget in 2006), which will demonstrate long-term, but not immediate-term impact.

5.2.2 REVENUE SOURCES

The GoSS has two major sources of revenue for public expenditure. The first source is oil revenue transfers from Khartoum. Under the CPA, Khartoum has agreed to transfer 48 percent of all oil revenues to the GoSS. Our interviews with Ministry of Finance (MoF) and MoH officials indicate that amount of these transfers have been unpredictable and slow, causing significant difficulties for MoF strategic planning. The second major source of revenue is through the MDTF, which will be described in greater detail in Section 5.2.4. At the time of this assessment, the GoSS did not have the capacity to generate revenues through taxation.

At the state level, the majority of revenues are received through central MoH transfers. Under the CPA, oil-producing states also receive a direct transfer from Khartoum amounting to 2 percent of total oil revenues. At the time of this assessment, no state-level administrations had taxing ability.

5.2.3 BUDGETING AND FLOW OF FUNDS

The budgeting process for health is intended to be a bottom-up system, in which counties feed their budgetary needs to states, and states in turn feed their aggregate needs to the MoH. The MoH is then to advise the MoF on total health sector needs and negotiate a final budget. Once the budget is finalized, the MoH sends a request to the MoF to transfer budget allocations to each state. Payments are to be made on a monthly basis, but the timing is directly dependent on oil revenue transfers from Khartoum.

In practice, much of the financial system is not functional yet, since state ministers were selected less than one year ago. In terms of bottom-up budgeting, our interviews reveal that states assess their needs without consulting their counties. Moreover, it is unclear as to how exactly states determined their budgetary needs. During the National Health Assembly, several states, such as Warrap, reported that they never submitted their budgets to the MoH. Those states that did submit budgets received considerably less than what they asked for. For instance, Central Equatoria asked for approximately US$ 6 million and received US$ 285,000 in 2006. State ministers interviewed reported that more than half of the budget was for salaries, the rest for operating and capital expenditures. Interestingly, the draft 2006 budget shows that the entire sum of the salary transfer to the state level is intended for the state officials only, with zero allocated to county-level salaries.

The most prominent complaint by states during the National Health Assembly was the slow disbursement of funds from the MoH. Many states complained that they had been unable to pay health workers for several months, the result of delayed disbursements. The assessment team was unable to conduct an in-depth analysis into the root causes of these delays, but most MoH officials interviewed traced the problem to slow transfers from Khartoum to the MoF, lack of disbursement capacity at the MoF, and delays by the MoH in notifying the MoF on disbursements.

So far, all budgeting is input-based. Though there has been talk at the MoH of moving toward output-based or performance-based financing, there has not been significant progress to this end, mostly due to the lack of capacity to operationalize more complex forms of financing.

5.2.4 MULTI-DONOR TRUST FUND

The MDTF was established upon the signing of the CPA in January 2005. Development partners pledged US$ 225 million for the MDTF of Southern Sudan, and tasked the World Bank to serve as the fund's implementation arm. The MDTF is to function as a matching grants fund: development partners will contribute US$ 1 for every US$ 2 contributed by the GoSS. According to the World Bank, 12 major projects across the GoSS have been financed as of June 2007, with one for health (the Umbrella Program for Health). This three-year, US$ 225 million project (see Table 4 for financial breakdown) serves as the MoH's overarching strategy for strengthening the core components of the Southern Sudanese health system. The functional arrangements of the MDTF are described in great detail elsewhere (Sudan Multi-Donor Trust Fund Operations Manual 2006). Interestingly, our interviews reveal that the MoH had limited involvement in deciding MoF allocations to the MDTF for the health sector. But given the time scale and the complexity of challenges in Southern Sudan, the MDTF is one element of a greater plan and development process. Setting up a health system and recruiting the GoSS/MoH and state ministry of health (SMoH) staff who will be the implementers will take time.

TABLE 4: FINANCING SOURCES AND TIMEFRAME FOR SOUTHERN SUDAN UMBRELLA PROGRAM FOR HEALTH SYSTEMS DEVELOPMENT (WORLD BANK 2007)

	MDTF	GoSS	Total
Year 1	20	40	60
Year 2	25	50	75
Year 3	30	60	90
Total	75	150	225

5.2.5 OUT-OF-POCKET EXPENDITURES

The GoSS has declared that basic health and emergency services should be provided free of charge to all Southern Sudanese citizens (MOH/GOSS 2006e). This declaration applies to all public facilities as well as NGO providers. However, our interviews with state officials and NGO representatives indicate that out-of-pocket expenses are commonplace.

At public facilities, the lack of funding for recurrent costs forces providers to charge for commodities and pharmaceutical products. Often, patients are given a list of products to purchase in the private sector. Informal fees are also prevalent, though to an indeterminate extent. It is unknown what percentage of spending is out-of-pocket spending. The World Bank is currently conducting a health financing household survey that aims to answer these questions.

There is no consistent policy for user fees at NGOs. Interviews with NGO representatives indicate that most NGOs, but not all, do not charge fees. Unfortunately, our findings are all anecdotal; there is no survey-based data to corroborate the findings.

How does improving health financing impact the delivery of MCH and immunization services?

- Strategic budgeting systems are needed to ensure that immunization systems are financed and prioritized.
- Bottom-up budgeting is needed to ensure that health facilities accurately forecast their needs and receive appropriate financing for MCH and routine immunization.
- Timely disbursements of funds are needed to ensure continuity of immunization services and of PHC services generally to promote utilization and thus the opportunity to provide routine immunization.
- Recurrent costs must be financed in order to ensure basic MCH and immunization system needs are met (such as fuel for generators to run cold chain equipment).
- Recurrent costs and salaries must be paid regularly to ensure facilities do not charge out-of-pocket fees for services.

5.3 HUMAN RESOURCES

5.3.1 OVERVIEW

Human resources constitute a critical element of a well-functioning and -performing health system. Improvement in the quality of services and achievement of health outcomes depends on available, competent, and motivated workers.

Human resources actions, if well managed and implemented, lead to workforce objectives including coverage, motivation, and competence. Good coverage of health personnel influences equitable access; motivation influences efficiency and effectiveness; competence influences quality and responsiveness. Equity, efficiency, and quality, which are all determinants of health system performance, lead in turn to positive health outcomes for the population.

The status of human resources in Southern Sudan is a top priority for the MoH. Throughout the National Health Assembly, during in-depth MoH discussions and interviews, human resources were consistently raised as the most critical issue currently facing Southern Sudan. Health staff availability, training, quality, distribution, and remuneration are issues to which the MoH has given (and is continuing to give) significant consideration.

By the time the civil war ended in 2003, most health professionals had left the country or had been absorbed into the military. Thousands of physicians, nurses, and other health professionals emigrated to Northern Sudan, Europe, the United States, and Canada and established lives there. In a brief review of the senior MoH staff, directors general, and state ministers of health, all have either returned from overseas after a 15–20 year absence or were officers and physicians fighting in the bush during the war. These senior health professionals are a highly motivated and gifted group; however, they are at high risk of burnout if the human resource base is not expanded quickly.

The lack of qualified human resources creates the greatest limitations for the expansion of health services across the health sector. With the current estimates of population at 10 million (2005), there is less than one health worker per thousand people, with most health staff concentrated in the three largest cities – Juba, Malakal, and Wau. The first-level PHC facilities – PHCUs and PHCCs – are sorely understaffed, while tertiary hospitals and training institutions are overstaffed.

Health workers continue to migrate out of the health sector into the military, UN agencies, private sector, and government posts in search of better pay and working conditions. This situation is so severe that the MoH has made a dramatic policy shift from the insistence that partners recruit only Sudanese to

work in the health sector to now encouraging the recruitment of staff from other countries in the region, principally Kenya, Ethiopia, and Uganda.

The three-year objective of the MDTF Umbrella Program for Health is to rapidly develop the human resources required for basic service delivery expansion. This component will also support post-basic training for specialized health personnel as well as for county health officers. The plan also includes testing innovative initiatives, including the provision of attractive remuneration or benefit packages to enable deployment of doctors and other qualified personnel to hardship areas, and incentives for qualified staff from the Diaspora to return.

Presently, under the MoH Directorate of Planning and Human Resource Development, consultants, and NGOs are formulating a Human Resources Development Plan. This plan will define the organizational structure, roles, and functions of the MoH central, state, county, and service provider levels, establishing realistic targets, developing and harmonizing training to upgrade skills, and allocating new and (reallocating) existing personnel to the appropriate positions.

5.3.2 MANAGEMENT AND PLANNING OF HUMAN RESOURCES

Human resources/human resources management refers to the people who provide the organizational function that effectively manages and utilizes the people who work in the organization.

Currently, the central MoH has two professional staff that focus on human resource management and planning under the direction of the Director of Planning and Human Resource Development. At the state level, there is limited or no human resource management staff in place. Although the MoH is moving as quickly as possible on human resource issues, their capacity is weak due to the lack of human resource professionals and support staff. The development of a human resource information system is currently under discussion, and is envisioned to dramatically help the MoH in personnel planning, accounting, classification, distribution, skill level management, and other critical workforce management functions.

Historically, management and planning of human resources (e.g., for training, recruitment, job descriptions, career development) has received limited attention. But this situation has changed and the MDTF Umbrella Program document outlines the need and plans for strong management and planning capability. This has translated into the early development of a Human Resources Development Plan. This assessment team agrees that this is the lynchpin of human resources.

Civil Service

Currently, the majority of health workers in Southern Sudan are considered employees of the GOSS, but seconded and financed by NGOs. According to GOSS officials, this stop-gap measure is intended to phase out in the coming years. States are given a line item budget for salary support, but this budget has been low and only sufficient to finance state MoH staff and, in some cases, senior medical staff. Additionally, states are tasked with maintaining a current roster of all health workers. Career paths and pay grades have been established by the GoSS, and are continuously being refined with support from the African Medical and Research Foundation (AMREF).

5.3.3 AVAILABILITY AND DEPLOYMENT

There is a critical lack of trained health personnel at every level of the health care system. The estimated 11,800 personnel in the health sector are deployed unevenly between or within states. For instance, 25

percent of health personnel work in three towns (Juba, Malakal, and Wau), PHCU/PHCC levels have half the staff required, and tertiary hospitals and training institutions have three times the needed staff. Managers and planners – essential for an evolving health system – exist in only limited numbers (MOH/GOSS 2006a).

In the former garrison towns, many staff on the payrolls are either inappropriate for the job, not working, or non-existent. There are approximately 1,355 nurses and 225 doctors with a ratio of doctors to nurses of 1:5. The 50–75 NGOs scattered throughout the country (with 1–550 employees) employ a range of health cadres; however, job descriptions, recruitment, deployment, and personnel policies/procedures vary widely.

At the central MoH level, half of the available positions remain vacant. At the state level, ministers of health are appointed, but staffing below this level is scant. Management and planning units do not exist or are barely staffed (including M&E staff). On a positive note, there is an EPI officer in each state.

Besides the overall shortage of health care workers, the unequal distribution across the country is due primarily to the difficulty of deploying health workers to remote areas, where living conditions are harsh and opportunities for advancement limited. This is a challenge many countries face and it will require creative measures to persuade workers to work in these areas. An unmotivated rural workforce results in high turnover rates, absenteeism, low job performance, professional negligence, and often corrupt practices.

The Human Resource Development Plan will assist greatly to outline the MoH's recruitment/retention/ deployment policy and guidelines, aligning and standardizing positions descriptions, cadres, and functions of health staff whether working for the MoH or partner programs throughout the country. A human resource information system is under discussion and would greatly assist in human resource planning. Knowing who is working where in the health system will provide the MoH with a road map for future planning.

The team found that a targeted effort to place management and planning health staff is critically needed to quickly improve health care system. This function is essential at each level – central, state, and county – to move health services out rapidly and ensure a strong health system. Planners and managers are particularly crucial at the state and county levels to move health services out quickly and respond to local health needs.

5.3.4 REMUNERATION AND RETENTION

Implementing policies regarding compensation, benefits, recruitment, hiring, transfer, and promotion for all types of health workers promote fairness and equity in the workplace. Failure to implement such policies has a negative effect on staff morale and performance, resulting ultimately in a detrimental impact on the quality of health services.

Within the human resource arena, remunerating health staff is a primary concern of the MoH. The overall compensation package is weak, and in some areas, staff payment is irregular and unpredictable. Salary structures are on par with those in Northern Sudan; however, the lack of housing and other amenities (easily obtained in the North) has made it difficult to recruit and retain qualified staff.

With the primary employers of health staff being a range of NGOs, compensation packages are very diverse. Although health worker compensation is low at some NGOs, for the most part, NGOs compensate workers at a level unaffordable to the MoH or multi- and bilateral donors. As humanitarian

relief funds gradually dry up and donors/NGOs respond to more immediate humanitarian crises in other countries, the MoH and donors will need to take on these existing programs. However, at this time, neither the MoH nor donors are positioned to assume the NGO health care programs at the levels at which they are currently funded.[6]

Additionally, NGOs provide a range of non-financial incentives – professional development (e.g., training), housing, team building – to retain workers. These non-financial incentives have a very powerful influence, often stronger than increasing monetary compensation. The MoH is looking at various non-financial incentives for workers. However, beyond the GAVI HSS scope of support, taking on the current level of NGO compensation for health workers and programs generally – either through contracting directly or assuming them as MoH programs – will prove fiscally challenging.

5.3.5 SKILLS PROFILE

Approximately 40 percent of the health workforce has none or less than one year of training, a quarter has 1-2 years of training, and another quarter has 3–5 years of training. Though limited information exists on education levels and training certification, it is estimated that only 7 percent of health personnel have a junior and high secondary school education level, and only 3 percent have university-level education. At present, in Southern Sudan, there are approximately 225 doctors and approximately 220 medical officers and specialists who have been trained in Khartoum or abroad. However, the majority of physicians are in Juba, Malakal, and Wau and most states have fewer than 10 doctors. Interestingly, no staff has been trained in management and planning, which are essential skills for operationalizing health services delivery (MOH/GOSS 2006a).

5.3.6 TRAINING INSTITUTIONS, CURRICULA, AND QUALITY

Training needs span the full health workforce from high-skilled PHC cadres (medical officers, clinical officers, nurses, certified midwives, laboratory technicians) to nursing aids, community health workers, and community health committees. The MoH has recognized training as a prime focal area and provided solid attention and substantial resources for pre- and in-service training (AMREF 2005).

Before the civil war, although Juba had nursing and medical schools, many Southern Sudanese were trained in Khartoum.

Specialized continuing professional education and long-term training are usually managed at the central level, but since there was limited central authority during the war, NGOs took the lead in providing training to health staff. Although many NGOs have excellent training capacity, the range of quality and types of training is large.

The human resource situational analysis (SOH 2004) indicates that 15 training institutions are distributed throughout the country – in every state except Jonglei and Eastern Equatoria – offering 33 courses (

[6] This relief to development phenomena is an issue worldwide. Relief organizations typically compensate workers at a higher level (and overall program funding is greater) than host governments or other donors can afford.

Table 5).

TABLE 5: EXISTING TRAINING INSTITUTIONS AND THE NUMBER OF COURSES OFFERED

State	Location		Number of Sites	Number of Courses
Upper Nile	1	Malakal (former Govt. of Sudan [GoS])	3	3
	2	Renk (former GoS)	1	1
	3	Keew	1	1
	4	Nyal	1	1
Central Equatoria/ Bahr E Jabal	5	Yei	1	2
	6	Juba (former GoS)	5	7
Jonglei		-	0	0
Eastern Equatoria		-	0	0
Warrap	7	Marial Lou	1	2
North Bahr El Ghazal	8	Aweil (former GoS)	1	1
Western Equatoria	9	Lui	1	1
	10	Maridi	3	3
Unity	11	Bentiu (former GoS)	3	3
Lakes	12	Rumbek	1	1
	13	Billing	1	2
	14	Adol	1	2
West Bahr El Ghazal	15	Wau (former GoS)	3	3
Total			22	33

Source: MOH/GOSS 2006a

Within training institutions, training focuses primarily on theoretical, disease-based knowledge rather than prevention and aspects of health promotion.

Programs use traditional teaching and learning methods instead of practicum/experiential learning. There is no national accreditation mechanism in place for training institutions and hence no system to measure training quality. According to the human resource situation analysis, which assessed six indicators (infrastructural design; average annual intake/output; availability of qualified teaching staff; availability of library facilities; management practices; and field practicum), trainee performance assessments are weak, and training objectives poor, and only 14 percent of surveyed institutions had adequate training capacity.

Because most training institutions are in a state of disrepair, the MoH will contract for architectural assessments in preparation for rehabilitating and equipping existing training facilities, particularly three nursing schools, three midwifery schools, and two laboratory technician schools.

How do human resources affect health services?

- Poorly selected and trained health staff cannot provide quality services.
- Poorly deployed staff cannot cover underserved populations in need of health services.
- Poorly remunerated health staff is not motivated to provide quality services.

5.4 SERVICE DELIVERY

5.4.1 OVERVIEW

As discussed throughout this document, more than 20 years of war and decades of scarce resources have left the health care system extremely deteriorated. Even in former garrison towns, which were less affected by the civil war (and supported by the North), hospitals, clinics, and health care generally is in very poor condition. Early on, FBOs supplemented poor or non-existent public health services. During the past 20 years of civil conflict, multilateral/bilateral donors and NGOs joined FBOs to fill the gap in service delivery. NGOs and FBOs continue to play the lead role in health service delivery.

A 2006 MoH assessment reports Southern Sudan to have 691 health care facilities (29 hospitals, 111 health centers, and 551 health units). Other entities report fewer facilities.[7] Existing facilities are usually inadequately staffed and lack drugs, supplies, and equipment. NGOs provide most health care. Their approach is remedial, humanitarian, and emergency in nature. Interventions are mostly first-level community-based health services and vertical disease programs. (MoH/GoSS 2007). The major hospitals in Juba, Malakal, and Wau, total only an estimated 1,200 beds (for a population ranging from 8 to 12 million, this amounts to about 1.2 hospital beds per 10,000 population, appreciably below the sub-Saharan Africa average of 5.6 or the Sudan figure of 7.1) and require financing, staffing, and management reforms as well as refurbishing and improvements in the quality of services. Every level of the health system suffers severe limitations (inadequacy, lack of clarity, non-existence, etc.) in every aspect of the service delivery system:

- Health personnel availability, quality, and distribution
- Infrastructure – facilities, electricity, water, roads, communications
- Drugs, supplies, and equipment
- Consistent funding for recurrent costs – salaries, drugs, supplies
- Range of service providers, policies, and procedures
- Service guidelines
- Human resource policies and procedures

As a result, only 30 percent of the population in Southern Sudan is covered by health services – 70 percent of the population has limited or no access to any type of health care facility, services, or information.

The MoH is addressing problems in service delivery as effectively as possible given the current constraints. Because current health service provision in Southern Sudan is primarily an NGO and donor response to an emergency situation, there has not been a national plan for long-term service delivery. This section focuses on MoH plans for improving health service delivery.

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[7] A WHO report, also in 2006, cited 19 hospitals, 103 primary health centers, and 551 primary health units (total 673). The World Bank (2003) reports 17 hospitals and 94 health centers and 60 percent of the population with access to some type of health care services.

5.4.2 AVAILABILITY AND ACCESS

At present, of the 30 percent of the population covered by formal health services in Southern Sudan, the NGO/FBO sector provides 68 percent of these services. Although many health staff technically are government workers, they are not on the government payroll but rather are paid by NGOs. The majority of the NGOs are funded by bilateral and multilateral emergency assistance (funded on a yearly basis). The focus is on providing first-level health services, not building the capacity of the government to provide services.

The GoSS must currently rely on NGOs to fulfill the acute need for service delivery; however, it should concurrently develop policies and procedures to coordinate and standardize service delivery. Indeed, the provision of health services by the many organizations (estimates range from 50 to 75 NGOs), each with its own policies and procedures, creates a fragmented, inefficient health system. In addition, more technical assistance, financed by donor resources, is coming into the country. So the MoH has now the task of filling the health services gap (which can be helped by a more coordinated approach between organizations), managing the coordination while, at the same time, developing the structures necessary to establish a rational health care system for the country.

Currently underway is an MoH-contracted mapping of health facility infrastructure, including assessing staffing, financing/management, and health services type. This will provide a much-needed picture of the distribution of current health care services to determine where underserved populations are, who is served in which areas, and which organizations are providing the services.

5.4.3 EQUITY

Equity of access to care – for geographically isolated, ethnic, and other underserved groups – is a primary concern for the MoH. Because most of the country is without services, the MoH is focused on expanding geographic access to formal health services. Although procurements have been slow, the objective is to rapidly provide formal health care services to the estimated 70 percent of the Southern Sudan population who now lack them by introducing high-impact interventions delivered through community and household channels. High-impact services reduce child mortality and morbidity rapidly and include: immunization; vitamin A supplementation; ITNs for malaria prevention; oral rehydration therapy/zinc and point-of-use water treatment to avoid diarrheal and other water-borne diseases; community-based treatment of malaria with pre-packed ACT (artemisinin combination therapy) drugs; treatment of acute respiratory infection with antibiotics; and mass treatment of hyper-endemic communities infected with bilharziasis. Delivery of these interventions will be done through existing governmental, nongovernmental, and community networks and through social marketing.

5.4.4 QUALITY

Because a great number of organizations have implemented health services over the years in Southern Sudan, there is no standard measure of service delivery quality. Quality (and standardization of services) should improve once the recently developed BPHS is rolled out and the procurements to expand services in each state are implemented. This BPHS is a PHC-oriented approach to service delivery – moving from the community level to first-referral hospitals to county health departments is an integral part of the system.

An assessment of the three major hospitals – Juba, Malakal, and Wau – was recently completed in preparation for strengthening and reforming hospital service delivery. The MoH will contract on a pilot

basis one or more hospitals to a management firm to support the reform process and rapidly improve hospital services. Significant quality improvements should result from the implementation of the Human Resource Development Plan, including rationalizing, reallocation, and retraining staff.

The assessment team understands that the upcoming MoH state-based service delivery contracts with NGOs are performance-based. Because the contracts are still being negotiated, details are not yet known, but the team envisions that a performance-based system of service delivery will set the correct incentives for improving health outcomes by improving the quality and access to services. Performance-based service delivery, as implemented in other countries such as Afghanistan, Haiti, and Rwanda, could stimulate productive competition among NGOs to provide high-impact, quality services.

In the medium term, as government resources increase, the MoH may choose to continue contracting service delivery to nongovernmental partners or may absorb services into the public sector system. The choice will be informed by the ministry's experience with these contracting arrangements over the next years.

5.4.5 HEALTH PROMOTION

According to MoH and NGO officials, geographically isolated communities in Southern Sudan lack accurate health information, and traditional practices are widespread. Examples of traditional practices and beliefs include early marriage, belief that if a woman has trouble in her labor it is a sign that she has not been faithful to her husband, or belief that labor is considered a test of courage, so a woman who complains or cries is cowardly, thus making it hard to determine the onset of labor in order to identify a prolonged labor and need for timely referral. As in other countries, NGOs in Southern Sudan have had significant successes in training and deploying HHPs or other type of community health workers to delivery information and high-impact health services to hard-to-reach populations. NGOs have also been successful in organizing community health committees to identify individuals for HHP positions and continue to work with the HHPs to ensure that their communities have the appropriate health information. In many cases, HHPs and community health committees are given basic training to raise community/individual awareness of basic, high-impact services including the use of EPI services, ITNs, diarrheal disease prevention, nutrition, water and sanitation practices, and skilled delivery. However, because these community-based initiatives are implemented by scattered NGOs, no systematic, national process has been established for recruiting, training, deploying, and supervising HHPs or organizing/training community health committees.

5.4.6 MANAGEMENT AND LEADERSHIP

The central MoH is increasingly taking charge of the planning and management of health service delivery. It has contracted with AMREF, Population Services International, and Church Ecumenical Action in Sudan for training, social marketing, and survey services, respectively. Additionally, it is negotiating 10 contracts with NGOs to directly provide services and capacity building in each state. It also will contract out the improvements in hospital services. Through these agreements and other direct service contracts, the MoH is pro-actively taking authority over the current service provision picture.

Furthermore, the MoH is increasingly taking a leadership role with NGOs and donors, working closely with all partners, but enunciating clear expectations. This was demonstrated during the National Health Assembly, where senior MoH officials chaired the full assemblage and the majority of participants were Southern Sudanese health professionals. The assembly presentations outlined the MoH structure, policies, expectations, and roles vis-à-vis their partners.

From the National Health Assembly and other forums attended during this assessment, it is evident that the MoH is taking authority on another front. MoH policies in each technical health area are developed (seven, so far) or currently under development. Guidelines, protocols, and procedures, technical and programmatic, are planned or developed. Although each of these steps is undertaken in conjunction with partners, the MoH is clearly in the lead as the planners and managers of the health care system.

How does service delivery affect health services?

- Poor access to service delivery will result in lack of sufficient health service.
- Poor quality of service delivery will result in families rejecting health services.
- Poor equity in service delivery will result in underserved populations not receiving health services.

5.5 HEALTH INFORMATION SYSTEM

5.5.1 OVERVIEW

Southern Sudan's National Health Policy states,

> The Ministry of Health, Government of Southern Sudan is committed to develop a monitoring and evaluation program and a health information system that provides information support to the decision-making process at each level of the health system. Thus a system that integrates data collection, processing, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services. (MOH/GOSS 2006e)

As in most post-conflict countries devastated by years of war, the HIS of Southern Sudan is almost non-existent. This holds true for data on health determinants (socioeconomic, environmental, and behavioral factors and the contextual environments in which the health system operates), health system inputs (policies, facilities, human resources, financial resources), health system outputs (quality, use, and availability of health information and services), and health outcomes (mortality, morbidity, diseases, health status). Today, there is no physical structure (equipment), human resources, or policies for such a system.

5.5.2 DATA COLLECTION

The existing HIS is characterized by its verticality and fragmentation; several parallel systems operate. The data collected by NGOs, implementing partners, UNICEF, or WHO is not centralized, and aggregated at the state or central levels. The main HIS-related activities recorded in recent policy documents (Lomoro 2007, GoNU and GoSS 2007, UNICEF 2007), through interviews, and during the National Health Assembly were:

- Disease surveillance and outbreak notification done through UNICEF and WHO's Early Warning and Response Network (EWARN)

- Recent household survey completed

- Stand-alone assessments and studies conducted (e.g., human resource assessment, health facility mapping)
- Registration of vital events and censuses (birth, death, causes of death) taking place in very few facilities or level of governments
- Program-specific M&E (TB, HIV/AIDS, EPI) done by UNICEF
- Data collected by NGOs in their own facilities
- Health statistics in 2006 transmitted from the county to the state level in Central Equatoria (cholera only), Upper Nile, Warrap, Western Bahr El Gazal, and Western Equatoria
- Ongoing discussions on the possibility of creating a human resource information system
- To answer a critical informational gap, a census will start in the fourth quarter of 2007

5.5.3 ROLE OF NGOS

As NGOs provide most health care services, they are an important source of data regarding health determinants, and health system inputs, outputs, and outcomes. Presently, NGOs collect data through their own health facilities, using their own forms, and are not required to transmit their data to the central or state levels.

To strengthen Southern Sudan's HIS in the medium-term, and to acknowledge the role of NGOs in delivery of PHC services, policies could be developed, implemented, and enforced to, first, mandate that NGOs use standardized forms, and second, require that NGOs transmit their information and data to the relevant government structures (central, state, county, community).

At different levels of the health care system, capacity also needs to be built through management teams in order to audit and supervise data collection; incentives, such as access to other organizations' data, and processes, like data collection forms, could be put into place for the production of quality data.

5.5.4 HIS AT THE COUNTY LEVEL

Whereas policy, planning, and financial decisions about health services takes place largely at the national level, actual service provision and delivery of interventions occurs at the county level and below. As such, the county level in Southern Sudan is a key structure and actor for the delivery of health care, and the strengthening of its HIS should be as much of a focus as strengthening the central level. County health teams are the key source of information and are used to assessing the existence and coverage of specific resources and interventions.

Counties need to have the appropriate resources to build and maintain a HIS in order to generate information on service availability and quality; patient satisfaction; operational failure issues such as drug stock-outs, cold chain functionality, and staff absenteeism; system performance, including demand and utilization (e.g., specific clinic attendance per capita), coverage and equity (e.g., attended delivery, TB case detection, and completed immunization; all by income quintiles), and outcomes and impacts (e.g., health status indicators and age-specific mortality). These will serve as a critical tool for monitoring and management purposes, and enhancing county-level decision-making. For example, the analysis of the

county-level data on burden of disease and resource allocation can lead to a redirection of available resources.

5.5.5 USE OF DATA FOR DECISION-MAKING

Producing data is ineffective if health care actors, such as doctors, hospital managers, nurses, financial administrators, and program managers, do not use the data. The rationale for producing data is to use it for programming, budgeting, and forecasting, which in turn impact the efficiency of the use of funds and helps inform decisions, whether they concern the health of the patients or the human resource force. Southern Sudan not only lacks the capacity to produce data, but also to analyze and use data for decision-making.

5.5.6 MOH POLICIES REGARDING HIS

Recognizing the need for implementing an HIS, the MoH/GoSS plans to (Lomoro 2007):

- Develop a national M&E framework and implementation guidelines/manual, including development of a comprehensive national M&E database, and strengthened capacity and institutional infrastructure at the MoH/GoSS to enhance management of M&E programs in Southern Sudan.

- Establish a functional, effective, and efficient health management information system including review and standardization of indicators and reporting formats/tools, and transfer all existing health databases to the MoH/GoSS.

- Enhance effective coordination and partnership.

However, it is not clear at present if there will be any links between the M&E and HIS systems.

The M&E/Health System Directorate has initiated the development of an M&E strategy. A workshop facilitated by the directorate was held in January 2007. It engaged the state MoH representatives and all partner agencies in the process of defining priorities and mechanisms for implementing an M&E system framework.

The MoH is in the process of developing an M&E system in collaboration with USAID's Sudan Health Transformation Project. The medium-term objectives of this work are to build a national framework for M&E, conduct a rapid assessment of the M&E system at the state level, and develop a one-year action plan for implementation. The M&E system will focus on five interventions: reproductive health, HIV/AIDS, IMCI, malaria, and TB. Among other activities is the development of a uniform reporting format and procedures for routine HIS:

- Data collection tools developed: daily patient register, monthly morbidity summary form, antenatal care (ANC) register, maternal delivery register, monthly ANC summary register, immunization form (UNICEF), staffing report, personnel training register, inventory register, water and sanitation form.

- Training manuals developed: trainee manual, trainers' manual, M&E supervision tools, and baseline assessment tools.

Among the existing plans is the Integrated Disease Surveillance and Response (IDSR) Plan of Action for Southern Sudan, which is being revised and updated. The IDSR will build on the existing EWARN. IDSR

priorities will be cholera, bloody diarrhea, measles, yellow fever, meningococcal meningitis, viral hemorrhagic fevers, guinea worm, acute flaccid paralysis (AFP), neonatal tetanus, leprosy, diarrhea in children under five years, acute respiratory illness for children under five, HIV/AIDS, sexually transmitted infections, malaria, trypanopsomiasis, TB, onchocerciasis, rabies, lymphatic filariasis, Kala-azar, schistosomiasis, acute jaundice syndrome, and avian influenza.

Otherwise, the WHO is supporting strengthening surveillance and response for epidemic-prone and vaccine-preventable diseases through recruitment of staff. Currently, in addition to AFP/poliomyelitis and EWARN, programs for malaria control, onchocerciasis control, TB, and HIV/AIDS are being supported. The integration of EWARN and surveillance activities for AFP/poliomyelitis is taking place gradually (MOH/GOSS 2006b).

The health system covers only 30 percent of the population. Therefore, investing in obtaining information through facilities is only one aspect of the solution since the remaining 70 percent of the population, which is not reached by facilities, will not be captured. In this context, it is important to base the HIS on population-based sources in order to have a more accurate picture of the health system.

5.5.7 MAIN CONSTRAINTS OF THE HIS

The major constraints for the functioning and implementation of the HIS that were identified were the following (MOH/GOSS 2006b, Vyas 2007):

- Low staffing and equipment
- Poor communication network and weak logistic support
- Lack of formal data collection procedures and protocols
- Low education level among primary data collectors
- Lack of knowledge of collectors on data analysis or use
- High rate of staff turnover due to lack of salary or incentives
- Poor data quality: unreliable and inconsistent data
- Lack of timely analysis and interpretation at the health facility
- Need to train staff at state level on HIS, special studies, and general management

How does the quality of the HIS affect health services ?

Lack of data impedes or prevents the following:

- Forecasting medical supply and drug needs (quantity of vaccines to order, number of people to vaccinate) and equipment and transportation needs related to providing health services
- Implementing routine immunization
- Identifying diseases outbreaks and doing risk analysis
- Planning and managing provision of health services: financing, staffing
- Translating knowledge into appropriate and adapted monitoring and prevention strategies
- Identifying barriers to increasing health coverage

5.6 PHARMACEUTICAL AND HEALTH COMMODITY MANAGEMENT

5.6.1 OVERVIEW

Until recently, the Southern Sudanese pharmaceutical sector has been largely unregulated. During the years of conflict, pharmaceutical products mostly entered the country through black market channels and relief agencies. Southern Sudanese paid out-of-pocket for the drugs, other than those subsidized by the NGO sector.

In forming the MoH, pharmaceutical management became a priority of the GoSS. The MoH completed a National Pharmaceutical Policy in 2005. Many components of this policy have yet to be implemented, and thus it is estimated that a majority of the population still lack access to basic pharmaceuticals.

At present, the pharmaceutical management system is characterized by a lack of staff (for storekeeping, forecasting, procuring, stock and inventory management, distribution, pharmacists), infrastructure, and training on existing policies (MOH/GOSS 2007).

Currently, pharmaceutical products enter Southern Sudan through five primary mechanisms:

- UNICEF, and ECHO (European Commission's Humanitarian Aid Office)
- Direct MoH procurements of essential drugs
- Direct NGO and private facility procurements
- Direct state procurements for their revolving drug funds (RDF)
- Private sector (both formal and informal) procurements by drug vendors

This section looks at five key components of the pharmaceutical management system: finance, selection, procurement, distribution, and use.

5.6.2 MOH NATIONAL STRATEGY FOR PHARMACEUTICAL MANAGEMENT

The key components of the National Pharmaceutical Policy, developed in 2005, are described in component 3 of MDTF Umbrella Program for Health. During the first year of implementation, the focus of the program will be on (MOH/GOSS 2006d):

- Supporting technical assistance and training activities focused on further development of the policy and regulations
- Improving MoH capacity to manage the pharmaceutical system and implementing a program for rational drug use
- Rehabilitating and constructing central and regional warehouses
- Contracting out management and distribution functions and the renovation of the central warehouse in Juba

In addition, the 2005 strategy outlines a medium-term vision of a centrally based procurement and distribution system, managed by an outsourced partner.

5.6.3 FINANCE

Essential drugs provided by the central MoH are intended to be free for patients. However, slow procurements have led to major stock shortages in the public system throughout the country.

To complement central MoH procurements, some states have established RDFs to purchase pharmaceuticals and medical supplies.[8] The RDFs, which are intended to be managed by SMoHs, are functional in only four states: Unity, Western Bahr El Gazal, Upper Nile, and Central Equatoria. Our interviews and document reviews suggest that the RDF system is not functional as a result of: (1) failure to replenish financing for RDFs; (2) lack of management and accounting capacity; and (3) lack of procurement capacity.

The RDFs operate differently in each state. For instance, in Western Bahr El Gazal, the SMoH reported that the federal government provided an initial investment of funds but requested that 85 percent of the funds from drugs sold be returned to the federal coffers, thus depleting the fund. The Upper Nile, on the other hand, has developed a private RDF, independent from the MoH. In Central Equatoria, the SMoH manages the RDF, and purchases drugs predominantly on the private market in Khartoum with some minor items through the "Public Cooperation" in Juba (SOH/FMOH GOSS 2005a, 2005b).

Though no survey-based data exist, our interviews with MoH officials and NGO representatives suggest that patients still rely on NGO networks and informal drug vendors as their prime source of pharmaceuticals. As stated earlier, other than drugs subsidized by NGO providers, most Southern Sudanese pay for pharmaceuticals out-of-pocket.

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[8] The RDF is a mechanism by which, after an initial capital investment, drug supplies are replenished with monies collected from the sales of drugs. The RDF places the orders from the Central Medical Store in Khartoum.

5.6.4 SELECTION

Until recently, no formularies or selection guidelines were in place other than those that exist in NGO-led facilities. Recently, the GoSS finalized an essential drug list based largely on WHO essential medicine guidelines.

The system of provision of medical supplies to the public health care facilities and providers is moving from a *push* system to a *pull* system, i.e., from a system in which the central level decides the types, timing, and quantity of drugs allocated to facilities to a system where the facilities place orders and control the flow of products. But the implementation of this system is compromised by the limited capacity of states and counties to forecast needs, weak or absent distribution system, lack of qualified staff in pharmaceutical management, and lack of management systems and of information technology.

Private facilities, run mainly by NGOs, order their medical supplies on an ad hoc basis.

5.6.5 PROCUREMENT

To date, the MoH has completed two emergency drug procurements, financed through the MDTF. However, these procurements have been slow, due to lack of procurement staff and skills, as well as cumbersome procedures (MOH/GOSS 2007).

At the same time, the MoH has been working on developing its first regular procurement, drawing on the strategy outlined in the MDTF Umbrella Program for Health. Initial bids for an 18-month supply of drugs have been submitted to the World Bank. It was decided to fill the gaps during the international competitive bidding process by bringing an additional three-month supply of Medical Kits through Rapid Impact Emergency Project (RIEP). The Bank's no-objection was given in October 2006 to issue a contract to International Dispensary Association (IDA) to supply most of the items (tablets, lotions, injectables, etc.), while the balance would be ordered from the selected firms for the 18-month supply of heavy items (infusions, disinfectants, syringes, bandages, and the items IDA could not supply). This procurement arrived between December 22, 2006 and February 2007 and is now in the Central Medical Store.

All contracting processes for US$ 20 million worth of drugs for the next 18 months under the MDTF have been completed and advance payments done. Delivery should begin soon. Furthermore, the selection process for the consultancy firm to support pharmaceutical management and logistics was completed.

5.6.6 DISTRIBUTION

The distribution system of pharmaceuticals in Southern Sudan is weak. In addition to the lack of overall pharmaceutical management described above, this is due to the lack of basic infrastructure, such as roads, warehouses, depots, and trucks. Where warehouses do exist, they are often not adapted to the requirements of pharmaceuticals. For example, most lack ventilation, air conditioning, security, proper storage equipment, stock cards, and storage compartments for drugs.

There is only one central warehouse in Juba, Central Equatoria, two small ones in Upper Nile, and no warehouses in Western Equatoria or Warrap. UNICEF, NGOs, and the private sector rely on their own distribution systems to bring in pharmaceuticals in Western Equatoria, Jonglei, and Warrap.

According to MoH officials, the costs and logistics of all drug distribution, from the state to the health facility level, is the responsibility of the central level. However, this system is not yet in place. Our interviews revealed that the lack of resources from the MoH has forced state governments to pay for and manage the distribution to the facilities. In most cases, public health facilities procure drugs and other supplies themselves or rely on NGO networks.

Not surprisingly, there is an acute shortage of drugs and other medical materials supplies throughout Southern Sudan. For instance, Jonglei State last received a government-procured shipment of pharmaceuticals in May 2006 and relied on UNICEF to provide vaccines.

The MoH could explore other distribution networks that might be working in country, for leveraging them in case of emergencies or using their framework as a model for successful distribution of pharmaceuticals. For example, does the country have good grain distribution systems?

How does pharmaceutical management affect health services and the creation of a sustainable health system?

- Poor forecasting ability and distribution networks lead to medical supplies and drugs stock-outs.
- Poor infrastructure can lead to damaged products and high wastage.
- Chronic stock-outs of essential medicines means poor-quality services, so families do not seek health care.
- Mechanisms for appropriate selection and use of products, and quality assurance systems are needed so that the population obtains quality products (adequate cold chain, checks for removing damaged/expired products, etc.).

5.7 SUMMARY OF KEY FINDINGS

This assessment has revealed numerous strengths, opportunities, weaknesses, and threats to the delivery of health care services. The paragraphs below attempt to summarize them in terms of the six areas of the health care system, namely, governance, health financing, human resources, service delivery, HIS, and pharmaceutical and health commodity management.

Among the strengths upon which the GoSS can build to improve its health systems are strong political will and commitment, the presence of donor funding for health, the wide range of partners, the early development of health care policies, the significant Diaspora and potential returnees with material resources and skills, the anticipated decentralization of the government and of health services, the strong community ownership of health care, the significant presence and active involvement of NGOs and FBOs in delivering services, the results of the recent household survey, and the upcoming census.

But Southern Sudan's health care system is fragile and several issues needs to be addressed: low absorptive capacity of the MoH, low capacity (funding, human resources, training) of states to manage health care services, lack of regulation, lack of coordination (between central, state, and county levels, NGOs and partners), poor and non-existent infrastructures, few trained health personnel, absence of human resource policy, poor quality of health care, lack of baseline and follow-up data, poor endemic disease control programs, funds not forthcoming from or slowly disbursed by national and international

sources that make it impossible to cover recurrent health system costs, and dependency on external resources.

Several of these weaknesses are being addressed by donors, government, or other partners. The table in Annex C attempts to summarizes this: column 1 lists the weaknesses of the health care sector; columns 2 to 5 identify which entity(ies) is addressing each weakness (GoSS, USAID, WHO, and/or UNICEF); column 6 identifies the weaknesses that are not currently being funded and could be addressed with HSS activities.

The next section, Recommendations, provides a detailed description of HSS activities that could have quick and sustainable impact on the health care system and health status of the population.

6. RECOMMENDATIONS

The results of this assessment have revealed many shortcomings that must be addressed to build a strong and equitable health system for Southern Sudan. Based on this analysis, the team identified three broad HSS objectives that can have quick and sustainable impact on the health care system and health status of the population:

1. Strengthen human resources
2. Strengthen management and coordination systems
3. Increase community participation

Working on these three areas will help achieve four concrete outcomes[9]:

1. Improved governance and management
2. Improved planning and budgeting
3. Strengthened service delivery
4. Increased demand for PHC through community outreach

6.1 STRENGTHEN HUMAN RESOURCES

Increase and improve strategic planning workforce: Most state-level administrations do not have a designated office for strategic planning; often staff with limited strategic planning experience and technical know-how are tasked with these duties. As a result, states are unable to engage counties in bottom-up budgeting, to adequately assess and forecast their resource needs and engage in other critical planning exercises.

The two main reasons for weak strategic planning capacity at the state level are lack of salary support from the central level and difficulty in finding qualified staff to fill planning roles. Because the Southern Sudan National Health Policy designates states as the main stewards of the health sector, the development of strategic planning capacity is essential.

The assessment team recommends improving strategic planning capacity at the state level, first, to **recruit and finance one strategic planner in each state**, and second, to **provide training at the state level in a range of strategic planning functions**, including the use of data for decision-making, needs assessment, operational planning, and bottom-up budgeting for health services, including immunization. This activity should be linked to the NGO contracting system that is currently under procurement.

[9] As noted above, Southern Sudan has a shortage of human resources; a short-term solution could be to recruit short-term professionals from other countries.

Strategic planning staff can develop the currently missing operational plans at the state level. In addition, this capacity will lead to improved budgeting for health, decreased wastage of drugs and vaccines, and increased efficiency of the logistics and transport systems for routine health activities such as EPI.

Increase M&E workforce: Most counties have not staffed an M&E focal person, mostly due to the lack of salary support and difficulty in recruiting qualified staff. The county level represents the closest level of the government health administration to the health facilities, and is best placed to manage, monitor, audit, and ensure quality of the health information from facilities. The county's role in supervising the M&E process at the facility level will become even more important as states begin contracting with NGO-run facilities and as routine immunization is implemented nationwide.

Therefore, the assessment team recommends **financing one M&E focal person** in selected pilot counties. Priority should be given to counties that have low health care coverage, have a basic administration in place, and are located in a state that is implementing an NGO service delivery contract and managing public facilities. Following these criteria will allow for a scalable model to be quickly developed and applied to less-advanced counties. As a first step, it might be useful to place them at the state level and, as the program takes root, M&E persons can be recruited for selected counties. This would ensure that the M&E focal person at the county level interacts with a competent counterpart at the state level to supervise the M&E activities. Besides, it would be helpful to introduce user-friendly health information decision support products.

Having M&E personnel will help (1) increase surveillance, (2) decrease wastage through better monitoring and forecasting of needs, demand, and supply, and (3) increase the quality and availability of population data necessary for computing coverage figures and forecasting.

Train and retain PHC workers through clinical collaboratives: Training and retaining health workers remains one of the most serious challenges in Southern Sudan. PHC workers, often based in difficult areas, need skills development as well as incentives to remain in their jobs. The GoSS has begun to implement in-service training programs, but national roll-out of these programs is slow. While there has been much talk of salary structure to retain workers, little attention has been given to non-financial incentives such as managerial quality and sense of belonging to a broader professional purpose. Finally, many health workers feel isolated, lack camaraderie and the ability to share experiences with their peers, and feel as if they have limited opportunities to provide upward feedback.

Therefore, the assessment team recommends that the MoH **develop quality improvement collaboratives for PHC workers**. This could also be done in partnerships with NGOs. Collaboratives have been highly successful in the developed world for enhancing skills, improving motivation, and ultimately improving quality of care; they are now seen as a cutting-edge method for resource-poor settings. Essentially, health workers are brought together around the topic of PHC delivery, learn from technical experts on different models of care, share their own experiences and innovations with each other, discuss grievances, and develop action plans for the way forward. Collaborative members should remain in regular communication with each other; given Southern Sudan's limited communication infrastructure, this would likely involve several face-to-face meetings annually.

Ultimately, this approach, combined with the in-service training provided by GoSS and partners, will lead to more motivated health workers with improved skills to deliver higher-quality PHC. By fostering exchange of ideas, motivating workers, updating skills, and transferring state-of-the-art practices, collaboratives will directly improve the quality of services, which will in turn increase the demand for services.

Provide the central MoH with procurement and program design support: The central MoH is understaffed and overstretched. While the organizational structure is in place, roles, responsibilities, and lines of authority are not yet clearly defined and implemented. Processes and procedures have become more standard since the MoH's inception, but much remains ad hoc. At the same time, the central MoH has worked with its development partners to develop a series of critical and well-designed strategies to improve PHC. Though it is fundamental that these strategies are transformed into implementable programs, the combination of the capacity constraints has impacted the MoH's ability to design and procure projects.

Therefore, the assessment team recommends **providing program design and procurement support to the central MoH**. This should entail recruiting a program design specialist and a procurement specialist to sit at the central MoH where a procurement unit is already being established. This activity will help to develop long-term MoH capacity on project design and procurement.

Strengthening procurement and project design capacity at the central level will allow for the quick implementation of the critical interventions discussed in the Umbrella Program for Health program to strengthen health care at the state, county, and community (payam and boma) levels.

6.2 STRENGTHEN MANAGEMENT AND COORDINATION SYSTEMS

Develop and strengthen management teams: Both the state and county levels have a significant role in the management of the health system. State and county management teams are the backbone of this responsibility. However, these teams, for the most part, are dysfunctional or non-existent, especially at the community level. Where committees do exist, few meet on a regular basis; members are unclear of their roles, responsibilities, and mandate; and they lack critical management tools such as supervisory checklists to carry out their functions. Because states and counties will soon be responsible for monitoring service delivery contracts with NGOs, the strength of the management teams is even more crucial to ensuring services are delivered appropriately and are of high quality.

Therefore, the assessment team recommends **providing technical assistance to form state-level management committees in every state, and county-level management committees in several pilot counties**. Technical assistance should focus on developing roles and responsibilities, empowering teams with the appropriate tools, and training teams on the appropriate procedures and processes needed for functional teams. As in the previous recommendation on county M&E, priority should be given to counties that have a basic administration in place and exist in a state that is implementing an NGO service delivery contract and managing public facilities. Following these criteria will allow for a scalable model to be quickly developed and applied to more nascent counties. For effective management, the existing HIS should be consolidated and information produced by it made more widely available.

Strengthening management capacity will lead to increased capacity to manage contracts with NGOs that provide health services, and improved quality and availability of services. This, in turn, will lead to decreased wastage through better monitoring and forecasting of medical needs, demand, and supply.

Strengthen coordination across decentralized levels: Communication across decentralized levels of the Southern Sudanese health system is weak. For the states to fulfill their responsibility for improving health status, they must be able to communicate with the county level. Moreover, community teams must be able to communicate and feed back information to county teams. Our previous

recommendations on establishing and strengthening of management teams must be coupled with developing procedures that allow teams to communicate and coordinate with each other in order for these teams to be effective. While other donors have begun to purchase core communications infrastructure such as telephones and Internet services, processes and channels of communication have not yet been focused on.

Therefore, the assessment team recommends **establishing processes and procedures for regular communication** from the community level to the county level and the county level to the state level, as well as vice versa. Doing so will help ensure management teams can quickly and in a coordinated manner address issues in health and immunization services delivery, including drug, vaccine, and commodity stock-outs, HIS quality, disease and measles outbreak surveillance, and personnel issues. Improving communication is absolutely essential for building strong services and IDSR systems that can quickly respond to emergencies and outbreaks. Moreover, strong communication is critically needed to foster continuous and rapid flow of information.

6.3 INCREASE COMMUNITY PARTICIPATION

Develop community (payam and boma) health committees: Community involvement can serve as a powerful voice against corrupt practices, inappropriate resource allocation, lack of commodities, poor treatment by health workers, and overall poor quality of care. While community involvement in the health system is stated as an important objective in the Southern Sudan Health Policy, community health committees are not functioning in a consistent manner across the country. In some areas they are strong and active, particularly where NGOs are supportive of the committees. In other areas, they meet on an ad hoc basis. In still other areas, they are non-existent.

Therefore, the assessment team recommends that GAVI funds be used to **establish and strengthen community health teams** in several pilot counties. Preferably, the counties selected would be the same as those selected for previous recommendations. They should be given technical assistance, operational training, and tools to help form committees, and then to function, define processes and procedures, and develop communication systems with county-level administrations. The focus of this activity should be to develop a strong, cost-effective and scalable model that can be expanded to other counties in Southern Sudan. Doing so can help ensure that the delivery of health care services is of high quality and acceptable to the end users. This activity could be done in partnerships with NGOs.

This activity will give communities a formal means to manage their health facilities. Their voice can apply pressure to health facilities to ensure health services are available, patients are treated with dignity, and resources are allocated appropriately.

Develop scalable community outreach model: Geographic coverage by health facilities in Southern Sudan is low, and poor quality of care has resulted in reduced demand for services even among those with geographic access. Furthermore, many basic prevention messages are not communicated. The GoSS has recognized that, to improve health outcomes, the focus cannot simply be on improving clinical quality and must focus on community outreach. However, outreach activities to date are run by interested NGOs, and as a result are ad hoc.

Therefore, the assessment team recommends **developing a cadre of community health promoters in select pilot counties**. Promoters are selected from the community, offered training on basic health messages, supervised by PHC units or centers, and given the stature of health promoter in their village. The community promoter system has been highly successful in communicating basic

prevention messages on immunization and skilled delivery in other resource-poor settings such as Ethiopia, Madagascar, and the Democratic Republic of Congo. Thus proven training curricula, supervisory procedures, and other tools have already been developed. HSS activities should aim at importing these tools and developing a scalable model of community promoters throughout Southern Sudan. It is recommended that this be done in partnerships with NGOs.

Health promoters will increase demand for child health, maternal health, and routine immunization by delivering key health prevention messages to their communities. As community members, they can target messages to pregnant mothers, newborn babies, and sick children. Promoters can also serve as an additional source of information for any disease outbreaks and be helpful in designing programs tailored to the cultural and socio-economic context of the community.

6.4 SUMMARY OF KEY RECOMMENDATIONS

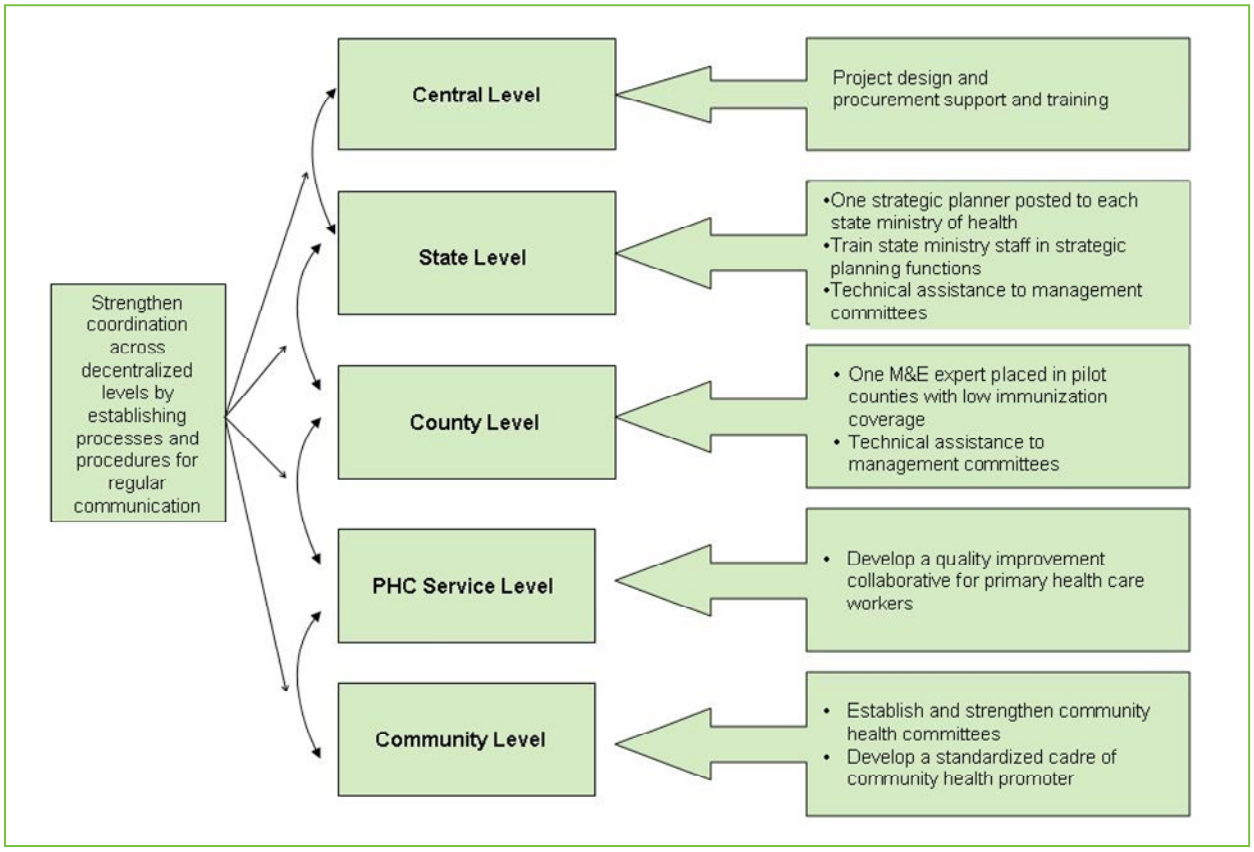
Table 6 summarizes the key recommendations of the assessment team and their impact on the health care system. Figure 4 summarizes and groups the key recommendations by level of government.

TABLE 6: KEY RECOMMENDED HSS INTERVENTIONS AND THEIR IMPACT ON HEALTH SERVICES

HSS Interventions	Results/Impact
1. Strengthen human resources • Increase and improve strategic planning workforce by (1) recruiting and financing one strategic planner in each state, (2) providing training at the state level in a range of strategic planning functions • Increase M&E workforce by financing one M&E focal person in select pilot county administrations • Train and retain PHC workers by developing quality improvement collaborative for PHC workers • Provide central MoH with procurement and project design support	• Develop operational plans to strengthen the implementation of health programs • Improve planning and budgeting for health services that will improve the functioning of health facilities, increase the availability of health workers, decrease wastage of medical supplies and drugs, and improve the efficiency and functioning of logistics and transport to implement health activities. • Improve surveillance • Decrease wastage through better monitoring and forecasting of needs, demand, and supply • Increase the quality and availability of population data necessary for computing coverage figures and forecasting • Increase the quality of services and help motivate workers to provide better services • Create demand for health services
2. Strengthen management and coordination systems • Develop and strengthen management teams by providing technical assistance to form state-level management committees in every state, and county-level management committees in several pilot counties • Strengthen coordination across	• Improve all aspects of PHC services through better planning for the provision and implementation of activities, policies, and regulations • Improve surveillance • Decrease wastage through better monitoring and forecasting of needs, demand, and supply • Increase the quality and availability of population data necessary for computing coverage figures and forecasting

HSS Interventions	Results/Impact
decentralized levels by establishing processes and procedures for regular communication	• Increase the timeliness and efficiency of emergency and outbreaks response • Foster a continuous and rapid flow of information
3. Increase community participation • Develop community (payam and boma) health committees in select pilot counties • Develop scalable community outreach model by developing a cadre of community health promoters in select pilot counties	• Communities have voice in the management of their health facilities, thus can provide civil society pressure to improve and make health services regularly available • Communities are empowered to act as first-responders during emergencies or poor performance of health facilities • Community-level promotion increases use of health services

FIGURE 4: KEY RECOMMENDATIONS, BY LEVEL OF GOVERNMENT



ANNEX A: LIST OF STAKEHOLDERS INTERVIEWED

Organization	Name – Title	Email
ADRA	Florence Lukhumwa –	florencelukhumwa@yahoo.com
AMREF	Dr Margaret Itto – Country Director for Sudan	ittomargaret@yahoo.co.uk margareti@amrefhq.org
Capacity Project	Agnes Comfort – Project Director	
CARE Sudan	Steve McDowell	
Church Ecumenical Action in Sudan (CEAS)	Gerbrand Alkema – Health Director	gerbrand.alkema@gmail.com
Government of Southern Sudan	Dr Majok Yak – Under-Secretary, MoH	majokyak@yahoo.com
	Dr Monywiir Arop – Director General, Planning and Human Resource Development	monywiir@nshpc.com
	Victoria Jabo Eluzai – Director, Nutrition Program	ohakim73@yahoo.com, victoria.eluzai@mohgoss.sd
	Mr Lasu Lawiya Joja – Director, PHC	lasujoja@yahoo.com lasu.joja@mohgoss.sd
	Dr Anthony Laku – EPI Manager	alako_k@yahoo.com
	Dr Olivia Lomoro – Director, Health Systems, Policy and Research	achaber@yahoo.co.uk
	Dr Elizabeth Ojaba	Elizabethojaba2002@yahoo.co.uk
	Dr John Rumunu, Director General, Preventive Medicine	john.rumunu@mohgoss.sd
JSI	Darshana Vyas – Chief of Party	dvyas@jsisudan.com
Project Axxes	Larry Sthreshley – Chief of Party	larrys@sanru.org
Tear Fund	Dr Chris Lewis – Sector Specialist	Dmt-southsudan-ha@tearfund.org
UNICEF	Bertha Jackson – Senior Nutrition Advisor	bjackson@unicef.org
	Jones Okoro – Head, Vaccination Team	jokoro@unicef.org
	Dr Romanus Mkerenga - Country Office, Southern Sudan	rmkerenga@unicef.org
USAID	John Kimbrough	jkimbrough@usaid.gov
	Jennifer Mayor	jmayor@usaid.gov
	Charles Oliver	coliver@usaid.gov
World Bank	Khama Rogo	krogo@worldbank.org
WHO	Dr. Abdullahi	ahmeda@nbo.emro.who.int

ANNEX B: MAP OF SUDAN

ANNEX C: DRAFT DONOR MAP OF HEALTH SYSTEMS ACTIVITIES

	GoSS-MDTF	USAID	WHO	UNICEF	Italian Cooperation	DFID	Areas for HSS
Budget Process							
Improving speed of financial disbursements to states	X						
Making available funds for salary support & other recurrent costs at state & county level	X						
Increasing allocation to PHC							X
Clarifying budget process to states & counties at central level							X
Multi-Donor Trust Fund							
Increasing capacity to design mechanisms for implementation of Umbrella program	X						X
Increasing capacity & providing TA for procurement process	X			X			X
State-level management capacity							
Increasing number of dedicated planning staff in states							X
Providing funds for salary support	X	X	X				X
Improving recruitment of qualified staff	X	X					
Increasing functionality of state health management teams							
Creating & providing tools & processes	X						X
Delineating roles/responsibilities	X				X		X
Building communication & coordination infrastructure (Internet, phone)	X	X	X	X	X	X	X
Clarifying role of state vis-à-vis prime contractor on planning	X						
County-level management capacity							
Creation of county administrations; many non-existent							
Increasing salary support for county staff	X						X
Building skills at county level	X						X
Increasing functionality of county health management teams							
Clarifying role of county vis-à-vis NGOs					X		X
Increasing coordination with state					X		X

	GoSS-MDTF	USAID	WHO	UNICEF	Italian Cooperation	DFID	Areas for HSS
level							
Increasing interaction between teams & village/community health teams							X
Service Delivery							
Coordinating service delivery:	X					X	X
Implementing standardized quality assurance processes	X	X					
Implementing mechanism for health promotion at community level							X
Human Resources							
Drafting National Human Resource (HR) policy	X						
Discussing implementation of database on payroll (HR-MIS) with MoH	X						
Determining classification of clinical cadres	X						
Developing pre- & in-service training programs	X	X					
Clinical management mostly performed by NGOs							X
Implementing a rational & regular salary system							X
Clarifying system of promotion to retain workers	X						
Formulating strategies for recruitment by MoH & partners	X						
Information Systems							
Increasing gathering & transmittal of information to central or state levels	X	X	X	X			X
Improving communication network	X			X		X	X
Creating formal data collection procedures & protocols	X	X					
Increasing use & analysis of data by states & counties for decision-making							X
Improving data quality, i.e., improving reliability & consistency of data	X	X					X
Pharmaceutical Management							
Developing pharmaceutical management policy	X	X					
Improving speed of MDTF-supported procurements							X
Moving from "push" system to "pull" system							
Increasing capacity of states & counties to forecast needs							X
Improving & creating distribution system	X	X	X	X			X
Improving capacity of existing staff in pharmaceutical management	X		X				

BIBLIOGRAPHY

African Medical and Research Foundation, Directorate of Learning Systems. 2005. Report on Training Needs Assessment for Health Human Resource Development in Southern Sudan.

Ahmed Noor, Ayan H. 2007. Trip Report. Sudan Health Sector Transition Assessment.

Buchan, John. 2006. Visual Loss in Postconflict Southern Sudan. PloS Med 3(12): e450. http://medicine.plosjournals.org/perlserv/.

Carter Center (The). February 12, 2007. Jimmy Carter Visits Southern Sudan to Praise Progress Against Disease, Urges Guinea Worm Eradication.

Carter Center (The). n.d. Activities by Country. http://www.cartercenter.org/countries/sudan.html.

Decaillet, Francois, Patrick D. Mullen, and Moncef Guen. 2003. Sudan Status Report. Draft. World Bank/AFTH3.

Government of National Unity and Government of Southern Sudan. 2007. Power Point Presentation: Sudan Household Health Survey.

High Level Forum on the Health MDGs. 2005. Health Service Delivery in Post-Conflict States; 2005.

Intelligence Resource Program. n.d. Sudan People's Liberation Army (SPLA), Sudan People's Liberation Movement (SPLM). http://www.fas.org/irp///world/para/spla.html.

Interagency Rapid Needs Assessment of Internally Displaced Persons in Mundri and Mvolo Counties, Western Equatoria.

IRIN Humanitarian News and Analysis. April 18, 2007. Sudan: Peace bolsters food security in the south. UN Office for the Coordination of Humanitarian Affairs. http://www.irinnews.org.

IRIN News.Org. 2007. Sudan: Landmines continue to plague the south. http://www.globalsecurity.org/miliary/library/news/2007/04/mil-070406-irin01.htm

Islam M, ed. 2007. *Health Systems Assessment Approach: A How-To Manual.* Submitted to the U.S. Agency for International Development in collaboration with Health Systems 20/20, Partners for Health Reform*plus*, Quality Assurance Project, and Rational Pharmaceutical Management Plus. Arlington, VA: Management Sciences for Health.

JAM (Joint Assessment Mission) Sudan. 2005. Cluster Reports; Volume III.

JAM Sudan. March 18, 2005. Framework for Sustained Peace, Development and Poverty Eradication.

Lefkow, Leslie. January 10, 1995. No justice for Sudan. Guardian Unlimited. http://www.guardian.co.uk/sudan/story/0,14658,1387074,00.html#article_continue.

Lippeveld, T.R., R. Sauerborn, and C. Bodart. 2000. Design and implementatio nof health Information Systems. Geneva: World Health Organization.

Lomoro, Olivia. 2007. PowerPoint Presentation: Overview Monitoring and Evaluation. Directorate of Research and Health System Development.

Ministry of Finance and Economic Planning/Government of Southern Sudan. 2006. GoSS Aid Strategy. 2006-2001.

MoH/GoSS (Ministry of Health, Directorate of Human Resource Development/Government of Southern Sudan). 2006a. Report on Situation Analysis and Recommendations on Human Resource Assessment for Health in Southern Sudan.

MoH/GoSS. 2006b. Assessment of National Communicable Disease Surveillance Systems in Southern Sudan. Draft Report.

MoH/GoSS. 2006c. Basic Package of Health Services for Southern Sudan;

MoH/GoSS. 2006d. South Sudan Multi Donor Trust Fund. Final Project Proposal (FPP). South Sudan Umbrella Program for Health System Development.

MoH/GoSS. 2006e. Southern Sudan National Health Policy. 2006–2011.

MoH/GoSS. 2007. Maternal and Reproductive Health Policy for Southern Sudan.

MoH/GoSS and UNICEF. 2006.Expanded Programme on Immunization. Draft report.

SoH (Secretariat of Health), South Sudan. The New Sudan Nutrition Policy and Plan of Action 2004-2010 for Implementation in New Sudan, Nuba Mountain, Blue Nile and Abyei Area.; 2004.

SoH/FMoH/GoSS, WHO (World Health Organization), USAID (United States Agency for International Development), UNICEF. Health System Assessment in former Garrison Towns. Report of a Mission to Juba. Final Draft; 2005.

SoH/FMoH/GoSS, WHO, USAID, UNICEF. Health System Assessment in former Garrison Towns. Report of a Mission to Wau, Aweil, Gogrial, Raja. Draft; 2005.

South Sudanese Friends International Inc. n.d. About Southern Sudan. http://southsudanfriends.org/southernsudan.html.

SPLM (Sudan People's Liberation Movement) and The New Sudan Centre for Statistics and Evaluation. 2004. Millennium Development Goals: Interim Report for South Sudan 2004. http://ssccse.org/blog/pubs/millennium.

Sudan Tribune. November 2, 2007. Sudan peace parties agree on demilitarization of oilfields in south. http//www.sudantribune.com/spip.php.

UNICEF. Update on UNICEF-Supported Southern Sudan Health and Nutrition Database; 2007.

USAID (United States Agency for International Development). 2007. The Humanitarian Situation in Sudan. Washington, DC. www.usaid.gov/locations/sub-saharan_africa/sudan.

Vyas D. 2007. SHTP M&E Assessment.

Wikipedia. 2007. Southern Sudan, Sudan People's Liberation Army. http://en.wikipedia.org.

World Bank (The). 2003. Sudan Health Status Report. Draft. Washington, DC.

World Bank (The). 2006. World Development Indicators.

World Bank (The). 2007. GOSS-MDTF. South Sudan Umbrella Program for Health Systems Development. Aide Memoire.

WHO (World Health Organization). 2000. Who Pays for Health Systems? In World Health Report 2000. Geneva.

World Health Organization. 2001b. Report of the Scientific Peer Group on Health Systems Performance Assessment. Geneva. <http://www.who.int/health-systemsperformance/sprg/report_of_sprg_on_hspa.htm>.

World Health Organization. 2006a The World Health Report.

WHO. 2006b. Weekly epidemiological record (31 March). Geneva.

WHO. 2006c. Health Infrastructure Assessment in South Sudan. Geneva.